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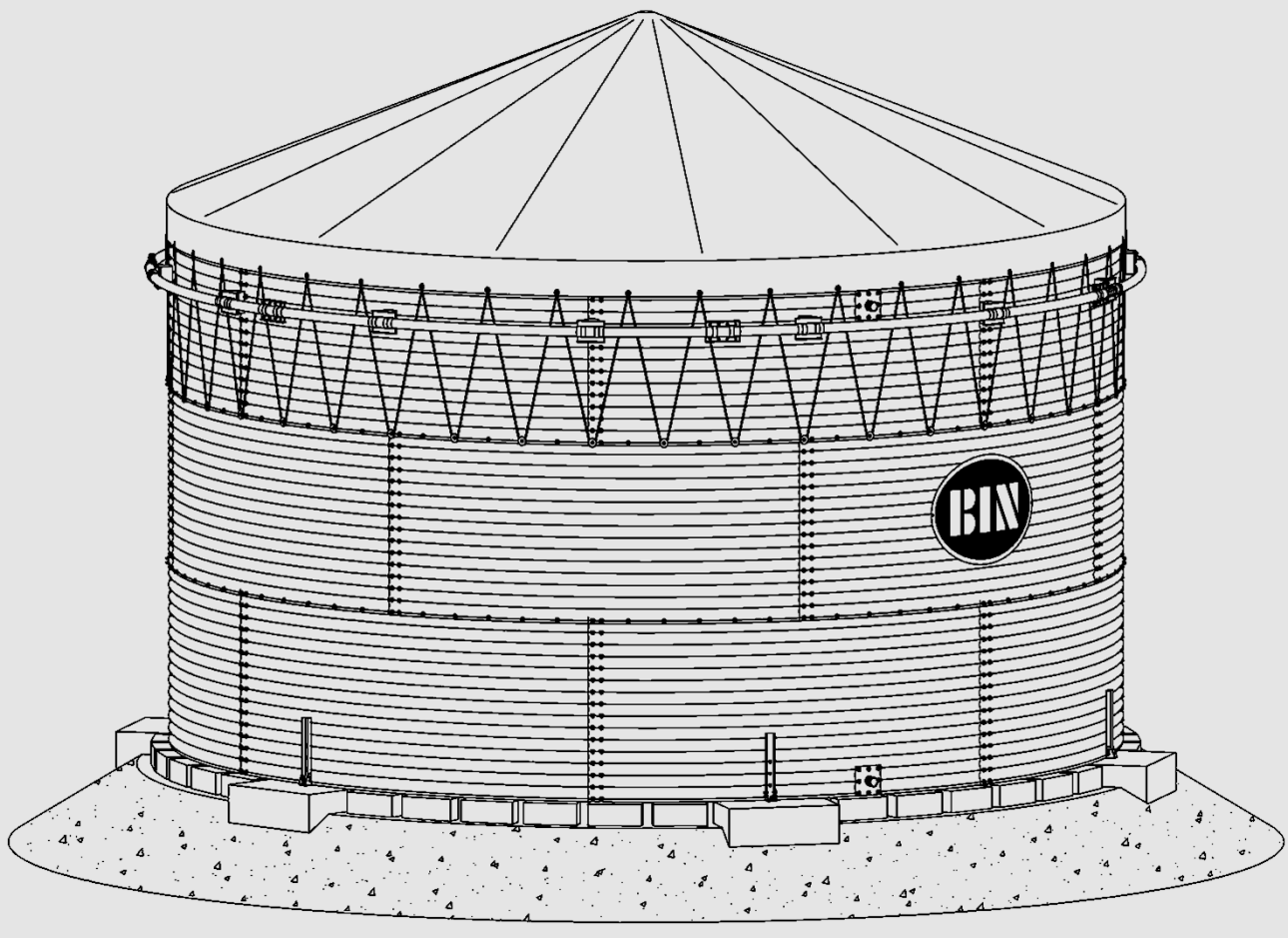
RETENTION TANK RBIN

FOR STORING WATER FOR IRRIGATION OF AGRICULTURAL CROPS

TYPE: RBIN

MODEL: RBIN042, RBIN043, RBIN044, RBIN062, RBIN063, RBIN064, RBIN072, RBIN073, RBIN074, RBIN092, RBIN093, RBIN094, RBIN112, RBIN113 RBIN114

OPERATING MANUAL (IO:RBIN)



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Aleksandrów Kujawski/A4 format

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INTRODUCTION

Thank you for purchasing a BIN retention tank. The tanks are provided with safety devices to protect operators and the product during its normal use in technological process. However, these devices cannot ensure safety in all circumstances, and, therefore, before operators start to operate the tank, they must thoroughly read this Operating Manual and understand it. This way errors during the tank installation, and during its operation itself can be avoided. Please, do not attempt to use the tank before you get acquainted with all sections of this manual, and not understand each of its functions and all procedures.

The Operating Manual aims at acquainting the user with a correct operation of the purchased product. It contains practical guidelines that must be known to a user during the tank operation.

If any content of this OPERATING MANUAL is not understood by or is unclear for the user, please, contact the manufacturer or its representative to receive additional explanation.

This operating manual forms an integral part of the product, and should be kept for further use.

Before starting to operate the tank, read this operating manual, and, in particular, the chapter concerning safety at work.

Each use of the tank for purposes other than those specified in the operating manual shall be treated as the misuse. The manufacturer of the product shall not be held responsible for any resultant damages. The user bears all related risk. All and any unauthorised changes to the product design exclude the manufacturer's responsibility regarding any resultant damages.

The warning sign in the operating manual indicates that the special caution must be exercised because of the danger to people and possibility of product damage.

People and animals are strictly forbidden to enter the retention tank containing water, regardless of the amount of water stored in it. Presence of people or animals in the retention tank with water may result in their drowning and in product damage.

It is strictly forbidden to operate the tank that is incorrectly assembled, including not fixed correctly to the ground. The tank that is incorrectly assembled, and in particular, not fixed correctly to the ground, may be damaged, as well as poses a threat to health and life of people and animals.

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1. Safety

1.1. Basic safety rules

1. People operating, performing maintenance or overhauls of retention tank are obliged to adhere to general occupational safety regulations.
2. The user is obliged to read and understand operating manuals for the tank and for all other auxiliary equipment, and to strictly adhere to them.
3. The tank can only be operated by able-bodied adults. These persons need to be fully aware of undertaken activities.
4. In particular, the following is forbidden:
   - operation by any “third” persons, who are not familiar with the Operating Manual;
   - operation by people who are ill, or under influence of alcohol or narcotic drugs.
5. The retention tank should be effectively secured against access of children, unauthorised persons, and animals. Do not leave ladders, scaffoldings, and other products facilitating access to the upper edge of the tank unattended.
6. An owner is obliged to provide the tank with detailed occupational health and safety instructions.
7. The tank and its surroundings should always be kept tidy and clean.
8. People and animals are strictly forbidden to enter the retention tank containing water, regardless of the amount of water stored in it. Presence of people or animals in the retention tank with water may result in their drowning and in product damage.
9. It is strictly forbidden to operate the tank that is incorrectly assembled, including not fixed correctly to the ground. The tank that is incorrectly assembled, and in particular, not fixed correctly to the ground, may be damaged, as well as poses a threat to health and life of people and animals.
10. It is forbidden to install devices, systems or other structures on the shell and the roof of the tank, because this may cause its damage, and especially cause loss of tightness.
11. The retention tanks are not underground ones. They can be installed above or below ground levels, but their side walls and roofs cannot transfer additional loads, e.g., from ground waters or ground.
12. The tank is not adopted to and is not provided with measures enabling user’s access to its interior. All activities requiring entering into the tank should be ordered at people performing works of this type, having equipment, resources, and required qualifications.
13. Overhaul works in the tank can only be performed after it is emptied of water, with devices for its filling and emptying disconnected and locked out, and after placing an information plate “Attention! Do not fill - overhaul”.
14. Workers can undertake and conduct works in tanks only on a basis of a written permit issued by the employer.
15. A person working in the tank should be equipped with appropriate personal protective equipment and assisted by another person outside the tank.
16. When people stay inside the tank, they must be provided with means for getting out of the tank immediately.
17. When there are hazards related to noise, causing problems in communication between people using or operating the tank, then special equipment for smooth communication between workers is required.
18. It is forbidden for unauthorised people to remain near the tank when any works are performed inside.
19. It is strictly forbidden for people to be present in the tank during its filling or emptying.
20. Before loading or unloading equipment is started, make sure there are no people or animals in the tank.
21. Do not let water contaminated with organic and/or inorganic substances, including water containing algae, plant protection agents, fertilisers, and nutrients for plants and animals to accumulate in the tank.
22. Only water from underground intakes, water supply systems, or precipitation (rainwater) can be stored in the tank.
23. Tanks cannot be used for accumulation of materials other than water, in particular, plant protection agent, liquid and solid fuels, and artificial and organic fertilisers, such as liquid manure or slurry.
24. Tanks cannot be used for storing water for fire prevention purposes or water intended for consumption by people and animals.
25. It is forbidden to collect in the tank bulk and solid materials such as, e.g., cereal grains, sand, straw, hay, etc.
26. It is forbidden to operate the tank in winter at temperatures below zero. Water stored in the tank can freeze and damage the tank. During temperatures below 0°C, there should be no water in the tank.
27. During the winter, flat protective roofing must be dismantled from the tank. Even small quantities of snow accumulated on the tank roof may cause its permanent damage.
28. The owner is responsible for construction and operational condition of the lightning system and the possible protective grounding of the tank.
29. The owner is obliged to equip the tank with an overflow hole located about 30 cm below the upper edge of the steel shell. The overflow hole prevents overfilling of the tank, which could result in a damage to the product. The upper G4" spigot (port) manufactured by BIN can be used as an overflow hole.

30. In the case of any outage in power supply, switch all devices working with the silo off.
31. The tank and its direct surroundings must be used and maintained in a way preventing fire, and it should be provided with handheld fire extinguishing equipment, including a dry powder or CO2 (carbon-dioxide) fire extinguisher.
32. In the event of the fire:
    - evacuate people from the danger zone;
    - call the fire brigade;
    - disconnect all devices from the power supply;
    - start extinguishing fire.
33. It is forbidden to extinguishing electrical systems fires with water or a foam extinguisher.
34. When any defects or damages to the tank are found which may affect safety of people or animals, the investor is obliged to immediately notify them in writing to the tank manufacturer.
35. The repair and maintenance operations can only be conducted by able-bodied adults holding relevant qualifications.
36. Do not attempt any operations in adverse weather conditions (rain, heavy frost, ice, strong wind, lightnings, poor visibility).
37. Any disinfection operations concerning tanks or water stored in them should be ordered at specialist companies. After these activities, relevant OHS regulations concerning the use of chemicals should be strictly adhered to.
38. Observe rules for complete control over auxiliary equipment connected to the grid.
39. It is forbidden to make any changes in design or to change the intended use of the tank without a written consent of the manufacturer.
40. Any design changes in the finished product require the new technical acceptance of the tank by the manufacturer or its authorised representative.
41. All equipment and systems connected to the tank (e.g., pumps for filling the tank with water or emptying it) must be constructed in such way that they do not damage the tank.
42. The manufacturer accepts a possibility for equipping the tank in equipment or sets of devices from other manufacturers provided they are "CE" marked. This forms a basis for use of relevant operating manuals of this equipment as a part of their correct operation.
43. The tanks are labelled with safety marks. Each user is obliged to become acquainted with their meaning.
44. In no device included in this Operating Manual the equivalent acoustic pressure level does not exceed 70dB(A), as measured in accordance with PN-EN ISO 11201:2012 and PN-N-01307:1994.

1.2. Information and safety signs

Safety signs

READ THE OPERATING MANUAL

ATTENTION! DANGER

USE PROTECTIVE GLOVES

USE PROTECTIVE FOOTWEAR

Nominal plate

NO UNAUTHORISED ACCESS

NO USE OF NAKED FLAME OR SMOKING

All information and safety signs are installed on a special board fixed to the tank shell, at the height of ca. 1.5m from the ground surface.

Warning signs, nominal plates and other information provided on the equipment must be kept legible and clean. When the signs or marks mentioned above are damaged or destroyed, or a part containing them is replaced, new plates should be purchased from BIN Company and installed on the product.

