BUtgb vzw - UBAtc asbl

WATER DRAINAGE AND SEWAGE SYSTEMS

HD-PE VACUUM RAINWATER DRAINAGE SYSTEM

WAVIN QUICKSTREAM

Valid from 21/05/2024 to 20/05/2029

Approval holder:

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ATG 2421

A Technical Approval is based on a favourable evaluation of a construction product by a skilled, independent and impartial approval body designated by UBAtc for a specific application.

The Technical Approval serves as a record of the approval inspection. This inspection consists of the following:

- identification of relevant properties of the system for the intended application, laying (or installation) method,
- product design,
- reliability of production.

The Technical Approval provides a high level of reliability, based on the statistical interpretation of inspection results, regular monitoring and adjustments, in order to keep abreast of the situation, the latest technical developments and quality monitoring by the Approval Holder.

In order to retain the Technical Approval, the approval holder must continuously provide evidence that he is taking all necessary steps to demonstrate that the system is suitable for use. In order to do so, it is vital that the conformity of the system with the Technical Approval is monitored. This monitoring is entrusted by the UBAtc to a skilled, independent and impartial Certification Body.

The Technical Approval and certification for conformity of the product to the technical approval are independent of tasks conducted individually. The contractor and/or architect remain fully responsible for the conformity of the completed work with the provisions contained in the specifications.

The Technical Approval is not concerned, except in specifically included provisions, with on-site safety, health aspects and the sustainable use of raw materials. As a result, the UBAtc shall not be responsible, under any circumstances, for any damage caused by the failure of the Approval Holder, contractor(s) and/or architect to respect provisions relating to on-site safety, health aspects and the sustainable use of raw materials.

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* The Certification body designated by UBAtc asbl operates in compliance with a system that is set to be accredited by BELAC (www.belac.be).

FOREWORD

This document relates to a modification in the wording of the approval document ATG 2421, valid from 8/5/2018 to 7/5/2023. The modifications compared with previous version are summarised below:

Modifications compared with the previous version
– update

The technical approvals are regularly updated. It is recommended that you always use the version published on the UBAtc website (www.butgb-ubatc.be).

The most recent version of the technical approval can be consulted by scanning the QR code on the cover page.

NORMATIVE AND OTHER REFERENCES

AGCR-RGAC	30/06/2022	UBAtc General Approval and Certification Regulations
NBN EN 1253	2015	Gullies for buildings -1 : Part 1: Trapped floor gullies with a depth water seal of at least 50 mm -2 : Part 2: Roof drains and floor gullies without trap

1 Scope

1.1 Scope of the technical product approval with certification

The system includes all of the components (funnels, drainpipes, fittings and accessories), techniques (connection techniques, fixings) and instructions (automated design method, installation recommendations and restrictions) required to be able to be installed correctly.

The technical approval does not cover the automated calculations provided by the manufacturer or the thermal and acoustic insulation proposed by the manufacturer, nor the quality of installation on the construction site or the tools to be used.

A favourable feedback is granted on the basis of an examination of the performance of the construction product described, carried out by means of tests conducted on prototypes and in line with the procedures detailed in this approval directive.

Technical approval with certification is granted on the basis of industrial self-monitoring at the manufacturers of the various components of the system and periodic external inspection, taking into account the quality assurance systems used by the manufacturers and as prescribed or accepted by the UBAtc. This certification grants the manufacturer the right to display the ATG mark to products that comply with the technical approval.

The approval holder of the system undertakes:

- to require compliance with these approval conditions relating to the manufacture and installation of these construction products,
- to require compliance with these approval conditions for the design and calculation of construction products by the consultancy offices to which the holder has given authorisation to do so,
- to provide specific training to the person responsible for the system design and for its calculation or verification.

2 Description

2.1 Operation and area of application

2.1.1 Operation

The rainwater drainage system is usually made up of a horizontal pipe to which one or more funnels are connected. The pipe then has a vertical course (downpipe) with a minimum height difference of 3 m that must be respected.

The system leads to a horizontal drain that runs into a manhole, ditch or aerated pipe, after which it is drained by gravity. Roof drains are designed in such a way that, above a certain flow rate to be evacuated, they involve practically no air, so that the downpipe fills completely and the entire evacuation system is under negative pressure as a result of the water falling down inside the downpipe. The system is designed in such a way that it is airtight and able to accommodate this negative pressure. The amount of flow that can be evacuated is therefore much higher than with gravity evacuation. As a result of these differences in pressure, the velocity reached by the water is higher, which allows the system to self-clean, although the speed is limited to 6 m per second in the pipes, to prevent erosion of the pipe (higher speeds can be reached in the funnel itself.

Compared with conventional systems, this allows smaller diameters of pipe to be used, as well as fewer vertical pipes to be laid and horizontal pipes to be laid without a fall.

For smaller volumes (such as with light showers or just when it begins to rain) the system works like a gravity drainage system.

As an alternative, each roof drain can be connected directly to a vertical pipe in the system, in which case the horizontal collection pipe is placed in the ground and operates in over-pressure. This type of installation can be implemented only if it can be demonstrated in a complementary manner that the slower establishment of evacuation speeds does not give rise to excessive water heights on the roof.

The roof drain and the pipes together constitute a system. The use of the roof drain on a conventional gravity drainage system or other roof drains on a drainage system, as described below, is not permitted, even in instances where repairs are being carried out.

Depending on the project, the manufacturer will handle the entire calculation. The isometric pipe diagram and the order form are then drawn up on this basis. No modifications may be made to this diagram without prior agreement and installation must be carried out in accordance with the execution plan.

2.1.2 Field of application

The system can be used for evacuation of water by vacuum, inside and outside buildings (housing and utility and industrial buildings; taking into account the restrictions below, with application in utility and industrial buildings being the main use), as well as rainwater from flat roofs and gutters accessible only for maintenance.

The use of a system of this kind in our country is generally only justified in comparison with conventional roof drainage systems, for roofs larger than 100 m² where a difference in level (static pressure difference) of at least 3 m can be achieved and provided that at least two roof drains or a drain and an overflow with sufficient capacity are in place.

