

Product and installation manual

Q-Bic Plus

Stormwater
Management System



Contents

Q-Bic Plus System



System overview	4	Rapid installation	8	Design guidance	15
Applications	4	Quick and easy to install	8	Infiltration or attenuation?	15
Infiltration or attenuation?	4	Step by Step guide to fixing	8	Site assessment	15
Features & benefits	4	Q-Bic Plus units together		Infiltration (soakaways)	15
		Safety first	9	Attenuation (storage tanks)	15
System	5	Easy handling	9	Hydraulic design	16
Column Unit	5			Structural design	16
Base Plate	5	Fully accessible	10	Important design considerations	16
Side Plate	6	Access for inspection and	10	for geocellular structures	
Connection Plates	6	maintenance			
Side Flange Adaptors	6	Camera access	10	Installation instructions	17-19
Vertical Flange Adaptors	6	Cleaning	10		
Specialist features	7	Specification details	11	Installation details	20
Specialist features in depth	7	Table 1 Characteristics of	11	Silt Trap and Air Vent Termination	20
		Q-Bic Plus modular units		Top Connection for Air Vent	21
Efficient design	7	Table 2 Minimum cover depths	11	Side Connection for Air Vent	21
Robust design to the last detail	7	Table 3 Maximum installation depths	12	Connections to Q-Bic Plus	22
4-in-1 Column Principle	7	– close bottom plate			
Modular design	7	Table 4 Maximum installation depths	12	Stormwater Management	23
		– open bottom plate		Wavin Stormwater Systems	23
				The Wavin Stormwater Service	23

Q-Bic Plus Overview

The Q-Bic Plus geocellular system has been uniquely engineered to combine ease of access and speed of installation. The system is a fully BBA approved, modular SuDS technique for managing stormwater.

Applications

The Q-Bic Plus system can be used either as a temporary storage tank or a soakaway, particularly where accessibility into the tank is required. It is suitable for a wide range of landscaped and trafficked applications, including:

- ⌚ Landscaped
- ⌚ Parks
- ⌚ Domestic gardens
- ⌚ Residential developments
- ⌚ Car parks & roads
- ⌚ Industrial/commercial areas



Infiltration or attenuation?

The Q-Bic Plus range can be used either as:

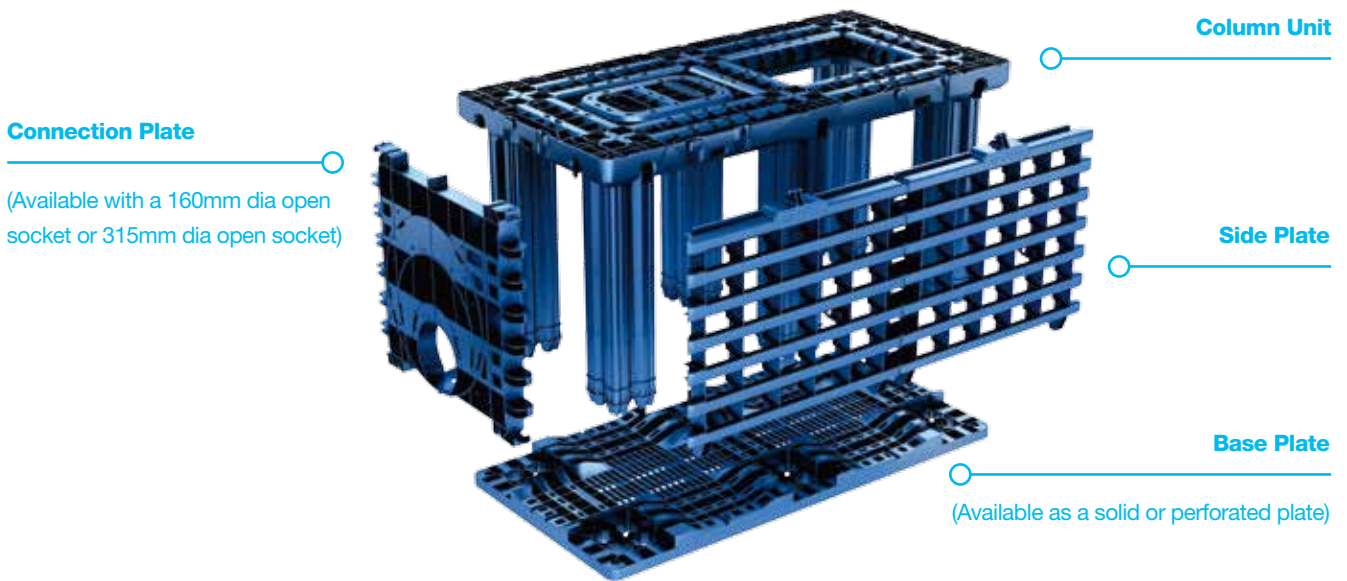
- ⌚ A soakaway (when using the Perforated Base Plate) whereby the units will be installed in suitable pervious soils so the units can be wrapped in a geotextile to allow infiltration of the stormwater into the surrounding ground, or
- ⌚ As an attenuation tank (when using the Solid Base Plate) in impervious ground (e.g. clay) where infiltration is not possible, here the units are wrapped in a geomembrane (which is in turn wrapped in a protective geotextile layer) so that the structure can hold the stormwater temporarily until local drainage flows can accept it for normal disposal at a permissible outflow rate.