2. General product description

2.1. Intended use of the product

Retention tanks manufactured by BIN Sp. z o.o. are designated for collecting water to be used to irrigate crops, including orchards and gardens. Water should be free of contaminations. Water stored in the tank should be regularly inspected for the presence of contamination, including algae, which may make emptying of the tank difficult and damage the inner PVC membrane of the tank. Water stored in the tank and controlled regularly can be used to irrigate agricultural crops during lack of or insufficient rainfalls (during a draught). The tanks are useful in the case of water intakes of capacity insufficient to supply irrigating devices. Water from such intakes should be collected in the tank at times when irrigation of crops is not possible (e.g., during intense sunlight). Then it can be used at a convenient time, ensuring required capacity of equipment irrigating agricultural crops. Tanks cannot be used for storing water for fire prevention purposes or water intended for consumption by people and animals. Do not use the tank to store liquids and materials other than water. When the tank is used contrary to its intended use, the manufacturer shall not be held responsible for any resultant damage.

A protective PVC roof can be installed, to protect stored water against loss through evaporation, contamination, and excessive algae growth. The protective roof manufactured by BIN Sp. z o.o. is not a standard tank accessory, and it should be requested when placing an order for the retention tank.

2.2. Tank technical data

Table 1. Basic characteristics of RBIN type tanks – standard and optional equipment.

- *nominal usable volume of the tank corresponds to the total volume of the tank internal space calculated on a basis of shall nominal diameter and height;*
- *the actual volume of water stored in the tank is always lower and depends on the following factors: filling method (height of the filling spigot* (port)*), installation of the protective roof, precision of the horizontal and vertical installation of the tank, etc.;*
- *the net tank weight does not include the weight of optional equipment*

	Item	Product Name		RBIN042	RBIN043	RBIN044	RBIN062	RBIN063	RBIN064	RBIN072	RBIN073	RBIN074	RBIN092	RBIN093	RBIN094	RBIN112	RBIN113	RBIN114
S-standard / O option	1.	Nominal usable volume of the tank		22.0m^3	32.9m^3	43.9m^3	58.8m^3	88.2m^3	117.6m^3	80m^3	120m^3	160m^3	132m^3	198m^3	265m^3	235m^3	353m^3	470m^3
	2.	Shell nominal diameter (the cylindrical part of the tank)	m	Ø 3,50			Ø 5,73			Ø 6,68			Ø 8,59			Ø 11,46		
	3.	Height of the tank with a flat roof	m	2.33	3.47	4.61	2.33	3.47	4.61	2.33	3.47	4.61	2.33	3.47	4.61	2.33	3.47	4.61
	4.	Height of the tank with a conical roof	m	2.97	4.11	5.25	3.35	4.49	5.63	3.53	4.67	5.81	3.88	5.02	6.16	4.40	5.54	6.68
	5.	Net weight of the tank in the basic version (without optional equipment)	kg	270	380	485	440	743	961	595	897	1162	686	1087	1456	940	1560	2330
S	6.	Outer reinforcement ring of the tank's shell		-				1 pc		-	1 pc		-	1 pc		-	1 pc	
S	7.	Mounting anchors		3 pcs			5 pcs		8 pcs	6 pcs		8 pcs	6 pcs		6 pcs	8 pcs		16 pcs
O	8.	Flat protective roof of the retention tank		1 pc (roof weight approximately 17kg)			1 pc (roof weight approximately 42kg)			1 pc (roof weight approximately 55kg)			1 pc (roof weight approximately 95kg)			1 pc (roof weight approximately 175kg)		
O	9.	Conical protective roof of the retention tank		1 pc (roof weight approximately 69kg)			1 pc (roof weight approximately 195kg)			1 pc (roof weight approximately 248kg)			1 pc (roof weight approximately 470kg)			1 pc (roof weight approximately 890kg)		
O	10.	Protective roof handle		44 pcs			72 pcs			84 pcs			108 pcs.			144 pcs.		
S	11.	A hardcopy of the silo operating manual (File No. SZJ/031)		IO: RBIN: 1 pc (attached to the product)														
S	12.	A digital copy of the structural product design (File No. SZJ/008)		Delivered free of charge on the customer request (for BIN customers only)														
S	13.	A hardcopy of the Declaration of Performance Properties (File No SZJ/029)		1 pc (attached to the product)														
O	14.	4" spigot (port)		1pc. (for filling or as an overflow spigot (port)) + 1pc. (for emptying)														
O	15.	151mm wrench		1 pc (necessary for installation of the 4" spigot (port))														

2.3. Design description

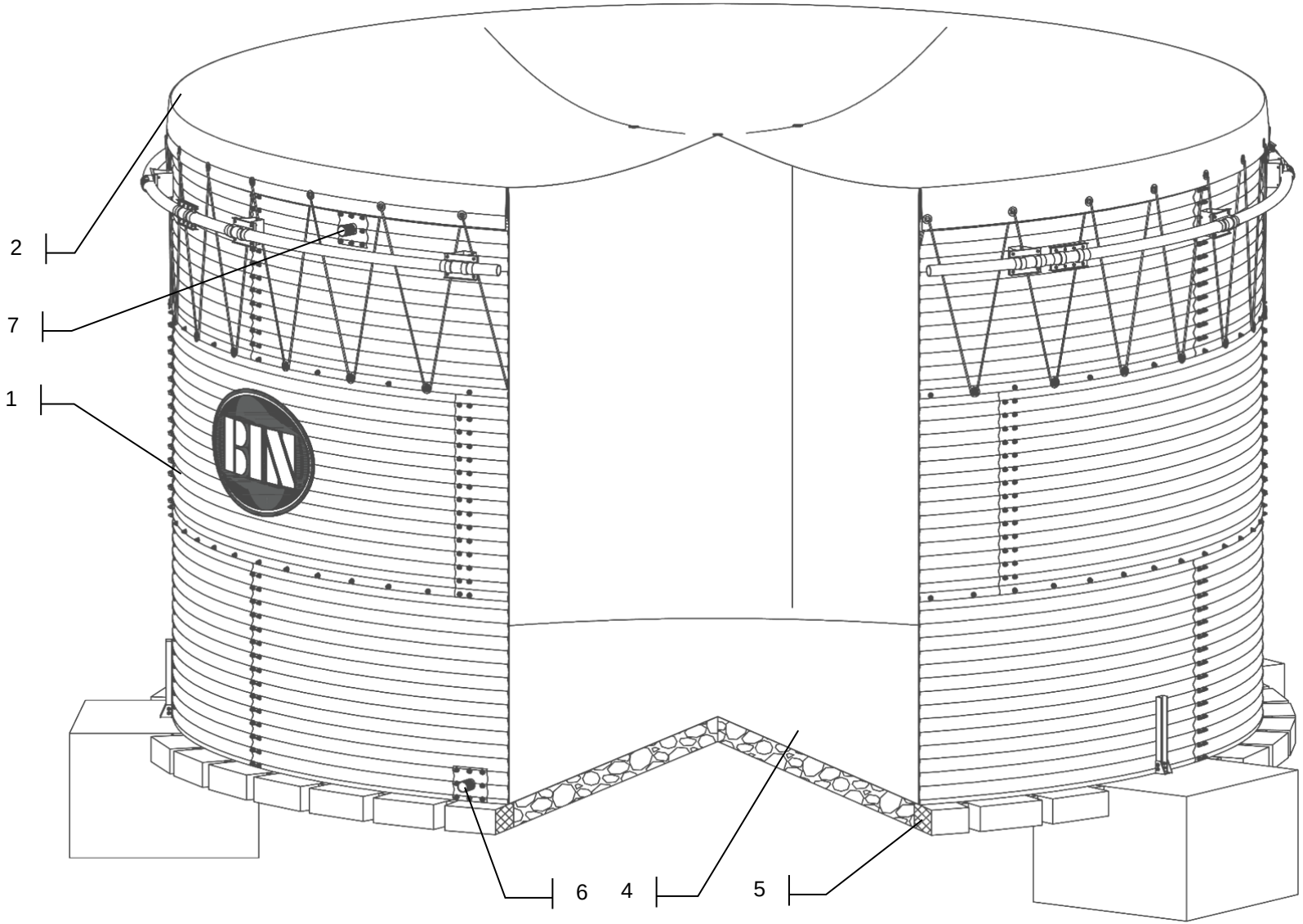

Figure 1. A diagram of the RBIN type tank with a flat protective roof.

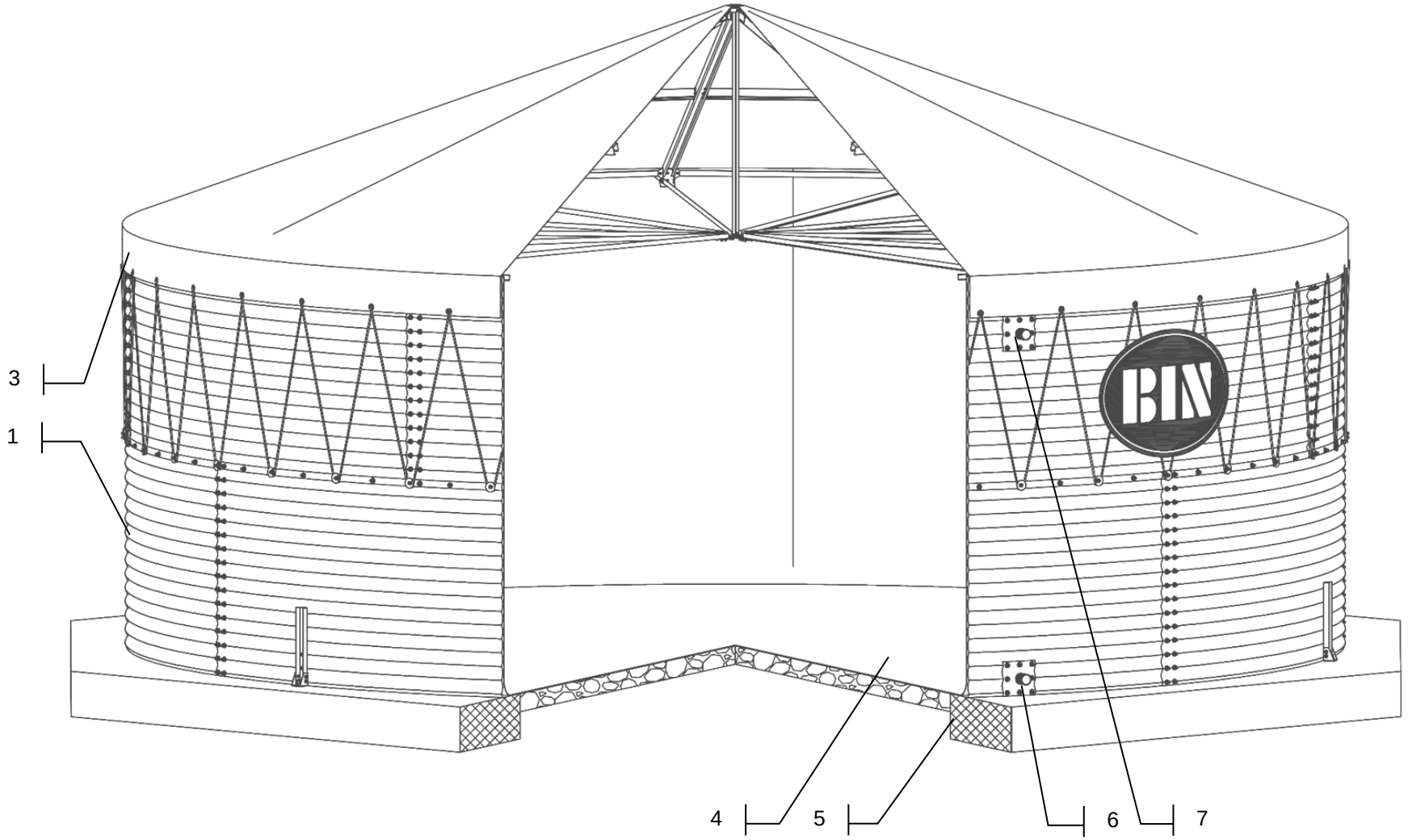

Figure 2. Diagram of the RBIN type tank with a conical protective roof.

Figure 1 and Figure 2 present the overground cylindrical retention tank with a flat bottom and a protective PVC roof. External side walls of the tank are formed by a durable shell made of galvanised corrugated steel sheet. Individual elements of the shell are connected with multirow bolt connections. The basic unit of the tank is a bag-shaped tight inner membrane made of PVC. Spigots (ports) for filling and emptying the tank can be installed in the tank side walls. During installation the whole structure is fixed to the foundation slab with anchors. A brief characteristics of the most important units and devices installed in RBIN tanks is presented below. Views and basic tank dimensions are presented in – Table 2, Figure 16 .