The same downpipe may only serve roof drains, which can be expected to come into service at the same time and during the same period of time (roof drains having the same roof surface area, distributed in such a way on the roof slope or in the gutter, that they have a comparable rain flow rate to evacuate and that they are located approximately at the same level). If this is not the case, air is sucked in by the funnels which have not been activated, which means that the desired vacuum is not reached, nor is the permissible evacuation capacity.

Connection to other drainage pipes (vacuum drain pipes from other drains serving other roof sections, drain pipes by gravity of waste household water for example – provided this is authorised

locally) can only occur at the point where the drainage flow continues by gravity.

Due to the higher drainage evacuation rate, it may be desirable to proceed with acoustic insulation of the downpipes.

Depending on the humidity level in the building, it may be advisable to provide thermal insulation to prevent the formation of condensation droplets.

A sufficient number of emergency overflow outlets should be provided on the roof (or in the gutters), so as not to be confronted with an excess load of water that might threaten the stability of the roof and the waterproofing of the building in the event that, accidentally, a roof drain or another part of the system (for example the sewer to which it is connected) does not work. The number of emergency overflow outlets and their location are determined by the project owner.

It is also recommended to install water evacuation spouts on the roof, in places where their function as warnings is most noticeable (i.e. they begin to operate before the water overflows through the overflow outlets in the event of incidents in the evacuation system).

2.2 Components

2.2.1 Pipes, connections and accessories

The system consists of the following components:

– Pipes: Wavin HDPE (BENOR-certified in accordance with EN 1519-1), series S12,5, black colour. Dimensions in accordance with **Error! Reference source not found.**; marking in accordance with Table 2.

Table 1 : Pipe dimensions

Outer diameter (mm)	Wall thickness (mm)
40	3
50	3
63	3
75	3
90	3.5
110	4.2
125	4.8
160	6.2
200	7.7
250	9.6
315	12.1

Table 2 : Marking of the pipe

Mark	WAVIN factory mark
Number of the production line	92
Material	PE
Series	S12,5
Quality mark	BENOR
Application class	BD- SANITAIR BD
Date of production	YYMMDD
Dimensions	Nominal diameter x minimum wall thickness [mm x mm]
Norm	NBN EN 1519

– Accessories (BENOR certification in accordance with EN 1519-1), colour black, with connections made by welding (mirror or electro-weldable sleeves:
  - 45° bends
  - 45° Tee pieces
  - Eccentric reducers
  - Expansion sleeves (max. diameter 110 mm) with elastomeric seals for use in vertical sections of the installation only.
  - Where required, 90° bends and centric reducers

Table 3 : Marking of the accessories

Mark	WAVIN factory mark
Number of the production unit	55
Material	PE
Dimensions	Nominal exterior diameter x thickness of wall [mm x mm]
	S12,5
Bending angle (for bends and T elements)	30°, 45°, 60°, 88,5°, 90°
Norm	EN 1519
Quality mark	BENOR
Date of production	Date clock
Application class	BD

- Straight PE connection between funnel and discharge pipe, with 2.5 inch internal thread (for connection to QS-M-75 and QS-P+75 funnels)
- Electro-weldable sleeves and appropriate electric welding equipment.
- Butt welding equipment

2.2.2 Funnels

2.2.2.1 Main details

Standards NBN EN 1253-1 and NBN EN 1253-2 define the method by which the flow rate of funnels must be determined.

The evacuation flow rate "q" is determined by the height "h" of the water level above the funnel. Height "h" is limited in all cases to 55 mm.

Depending on the nominal diameter of connection $Ø_e$, these standards define a minimum flow rate q_m to be obtained for a height h < 55 mm. The minimum flow rate q_{max} is a statement from the manufacturer; a corresponding height h is not specified.

When determining the flow rate through the funnel, note the height h_{min} at which the flow rate q_{min} is obtained, and the height h_{max} at which the flow rate q_{max} stated by the manufacturer is obtained. In this instance, we check that at least the flow rate q_{min} is obtained and that the maximum flow rate is obtained for a height $h_{max} \leq 55$ mm

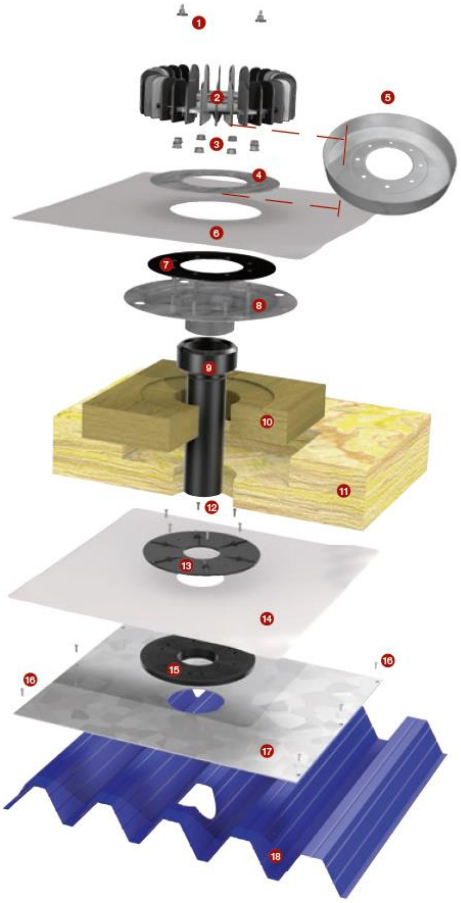
Table 4 : Main details for roof outlets

Type of roof outlet	Evacuation flow rate maximum q_{max}	Exterior diameter of connection $Ø_e$	Test requirement according to NBN EN 1253-2		Evacuation flow rate in keeping with the test configuration according to EN 1253-1			
			q_{min}	h_{min}	q_{min}	h_{min}	q_{max}	h_{max}
	(l/s)	(mm)	(l/s)	(mm)	(l/s)	(mm)	(l/s)	(mm)
Metal funnels								
30- M -75-260	33	75	12	< 55	12.0	29.0	33.0	46.8
Synthetic funnels								
QS P+ 75	33	75	12	< 55	12.0	29.0	33.0	46.8