Features & benefits

- ⌚ Fully BBA approved under certificate No. 17/5394
- ⌚ Proven vertical loading capacity of 32.5 tonnes/m² and lateral loading capacity of 10.8 tonnes/m²
- ⌚ The open void structure gives class leading levels of access for inspection and maintenance, with;
 - ⌚ 70% open floor space with both vertical and lateral access, allowing easy deployment of inspection and cleaning equipment
 - ⌚ Inspection access and inlets/outlets that can be placed in almost any position
 - ⌚ Guide channels inside the system, ensuring smooth, unobstructed access
- ⌚ Fast, easy to install units, with push-fit functionality and patented integrated connectors, with no need for separate pegs or clips
- ⌚ Modular design gives freedom to configure any shape of tank to suit the site conditions
- ⌚ Lightweight and easy to carry with ergonomic hand grips and a walkable top deck
- ⌚ Can be used as part of a SuDS scheme to help reduce flood risk

Q-Bic Plus System

The Q-Bic Plus system is modular in its design and comprises of easy to install components that can be designed to create a tank or soakaway to suit the needs of a specific site. The components are explained below:



Column Unit

The Column Unit comes pre-assembled with a top layer and six supporting columns. Each supporting column incorporates a sophisticated '4-in-1' column design for extra strength and stability. Each Column Unit fits into adjacent units via integrated connectors, without the need for lateral clips. The function of the Column Unit is to:

- ④ Carry vertical loads
- ④ Provide a wide, open structure for access
- ④ Allows a positive interlock between layers via the base of the supporting columns, with no pegs required



Base Plate

The Base Plate is connected to the Column Unit via the 6 supporting columns. Base Plates are only required to be used on the bottom layer of the construction and provide a stable platform for the rest of the system. There are two versions of the Base Plate*:

A Solid Base Plate which is used for attenuation



A Perforated Base Plate which is used for infiltration/soakaways



*The choice of Base Plate has an impact on the cover depth and maximum installation.

Q-Bic Plus System

Side Plate

The Side Plates provide lateral strength to the unit and are only required on the very outer edges of the structure, thus creating free space internally. Therefore, there are no internal walls within the system, reducing weight and creating an open structure.



Side Plates are attached to the Column Units using a simple integrated hinge mechanism.



Side Plates can be easily cut in half where required to accommodate space for a Connection Plate.

Connection Plates

There are two versions of the Connection Plate available: one with a 160mm dia open socket for use directly with 160mm OsmaDrain, and the other with a 315mm dia open socket for use with the Side Flange Adaptors. The Connection Plates can be fitted at any location on the side perimeter of the structure. The plates simply attach to the Column Unit via two integrated connection nodules. The 160mm version is supplied with a pipe stop to enable the 160mm OsmaDrain to be inserted to the correct depth.



Side Flange Adaptors

Side Flange Adaptors for direct connection to 300mm or 375mm TwinWall and 225mm or 300mm UltraRib are available for use with the 315mm dia open socket Connection Plate. The adaptors are secured to the Connection Plate using self-tapping screws. (Note: when using the 375mm TwinWall Side Flange Adaptor the Connection Plate 400mm guide socket will need to be cut out prior to fitting.)

Vertical Flange Adaptors

The Vertical Flange Adaptors are used to connect shafts onto the structure. If connecting using a shaft directly onto the top surface of the Q-Bic Plus structure then the rectangular pre-formed cut out section (on every level inside the structure) will need to be removed using a saw or jigsaw, prior to assembly of the structure. The Vertical Flange Adaptor is then attached to the top of the Q-Bic Plus units using self-tapping screws and then the shaft can be fitted. There are two Vertical Flange Adaptors available to fit with either 300mm or 500mm diameter TwinWall shafts.



Ø 300mm

Ø 500mm

Q-Bic Plus

Specialist features

Specialist features in depth

The three key specialist features of the Q-Bic Plus system include:

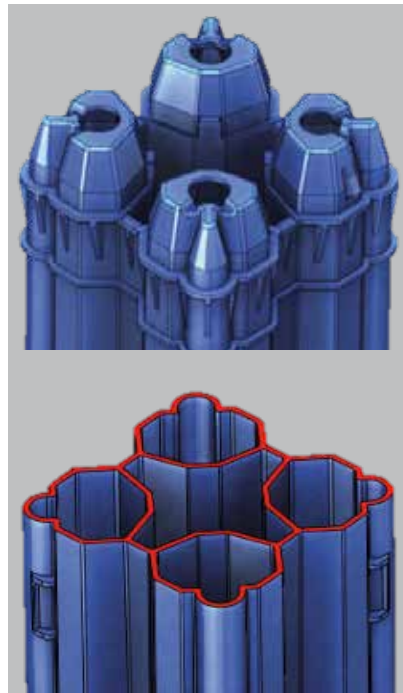
1. Efficient Design (see below)
2. Rapid Installation (see pages 8 & 9)
3. Fully accessible (see page 10)

Efficient design

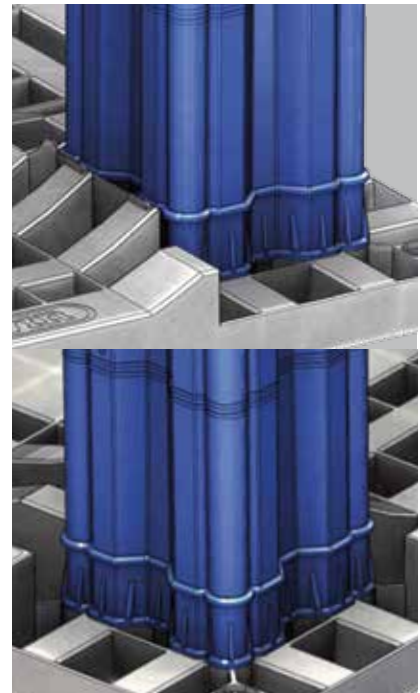
Robust design to the last detail

Q-Bic Plus is designed to meet the very latest design requirements and utilises state-of-the-art technology. The design itself helps with on-site convenience, thanks to the features that aid safety and make installation simple (such as integrated connectors, the walkable top deck and lightweight components).

The clever design of Q-Bic Plus isn't just limited to installation and handling; innovation is at the core of the product, including a 4-in-1 column principle. A column measuring almost 60cm in length houses four identical static, strong, individual columns. This is why Q-Bic Plus is able to withstand such high loads. The columns are designed in such a way that allows 96% stormwater storage capacity within the unit.



4-in-1 column principle



Modular design

The modular concept of Q-Bic Plus allows the units to be configured to suit project requirements. Areas of application range from deep, multi-level attenuation structures, to shallow single layer infiltration systems.

The 4-in-1 column principle and the specialist Base Plate designs, means that Q-Bic Plus can be used in a variety of ways, yet the system still provides the maximum possible space for inspection and maintenance.

Q-Bic Plus Rapid installation

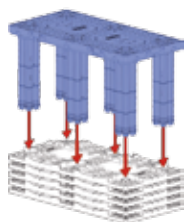
Quick and easy to install

The unique modular design of the Q-Bic Plus system gives class leading installation speeds. There is no need for separate clips and pegs to join the units together as the system features integrated, patented connectors that automatically slide into one another, ensuring that the units are secure both vertically and horizontally.