Item 1 TANK SHELL

One of the basic units in every retention tanks is an external steel shell. The tank shell means its cylindrical side walls made of hot-dip galvanised corrugated steel sheets. The shell consists of components (sheets) joined with steel screws with anti-corrosion coating. Shell sheets are installed with an overlap with multirow bolt connections. In its upper part, the shell is connected with an inner bag-shaped membrane. In its bottom part it is supported on the foundation, to which it is connected with special connectors and anchors. In its upper part, the shell can have special brackets for installation of a light protective PVC roof. Furthermore, a spigot (port) for filling/emptying of the tank can be installed in the bottom part of the shell, while an overflow spigot (port) can be installed in its upper part. The external side shell is a standard equipment of each retention tank.

Item 2 FLAT PROTECTIVE ROOF I Item 3 CONICAL PROTECTIVE ROOF

A flat or conical protective roof is an optional equipment of the retention tank. When installed in the tank, it fulfils the following functions:
- prevents excessive water loss by evaporation;
- secures stored water against external contamination;
- limits algae growth rate.

Both the flat and the conical protective roof are made of PVC as a light top cover of the tank. Holes are made around its perimeter with a flexible rope installed, enabling fixing of the roof to special handles of the external shell. The conical protective roof is equipped with an internal support structure made of steel and galvanized sections, with a conical shape of an inclination of about 20°. Openings are provided in the central part of the flat protective roof, to prevent damage to it due to excessive load from a rainfall. In contrast to the conical protective roof, the protective flat roof should not be used in winter because it is not designed to carry loads from precipitation or residual snow or ice. The conical protective roof can be operated all year round without the risk of being damaged by snow or ice.

Item 4 INNER MEMBRANE

A tight inner membrane is a system in the tank intended for water storage. The membrane is fully made of PVC and bag-shaped. Its side walls are connected to a flat bottom, which is supported on a horizontal surface of the foundation or any other paved surface. The flat bottom of the membrane should always be supported on a surface which should not be below the surface of the lower edge of the external steel shell. In its upper part, the membrane is connected to the external steel shell using belts with a tensioner. All bolt connections of the external shell are secured with self-adhesive covers protecting the inner membrane against damage. A rubber protection on the upper edge of the external shell plays a similar role. The inner membrane is a standard accessory of the retention tank.

Item 5 FOUNDATION

A correctly designed and constructed foundation is one of preconditions for correct installation, and safe and failure-free operation of the tank.
Solutions for foundations presented in this document are only geometric guidelines enabling installation of the tank. Calculations for the tank seating should be performed for ground conditions determined at a target location of the construction site,

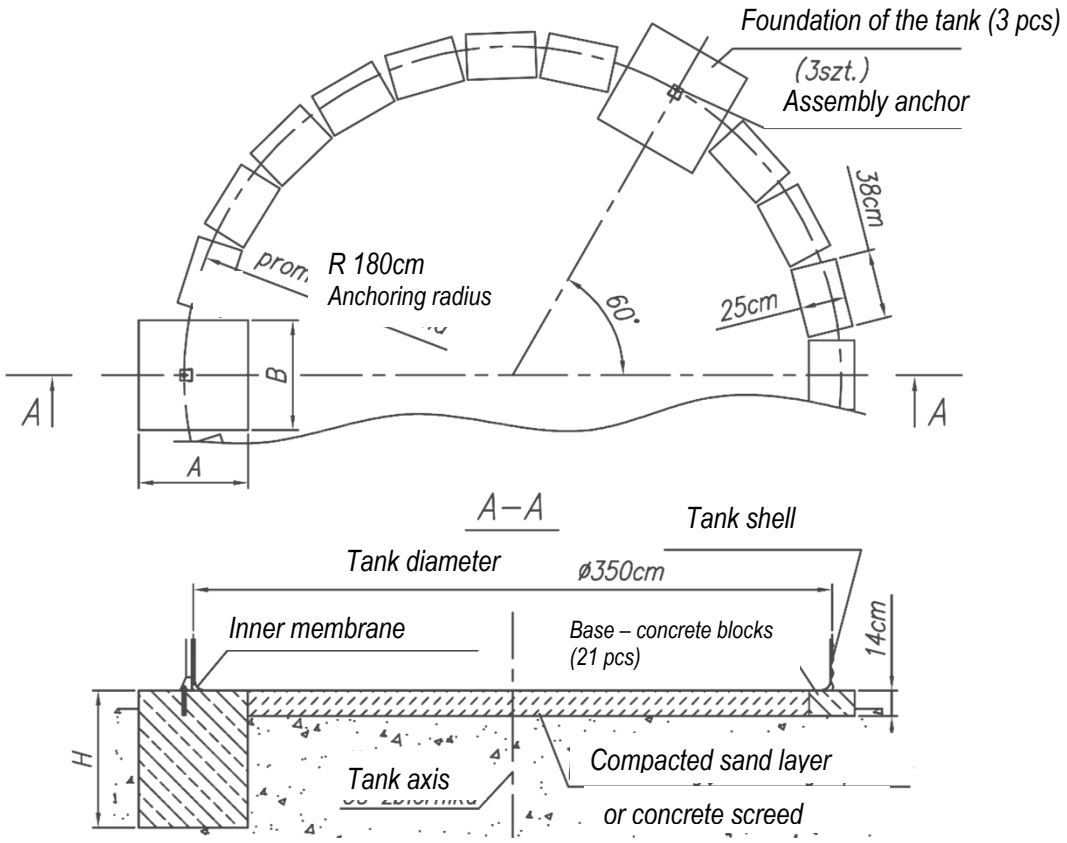

Figure 3. Characteristics of foundations (foundation blocks) for retention tanks: RBIN042 (A=65cm, B=65cm, H=50cm), RBIN043 (A=75cm, B=75cm, H=60cm), and RBIN044 (A=80cm, B=80cm, H=70cm).

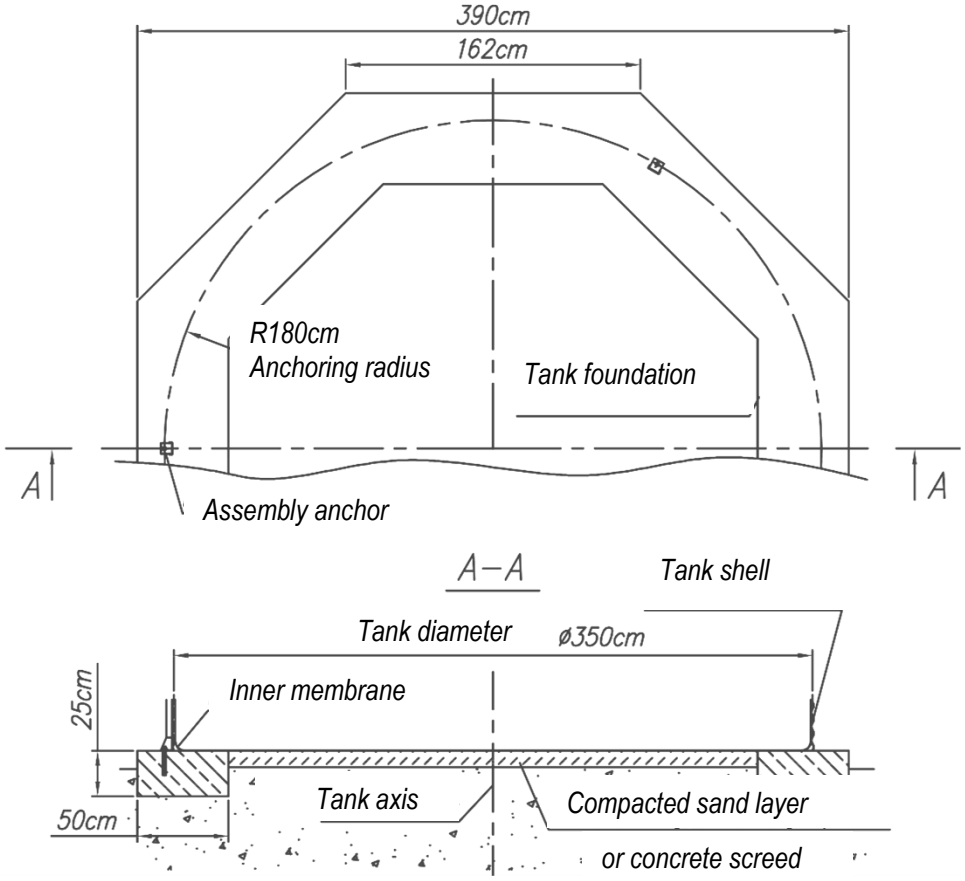

Figure 4. Characteristics of foundations (foundation ring) for retention tanks RBIN042, RBIN043, and RBIN044.

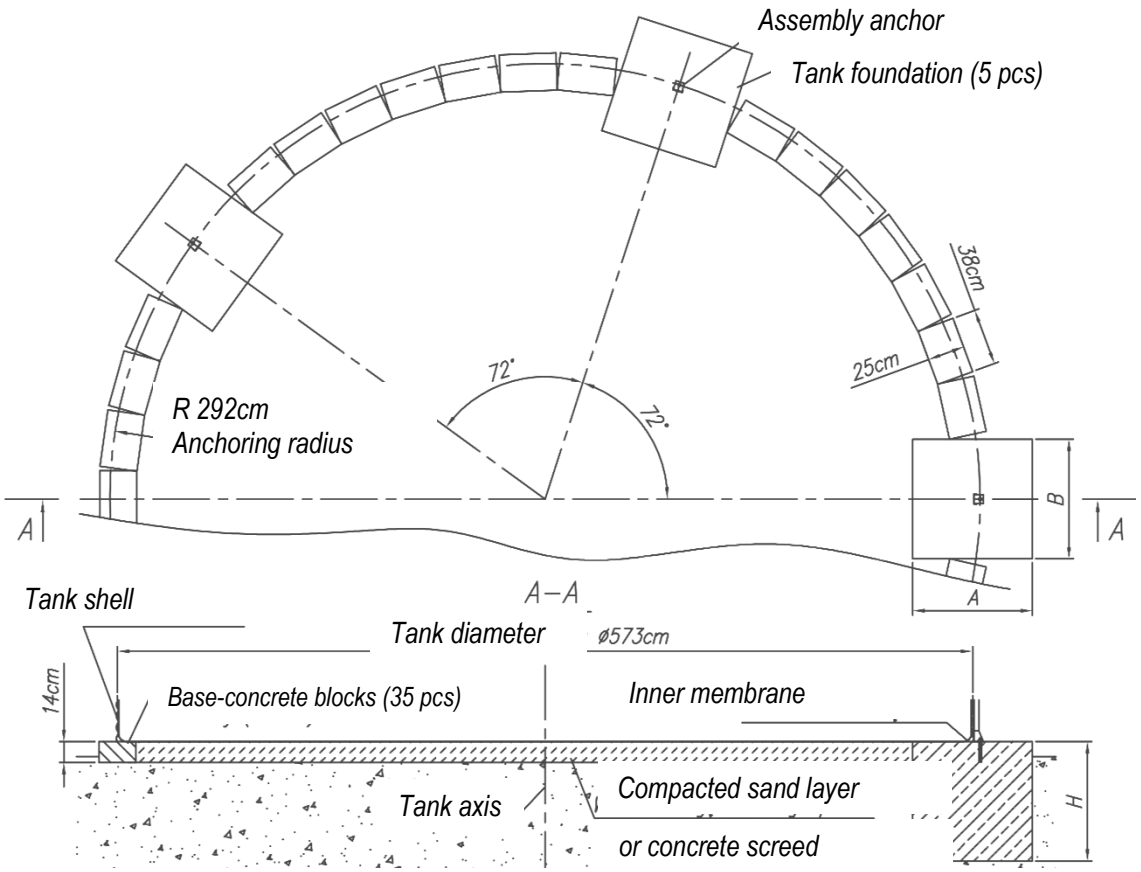

Figure 5. Characteristics of foundations (foundation blocks) for retention tanks: RBIN062 (A=60cm, B=60cm, H=85cm), and RBIN063 (A=80cm, B=80cm, H=80cm).