2.2.2.2 Description

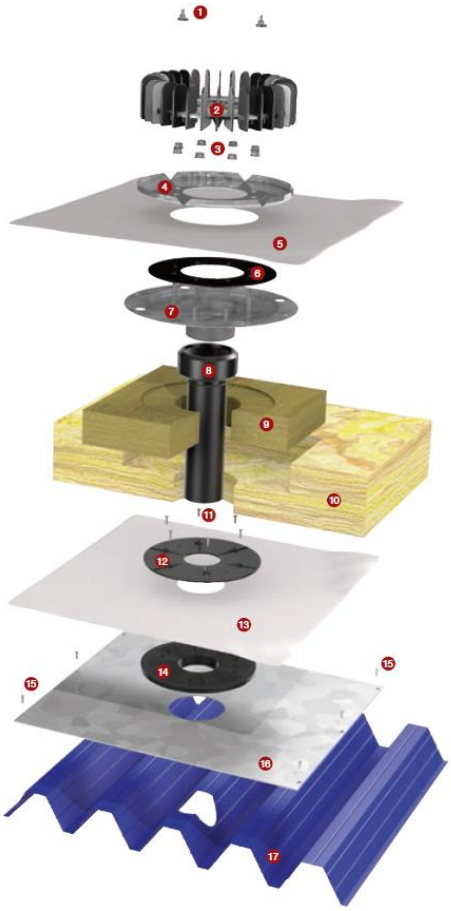
2.2.2.2.1 QS-M-75-260 metal roof outlet with clamping ring for synthetic roof membrane

With clamping ring or with extension for overflow



1. Wing nuts (2 pieces) for fastening the stainless steel footplate
2. 260 mm diameter footplate in coated aluminium
3. Bolts for mounting the stainless steel clamp
4. Stainless steel clamp
5. Additional clamp for use as a stainless steel overflow
6. Roof membrane
7. EPDM sealing ring
8. 300 mm diameter drain body, also counter-flange for clamping flange, in stainless steel
9. PE connecting pipe
10. Preformed insulation block (400 mm x 400 mm x 80 mm)
11. Roof insulation
12. Screws (6 pieces) for fixing vapour barrier clamps
13. Upper part of the vapour barrier clamp
14. Vapour barrier
15. Lower part of the vapour barrier clamp
16. Screws (6 pieces) for fixing the reinforcing plate
17. Reinforcing plate (600 mm x 600 mm x 1.5 mm)
18. Roof structure

With gravel guard



1. Wing nuts (2 pieces) for fastening the stainless steel footplate
2. 260 mm diameter footplate in coated aluminium
3. Bolts for mounting the stainless steel clamp
4. Stainless steel clamp, as well as the stainless steel gravel guard
5. Roof membrane
6. EPDM sealing ring
7. 300 mm diameter drain body, also counter-flange for clamping flange, in stainless steel
8. PE connecting pipe
9. Preformed insulation block (400 mm x 400 mm x 80 mm)
10. Roof insulation
11. Screws (6 pieces) for fixing vapour barrier clamps
12. Upper part of the vapour barrier clamp
13. Vapour barrier
14. Lower part of the vapour barrier clamp
15. Screws (6 pieces) for fixing the reinforcing plate
16. Reinforcing plate (600 mm x 600 mm x 1.5 mm)
17. Roof structure

The body of the stainless steel roof outlet is placed in a pre-formed insulation block, itself placed in a recess provided for this purpose in the roof insulation. Alternatively, the stainless steel roof outlet can be fitted directly into a suitable recess in the roof insulation. In the roof outlet, the synthetic roofing membrane, supported by an EPDM sealing ring, is clamped between the clamping flange and the body of the roof outlet. If the roof outlet has an overflow function, the clamping flange is replaced by a saucer 44.5 mm high.

The bottom of the stainless steel connector body has a 2.5 inch connection for a 75 mm, 63 mm, 56 mm, 50 mm or 40 mm connecting pipe.

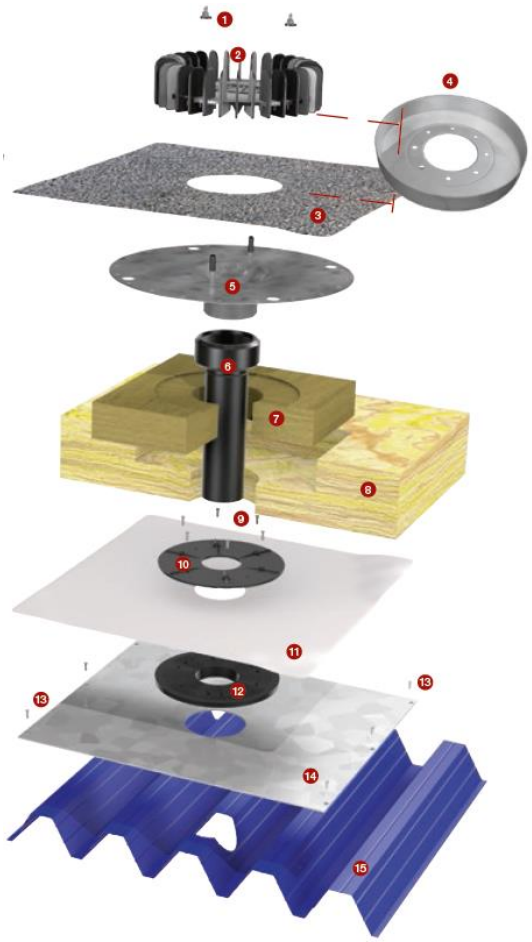
If necessary, the penetration of the vapour control layer by the drain pipe can be finished in a vapour-tight manner by applying a two-part flat sleeve above and below the vapour control layer, between which the vapour control layer is clamped. The drainpipe is then clamped into the recess in this sleeve.

If the roof structure consists of corrugated metal sheets, a stiffening plate can be screwed onto the area where the cut-out for the connecting pipe is made.