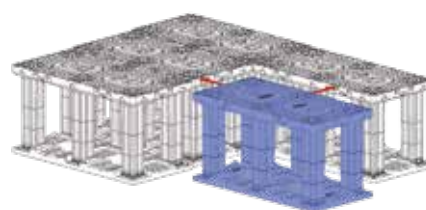
The Side Plates also feature a quick to install simple hinge mechanism for fixing, and can be easily hooked into position.

Step by Step guide to fixing Q-Bic Plus units together

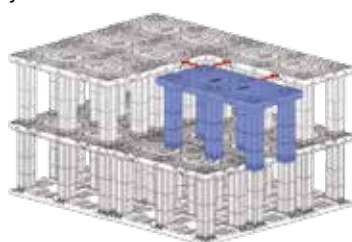
- ① Slot the Column Unit onto the Base Plate



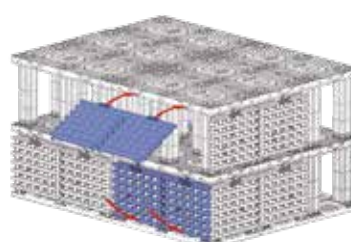
- ② Drop the unit into place, aligning it with the adjacent units. The integrated connectors will easily connect the units.



- ③ Slot the next layer of Column Units onto the completed base layer



- ④ Attach the Side Plates onto outer perimeter of the structure



- ⑤ Fix the Connection Plates where inlets/outlets are required



Safety first

Immediately following positioning, the storage units are readily secured together, via the integrated horizontal and vertical connectors. Allowing safe construction of the next layer due to the:

- ⌚ Level walkable surface
- ⌚ No trip hazards
- ⌚ No protruding vertical connectors

Easy handling

Integrated handholds make carrying the components to the construction area safe and easy. Rounded edges prevent straps from being damaged and reduce the risk of cuts from sharp edges. The individual components can be easily assembled on the building site without additional tools. Cut outs required for shaft connections or cutting Side Plates in half can be done easily and quickly using a standard saw in the pre-marked locations.

Handling features include:

- ⌚ Rounded edges
- ⌚ Ergonomic handholds
- ⌚ Lightweight components

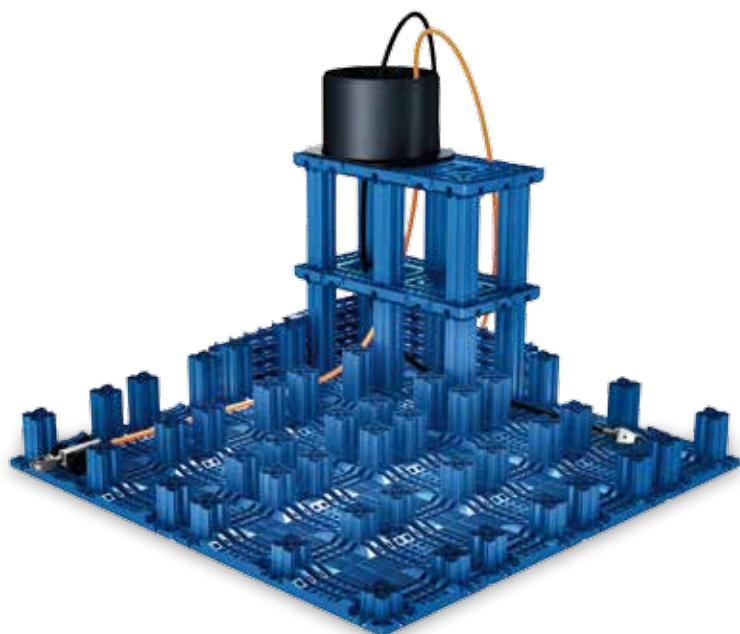


Proven faster construction saves valuable time and space on your site.

No small parts and no specialist equipment required allows Q-Bic Plus to be installed quickly and easily



Q-Bic Plus Fully accessible



Access for inspection and maintenance

Q-Bic Plus is arguably the most accessible infiltration and attenuation system on the market.

The six columns of each storage unit ensure the static stability of the structure, which means there is no need for internal separating walls or additional components that might obstruct the space. As a result of this, all three dimensions of the structure can be inspected and cleaned.

The inspectable areas of the structure make up at least 70% of the total floor area and enables you to build up a 360° picture throughout the whole structure. The channels, which run through the whole width and length of the structure, form clear inspection and maintenance routes. Measuring a maximum of 370mm wide, they provide sufficient room for any type of camera or inspection equipment.

Integrated inspection and cleaning shafts enable easy and clear access to every corner of the structure. Inspection and maintenance equipment can easily be sent into the structure to investigate all areas.

Q-Bic Plus delivers functionality, security, clear inspection and maintenance throughout its entire operational lifespan.

Camera access

The entire Q-Bic Plus structure is designed to allow the best possible access for inspection and cleaning.

Features include:

- ④ Smooth, continuous, wide inspection channels to ensure obstruction-free inspection
- ④ Lateral chamfers keep the camera on-track in the best possible position, 70% open floor space, allowing all areas inside the structure to be inspected and cleaned



Cleaning

Q-Bic Plus units have been manufactured using high quality material and have extremely smooth surfaces, which help to guard against deposits of silt and debris clinging to the inside of the units, making the cleaning process easier. The easy to clean inner construction, has rounded columns and lateral chamfers, so easy navigation is guaranteed without the hoses or cables getting hooked up or damaged on sharp edges.

The cleaning capability has been tested for pressures up to 200 bar at 3500 m³/min. without damage.



Q-Bic Plus

Specification details

Table 1 Characteristics of Q-Bic Plus modular units

Characteristic (unit)	Value
Unit dimensions per storage cell (nominal) (L x W x H) (mm)	1200 x 600 x 630 ^[1]
Unit volume per storage cell (nominal) (m ³)	0.45
Unit dimensions of Base Plate (nominal) (L x W x H) (mm)	1200 x 600 x 70 ^[2]
Storage volume per storage cell (net) (m ³)	0.436
Porosity (void ratio) (%)	95
Column Unit (nominal weight) (kg)	14
Side Plate (nominal weight) (kg)	2.85
Connection Plate (nominal weight) (kg)	1.95
Close Base Plate (nominal weight) (kg)	4.6
Open Base Plate (nominal weight) (kg)	3.5
Material	Virgin polypropylene (PP)
Durability	Up to 60 years

[1] 30mm of the total height is used for connection into either the Base Plate or previous layer.