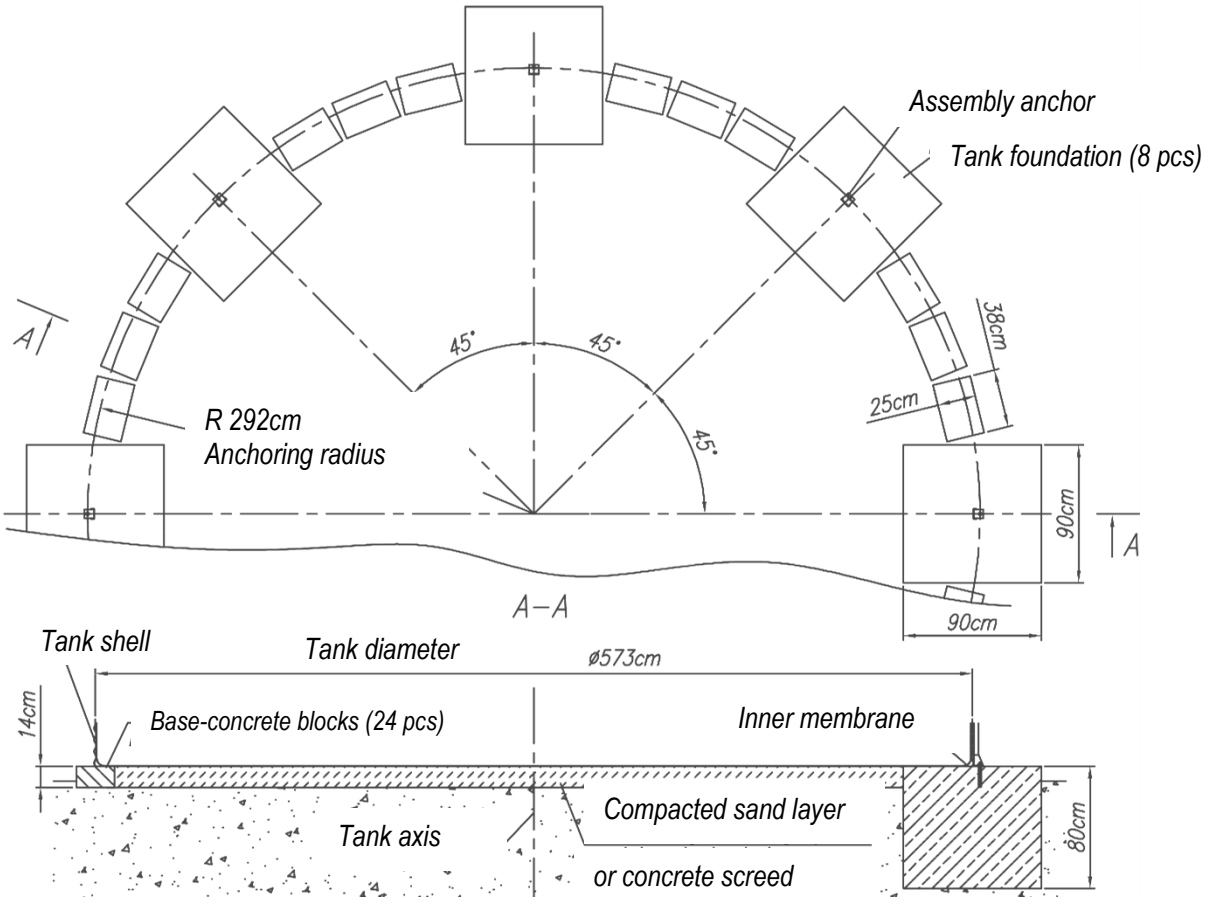

Figure 6. Characteristics of foundations (foundation blocks) for retention tanks RBIN064.

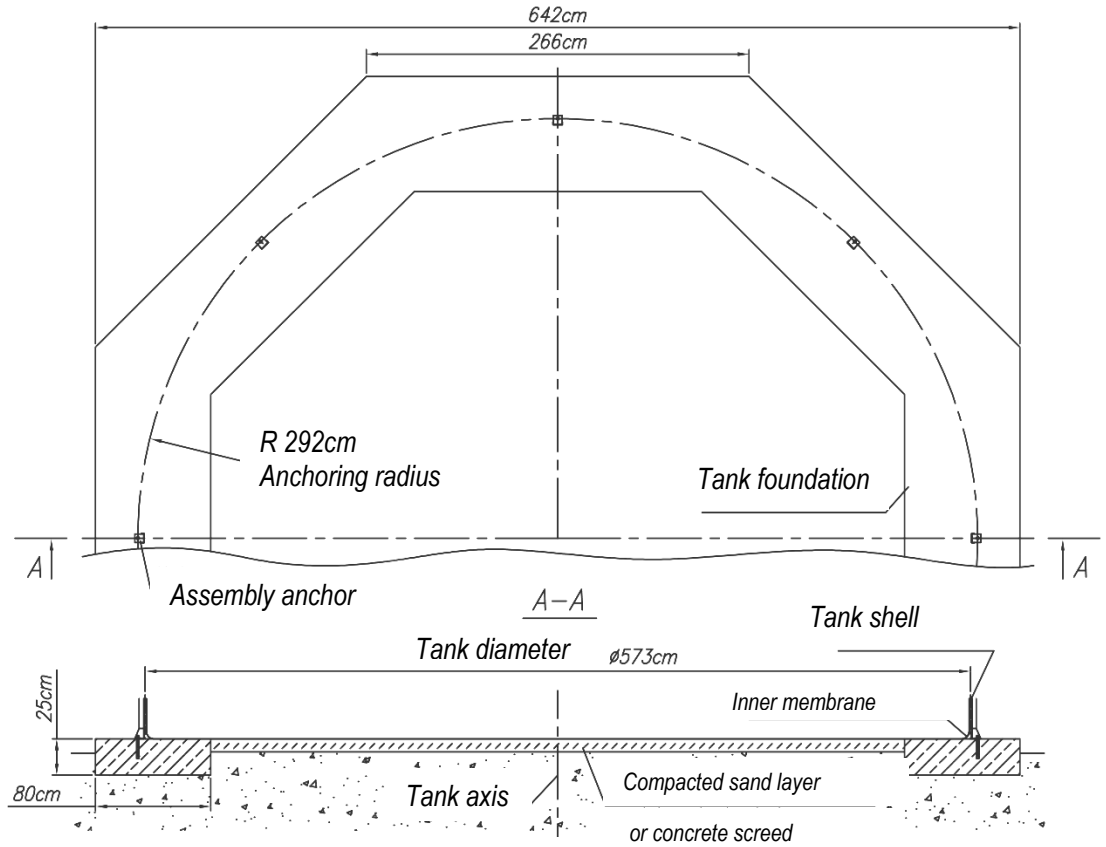

Figure 7. Characteristics of foundations (foundation ring) for retention tanks RBIN062, RBIN063, and RBIN064.

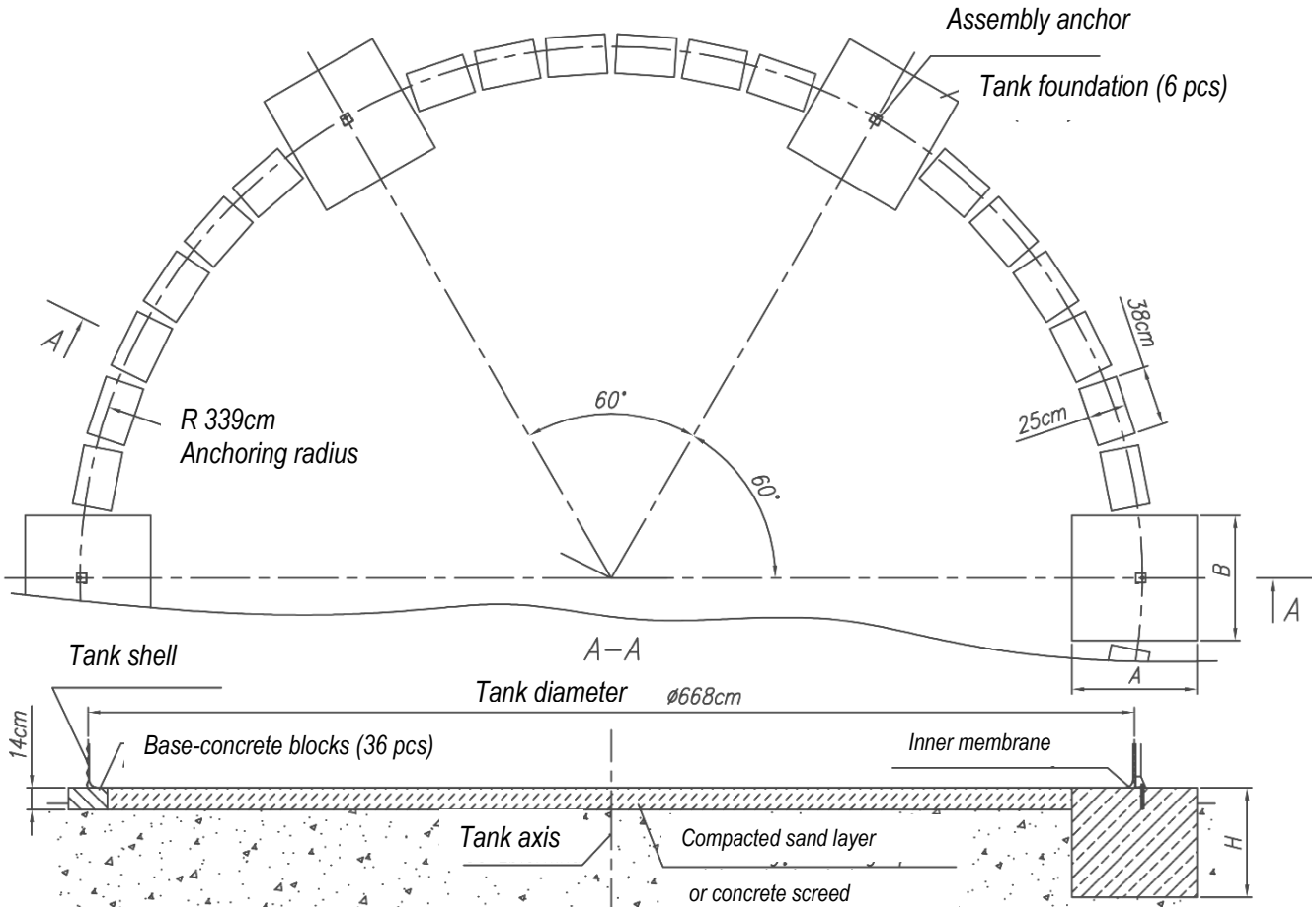

Figure 8. Characteristics of foundations (foundation blocks) for retention tanks: RBIN072 (A=65cm, B=65cm, H=70cm), and RBIN073 (A=80cm, B=80cm, H=70cm).

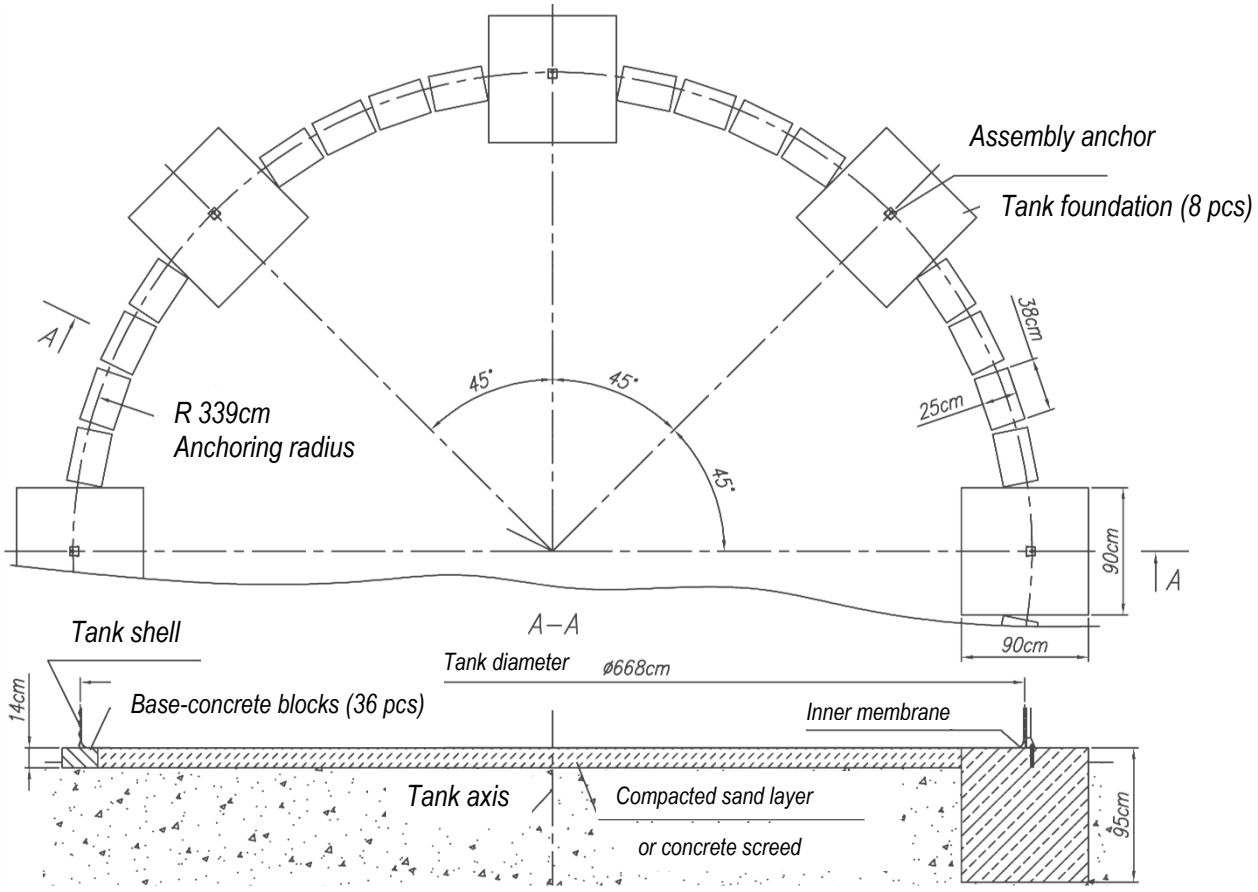

Figure 9. Characteristics of foundations (foundation blocks) for retention tanks RBIN074.