Above the body of the roof outlet, the functional disc, which also acts as a footplate, is mounted by means of wing nuts. This device can be removed to facilitate maintenance of the roof outlet.

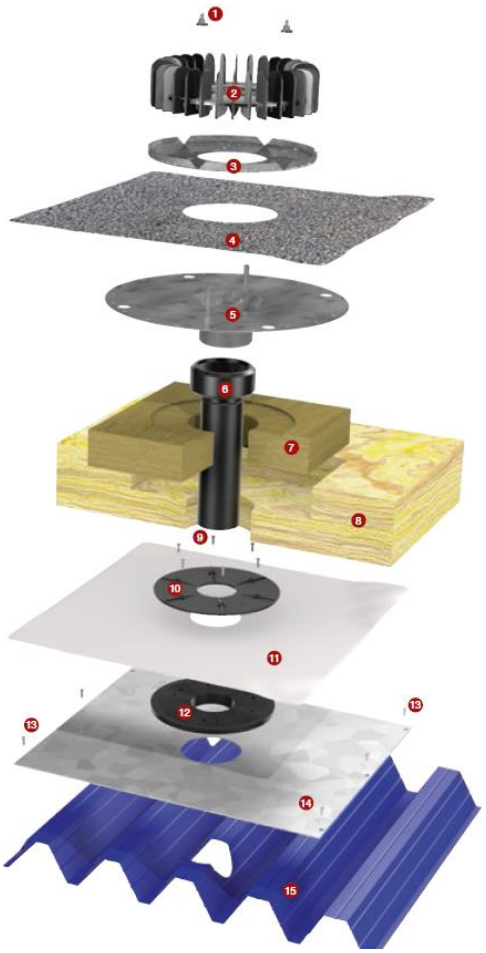
2.2.2.2.2 QS-M-75-260 metal roof outlet for bituminous roofing membrane

With flap, possibly with extension for overflow



1. Wing nuts (2 pieces) for fastening the stainless steel footplate
2. 260 mm diameter footplate in coated aluminium
3. Roof membrane
4. Extension element for use as a stainless steel overflow
5. 360 mm diameter drain body, also flashing in stainless steel
6. PE connecting pipe
7. Preformed insulation block (400 mm x 400 mm x 80 mm)
8. Roof insulation
9. Screws (6 pieces) for fixing vapour barrier clamps
10. Upper part of the vapour barrier clamp
11. Vapour barrier
12. Lower part of the vapour barrier clamp
13. Screws (6 pieces) for fixing the reinforcing plate
14. Reinforcing plate (600 mm x 600 mm x 1.5 mm)
15. Roof structure

With flap and gravel guard



1. Wing nuts (2 pieces) for fastening the stainless steel footplate
2. 260 mm diameter footplate in coated aluminium
3. Gravel guard
4. Roof membrane
5. 360 mm diameter drain body, also flashing in stainless steel
6. PE connecting pipe
7. Preformed insulation block (400 mm x 400 mm x 80 mm)
8. Roof insulation
9. Screws (6 pieces) for fixing vapour barrier clamps
10. Upper part of the vapour barrier clamp
11. Vapour barrier
12. Lower part of the vapour barrier clamp
13. Screws (6 pieces) for fixing the reinforcing plate
14. Reinforcing plate (600 mm x 600 mm x 1.5 mm)
15. Roof structure

The body of the stainless steel roof outlet is placed in a pre-formed insulation block, itself placed in a recess provided for this purpose in the roof insulation. Alternatively, the stainless steel roof outlet can be fitted directly into a suitable recess in the roof insulation. The bituminous roofing membrane is affixed to the flashing. If the roof has gravel, a gravel guard is placed on the roof membrane, under the footplate. Alternatively, if the roof outlet has an overflow function, a saucer 44.5 mm high is placed on the roof membrane, under the footplate.

The bottom of the stainless steel connector body has a 2.5 inch connection for a 75 mm, 63 mm, 56 mm, 50 mm or 40 mm connecting pipe.

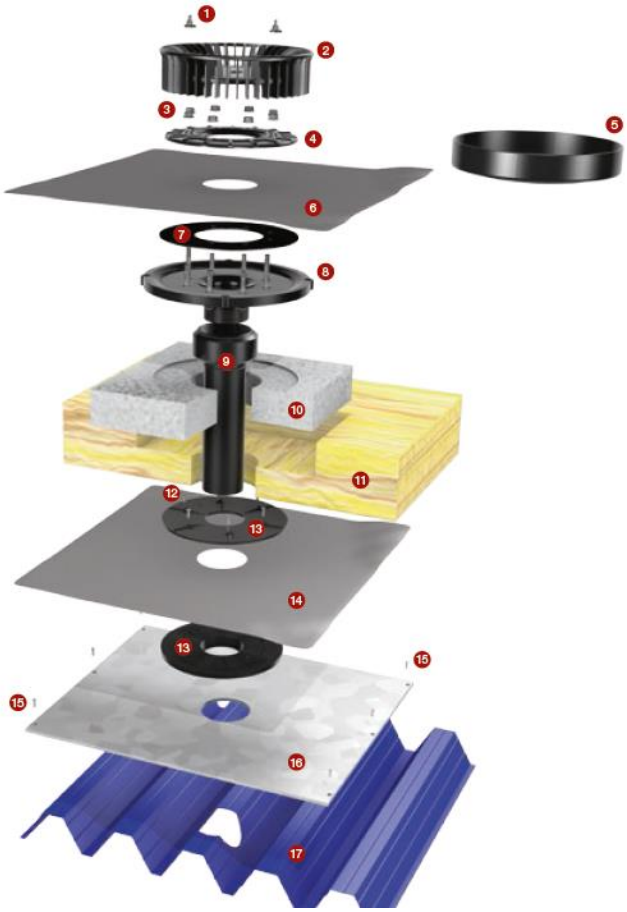
If necessary, the penetration of the vapour control layer by the drain pipe can be finished in a vapour-tight manner by applying a two-part flat sleeve above and below the vapour control layer, between which the vapour control layer is clamped. The drainpipe is then clamped into the recess in this sleeve.