[2] When the Base Plate is fitted to the Column Unit (on the bottom layer of a tank), then the effective height of the Base Plate is 30mm.

Table 2 Minimum cover depths

	Landscaped areas ^[1]	Car park with vehicle mass <3000 kg ^[2]	Car park with occasional vehicle mass <9000 kg ^[3]	Vehicles up to 60000kg GVW ^[4]
Minimum cover depth required (m)	0.30 ^[5]	0.50	0.93	1.74

[1] Landscaped areas where drive-on mowers are used in accordance with Table 4.2 of CIRIA Report C680

[2] Driveways to individual houses and car parks with height barriers to limit vehicle size, cars up to 3000kg GVW (e.g. people carrier) in accordance with Table 4.2 of CIRIA Report C680

[3] Car parks: cars or light vehicles up to 9000kg (GVW) in accordance with Table 4.2 of CIRIA Report C680

[4] Low-speed roads (<15 mph), vehicles up to 60000kg GVW (e.g. articulated lorries) in accordance with Table 4.2 of CIRIA Report C680

[5] CIRIA C680 recommends a minimum cover of 500mm where drive-on mowers may be used

Q-Bic Plus

Specification details

Table 3 Maximum installation depths (m) (to base units) – close bottom plate

Soil description	Soil weight (kN-m ⁻³)	Angle of internal friction (degrees)	No groundwater present			Groundwater present (1.0m below ground level)		
			Car parks ^[1]	Landscaped areas ^[2]	Low speed roads (<15 mph) ^[3]	Car parks ^[1]	Landscaped areas ^[2]	Low speed roads (<15 mph) ^[3]
Over consolidated stiff clay	20	24	2.51	2.51	n/a	2.51	2.51	n/a
Silty sandy clay	19	26	2.85	2.85	n/a	2.66	2.66	n/a
Loose sand and gravel	18	30	3.53	3.53	3.00	2.89	2.89	n/a
Medium dense sand and gravel	19	34	3.94	3.94	3.00	2.98	2.98	n/a
Dense sand and gravel	20	38	3.97	4.12	n/a	3.07	3.07	n/a

[1] Car parks: cars or light vehicles up to 9000kg (GVW) in accordance with Table 4.2 of CIRIA Report C680

[2] Landscaped areas where drive-on mowers are used in accordance with Table 4.2 of CIRIA Report C680

[3] Low-speed roads (<15 mph): vehicles up to 60000kg GVW (e.g. articulated lorries) in accordance with Table 4.2 of CIRIA Report C680

General Notes for Tables 3 & 4:

- Calculations based on systems constructed from two layers of Q-Bic Plus modular units
- Weight of ground water taken as 10 kN-m⁻³
- Angle of spread for wheel loads taken as 27° in car parks with asphaltic surfacing and angle of internal friction of soil in landscaped areas
- No account is taken of accidental loading
- Ground surface in vicinity of system assumed to be level
- Formation below system assumed to have adequate bearing capacity
- Partial load and material factors are defined in Table 7 of the Q-Bic Plus BBA Certificate (No. 17/5394)
- Values for distributed load and concentrated wheel loads/contact areas as defined in Table 4.2 of CIRIA Report C680
- The maximum depth has been calculated for lateral creep loads up to 25% of the horizontal characteristic strength

Table 4 Maximum installation depths (m) (to base units) – open bottom plate

Soil description	Soil weight (kN-m ⁻³)	Angle of internal friction (degrees)	No groundwater present			Groundwater present (1.0m below ground level)		
			Car parks ^[1]	Landscaped areas ^[2]	Low speed roads (<15 mph) ^[3]	Car parks ^[1]	Landscaped areas ^[2]	Low speed roads (<15 mph) ^[3]
Over consolidated stiff clay	20	24	n/a	n/a	n/a	n/a	1.76	n/a
Silty sandy clay	19	26	n/a	1.81	n/a	n/a	1.86	n/a
Loose sand and gravel	18	30	2.24	2.21	n/a	n/a	2.06	n/a
Medium dense sand and gravel	19	34	2.50	2.48	n/a	n/a	2.11	n/a
Dense sand and gravel	20	38	2.06	2.85	n/a	2.19	2.21	n/a

[1] Car parks: cars or light vehicles up to 9000kg (GVW) in accordance with Table 4.2 of CIRIA Report C680

[2] Landscaped areas where drive-on mowers are used in accordance with Table 4.2 of CIRIA Report C680

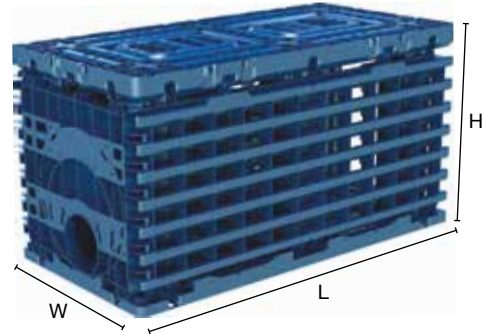
[3] Low-speed roads (<15 mph): vehicles up to 60000kg GVW (e.g. articulated lorries) in accordance with Table 4.2 of CIRIA Report C680

Q-Bic Plus Components

Wavin Q-Bic Plus

Wavin Q-Bic Plus is a geocellular water management system made of polypropylene (PP) for stormwater infiltration and attenuation.