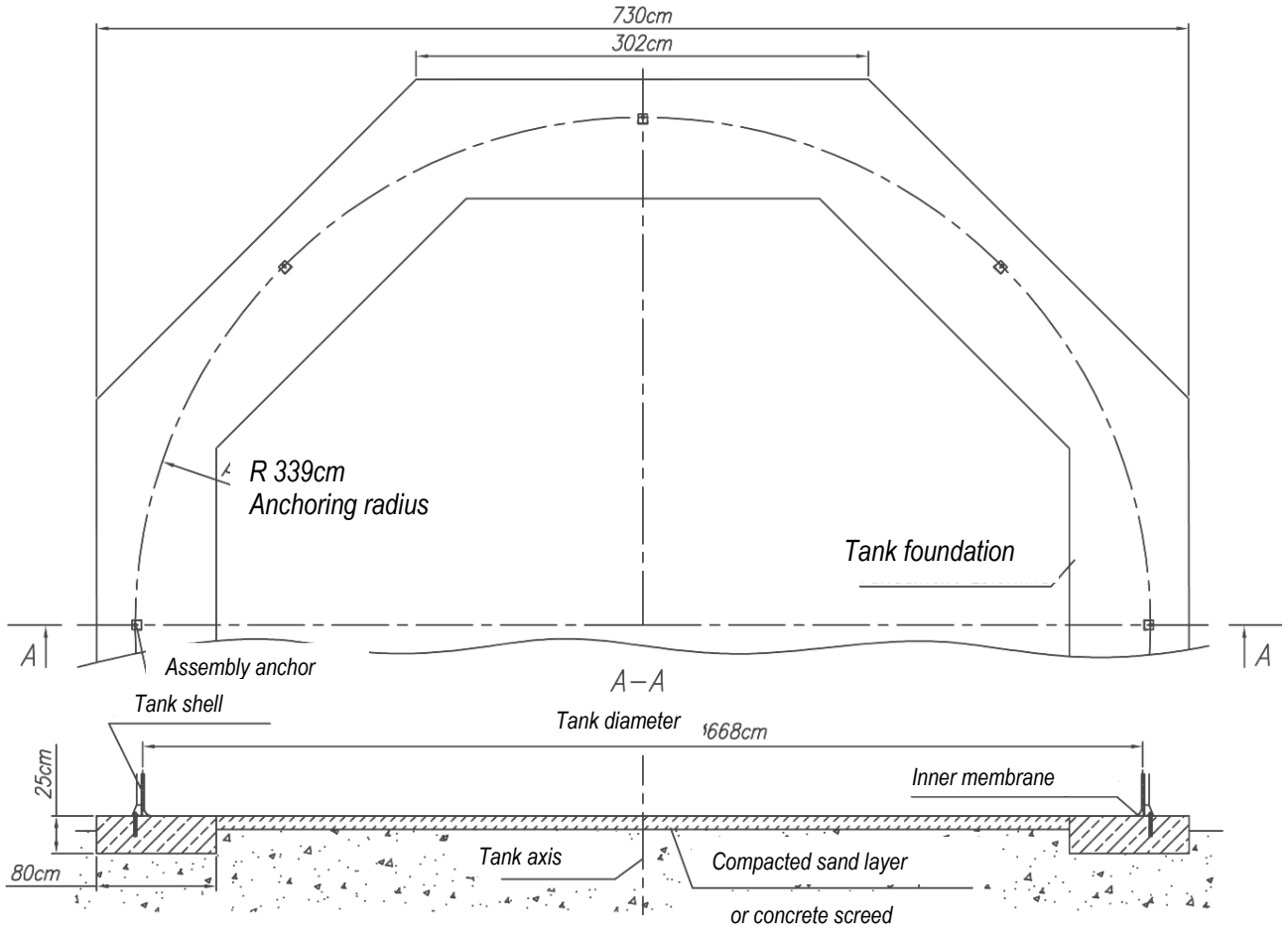

Figure 10. Characteristics of foundations (foundation ring) for retention tanks RBIN072, RBIN073, and RBIN074.

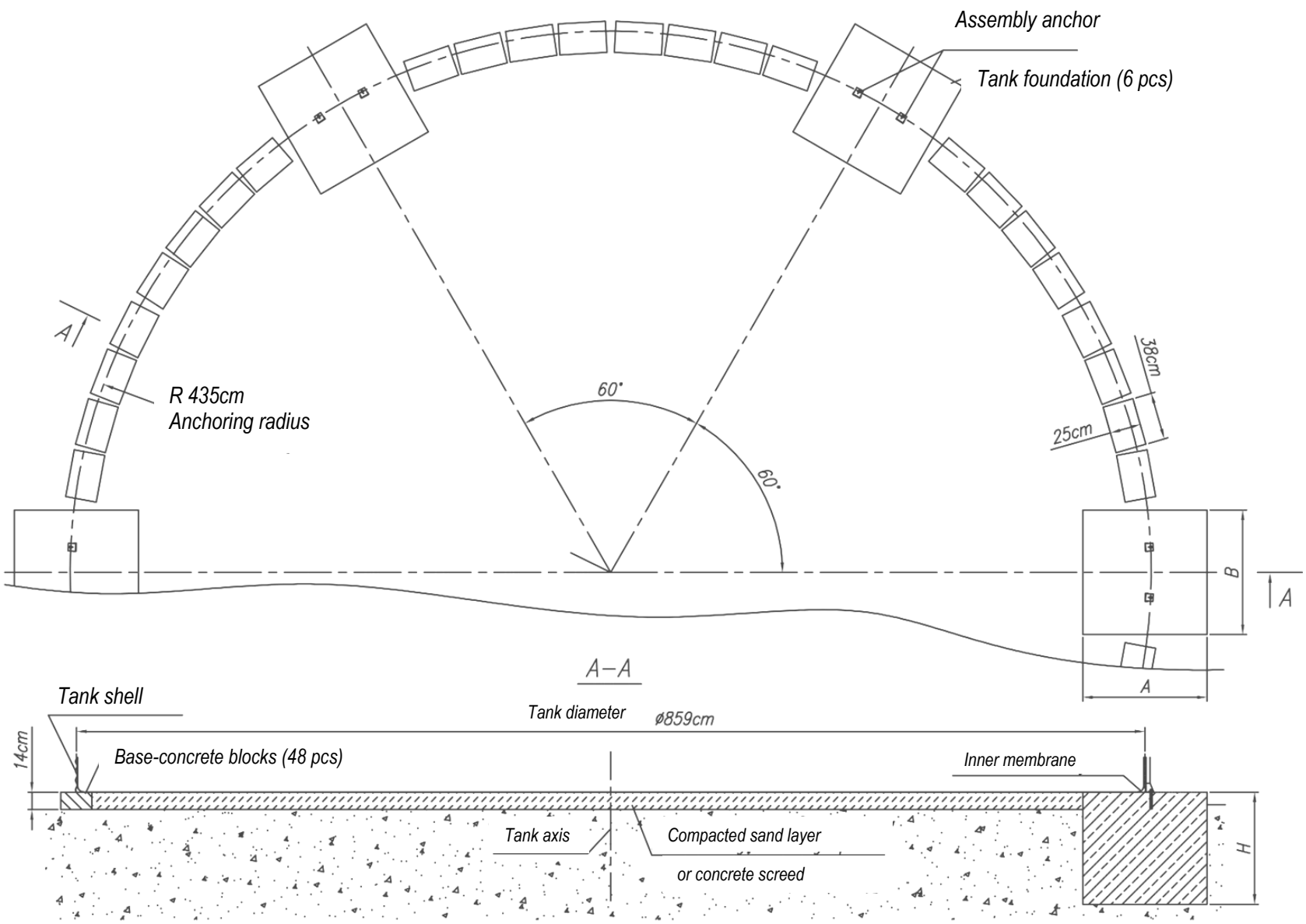

Figure 11. Characteristics of foundations (foundation blocks) for retention tanks: RBIN092 (A=70cm, B=70cm, H=60cm), RBIN093 (A=80cm, B=80cm, H=80cm), and RBIN094 (A=100cm, B=100cm, H=90cm).

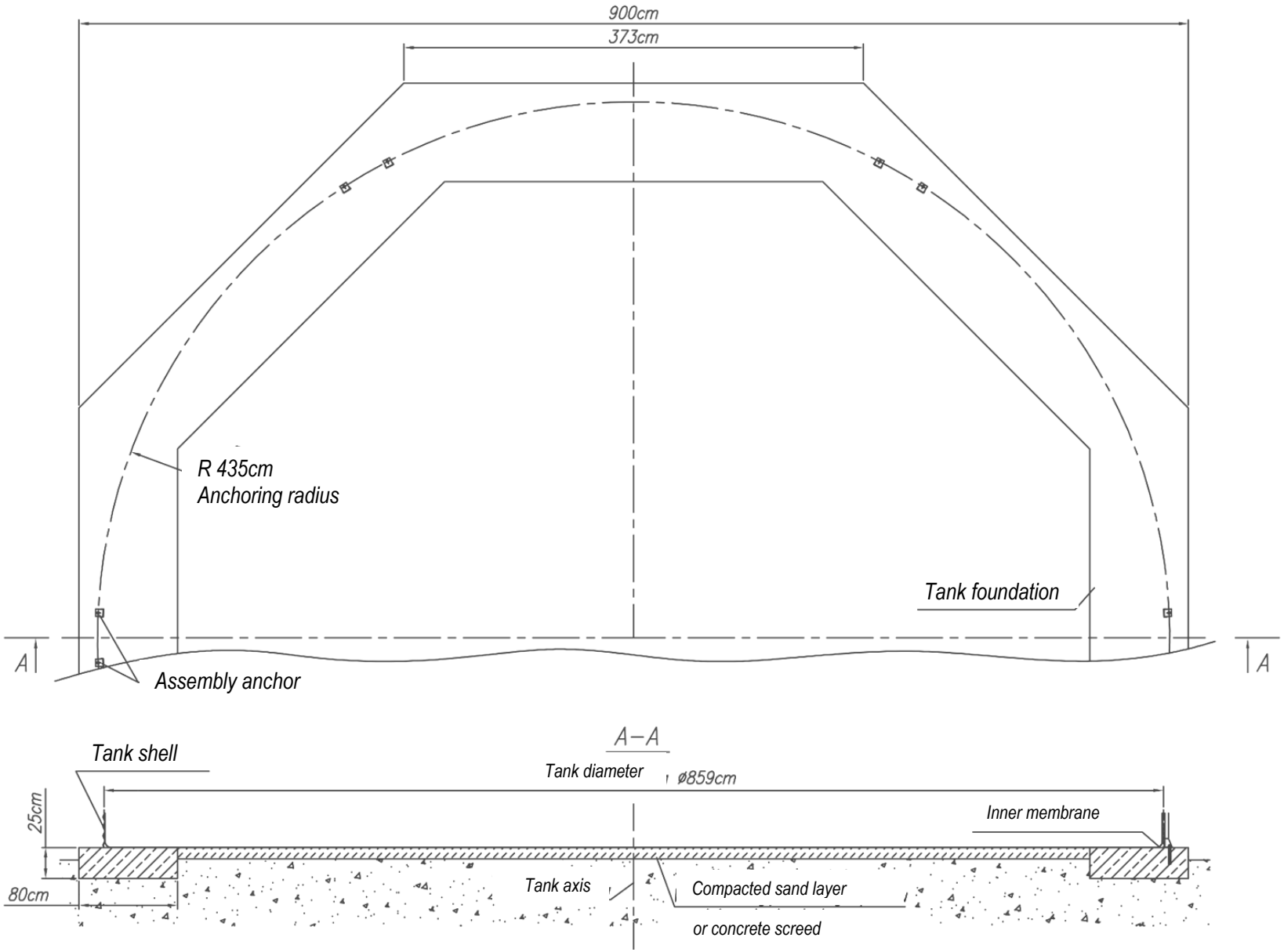

Figure 12 Characteristics of foundations (foundation ring) for retention tanks RBIN092, RBIN093, and RBIN094.

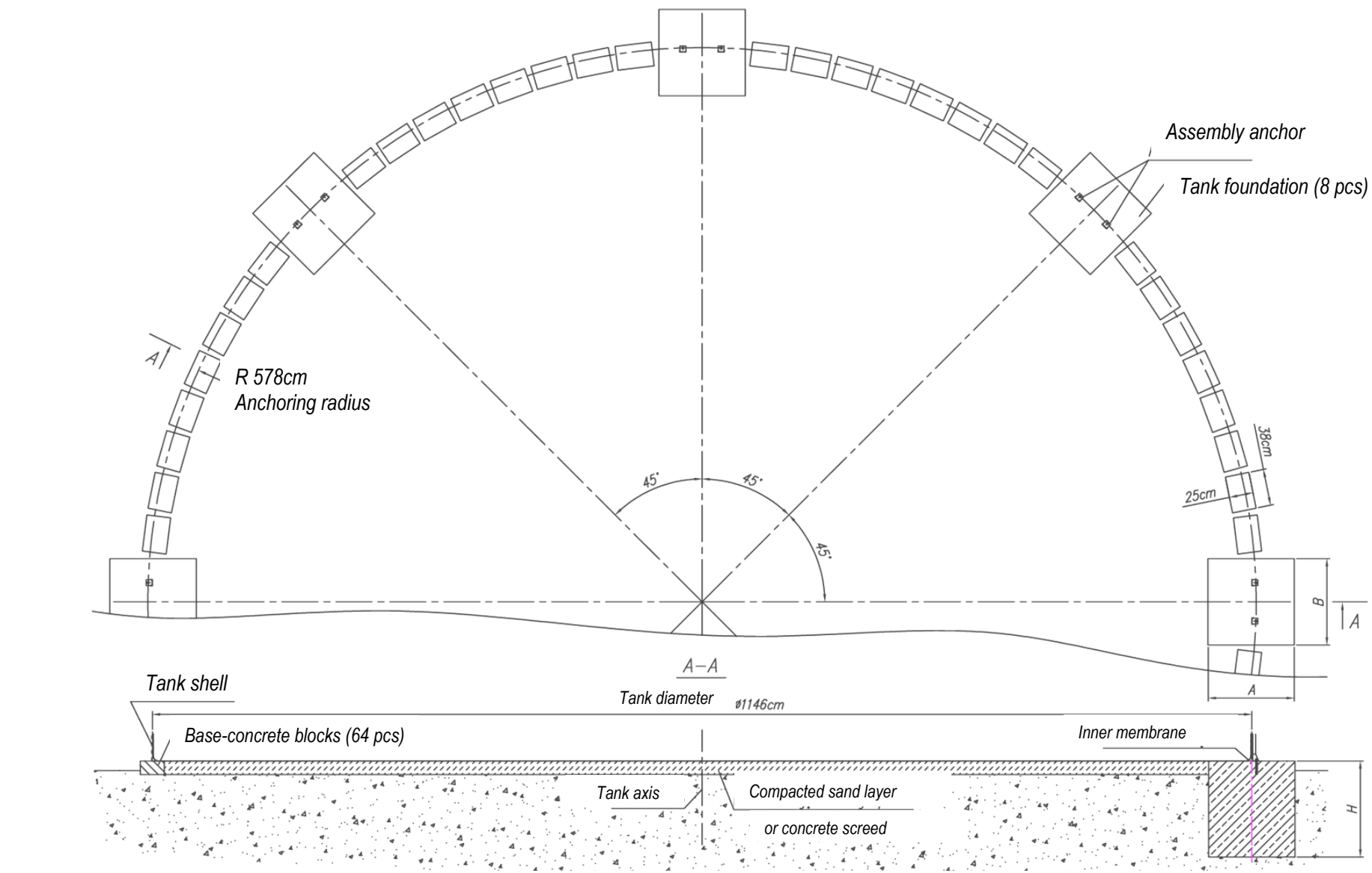

Figure 13 Characteristics of foundations (foundation blocks) for retention tanks: RBIN112 (A=60cm, B=60cm, H=70cm), RBIN113 (A=80cm, B=80cm, H=70cm), and RBIN114 (A=90cm, B=90cm, H=100cm).

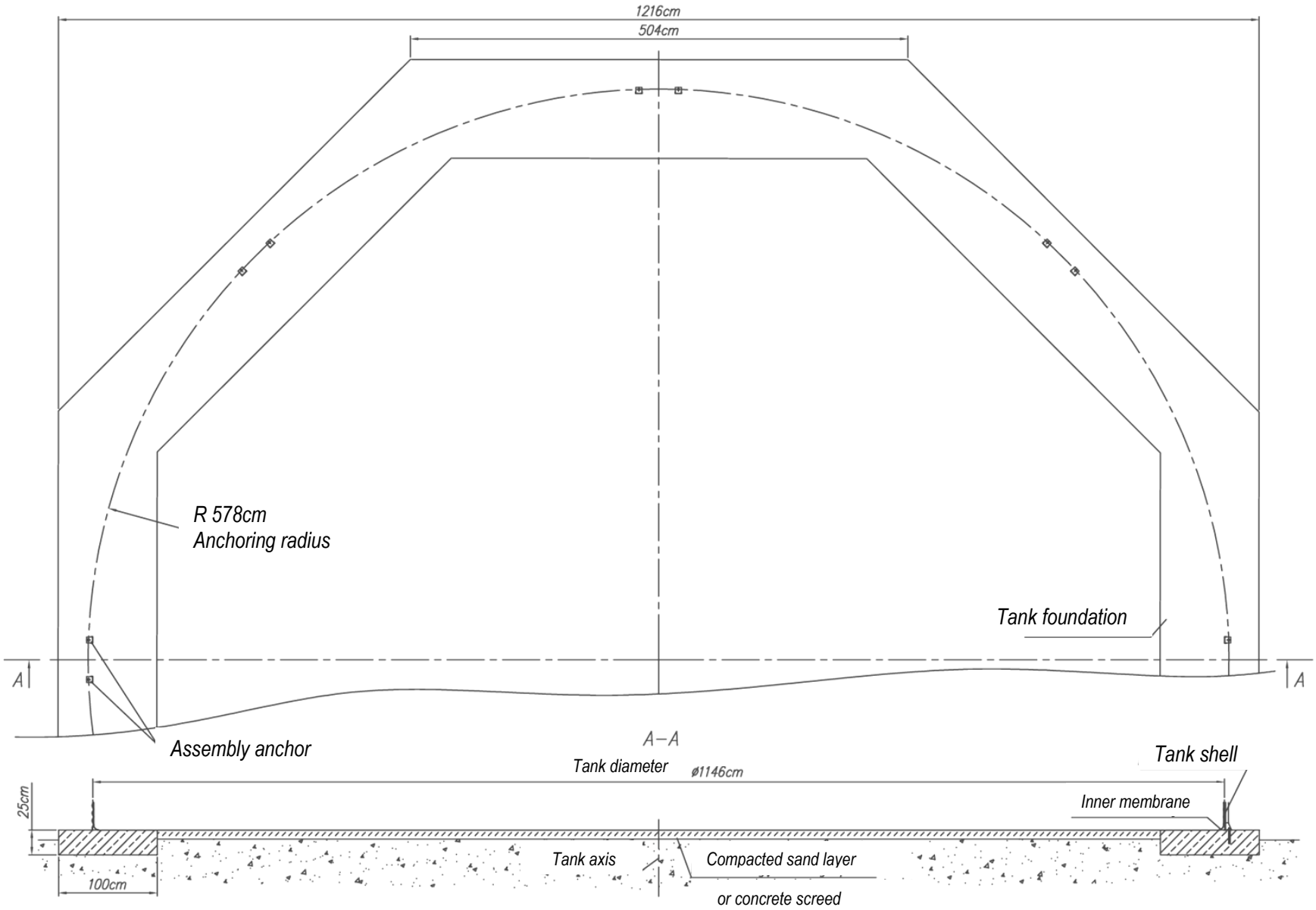

Figure 14 Characteristics of foundations (foundation ring) for retention tanks RBIN112, RBIN113, and RBIN114.

Guidelines for foundation slab designing and construction:

- the investor is responsible for developing a construction design for the tank with foundations;
- the construction design must be prepared by a designer holding relevant licences;
- when designing the foundations, geotechnical ground tests must be performed and local geotechnical conditions must be taken into account;
- replace soil subject to frost-heave at least to the ground freezing level;
- minimum concrete class for foundation construction - C20/25 (B25);
- a topsoil layer and non-load bearing layers under the foundation must be removed;
- construct a layer of compacted sand or concrete screed of a minimum thickness of 15 cm under the bottom of the inner decking;
- the steel shell of the tank requires its seating on a levelled concrete sill plate (concrete blocks);
- a difference in levels between the lowest and the highest point of the upper surface of the foundation ring or concrete base cannot exceed 10 mm;
- the concrete must be vibrated;
- when the foundations are constructed incorrectly, installation of the tank may be cancelled;
- BIN Spółka z o.o. shall not be held responsible for any tank damage and other damage resulting from incorrect design and construction of the foundation.

Item 6 LOWER SPIGOT (PORT)

The lower spigot (port) is a culvert in the shell and the inner membrane installed in the lower part of the tank. It is used to fill the tank with water or draw the water stored in the tank. The spigot (port) is formed of a pipe threaded on both ends, fixed to its base. The base is made of a corrugated steel sheet. The internal threaded part of the spigot (port) with the G4" connection can be used for installation of standard valves, tees, connections of discharge hoses, etc. The base and the inner part of the spigot (port) are provided with necessary bolts and nuts for its installation in the retention tank. Furthermore, the manufacturer supplies, free of charge, a special spanner for the spigot (port) installation in the tank. The spigot (port) is an optional equipment of the retention tank.

Item 7 UPPER SPIGOT (PORT)

The upper spigot (port) is a culvert in the shell and the inner membrane installed in the upper part of the tank. The spigot (port) can be used as an overflow opening, protecting the tank against overfilling. The spigot (port) is formed of a pipe threaded on both ends, fixed to its base. The base is made of corrugated steel sheet. The internal threaded part of the spigot (port) with the G4" connection can be used for installation of standard valves, tees, connections of discharge hoses, etc. The base and the inner part of the spigot (port) are provided with necessary bolts and nuts for its installation in the retention tank. Furthermore, the manufacturer supplies, free of charge, a special spanner for the spigot (port) installation in the tank. The spigot (port) is an optional equipment of the retention tank.

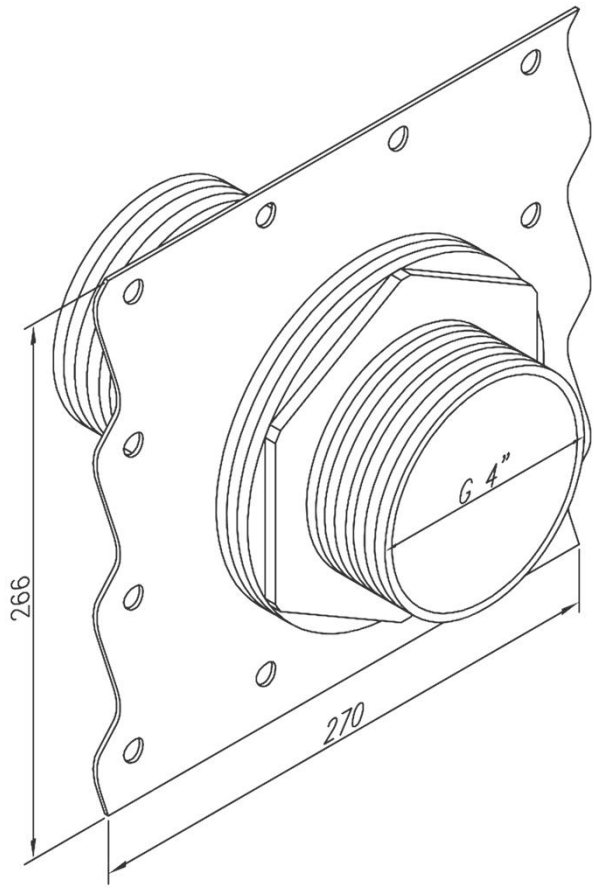

Figure 15 Lower/upper spigot (port) of the retention tank with the G4" connection.

Table 2 Basic dimensions of RBIN tanks.

Tank model	Height of a shell (cylindrical part of the tank) *Hp (m)*	Total height of a tank (with a conical roof) *Hc (m)*	Minimum installation height of the lower spigot (port) *Hk min. (m)*	Minimum installation height of the upper spigot (port) *Hk max. (m)*	Tank diameter *D (m)*
RBIN042	2.32	2.97	0.1	2.03	3.50
RBIN043	3.46	4.11		3.17	
RBIN044	4.60	5.25		4.31	
RBIN062	2.32	3.35		2.03	5.73
RBIN063	3.46	4.49		3.17	
RBIN064	4.60	5.63		4.31	
RBIN072	2.32	3.53		2.03	6.68
RBIN073	3.46	4.67		3.17	
RBIN074	4.60	5.81		4.31	
RBIN092	2.32	3.88		2.03	8.59
RBIN093	3.46	5.02		3.17	
RBIN094	4.60	6.16		4.31	
RBIN112	2.32	4.40		2.03	11.46
RBIN113	3.46	5.54		3.17	
RBIN114	4.60	6.68		4.31	

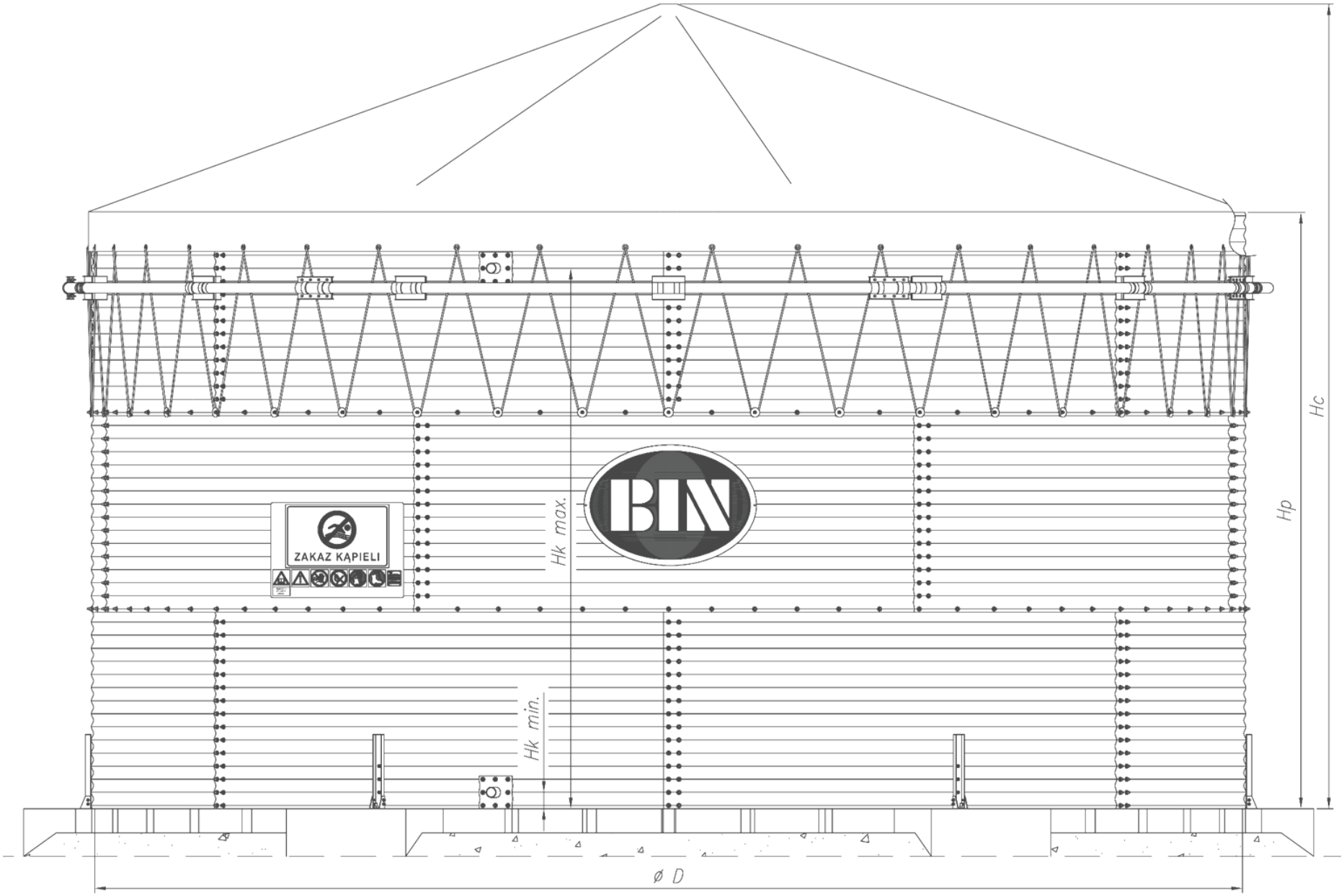

Figure 16 Basic dimensions of RBIN type tanks.

3. Initial operations and preparing the tank for operation

3.1. Investor initial activities

3.1.1. Tank location

The retention tanks are installed outdoors or indoors, provided sufficient space is ensured for their installation and operation.
It is forbidden to install tanks in the vicinity or under power supply lines.
Due to an aggressive character of the environment, tanks can be erected at a minimum distance of 15 m away from storage of silage and organic fertilisers: manure, liquid manure, slurry and similar.

Tanks are intended to be used in climate conditions of Poland for the following wind actions (loads) and snow loads:

The II terrain category was selected, defined in the standard PN-EN 1991-1-4 as terrains with low vegetation and with low isolated obstacles with separations of at least 20 obstacle heights. The design does not provide for construction of tanks at the sea and shore terrains, lakes and terrains without terrain obstacles, belonging to more stringent terrain categories.

For the tanks RBIN042, RBIN043 and RBIN044, the basic wind speed of vb,o = 26 m/s was assumed. In Poland, that value corresponds to wind zones 1 and 3 to the height A of ≤ 600 m amsl and wind zone 2 regardless of the height.

For the other tanks, the basic wind speed of vb,o = 22 m/s was assumed. In Poland, that value corresponds to wind zones 1 and 3 to the height A of ≤ 300 m amsl.

For the tanks RBIN042, RBIN043 and RBIN044, the acceptable value of the specific snow load on the ground of sk = 1.6 kN/m2 was assumed. In Poland, that value corresponds to 2 and 4 zones regardless of the height, zone 1 to the height of 428 m amsl, zone 3 to the height of 366 m amsl (according to PN-EN 1991-1-3 standard).

For other tanks, the acceptable value of the specific snow load on the ground of sk = 1.2 kN/m2 was assumed. In Poland, that value corresponds to zone 2 regardless of the height, zone 1 to the height of 371 m amsl, zone 3 to the height of 300 m amsl (due to PN-EN 1991-1-3 standard.

3.1.2. Ordering tank

Orders for tanks and spare parts can be placed with BIN Sp. z o.o. or with authorised BIN sales representatives.
Each time, before purchasing any components, a customer should consult the manufacturer or a sales representative in detail about planned investment.

3.2. Transport of tank components

RBIN tanks are delivered as components packed on pallets:
- the weight of the heaviest pallet does not exceed 2350kg,
- the dimensions of the largest pallet do not exceed 3.5 m in length and 1.2 m in width.

TANK COMPONENTS MUST BE SECURED AGAINST MOISTURE DURING THEIR TRANSPORT AND STORAGE.

When the components get wet, they must be thoroughly dried. This concerns, in particular, steel components of the tank shell. Storage of wet components may result in development of impossible to remove white spots on a surface of metal sheets of which the tank is constructed. The producer shall not be held responsible for the above-mentioned defects resulting from a failure to observe the above recommendations.

Transport of the components is arranged by a seller or the customer, under additional arrangements. A vehicle of a capacity and dimensions adapted to the above-mentioned pallet weights and lengths is required for transport of the components. The cargo body of the vehicle must be provided with a tight tarpaulin. In transport, all elements must be secured against sudden movement.
A forklift truck of a capacity adapted to the above-mentioned pallet weights should be used for loading and unloading. During a delivery acceptance, a tank buyer is obliged to check the delivery completeness against the specification attached to the components.

IT IS FORBIDDEN TO TRANSPORT THE TANK PARTS ABOVE PEOPLE AND ANIMALS

3.3. Information on installation

Installation of the retention tank and its standard and optional equipment requires the use of specialist equipment and relevant knowledge. Therefore, the quick and correct installation can be performed by an installation company authorised by BIN. The installation company should cooperate with an entity ordering installation, in terms of works organisation, financial settlements, and acceptance of installation works. The manufacturer accepts installation of the tank by the investor itself or by an installation company not authorised by the manufacturer. Installation works can start when suitable foundations are constructed, and all tank components are collected in a required place.

When the investor itself or any other installation company not authorised by BIN performs installation works, the investor is obliged to obtain the detailed tank installation instruction and place safety and information signs on the product.

3.4. Investor final activities

3.4.1. Tank anchoring

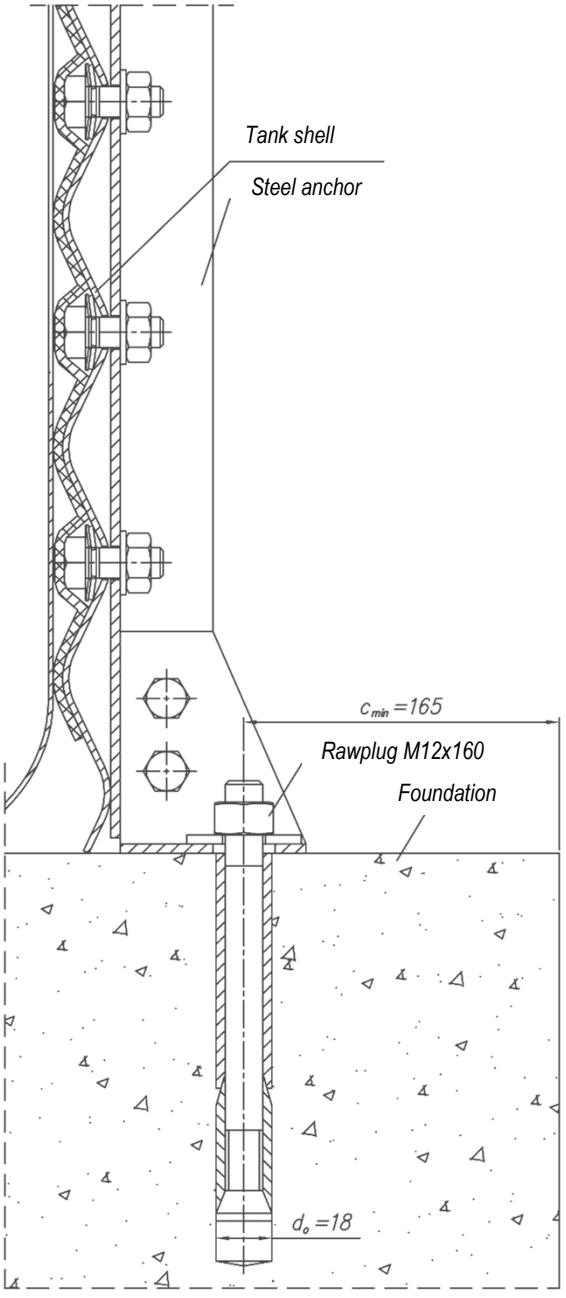

Figure 17 The method of tank anchoring.

FAILURE TO ANCHOR THE TANK CORRECTLY POSES A THREAT OF ITS DESTRUCTION AND OF A SITUATION THAT IS HAZARDOUS TO HUMAN HEALTH AND LIFE

Anchoring consists in fixing the tank to the foundation with steel anchors and rawlplugs. Each anchor is mounted to the steel shell of the tank with M10 bolts and fixed to the foundation with an M12x160 steel rawplug.

The basic installation conditions for steel M12x160 STS rawlplugs from DROMET are as follows:

- tightening torque, $T_{inst,}$ = 65Nm,
- hole diameter, d_0 = 18mm,
- minimum distance from the foundation edge, c_{min} = 165mm.

The tank should be anchored taking into account rules and conditions for installation of steel rawlplugs, specified by their manufacturer in a relevant installation instruction. When the tank is installed by the installation company under a direct order of the investor, then during installation works, the investor is obliged to verify and personally ensure correct performance of the above activities.

3.4.2. Electric shock protection - lightning arrestor system

The retention tanks should be protected against consequences of a lightning. A system must be provided, protecting people and animals against the electric shock related to devices and machines connected to the tank. The investor is obliged to provide the electric shock protection for people and animals, and to construct the lightning arrestor system and the protective earthing of the tank. Construction and performance verification of the lightning arrestor system and the protective earthing of the tank should be ordered at a person with required qualifications.

3.4.3. Fire prevention

The investor is obliged to fulfil all obligations related to fire prevention, including ensuring access and evacuation routes, access to sources of extinguishing water, and distribution of extinguishing equipment and fire safety instructions. Fire prevention aspects are governed by the Regulation of the Minister of Interior and Administration of 7 June 2010 concerning fire prevention in buildings, other structures, and terrains (Journal of Laws, 2010, No. 109, item 719) and the Minister of Interior and Administration Regulation of 24 July 2009 concerning supplies of water for extinguishing purposes and fire department access roads (Journal of Laws 2009, No. 124, Item 1030).

4. Operation

4.1. Tank use

4.1.1. Filling the tank

The tank is filled with pumps of various types and devices intended for transport of water over significant distances. When the tank is equipped with a special 4” spigot (port), then it should be used to fill the tank. When the filling spigot (port) is not available, water can be transported to the tank over upper edge of the steel shell. This way of filling requires earlier removal of the protective roof, if it was installed.

Before starting filling:
1) check the operational condition of the tank and its accessories;
2) make sure there are no people or animals in the tank;
3) close the valve of the spigot (port) for emptying the tank (if installed).

During filling, monitor the water level in the tank.
For devices used to transport water, strictly adhere to rules of their operation as described in the relevant Operating Manual.

4.1.2. Water storage

Water can be stored in the BIN retention tank without any deterioration of its quality, provided the following rules are adhered to:
1) water cannot be contaminated;
2) the user should regularly monitor stored water for presence of contaminations, including algae;
3) when water is contaminated, generally available chemical, biological and other agents and formulations designated for water cleaning and disinfection should be used;
4) agents and formulations used to clean water should be safe for the tank inner PVC membrane;
5) storing contaminated water in the tank may damage the inner membrane, as well as make emptying and filling of the tank difficult;
6) excessive algae growth can be limited by installing the protective PVC roof;
7) the tank is not designated for storage of water when the air temperature is below zero;
8) in no circumstances, water stored in the tank can be used for swimming, taking a bath, etc.

The Investor is responsible for ensuring effective supervision over water stored in the tank, preventing access of unauthorised people and animals. Failure to provide such supervision may lead to a hazard to life and health of people and animals.

4.1.3. Tank emptying

The tank can be emptied through a special 4” spigot (port), which is an optional accessory of the tank, and is installed in the bottom part of the steel shell. When the discharge hose is connected, water gravitationally flows to a location selected by the user. If the discharge spigot (port) is not installed, then tank can be emptied using different types of pumps and devices for transport of water. A suction hose should be inserted into the tank over the upper edge of the steel shell and placed at the tank bottom. This way of emptying requires earlier removal of the protective roof, if it was installed.

The following principles must be observed during emptying of the tank:
1) before starting emptying, check the operational condition of the tank and possible equipment for water transport;
2) ensure there are no people or animals at a location to which water from the tank will be transported;
3) during emptying, the tank requires permanent supervision;
4) for devices used to transport water, strictly adhere to rules of their operation as described in the relevant Operating Manual;
5) when a pump or other device for transport of water is damaged, it should be repaired or replaced with a new one, to continue emptying of the tank;
6) it is forbidden to make holes in the tank shell for its emergency emptying.

4.2. Tank operation

Correct and punctual maintenance inspections, maintenance and possible repairs guarantee availability of the full storage capacity of the tank and prevent its premature and excessive wear.

To perform maintenance or repair operations, the retention tank can only be entered over the upper edge of is shell and after removal of the protective roof (if installed). The tank should be completely emptied of water, and devices working with it should be disconnected and secured against accidental starting. The tank can only be entered using access equipment (not provided in the tank) foreseen for works of this type, like ladders, person lifts, etc. A person entering the tank should be provided with equipment securing against a fall from a height and assisted by another person outside the tank. It is strictly forbidden to disconnect a lifeline protecting against a fall from height while working in the tank.

4.2.1. Periodic maintenance and current overhauls

Periodic maintenance covers:

1) inspection of a technical condition of a tank shell and bolted joints;
2) inspection of the inner PVC membrane including its tightness and fixing to the steel shell;
3) verification of closing of filling, emptying, and overflow spigots (ports);
4) inspection of the tank anchoring to the foundation;
5) verification of the technical condition of the sill plate of concrete blocks;
6) inspection of anti-corrosion coatings.

The technical condition of the discharge spigot (port) must be checked after each emptying of the tank and before its each filling. Before each filling, check the operating condition of accessories for emptying and filling of the tank.

Closing of spigots (ports) for filling, emptying and overflow and tightness of the inner membrane should be checked at least once a month. The inspection of other tank components should be performed at least once every 12 months.

The regular repairs include small repairs such as repairs of anti-corrosion coats.

At least once every two years anti-corrosion coating of the shell on the side of foundations and the concrete sill plate should be checked. When any corrosion foci are found, they should be removed, and anti-corrosion coating applied.

Anti-corrosion coating of screws can be damaged during installation (tightening). In such a case, regular repairs include applying anti-corrosion coatings on damaged surfaces.

The annual maintenance of the tank should be performed with a person authorised to perform maintenance of construction structures. The person performing the maintenance should draw up a report on inspection of the structure operating condition.

The tank user should maintain a tank maintenance logbook.

4.2.2. General overhaul

The general overhaul is performed at least once every 8 years. It covers the scope of regular maintenance and:

1) painting of steel components;
2) inspection of the lightning arrestor system by a licensed electrician, and drawing up of a report;
3) other relevant repairs.

All damages must be repaired immediately, and parts that are damaged or worn must be repaired or replaced with new ones.

4.2.3. Spare parts

When any tank components are worn, damaged or lost, they can be purchased from BIN. The manufacturer does not provide for the use of spare parts from manufacturers other than BIN. To purchase spare parts, contact BIN in writing, specifying the following details:

- Name of the product
- Proof of purchase
- Product model
- Year of production
- Serial number

Before placing an order, define precisely (on phone) types of spare parts ordered. A need for BIN representative's visit to correctly identify a part cannot be excluded. The manufacturer does not provide the tank with spare parts.

4.2.4. Disassembling and disposal

The retention tanks are devices made of materials not harmful to the environment and can be scrapped, and all their components can be recycled. During disassembling, particular attention should be paid to safety, due to components large dimensions. Disassembling should be ordered at a specialist company.

As of 02/08/2023, I approve for use the Operating Manual
entitled "RBIN retention tank" (IO:RBIN),
revision - 4
issued on -31/07/2023.

Chief Constructor
Mieczysław Laskowski

……
(signature)
(podpis)

5. Warranty

BIN Spółka z o.o. guarantees a correct operation of the purchased product in normal conditions and during the normal use of the tank. The guarantee shall cover 12 months from a date of the end of the installation (but no longer than 15 months of a date of the product purchase by the Buyer from BIN Sp. z o.o.). This guarantee shall be valid solely with a proof of purchase issued to the user by BIN Sp. z o.o. or by the BIN Sp. z o.o. distributor. The guarantee covers free of charge removal of defects significantly compromising functions of the product. Therefore, application of warranty provisions of Article 558.1 of the Civil Code, in force in the territory of the Republic of Poland, shall be explicitly excluded. BIN Sp. z o.o. guarantees that the new RBIN tank under the BIN brand (hereinafter referred to as the Product), manufactured by BIN Sp. z o.o., is free of manufacturing defects in terms of material and workmanship. When BIN Sp. z o.o. confirms that the defect exists, then BIN Sp. z o.o. undertakes, at its own discretion, to repair or to replace the Product free of charge. This limited guarantee is not transferable and applies solely to the Buyer who purchased a new Product directly from BIN Sp. z o.o. or from the BIN Sp. z o.o. distributor.

Guarantee terms and conditions

1. This Guarantee shall cover the territory of the Republic of Poland. The warrantor shall cover costs of transport over a distance of up to 250 kilometres related to an accepted warranty complaint, according to standard rates.
2. The warranty shall not apply to defects resulting from incorrect or excessive operation, natural wear of parts, or other reasons outside the manufacturer's control.
3. The warranty shall not cover any other costs, especially costs being a consequence of the equipment stoppage.
4. This warranty shall not apply when:
   - the Product is used contrary to its intended use or the operating manual;
   - installation was incorrect or any unapproved changes were made;
   - the Product is modified in a way not explicitly specified in the Product operating manual or described in detail and approved in writing by BIN Sp. z o.o.;
   - works requiring specialist licences are performed by unauthorised persons;
   - when all parts of the products are not original equipment supplied by BIN Sp. z o.o.;
   - when the Product or its components have not been installed by an authorised fitter, to the order of the BIN Sp. z o.o. or the BIN Sp. z o.o. distributor;
   - when the incorrect operation or a failure of the Product result from the incorrect use of the product, a failure to perform periodic maintenance, excessive use of the Product, poor management, changes made, accident, or failure to ensure proper maintenance, the use for water which does not flow smoothly and/or is in a poor condition, lightnings, natural catastrophes, electric shock, or power outages;
   - corrosion, deteriorated water condition, and/or incorrect operation of equipment caused by chemicals, minerals, deposits, or other foreign bodies;
   - installation of the Product at locations or in a way not permitted by legal regulations;
   - incorrect design of the foundation, or construction of the tank foundation contrary to assumptions of a construction design and legal regulations, and technical standards.
5. The Buyer shall be responsible for the Product location conforming to the legal regulations, the Product installation conforming to the legal regulations, and the Product operation conforming to the legal regulations. BIN Sp. z o.o. shall not be held responsible for any damages that may result from a failure to observe those regulations.
6. In the case of Products delivered as components - a customer shall verify condition of these components on delivery, and then shall store them on its own responsibility until they are assembled. Components of galvanised sheets require a special attention. They should be stored in a way ensuring a free flow of air around each component. When wet galvanised metal sheets are in contact with each other, permanent spots form, even during a short-term storage.
7. BIN Sp. z o.o. guarantees correct anti-corrosion protection for manufactured hot-dip galvanised products; provided they are operated in the corrosion environment of the category no worse than C3, as specified in PN-EN ISO 12944-2:2018-02.
8. The Product can have parameters of no importance from an anti-corrosion protection point of view, and thus not covered by a warranty. In particular, this concerns:
   - different colour or shade of the zinc coating on individual elements of the Product (depending on a material supplier);
   - visible cracks and scratches created in the metal sheet production process with a minimum zinc coating weight maintained.
   - corrosion that may occur at cut edges of galvanised metal sheet is a natural phenomenon that does not reduce the Product durability, and cannot form a basis for any complaints.

9. When arrangements made during placement of an order or included in the Operating Manual include obligations for a buyer, then the warranty does not cover consequences of failure to perform or incorrect performance of these obligations.
10. Outdated financial liabilities of a buyer towards the warrantor or the seller result in a loss of the warranty rights until the outstanding liabilities are covered.
11. These guarantee terms and conditions can only be modified in writing.

Mode for exercising guarantee rights

Any defects found a customer notifies to the seller in writing. The seller shall notify the customer about a way of handling its complaint, a place and a time of warranty repair no later than within 14 days.

Manufacturer:

BIN Sp. z o.o.
87-700 Aleksandrów Kujawski
at Narutowicza 12

.....

Seller

(*seller's signature is not required when an invoice includes a note of granting the warranty)*