If the roof structure consists of corrugated metal sheets, a stiffening plate can be screwed onto the area where the cut-out for the connecting pipe is made.

Above the body of the roof outlet, the functional disc, which also acts as a footplate, is mounted by means of wing nuts. This device can be removed to facilitate maintenance of the roof outlet.

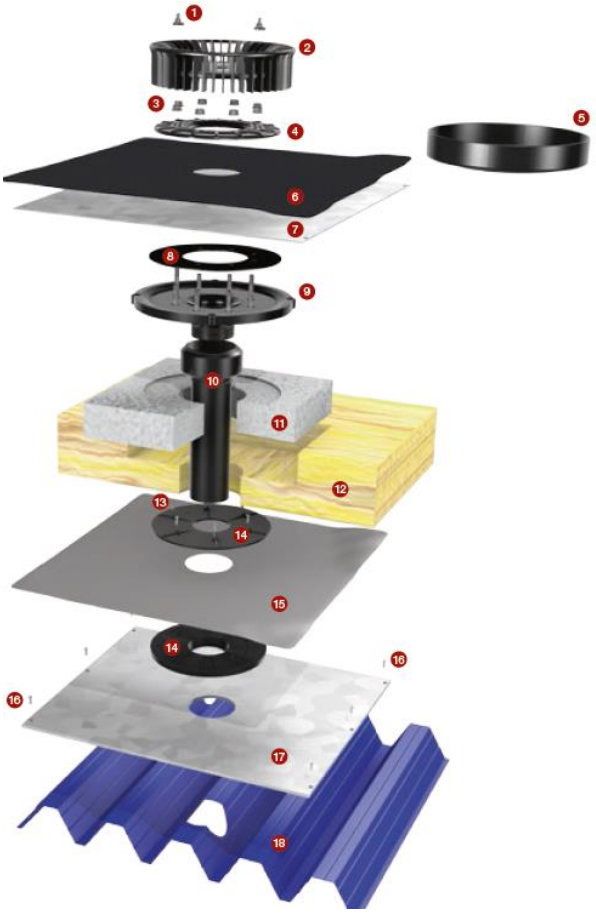
2.2.2.2.3 Synthetic roof outlet QS-P+ 75

For synthetic roof membrane



1. Wing nuts (2 pieces) for fastening the stainless steel footplate
2. Polypropylene footplate
3. Screws (8 pieces) for fixing the stainless steel clamp
4. Clamp in glass-fibre reinforced PA
5. Alternative clamp for use as an overflow in glass-fibre reinforced PA
6. Roof membrane
7. EPDM sealing ring
8. Drain body in glass-fibre reinforced PA
9. PE connecting pipe
10. Preformed insulation block
11. Roof insulation
12. Screws (6 pieces) for fixing vapour barrier clamps
13. Vapour barrier clamp (upper and lower parts)
14. Vapour barrier
15. Screws (6 pieces) for fixing the reinforcing plate
16. Reinforcing plate
17. Roof structure

For bituminous roof membrane



1. Wing nuts (2 pieces) for fastening the stainless steel footplate
2. Polypropylene footplate
3. Screws (8 pieces) for fixing the stainless steel clamp
4. Clamp in glass-fibre reinforced PA
5. Alternative clamp for use as an overflow in glass-fibre reinforced PA
6. Roof membrane
7. Roof membrane underlay
8. EPDM sealing ring
9. Drain body in glass-fibre reinforced PA
10. PE connecting pipe
11. Preformed insulation block
12. Roof insulation
13. Screws (6 pieces) for fixing vapour barrier clamps
14. Vapour barrier clamp (upper and lower parts)
15. Vapour barrier
16. Screws (6 pieces) for fixing the reinforcing plate
17. Reinforcing plate
18. Roof structure

The body of the glass-fibre reinforced polyamide roof outlet is placed in a pre-formed insulation block, itself placed in a recess provided for this purpose in the roof insulation. Alternatively, the glass-fibre reinforced polyamide roof outlet can be fitted directly into a suitable recess in the roof insulation. In the roof outlet, the synthetic or bituminous roofing membrane (for a bituminous roofing membrane, flashing should preferably be used) is supported by an EPDM sealing ring, is clamped between the clamping flange and the body of the roof outlet. If the roof outlet has an overflow function, the clamping flange is replaced by a saucer 44.5 mm high.

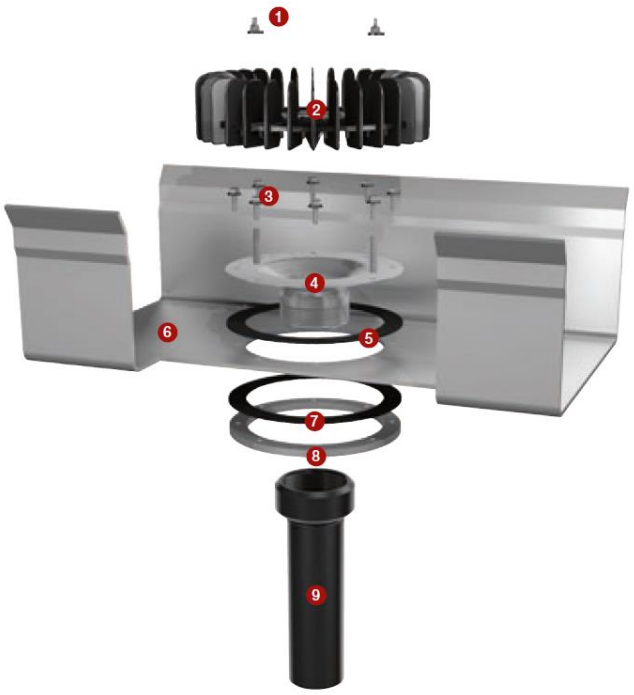
The bottom of the glass-fibre reinforced polyamide roof outlet body has a 2.5 inch connection for a 75 mm, 63 mm, 56 mm, 50 mm or 40 mm connecting pipe.

If necessary, the penetration of the vapour control layer by the drain pipe can be finished in a vapour-tight manner by applying a two-part flat sleeve above and below the vapour control layer, between which the vapour control layer is clamped. The drainpipe is then clamped into the recess in this sleeve.