Dimensions
LxWxH (mm)
1200 x 600 x 630



Q-Bic Plus Column Unit

Cat Code	Dimensions LxWxH (mm)
3059730	1200 x 600 x 630



Q-Bic Plus Solid Base Plate (attenuation applications)

Cat Code	Dimensions LxWxH (mm)
3059732	1200 x 600 x 70

Q-Bic Plus Perforated Base Plate (infiltration applications)

Cat Code	Dimensions LxWxH (mm)
3059731	1200 x 600 x 70



Q-Bic Plus Side Plate

Cat Code	Dimensions LxWxH (mm)
3059733	1184 x 543 x 50



Q-Bic Plus Connection Plate with 160mm dia open socket

Cat Code	Dimensions LxWxH (mm)
3059735	596 x 527.5 x 50

Q-Bic Plus Connection Plate with 315mm dia open socket

Cat Code	Dimensions LxWxH (mm)
3059736	596 x 527.5 x 50

Q-Bic Plus Components



Q-Bic Plus 225mm UltraRib Side Flange Adaptor

Cat Code	Dimensions
	LxWxD (mm)
4062303	520 x 510 x 114



Q-Bic Plus 300mm UltraRib Side Flange Adaptor

Cat Code	Dimensions
	LxWxD (mm)
4062358	520 x 510 x 161



Q-Bic Plus 300mm TwinWall Side Flange Adaptor

Cat Code	Dimensions
	LxWxD (mm)
4062356	520 x 510 x 123



Q-Bic Plus 375mm TwinWall Side Flange Adaptor

Cat Code	Dimensions
	LxWxD (mm)
4062357	520 x 510 x 161



Q-Bic Plus 300mm TwinWall Vertical Flange Adaptor*

Cat Code	Dimensions
	LxWxD (mm)
4062305	510 x 510 x 123



Q-Bic Plus 500mm TwinWall Vertical Flange Adaptor*

Cat Code	Dimensions
	LxWxD (mm)
4062304	600 x 600 x 231

*300mm and 500mm diameter TwinWall shafts are available for use with the Vertical Flange Adaptors.

Q-Bic Plus Design guidance

Infiltration or attenuation?

The Q-Bic Plus range can be used either as:

- ④ A soakaway (using the Perforated Base Plate) whereby the units will be installed in suitable pervious soils and wrapped in a geotextile to allow infiltration of the stormwater into the surrounding ground, or
- ④ As an attenuation tank (using the Solid Base Plate) in impervious ground (e.g. clay) where infiltration is not possible, here the units are encapsulated in a geomembrane (which is in turn wrapped in a protective geotextile layer) so that the structure can hold the stormwater temporarily until local drainage flows can accept it for normal disposal at a permissible outflow rate.

Q-Bic Plus storage tank



Site assessment

Ground conditions may be established as part of a geotechnical assessment. This may include tests for infiltration and ground water level.

If there is no confirmation that such assessments have been conducted, or resulting conclusions are unavailable, a trial pit will be required in accordance with BRE 365.

For further information and guidance, please contact the Wavin Technical Design Team.

Infiltration (soakaways)

According to the principals of SuDS, wherever possible stormwater should be drained back into the ground via a soakaway as the first priority. A site must meet BOTH of the following criteria for infiltration to be possible:

- ④ The underlying soil surrounding the proposed installation is sufficiently permeable
- ④ The seasonally high water table is a minimum of 1 metre below the base of the proposed installation

If either of these criteria is not met, or cannot be confirmed for any reason, a soakaway system may not be suitable for the application, in which case a storage tank must be used.

Attenuation (storage tanks)

A storage tank may be designed to be online or offline. If the site is subject to groundwater or a high water table, it is important to ensure that the tank is not vulnerable to flotation. Sufficient weight from soil, or other covering placed over the Q-Bic Plus units, must be sufficient to counter any buoyancy uplift force from the rising groundwater level.

Q-Bic Plus Design guidance

Hydraulic design

Q-Bic Plus units are 1200mm x 600mm x 630mm (LxWxH), have a nominal void ratio of 96% and each holds 436 litres of water.

Structural design however, requires careful consideration of loading factors specific to each location – see CIRIA C680 and CIRIA C737 for further guidance.

Structural design – installation & cover depths

Q-Bic Plus has been designed for use in applications including areas subject to traffic loading.

Minimum depth of cover varies according to whether or not the installation will be subject to trafficking by cars/HGVs.

However, in some situations, installations may have to be located with greater cover depths. Reasons may include:

- ③ Deep-running drainage network
- ③ Other buried services running above tank location
- ③ Installation into banked/ sloping ground
- ③ Upper layer of clay preventing infiltration.

The tables on pages 11 and 12 show maximum installation depths and minimum cover depths. In addition, the height of any tank should not exceed 2.52m (4 units).

For any design guidance or for a free project design, please contact Wavin Technical Design:

T: 0844 856 5165 E: technical.design@wavin.co.uk

Important design considerations for geocellular structures

Rising rainfall levels and increased focus on SuDS compliance, have led to a sharp increase in the use of modular units to create underground structures for infiltration or the temporary storage of stormwater.

However, not all currently available systems have the proven performance characteristics necessary to meet the wide range of complex underground geocellular applications.

As with all Wavin geocellular systems, Q-Bic Plus provides assured performance, since all strength and hydraulic capabilities have been verified by independent testing and all units are fully BBA approved.

To guarantee the structural integrity of an engineered drainage system, any underground structure must be strong enough to support the loads to which it will be subjected without any unacceptable deflection.

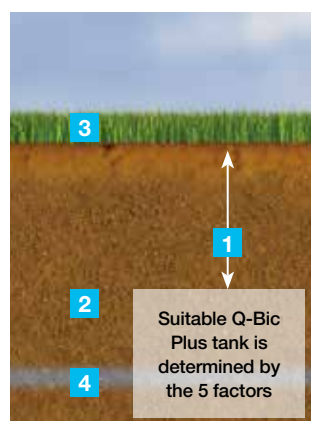
The correct choice of geocellular unit must have appropriate proven top (vertical) and side (lateral) load bearing capacity and deflection characteristics to suit site conditions.

The five key site considerations to be noted when designing a geocellular structure are:

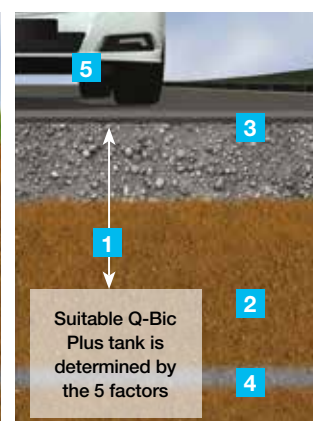
1. Depth of cover (See page 11)
2. Soil type
3. Surface finishing
4. Presence of groundwater
5. Type of traffic/loading – pre and post construction

The combination of these five factors effectively means that the required characteristics of a geocellular structure to be installed under a trafficked location (for example) will be very different from that under a landscaped/low-loaded location.

Non-trafficked



Trafficked



Q-Bic Plus Installation instructions

Follow the step by step instructions to install a Q-Bic Plus tank or soakaway.

Step 1

Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the Q-Bic Plus units.



Step 2

Lay 100mm bed of coarse sand or non-angular granular material, level and compact.



Step 3

For a soakaway, lay the geotextile* over the base and up the sides of the trench. For an attenuation tank, lay the protective geotextile layer over the base and up the sides of the trench, then lay the geomembrane** on top of the geotextile over the base and up the sides of the trench.



*The geotextile should be selected according to specific site conditions. Typically, however, a 300g non-woven material will be suitable. Specialist advice should be sought if surrounding soil characteristics exhibit a high degree of fines/low infiltration capacity and/or there is a high risk of damage from ground contaminants.

**Typically, for large scale, deep installations a 1mm thick geomembrane is recommended and joints should be sealed using proprietary welding techniques, however specialist advice should be sought.

Step 4

Lay the bottom layer of the Q-Bic Plus units, by first slotting the Column Units into the appropriate Base Plates (using perforated Base Plates for a soakaway and solid Base Plates for an attenuation tank). Ensure an audible 'click' is heard when connecting the Column Units into the Base Plates.



Slide and fix the assembled Column Units and Base Plates together using the integrated connectors to form the base of the structure.

Q-Bic Plus Installation instructions

Step 5

Where vertical inspection shafts are required within the main Q-Bic Plus structure, the rectangular pre-formed cut out section on the top of the appropriate Q-Bic Plus unit must be cut out prior to assembly. The cutting lines are marked by a 'hand saw' logo. Ensure that the rectangular performed cut out section of each unit on every layer below the vertical access is cut out prior to assembly.



Step 6

Slot the next layer of Column Units (without the Base Plates) on to the completed base layer. Each of the 6 pillars on the Column Units will click into the top deck of the unit below.



Step 7

Attach the Side Plates onto outer perimeter of the structure by putting the hinge pins of the Side Plates into the hinge pockets on the units at an angle. The Side Plates will then drop into place.



Where half of a Side Plate is required to be fitted next to a Connection Plate, then a full Side Plate will need to be cut in half (as shown below).



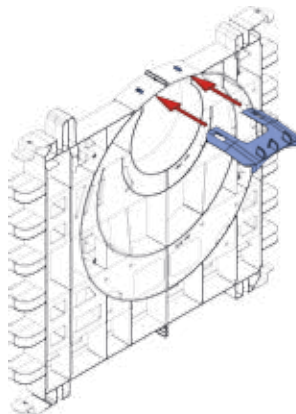
Only the non-cut edge of a Side Plate should be installed on a corner edge.

Step 8

Fix the Connection Plates where inlets/outlets are required. There are positioning nooks on the Connection Plates that fit into the openings on the units to guarantee the correct positioning.



If using 160mm diameter pipe then assemble the pipe-stopper to the socket of the connection plate before attaching it to the main structure (as shown on the right). Alternatively, if using an adaptor fit this to the Connection Plate with self-tapping screws (not supplied).



Step 9

For soakaways - wrap and overlap the geotextile covering the entire Q-Bic Plus structure.

For attenuation tanks – wrap the geomembrane around the AquaCell structure and seal to manufacturer's recommendations**. Then wrap and overlay the geotextile.



**Typically, for large scale, deep installations a 1mm thick geomembrane is recommended and joints should be sealed using proprietary welding techniques, however specialist advice should be sought.

Step 10

Lay 100mm of coarse sand or non angular granular material between the trench walls and the Q-Bic Plus structure and compact.

Step 11

Lay 100mm of coarse sand or non angular granular material over the geotextile and compact. Backfill with suitable material.

Step 12

If installing integral vertical inspection shafts, directly onto the top surface of the Q-Bic Plus structure, then the rectangular pre-formed cut out section (on every level inside the structure) will need to be removed using a saw or jigsaw, prior to assembly of the structure.

The Vertical Flange Adaptor is then attached to the top of the Q-Bic Plus units using self-tapping screws (not supplied) and then the shaft can be fitted.

Note: There are two different Vertical Shaft Adaptors available: 300 and 500mm diameters.



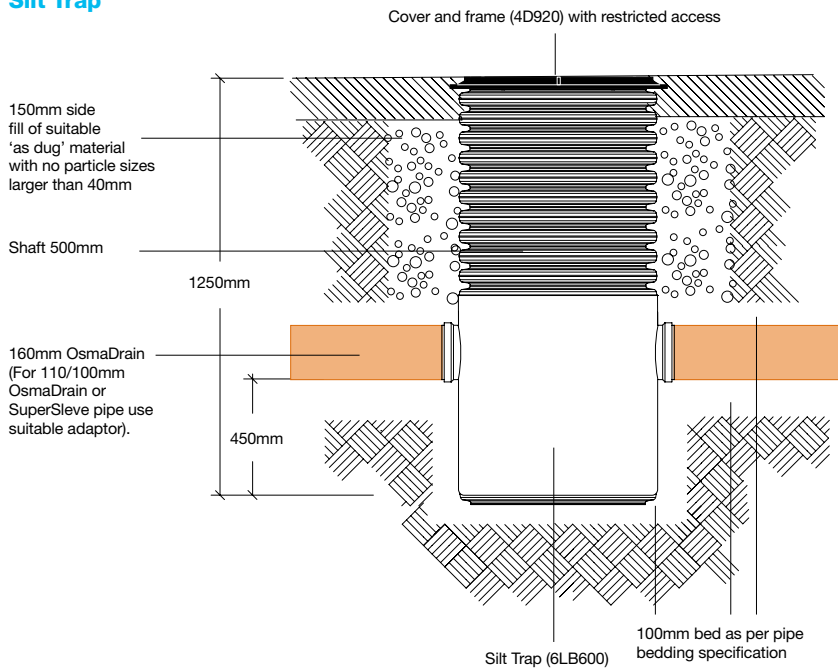
Step 13

If installing an attenuation tank then it must be vented, and it is recommended that one vent pipe, 110mm in diameter is provided per 7,500 square metres of impermeable catchment area on a site, see page 20 for details.

Q-Bic Plus Installation details

Silt Trap and Air Vent Termination

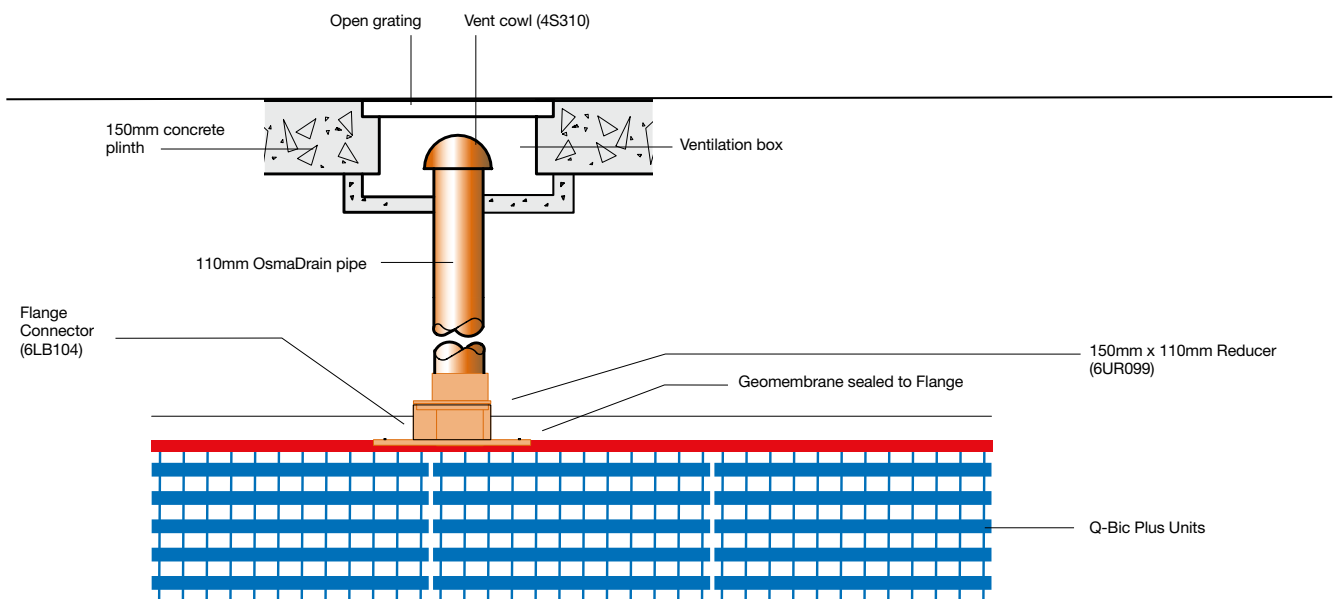
Silt Trap



Typical installation procedure

1. Place the Silt Trap (6LB600) on a minimum of 100mm bed as per pipe bedding specification. Ensure that the trap is as close to the Q-Bic Plus unit as possible and in a suitable position to allow pipework connection.
2. Connect the relevant pipework in accordance with standard pipe installation guidelines.
3. Surround the sides of the Silt Trap with 150mm of 'as dug' material, with no particle sizes larger than 40mm.
4. Fit relevant cover and frame.

Typical Air Vent design



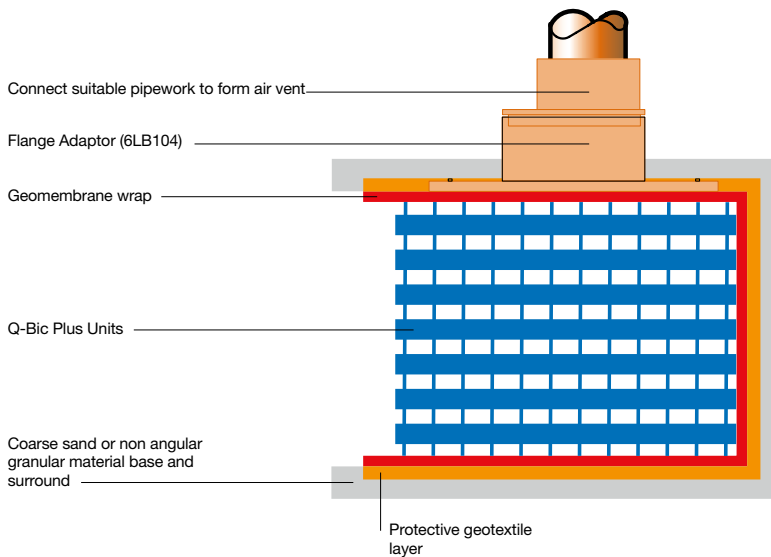
NOTE: It is recommended that all connections and air vent installations in storage applications (using geomembrane) are made using a Flange Adaptor.

Adhesive or double sided tape should be used between the geomembrane and the flange plate to ensure a watertight seal.

NOTE: It is recommended that one vent pipe, 110mm in diameter, is provided per 7,500 square meters of impermeable catchment area on a site.

Top Connection for Air Vent

Connect into the top of the Q-Bic Plus unit, using Flange Adaptor.

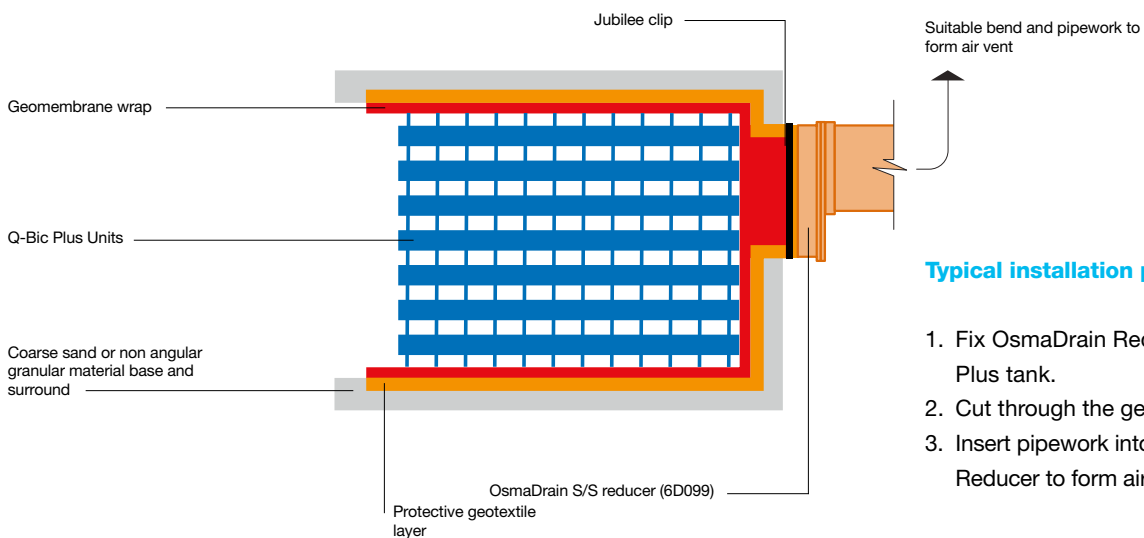


Typical installation procedure

1. Fix Flange Adaptor to the Q-Bic Plus unit with self tapping screws (not supplied).
2. Cut through the geomembrane.
3. Insert pipework into Flange Adaptor to form air vent.

Side Connection for Air Vent

Connect into the side of the Q-Bic Plus tank unit using standard Reducer.



Typical installation procedure

1. Fix OsmaDrain Reducer to the Q-Bic Plus tank.
2. Cut through the geomembrane.
3. Insert pipework into OsmaDrain Reducer to form air vent.

Q-Bic Plus

Installation details

Connections to Q-Bic Plus

Side connections via the 160mm open socket

The 160mm open socket Connection Plate is for use directly with 160mm OsmaDrain or for connection to other pipework via adaptors as listed below:

- ④ 6TW141: TwinWall S/S Adaptor connects to 150mm TwinWall
- ④ 6D099: OsmaDrain Adaptor connects to 110mm OsmaDrain
- ④ 4D916: OsmaDrain PE Adaptor connects to 160mm OsmaDrain
- ④ 6UR141: UltraRib S/S Adaptor connects to 150mm UltraRib
- ④ 6D129: OsmaDrain S/S Adaptor connects to 150mm SuperSleve clay. (Use an appropriate reducer, as required, e.g. 6D099)

Side connections via the 315mm open socket

When using the 315mm open socket Connection Plate, connections can be made to 300mm and 375mm* TwinWall and 225mm or 300mm UltraRib using the appropriate Side Flange Adaptor.

*Note: When using the 375mm TwinWall Side Flange Adaptor the 400mm dia guide socket will need to be cut out prior to fitting.

Vertical Shaft Connections

To form direct vertical shaft connections onto the top of the Q-Bic Plus structure use either the 300mm or 500mm Vertical Flange Adaptor, depending on whether a 300mm or 500mm TwinWall shaft is required. The rectangular preformed cut out sections below the shaft (on every level inside the structure) will need to be removed using either a saw or jigsaw.

Q-Bic Plus Stormwater Management

Wavin Stormwater Systems

Geocellular Stormwater Units

The AquaCell range of Geocellular systems are a fully tried and tested, BBA approved, modular technique for managing excessive rainfall, including:

- ⌚ AquaCell Eco
- ⌚ AquaCell Prime
- ⌚ AquaCell Core
- ⌚ AquaCell Plus

Channel Drainage

Environmentally-friendly polyconcrete systems to cover all EN 1433 load classes. With outstanding chemical resistance and low water absorption:

- ⌚ Medium duty range for applications up to C250
- ⌚ Heavy duty range for D400 / F900 application

Plastic Pervious Paving

High performance, plastic pervious paving system, for use in all types of Sustainable Drainage Systems (SuDS).

- ⌚ AquaGrid 50 – for use in landscape projects
- ⌚ AquaGrid 75 – for use in car parking areas

Flow Control Valves

The Wavin+Mosbaek range of vortex flow control valves are manufactured from stainless steel and are custom-built to meet exact site requirements:

- ⌚ Tornado, Hurricane and Typhoon stainless steel flow control valves with no moving parts or power needs

Anti-flood Valves

- ⌚ Anti-Flood Valves that comply with EN 13546-1, and Part H1– Sections 2.8-2.12 of Building Regulations

Below Ground Water Transportation

Wavin Stormwater installations can draw from an extensive choice of plastic and clay water conveyance systems, including:

- ⌚ OsmaDrain solid wall PVC-U pipe system
- ⌚ Structured wall plastic UltraRib and TwinWall pipe systems
- ⌚ SuperSleve and HepSeal clay pipe systems

Other options include perforated pipe for land drainage: WavinCoil plastic and HepLine clay – and a full range of Wavin Non-Entry Inspection Chambers.

Rainwater Re-Use

The Wavin Stormwater Water Range can also exploit stored rainwater. These reduce the use of potable mains water for non-potable purposes.

The Wavin Stormwater Service

Precision and Performance

The Wavin Technical team are ready to contribute to any stormwater management project. This may be at the very earliest stage – or when initial plans have already been developed. There are no pre-conditions with regards to you requesting Wavin to become involved.

We are ready to:

- ⌚ Originate project design
- ⌚ Comment on an existing design
- ⌚ Help validate a specification – or, where we see an opportunity to do so, to suggest how it may be enhanced
- ⌚ Check, clarify and confirm maximum cost-efficiency, performance capability and regulatory compliance

This involvement is a core part of the Wavin principle. It extends beyond the systems and components.

To discuss your stormwater management project, call 0844 856 5161 or email technical.design@wavin.co.uk.

Discover our broad portfolio at
www.wavin.co.uk



Water management | Plumbing and heating | Waste water drainage
Water and gas distribution | Cable ducting

Mexichem.
Building & Infrastructure



CONNECT TO BETTER

Wavin Limited
Registered Office
Edlington Lane
Doncaster | DN12 1BY
Tel. 0844 856 5152
www.wavin.co.uk | info@wavin.co.uk

© 2017 Wavin Limited

Wavin operates a programme of continuous product development, and therefore reserves the right to modify or amend the specification of their products without notice. All information in this publication is given in good faith, and believed to be correct at the time of going to press. However, no responsibility can be accepted for any errors, omissions or incorrect assumptions. Users should satisfy themselves that products are suitable for the purpose and application intended.

For further product information visit: wavin.co.uk