If the roof structure consists of corrugated metal sheets, a stiffening plate can be screwed onto the area where the cut-out for the connecting pipe is made.

Above the body of the roof outlet, the functional disc, which also acts as a footplate, is mounted by means of wing nuts. This device can be removed to facilitate maintenance of the roof outlet.

2.2.2.2.4 Metal roof outlet QS-M-75-260 for gutter



1. Wing nuts (2 pieces) for fastening the stainless steel footplate
2. 260 mm diameter footplate in coated aluminium
3. Screws for fixing the stainless steel clamping ring
4. 200 mm diameter stainless steel drain body
5. EPDM upper sealing ring
6. Gutter
7. EPDM lower sealing ring
8. Stainless steel clamping ring
9. PE connecting pipe

The stainless steel roof outlet body is placed in a circular cut-out in the bottom of the gutter. The gutter is clamped, with two EPDM sealing rings added to the upper side of the coupling body and the lower side of the clamping flange. The body of the roof outlet, sealing rings, gutter and clamping flange are tightened together using bolts.

The bottom of the stainless steel connector body has a 2.5 inch connection for a 75 mm, 63 mm, 56 mm, 50 mm or 40 mm connecting pipe.

Above the body of the roof outlet, the functional disc, which also acts as a footplate, is mounted by means of wing nuts. This device can be removed to facilitate maintenance of the roof outlet.

2.2.3 Accessories

- Stainless steel gravel guard
- Overflow ring
- Electric heating strip

2.2.4 Brackets

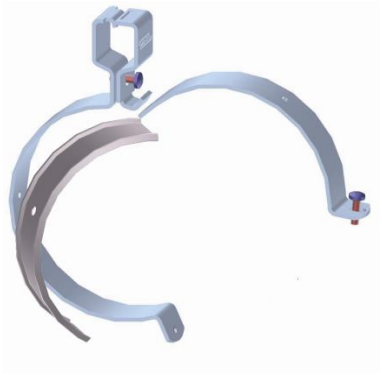


Fig. 1 Diagram of bracket and metal half-shell

2.2.4.1 Sliding brackets

Sliding brackets are used to take up the vertical stresses caused by the weight of the filled pipes and to prevent buckling in the vertical parts of the drainage system.

The distance between the brackets must remain limited to:

- 10 times the exterior diameter (with a maximum of 2 m) for horizontal pipes
- 15 times the exterior diameter (with a maximum of 3 m) for vertical pipes

2.2.4.2 Fixed point clamps

A fixed point clamp is a stronger suspension clamp with a metal half-shell that is fixed to the pipe as the clamp is tightened (for diameters from 40 mm to 315 mm).

It is also possible to create a fixed point with this clamp by applying a weld bead or electrofusion sleeve on either side of the clamp.

In addition to absorbing vertical loads (weight of filled pipes), fixed points also transmit expansion loads from the pipes to the construction or mounting rail.

Fixed points must be provided a minimum of every 10 m.

2.2.5 Mounting rail

Specially designed mounting rails are provided for suspending horizontal pipes. These rails are fixed to the structure at least every 2 metres.

2.2.6 Support shells

To increase the distance between two horizontal pipe suspension clamps, 3-metre-long galvanised steel support shells can also be used.

The pipe is fixed every 0.5 m to the shell using clamping bands. Suspension clamps are installed at a distance of 20 times the external diameter (with a maximum of 3 m).

2.3 Installation

2.3.1 Important note

The installation must be carried out in accordance with the isometric plan of the entire installation and the related computer calculation, drawn up by Wavin Belgium in accordance with the client's instructions; modification without prior agreement is not authorised (even after execution). Carrying out welding and fitting clamps in accordance with the manufacturer's instructions.

2.3.2 General

The use of components other than those belonging to the WAVIN QuickStream-UV system is not authorised.

The route taken by the pipes can be established by Wavin Belgium and will in any case be checked by the client. The diameters of the pipes in the drainage system are always determined by Wavin Belgium and submitted to the client for approval.

2.3.3 Roof drain

Always follow the recommendations in the installation instructions provided with the roof drain. The roof drains are placed in the locations provided for in the project.

The waterproof finish of the funnel installation in relation to the roof waterproofing must be carried out in accordance with the specifications of the waterproofing material manufacturer. The funnel is then connected to the drainage pipes, either directly to a column or to a horizontal collector pipe connected to a vertical pipe.

Temporary measures should be taken to avoid any build-up of water on the roof and in the building before completing the drainage installation (see, among others, the installation guidelines).

2.3.4 Pipes

2.3.4.1 General

The isometric drawing produced by the manufacturer shows the layout of the installation and must be adhered to. The list of equipment provided indicates the hoses and accessories to be used.

2.3.4.2 Pipe connections

The pipes are connected only by:

- butt welds,
- electric welds (for 40 mm, 50 mm and 56 mm diameters, electric welding fittings should preferably be used, as the pressure loss in the fitting is lower than in the case of butt-welded fittings), or by
- expansion joints (long sleeves to be fitted over the sealing lips, to be used only in the places provided in the vertical parts of the installation, see also paragraph 2.3.4.3).

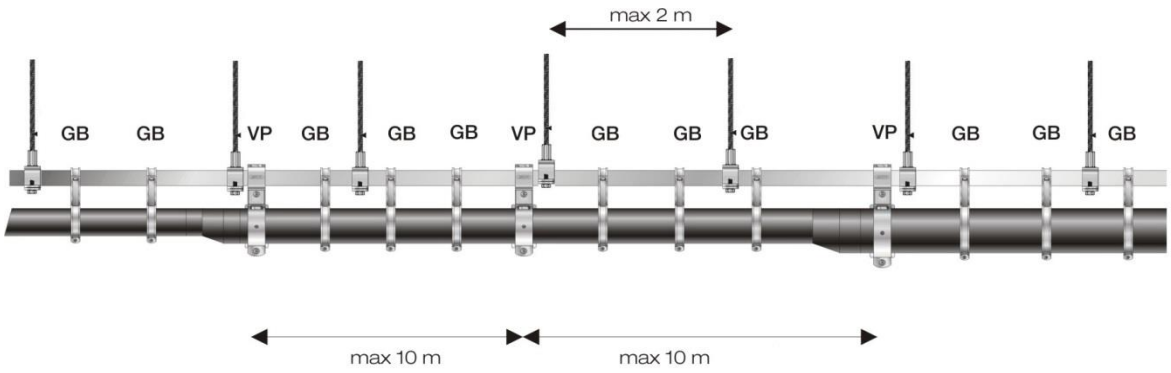
2.3.4.3 Dilatation devices and fitting of brackets

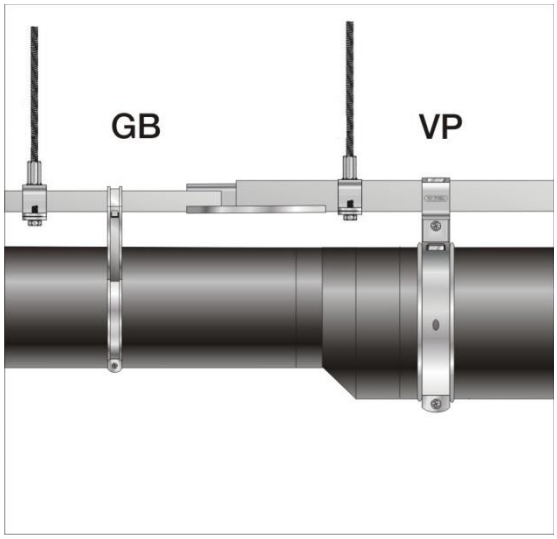
In the design and during installation, it is advisable to take into account the thermal length variations (between 20°C and 90°C, the expansion coefficient is 0.2 mm/m,K):

- in free assembly, one expansion sleeve is provided per floor (with a minimum of one expansion sleeve per 5 m) just above the floor slab, applied only to the vertical parts of the installation;
- in a fixed installation, the variation in length and the resulting stresses must be absorbed by the supporting structure (see § 2.2.4) or by mounting rails (see Fig. 2)

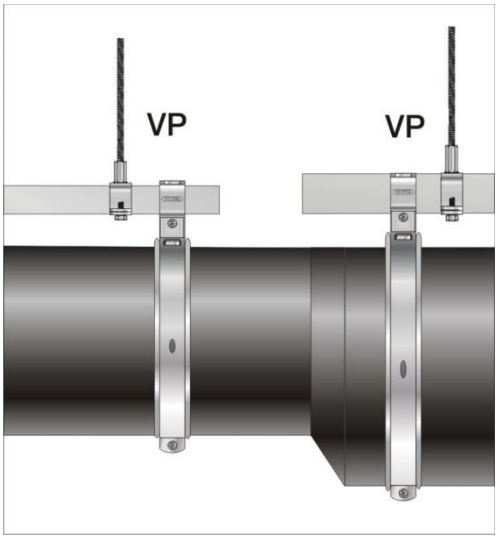
Table 5 : Main information about fitting brackets

Diameter	Maximal horizontal distance between the			Dimensions of the rail
	sliding brackets	fixed-point brackets	support points	
(mm)	(m)	(m)	(m)	(mm x mm)
40	0.80			30 x 30
50	0.80			30 x 30
63	0.80			30 x 30
75	0.80			30 x 30
90	0.90			30 x 30
110	1.10	10.00	2.00	30 x 30
125	1.25			30 x 30
160	1.60			30 x 30
200	2.00			30 x 45
250	2.00			30 x 45
315	2.00			41 x 62

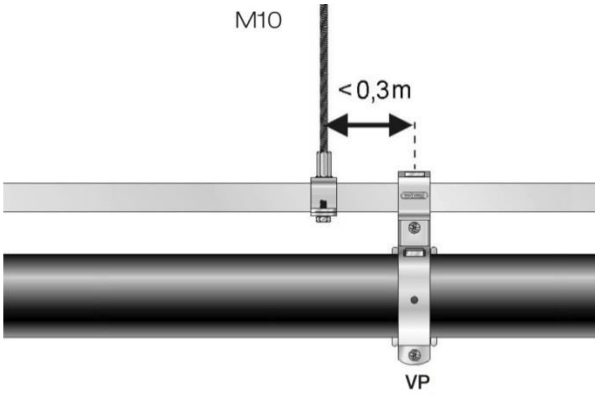




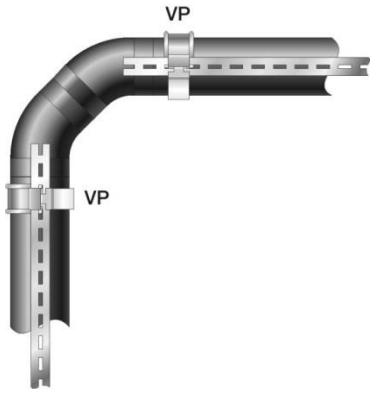
Fixing to the rail 30 x 30 – 30 x 45



Fixing to the rail 30 x 45 – 41 x 62



Fitting of brackets in relation to the assembly to the supporting structure



Execution of angles

Fig. 2 details for installing brackets

2.3.4.4 Connection of the funnel to the evacuation pipe

In the case of completely straight vertical pipes serving only one funnel, the connection is made by means of a 2.5 inch PE connector (sealed by means of a sealing ring) which is then connected by an electro-weldable sleeve to the next pipe. A fixed point attachment is made just below this sleeve. The other fixings are made as mentioned above.

In the case of a horizontal pipe (collector) serving several funnels, these are connected by butt-welding or by an electro-weldable sleeve with accessories such as elbows, Tee pieces and eccentric reducers (upper side of the reducer in the same plane as the upper side of the pipes). The other suspensions of this pipe and the vertical section that follows it are constructed as indicated above. At the point considered in the calculation as the beginning of the gravity drain, the vertical pipe is connected, in the case of free installation, by means of an expansion sleeve connected to the gravity drain. If necessary (for example at floor level), make provision for additional mechanical protection against accidental knocks.

2.3.5 Thermal and acoustic insulation

The products used for this purpose are not subject to approval.

If condensation is to be expected, it is advisable to provide thermal insulation for the pipe. Consult Wavin Belgium about this.

The increased speed of the water can cause noise pollution and hence may require acoustic insulation.

The bonding of these insulating products to pipes is only authorised with the manufacturer's prior agreement.

2.3.6 Heating strips

A heating strip can be applied to the roof drain. However, this strip will not come under this approval.

2.3.7 Leak testing

The system's watertightness is checked visually. An additional inspection will be carried when the first rain falls.

2.3.8 Maintenance and repairs

It is recommended that roof drains, overflows and any water spouts be inspected regularly (for example, after the leaves have fallen and after winter).

The drainage system is self-cleaning and therefore requires little maintenance; however, an annual inspection is essential.

Any damage can only be repaired with components belonging to this system and in accordance with the guidelines of Wavin Belgium.

2.4 Calculation method

2.4.1 Preliminary remarks

The full calculation and isometric drawing of the route are provided by Wavin Belgium and submitted to the project owner for approval.

No changes may be made to this diagram without prior agreement, and the installation must be carried out in accordance with this diagram. This also applies to subsequent alterations, adaptations and/or repairs.

2.4.2 Calculations

In outline, this method is carried out as follows and the following calculation values are accepted:

- Determination of the calculated rainfall value (in Belgium: 500 l/s.ha in accordance with NBN 306).
- Determination of roof areas from which rainwater will be drained through a single pipe system.
- Determination of the number of drains required and their distribution over the roof. The drainage capacity of a funnel used in the calculation is shown in the table in § 2.2.2.
- Determination of the isometric diagram with indication of the positioning of the roof drains and the layout of the pipes until the transition to a traditional system operating by gravity.
- Determination of the static pressure available per pipe.
- Estimation of the provisional length between the furthest drain and the beginning of the gravity-fed drainage system.
- Determination of pressure drops (linear pressure drops and localised pressure drops due to accessories, welded joints, etc.) and final determination of diameters.
- Checks of the hydraulic operation of all the components of the installation and the balanced operation of the roof drains. The minimum evacuation speed to be achieved is 0.7 m/s, the maximum speed in the pipes is limited to 6 m/s.
- Check that critical depression is not reached anywhere (900 mbar for PN 4).
- Indication of the components to be used.

The client also determines the number, distribution, drainage capacity and positioning of the essential overflows, as well as any water overflow spouts.

2.5 Suitability for use

2.5.1 Pipes and accessories

The suitability for use of the hoses and accessories is guaranteed by Benor certification (in accordance with NBN EN 1519).

2.5.2 WAVIN QuickStream vacuum rainwater drainage system

The suitability for use of the system has been verified on a test installation in accordance with the standard NBN EN 1253.

2.6 Instructions for use

The latest versions of the relevant references are provided in each case:

- The technical catalogue for the Wavin pipe system for indoor and outdoor drainage
- The Wavin QuickStream manual
- Wavin QuickStream operating instructions

CONDITIONS FOR USE AND MAINTENANCE OF THE ATG

A. This technical approval refers exclusively to the construction product mentioned on the cover page of this document.

B. The approval holder and, if applicable, the distributor are not permitted, in any way, to use the name of the UBAtc, its logo, the technical approval mark, the technical approval or the approval number to demand the evaluation of products that fail to comply with the Technical Approval or products, including their properties or characteristics, which do not form the object of the technical approval.

C. The technical approval is based on the available knowledge and technical/scientific information, together with information provided by the applicant and complemented by an approval inspection, which takes account of the specific nature of the product. However, users remain responsible for selecting the product, equipment or system, as described in the technical approval, for the specific use intended by the user.

D. Only the approval holder and, if applicable, the distributor may assert rights based on the technical approval.

E. Any references to the technical approval must be accompanied by an identification number ATG 2421 and the validity period.

F. The approval holder and, if applicable, the distributor is required to adhere to the inspection results described in the technical approval if they make information available to third parties. The UBAtc or certification body may take any steps that become appropriate if the approval holder [or the distributor] intentionally fails to do so (to a sufficient extent).

G. Information provided in any way by the approval holder, distributor or an approved contractor or by their representatives for (potential) users of the product, which is described in the technical approval (e.g. for clients, contractors, architects, consultants, designers, etc.) must not be incomplete or contradict the content of the technical approval or information mentioned in the technical approval.

H. The UBAtc, the approval body and the certification body cannot be held responsible for any damage or adverse consequences suffered by third parties that result from the failure of the approval holder or distributor to respect the provisions of this document.

I. This technical approval shall remain valid, provided the product, its manufacture and all processes that are appropriate for this purpose:

- are maintained, in order to achieve, as a minimum, the inspection results defined in the approval document;
- are continuously monitored by the certification body, which confirms that the certification continues to be valid;

If these conditions are no longer met, the technical approval shall be suspended or withdrawn and the approval document shall be deleted from the UBAtc website.

J. The approval holder is bound at all times to provide UBAtc, the approval body and the certification body with prompt or prior notification of any adjustments made to primary materials and products, installation instructions and/or the manufacturing, installation and equipment process. According to the information communicated, the UBAtc, the approval body and the certification body will judge whether it is necessary to adjust the technical approval.

This technical approval has been published by UBAtc, under the responsibility of the approval body SECO/Buildwise, and based on favourable feedback from the specialist “EQUIPMENT” group, issued on 14 June 2013.
In addition, the BCCA certification body has confirmed that the production process meets the conditions for certification and that a certification agreement was signed by the approval holder.

Date of issue: 21 May 2024.

For **UBAtc**, declaration of the validity of the approval process

Eric Winnepenninckx
Secretary general

Benny de Blaere
Director

For the approval and certification bodies

Buildwise

Olivier Vandooren
Director

SECO Belgium

Bernard Heiderscheidt
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BCCA

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UBAtc asbl has been notified by the FPS Economy within the framework of Regulation (EU) 305/2011.

UBAtc asbl is an accredited body and member of: