alwitra

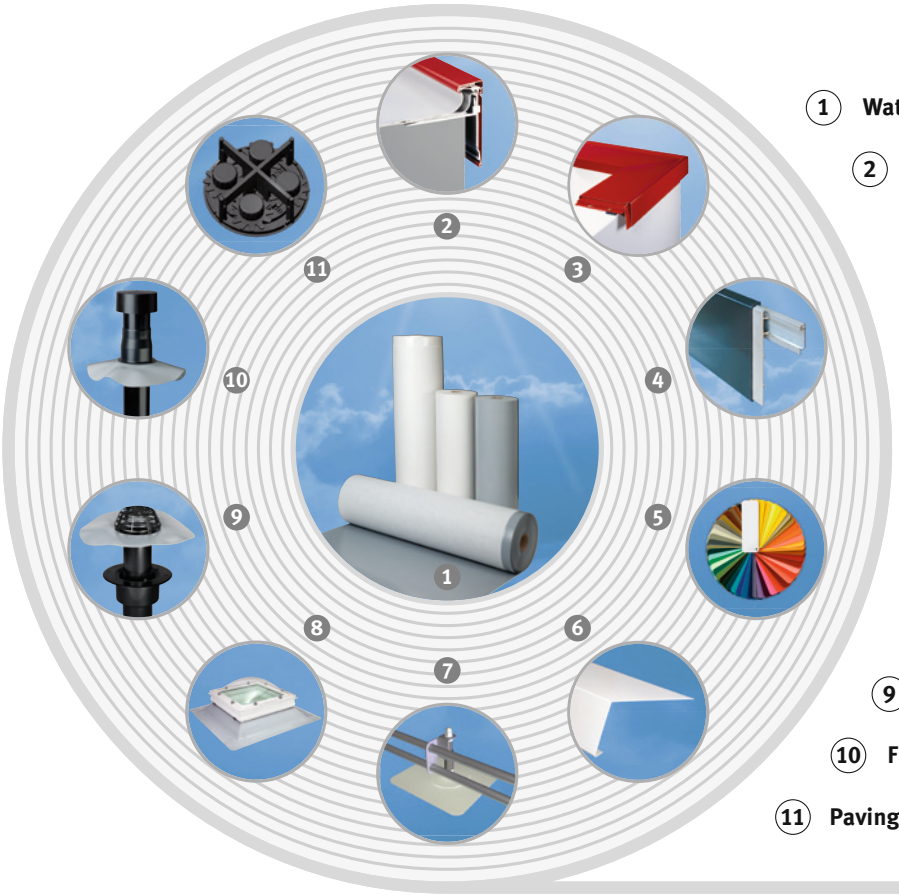
DIE DACHMARKE

Flat roof drainage

Rainwater outlets
Emergency outlets
Water spouts

alwitra waterproofing system

Flat roof drainage systems are part of the proven alwitra waterproofing system. This system comprises:



1. Waterproofing membranes
2. Roof edge trim profiles incl. colour coating
3. Wall capping profiles incl. colour coating
4. Wall flashing profiles incl. colour coating
5. Colour coating
6. Coated metal sheets
7. Snow guard profiles
8. Daylight systems
9. Flat roof drainage
10. Flat roof vents
11. Paving slab supports

Contents

alwitra rainwater and emergency outlets

alwitra rainwater outlet S 125/110 with extension piece

Ready for the next deluge - the new alwitra roof drainage system

The new alwitra roof drainage system

When planning and installing drainage systems on low slope roofs, the requirements of various standards and guidelines are generally binding.

In particular, DIN EN 12056 and DIN 1986-100 include specific requirements for roof drainage and emergency drainage systems. The new alwitra roof drainage system is the perfect solution for all drainage issues of low slope roofs.

alwitra GmbH & Co.

DIN EN 1253

The new alwitra roof drainage system is

- **adapted** to the specific requirements for rainwater and emergency outlets of low slope roofs (EnEV, DIN 1986-100)
- **extremely efficient:** Optimised inlet geometry providing both a high discharge rate and a low ponding height.
- **extremely tough:** Made of highly impact resistant polypropylene (PP).
- **comprehensive:** A vast product range offering numerous combination possibilities with a small number of individual parts.
- **flexible:** Along with the alwitra waterproofing membranes EVALON® and EVALASTIC®, almost any vapour control sheets can be professionally and securely flashed against.
- **safe:** The entire system has been testified by TÜV Rheinland LGA Products GmbH according to DIN EN 1253 and bears the German conformity mark „Ü“.

Dimensioning principles for roof drainage systems

General notes (excerpts from relevant standards and guidelines):

Roof drainage:

- **Dimensioning** of roof drainage systems has to be done **by way of hydraulic** calculation. A medium rain event, the so called local design rainfall ($r_{(5,5)}$)* is used as a dimensioning basis, taking into consideration cost effectiveness and self-cleaning capacity.
- At least one flat roof rainwater outlet must be installed at every low point, depending on slope, as well as on every separate roof area, depending on the roof geometry.
- Roof and emergency drainage systems, **in total**, must be capable of discharging a 5 minute centennial rainfall ($r_{(5,100)}$)* to be expected at the location of the building.
- The distance between the individual rainwater outlets installed at practically the same height level should not exceed 20m.

Emergency drainage:

- **Each** individual roof area **must have** an emergency drainage system.
- Emergency drainage can be done by emergency overflows (e.g. water spouts) or emergency outlets.
- At least one flat roof rainwater outlet must be installed at every low point, depending on slope. From every flat roof rainwater outlet, unimpeded discharge to an emergency outlet with sufficient discharge capacity must be ensured on the roof waterproofing.
- **In any case**, the emergency drainage system must be capable of discharging the **difference volume** between centennial rainfall ($r_{(5,100)}$)* and design rainfall ($r_{(5,5)}$)*. The water has to be freely discharged to an area not prone to flooding. In order to avoid any damage, this water must not be discharged to other roof areas, roof terraces or e.g. to areas near low-ground entrances to garages, basements etc.
- In the case of refurbishment, the discharge capacity of the existing drainage system needs to be verified. Furthermore, it must be verified whether an emergency drainage is in place, whether it is adequately sized and properly arranged.
- At concrete constructed roofs with designed and statically proven rainwater retention, there is no need for an emergency drainage system.
- Gravel or green roof, usually, means less rainwater outlets, the number of emergency outlets or overflows, however, will increase compared to roof areas without ballast.

Calculation:

The required discharge rate $Q_{(5,5)}$ [L/s] of the design rainfall ($r_{(5,5)}$) at a projected roof area A [m²] and a drainage coefficient C for the roof drainage is calculated as follows:

$$\mathbf{Q_{(5,5)} = r_{(5,5)} \cdot C \cdot A \cdot 1 / 10{,}000}$$

As regards emergency drainage, this leads to a minimum discharge rate $Q_{emerg.}$ [L/s] of

$$\mathbf{Q_{emerg.} = (r_{(5,100)} - r_{(5,5)} \cdot C) \cdot A \cdot 1/10{,}000}$$

* Reference locations see Appendix 1 to DIN 1986-100 or KostraDWD of the German Weather Service (DWD)

alwitra rainwater outlet vertical

(S 125/110 and SH 125/110 for DN 125 and DN 100)

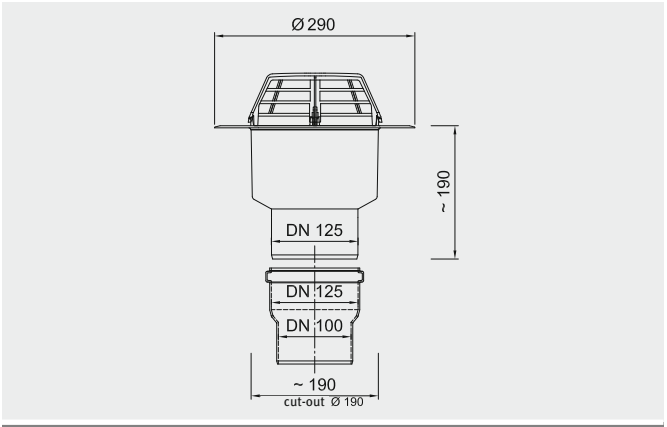
The thermally insulated **alwitra rainwater outlet S** (vertical) made of highly impact resistant polypropylene (PP) provides the connection between vertical drainage pipes and the waterproofing at cold or inverted roofs. Thus, pipes DN 125 (OD 125 mm) can be connected directly, pipes DN 100 (OD 110 mm) using the included reducer 125/110. Here, OD marks the outer diameter. Corresponding reducers/adapters are optionally available for drainage pipes DN 70 (OD 75 mm) or DN 150 (OD 160 mm). So, every rainwater outlet fits four different diameters (DN 70, DN 100, DN 125 and DN 150).

Flashing against the roof waterproofing is carried out with a special screw ring. In combination with an oval gasket and a corresponding connecting flange, a reliable and long-term waterproof connection is easily established between the roof waterproofing and the rainwater outlet.

On classic warm roofs, instead of the roof waterproofing, all standard vapour barriers can be flashed in the same way. Thermal insulation layers can be bridged by an extension piece. Extension pieces are available in various lengths (see chapter „alwitra extension pieces 200, 400, SL“).

An electrically heatable version, 230 V AC, is optionally available (see chapter „Heatable alwitra rainwater outlets“).

A combined leaf guard/gravel stop is included.



alwitra rainwater outlet vertical

alwitra rainwater outlet S 125/110

Technical data of alwitra rainwater outlet S 125/110

Class (leaf guard/gravel stop):	H 1.5
Outlet:	vertical
Material:	highly impact resistant PP
Colour:	black (optional connecting flange in the colour of the waterproofing membrane)
Required roof opening:	Ø 200 mm (Ø 190 mm possible)
Height:	approx. 190 mm (approx. 275 mm incl. installed reducer)
Outer diameter flange:	290 mm
Number of screw holes in flange:	4
Ø of screw holes in flange:	240 mm
Flange width:	approx. 50 mm
Connection diameter:	125 mm (DN 125) and 110 mm (DN 100); 75 mm (DN 70) with optional reducer; 160 mm (DN 150) with optional adapter
Outer diameter of optional connecting flange:	480 mm
Discharge rates:	see table p. 17

alwitra rainwater outlet horizontal

(W 75/110 and WH 75/110 for DN 70 and DN 100 as well as W 125 and WH 125 for DN 125)

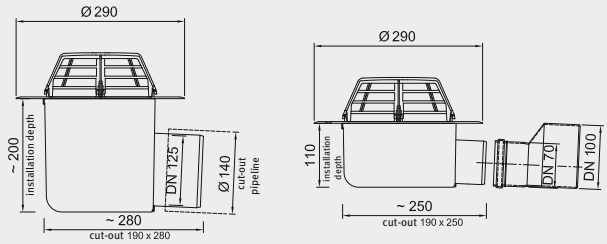
The thermally insulated **alwitra rainwater outlet W** (horizontal) made of highly impact resistant polypropylene (PP) provides the connection between horizontally installed drainage pipes and the waterproofing on cold or inverted roofs. It is available in two different sizes:

- W 125 for connecting to pipes DN 125 (OD 125 mm)
- W 75/110 with small overall height for connecting to pipes DN 70 (OD 75 mm) and - with included adapter 75/110 - to pipes DN 100 (OD 110 mm)

As with all rainwater outlets and extension pieces, flashing against the roof waterproofing is carried out with a special screw ring. In combination with an oval gasket and a corresponding connecting flange, a reliable and long-term waterproof connection is easily established between the roof waterproofing and the rainwater outlet.

On classic warm roofs, instead of the roof waterproofing, all standard vapour barriers can be flashed in the same way. Thermal insulation layers can be bridged by an extension piece. Extension pieces are available in various lengths (see chapter „alwitra extension pieces 200, 400, SL“).
Electrically heatable versions, 230 V AC, are optionally available (see chapter „Heatable alwitra rainwater outlets“).

A combined leaf guard/gravel stop is included.



alwitra rainwater outlet horizontal

alwitra rainwater outlet W 75/110

Technical data of alwitra rainwater outlet W 75/110 and WH 75/110 for DN 70 and DN 100 as well as W 125 and WH 125 for DN 125

Class (leaf guard/gravel stop):	H 1.5	
Outlet:	horizontal	
Material:	highly impact resistant PP	
Colour:	black (optional connecting flange in the colour of the waterproofing membrane)	
Required roof opening:	W 125	190 x 280 mm
	W 75/110	190 x 250 mm
Min. installation height:	W 125	approx. 200 mm
	W 75/110	approx. 110 mm
Outer diameter of flange:	290 mm	

Number of screw holes in flange:	3	
Ø of screw holes in flange:	240 mm	
Flange width:	approx. 50 mm	
Connection diameter:	W 125	125 mm (DN 125)
	W 75/110	75 mm (DN 70) 110 mm (DN 100) with included adapter 75/110
Outer diameter of optional connecting flange:	480 mm	
Discharge rates:	see table p. 17	

Heatable alwitra rainwater outlets

alwitra rainwater outlets are optionally available with electrical heating (230 V AC). The letter „H“ in the name indicates the heating feature of the outlet.

At the factory, the heating system is integrated into the rainwater outlets, consisting of a silicone heating mat protected against overheating by a built-in temperature switch.

Connection to 230 V AC power supply is carried out with a thermostat without using transformers or the like.

For controlling, an energy-saving thermostat with an outdoor temperature sensor is used, activating the heating only when required. This is done at two adjustable switching thresholds. The thermostat is activated at the critical temperature range just above freezing point. Thus, energy is consumed only when actually necessary.

Irrespective of the number of heatable rainwater outlets installed, only one thermostat is required

alwitra Thermostat with outdoor temperature sensor

Heatable alwitra rainwater outlet WH 75/110

Technical data of the thermostat

Mounting:	DIN rail mounting with external outdoor temperature sensor
Operating voltage:	230 V AC, ±10 %, 50 - 60 Hz
Power consumption:	3 VA
Temperature range „HIGH“:	+10 °C / 0 °C
Temperature range „LOW“:	0 / -15 °C
Output relay:	16 A changeover contact 250 V AC (ohmic load)
Protection class:	II
Degree of enclosure protection:	IP20 IP54 outdoor temperature sensor

Technical data of the heating

Operating voltage:	230 V AC, ±10 %, 50 - 60 Hz
Power:	10 VA
Protection class:	II
Degree of protection:	IP54
Connecting cable:	silicone, two-core, length approx. 100 cm

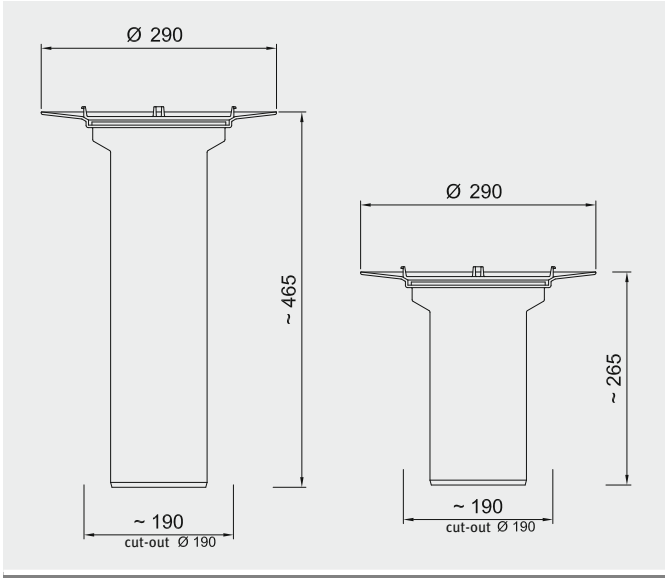
alwitra extension pieces 200, 400, SL

The alwitra extension pieces are used for bridging thermal insulation layers of warm roofs and are available in three lengths, depending on the thermal insulation layer thickness:

- extension piece 200
  for thermal insulation layer thicknesses from 50 - 200 mm
- extension piece 400
  for thermal insulation layer thicknesses from 50 - 400 mm
- extension piece SL
  individual length according to customer specification

alwitra extension pieces are made of highly impact resistant polypropylene (PP). As with alwitra rainwater outlets, flashing against the roof waterproofing is carried out with a special screw ring. alwitra extension pieces are compatible with all alwitra rainwater outlets and provide backflow-proof connection by simply inserting them into the rainwater outlet. When used in combination with alwitra rainwater outlet S or SH, the extension piece usually requires no cutting to length.

For waterproofing membranes EVALON® or EVALASTIC®, a corresponding connecting flange is already included.



alwitra extension piece

alwitra extension piece 400

Technical data of the alwitra extension piece

Material:	highly impact resistant PP
Colour:	black (connecting flange in the colour of the waterproofing membrane)
Min. installation height:	approx. 35 mm
Max. installation height:	200: approx. 200 mm thermal insulation thickness 400: approx. 400 mm thermal insulation thickness SL: according to customer specification
Outer diameter Flange:	290 mm
Flange width:	approx. 50 mm
Connection diameter:	approx. 120 mm (fitting all alwitra rainwater outlets)
Outer diameter of connecting flange:	480 mm
Discharge rates:	see table p. 17

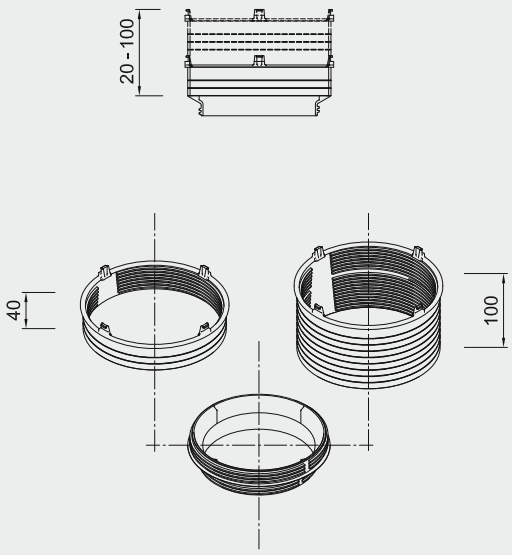
alwitra emergency outlets

According to the requirements stipulated in DIN 1986-100, emergency drainage systems are mandatory for flat roofs with internal drainage. This applies also to refurbishment.

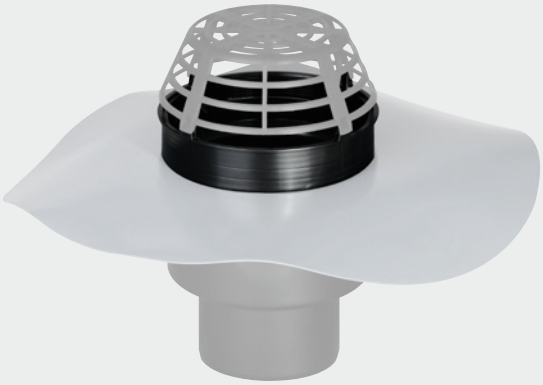
To meet these requirements, alwitra rainwater outlets and extension pieces are designed as to be easily converted into emergency outlets with a specified ponding height.

The required emergency outlet sockets are available in three different versions and vary only in the potential ponding height: A ponding height of 20 - 40 mm at the „emergency outlet socket 40“ can be achieved by cutting to length on site. To this end, the extension pieces are marked (grooves) at intervals of 10 mm. The „emergency outlet socket 100“ can be adjusted to a ponding height of 20 - 100 mm.

For the SL version, pieces are delivered ready-to-install for a ponding height of 20 - 100 mm according to customer specification.



alwitra emergency outlet socket



alwitra emergency outlet socket 40, mounted to alwitra rainwater outlet S 125/110

Technical data of the emergency outlet socket

Material:	highly impact resistant PP
Colour:	black
Min. ponding height:	20 mm
Max. ponding height:	40: approx. 40 mm 100: approx. 100 mm SL: according to customer specification preadjusted from 20 - 100 mm

Outer diameter of optional connecting flange:	480 mm
Discharge rates:	see table p. 17

alwitra terrace grate

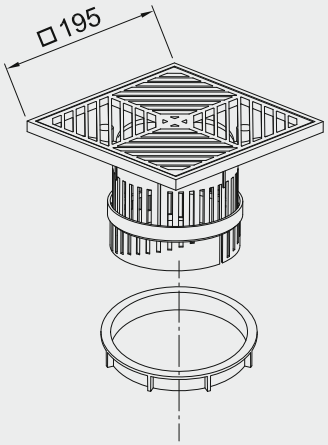
Combined with the height-adjustable alwitra terrace grate made of stainless aluminium, all alwitra rainwater outlets can be installed on used roof areas with waterproofing (e.g. roof terraces).

The grate is installed in place of the leaf guard/gravel stop, ensuring drainage at paving and waterproofing level.

By turning the lift ring, the installation height (overall height of the paving above the waterproofing) is adjustable from approx. 67 - 90 mm in steps of 3 mm.

For installation heights › 90 mm, additional lift rings are optionally available, providing for additional height of approx. 36 mm per ring.

The alwitra terrace grate is the ideal complement for roof areas covered with paving slabs installed on the proven alwitra paving slab supports PA 20 plus.



alwitra terrace grate

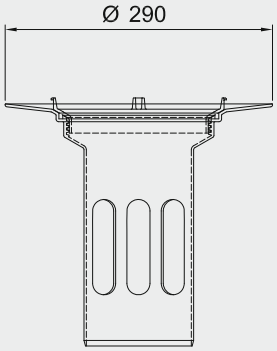
alwitra terrace grate on alwitra rainwater outlet W 75/110

Technical Data of the alwitra terrace grate

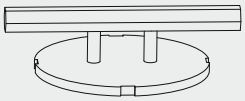
Class:	K3
Material:	aluminium, with locating ring made of polypropylene (PP)
Colour:	aluminium
Dimensions	approx. 195 x 195 mm (for an opening of 200 x 200 mm)
Installation height:	approx. 67 - 90 mm, adjustable in steps of 3 mm (without additional lift ring)
Additional height per optional lift ring:	approx. 36 mm
Discharge rates:	see table p. 17

Accessories for alwitra rainwater outlets

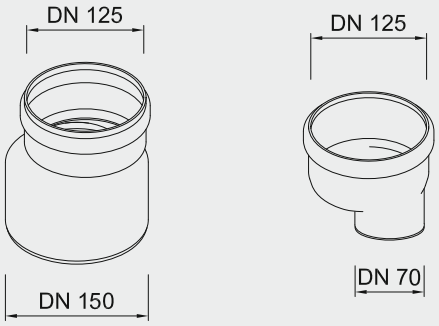
Numerous optional accessories are available to complement the drainage system of alwitra rainwater/emergency outlets.



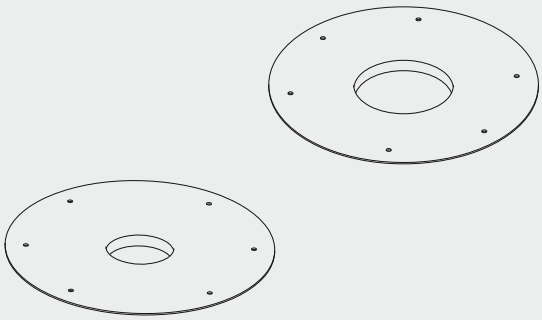
alwitra extension piece UKD 200 and UKD 400 for inverted roofs



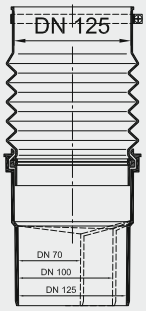
alwitra screwing aid for secure installation of the screw ring



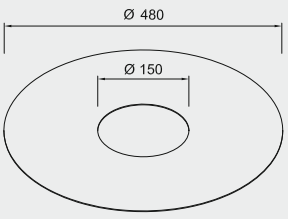
alwitra reducers/adapters



alwitra base plate/refurbishment plate



alwitra bellows

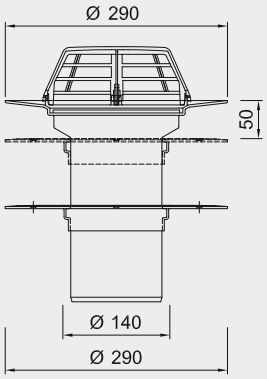


alwitra connecting flange

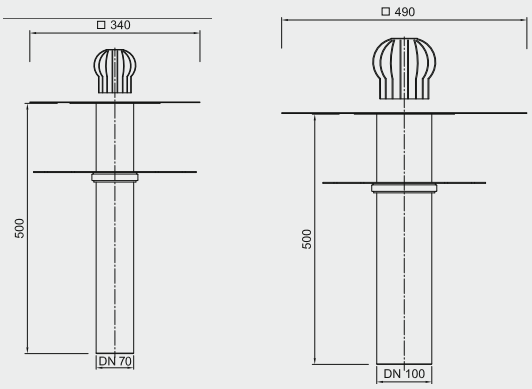
alwitra refurbishment rainwater outlets

In the case of refurbishment with additional thermal insulation, where it is not possible to replace existing outlets, it is recommended to install alwitra refurbishment rainwater outlets. Using the custom-fit refurbishment plate (DN 125 made of PP, DN 100 and DN 70 made of aluminium), which is flashed against the existing waterproofing without back flow, reliable installation of the refurbishment piece is guaranteed. Flashing against the new waterproofing is carried out either with connecting flange and screw ring (refurbishment rainwater outlet 125) or with factory-fitted connecting flange (refurbishment rainwater outlet 75, 110).

alwitra refurbishment rainwater outlet 125



alwitra refurbishment rainwater outlet 125



alwitra refurbishment rainwater outlet 75 and 110

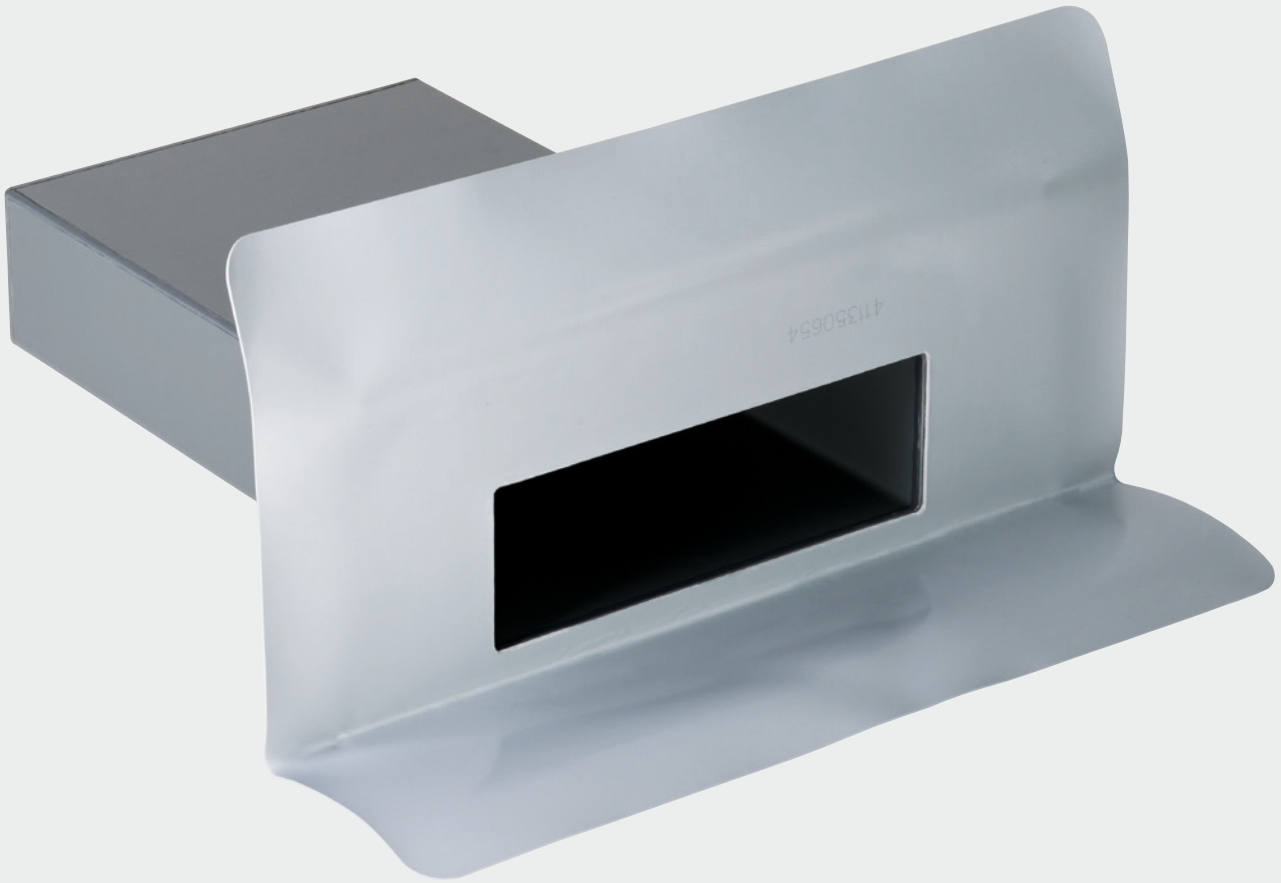
Technical Data for alwitra refurbishment rainwater outlet 125 (EVALON® / EVALASTIC®)

Material:	highly impact resistant PP
Min. thickness of additional insulation:	approx. 50 mm
Max. thickness of additional insulation:	approx. 200 mm
Outer diameter of flange:	290 mm
Flange width:	approx. 50 mm
Outer diameter of connecting flange:	480 mm
Refurbishment plate:	PP black
Discharge rates:	see table p. 17

Technical Data for alwitra refurbishment rainwater outlet 75 and 110 (EVALON®)

Material:	PVC
Colour:	grey
Min. thickness of additional insulation:	approx. 10 mm
Max. thickness of additional insulation:	approx. 300 mm
Connecting flange:	factory welded, in the colour of the waterproofing membrane 75: 180 x 180 mm 110: 230 x 230 mm
Refurbishment plate:	aluminium
Discharge rates:	see table p. 17

alwitra water spouts



alwitra water spout SW rectangular 100/300

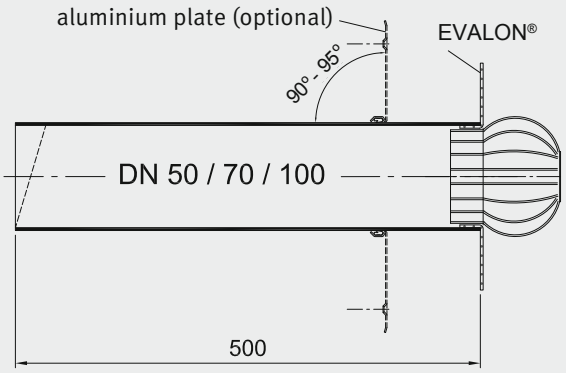
alwitra water spouts

As an emergency overflow, alwitra water spouts are part of the alwitra roof and emergency drainage system for non-used or extensive green roof areas covered with EVALON® waterproofing membranes. They can be installed horizontally through the parapet. alwitra water spouts are made of rigid PVC and, depending on the version, are equipped either with a welding flange for EVALON® waterproofing membranes or with a factory-fitted connecting flange made of EVALON®. Along with the alwitra water spouts for pipes with various diameters, rectangular versions are also available. These rectangular water spouts feature particularly high discharge rates at low ponding heights. The discharge rates are indicated in the table at p. 17

alwitra water spout S

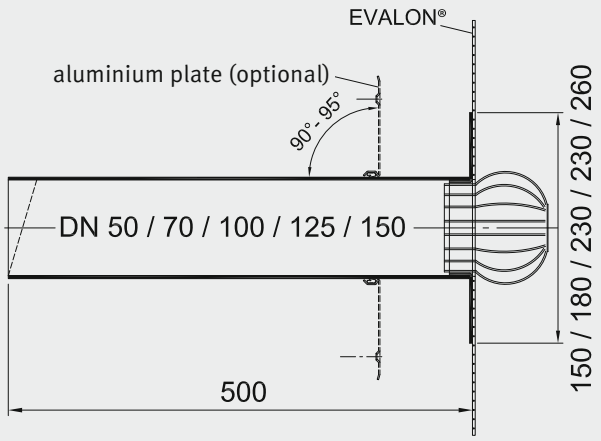
Technical Data for alwitra water spout S
with connecting flange made of EVALON®,
as emergency overflow with open outlet,
with standard DN pipe sizes,
for EVALON® roof waterproofings

Material:	rigid PVC, impact resistant, UV stabilised
Pipe dimensions:	DN 50 (OD 50 mm), DN 70 (OD 75 mm), DN 100 (OD 110 mm)
Pipe length:	500 mm
Connecting flange:	EVALON® 1.5 mm
Colour:	pipe iron grey (~ RAL 7011); connecting flange white, light grey, slate grey



Technical Data for alwitra water spout SF
with base plate and connecting flange
made of EVALON®, as emergency overflow
with open outlet, with standard DN pipe sizes,
for EVALON® roof waterproofings

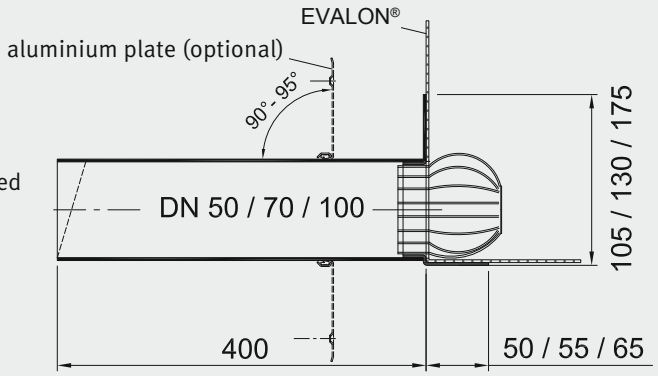
Material:	rigid PVC, impact resistant, UV stabilised
Pipe dimensions:	DN 50 (OD 50 mm), DN 70 (OD 75 mm), DN 100 (OD 110 mm), DN 125 (OD 125 mm), DN 150 (OD 160 mm)
Pipe length:	500 mm
Connecting flange:	EVALON® 1.5 mm
Colour:	pipe iron grey (~ RAL 7011); connecting flange white, light grey, slate grey



alwitra water spouts

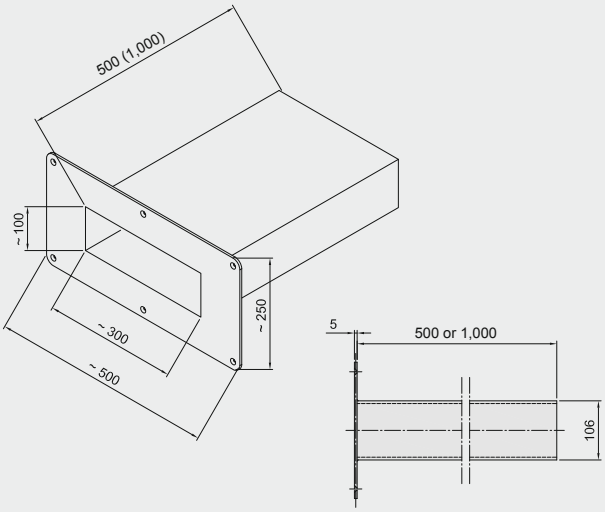
Technical Data for alwitra water spout SW
with angled flange and connecting flange,
as emergency overflow with open outlet,
with standard DN pipe sizes,
for EVALON® roof waterproofings

Material:	rigid PVC, impact resistant, UV stabilised
Pipe dimensions:	DN 50 (OD 50 mm), DN 70 (OD 75 mm), DN 100 (OD 110 mm)
Pipe length:	400 mm
Connecting flange:	EVALON® 1.5 mm
Colour:	pipe iron grey (~ RAL 7011); connecting flange white, light grey, slate grey



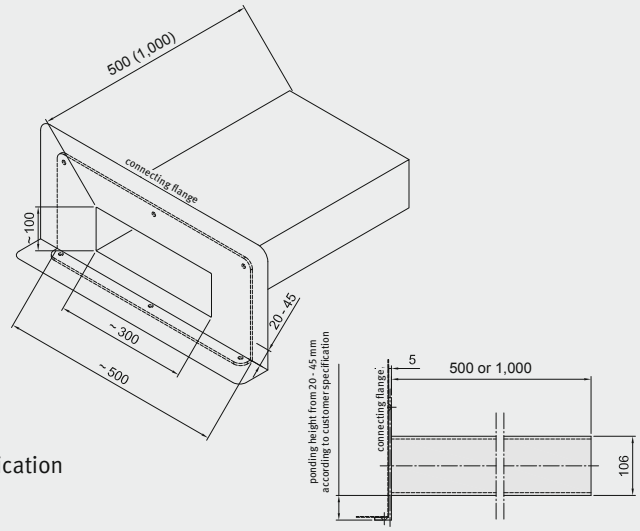
Technical Data for alwitra water spout SF rectangular
with rigid PVC welding flange,
as emergency overflow with open outlet,
with rectangular pipe cross-sections,
for EVALON® roof waterproofings

Material:	rigid PVC, impact resistant, UV stabilised
Pipe dimensions:	100 x 300 mm, 100 x 500 mm
Pipe length:	500 mm, 1,000 mm, according to customer specification up to 1,000 mm
Colour:	pipe iron grey (~ RAL 7011);
Optional:	connecting flange made of EVALON® white, light grey, slate grey



Technical Data for alwitra water spout SW rectangular
with angled flange and connecting flange made of EVALON®,
as emergency overflow with a ponding height from 20 - 45 mm
according to customer specification and with open outlet,
with rectangular pipe cross-sections, for EVALON®
roof waterproofings

Material:	rigid PVC, impact resistant, UV stabilised
Pipe dimensions:	100 x 300 mm, 100 x 500 mm
Pipe length:	500 mm, 1,000 mm, according to customer specification up to 1,000 mm
Ponding height:	factory-adjusted ponding height from 20 - 45 mm according to customer specification
Colour:	pipe iron grey (~ RAL 7011); connecting flange white, light grey, slate grey



Discharge rates – Rainwater outlets, emergency outlets, refurbishment rainwater outlets, water spouts

Ponding height [mm]								
5 mm	10 mm	15 mm	25 mm	35 mm	45 mm			
0.70 L/s	1.50 L/s	2.30 L/s	4.10 L/s	**6.90 L/s**	9.20 L/s	vertical DN 70	DN 70 (OD 75)	vertical S and SH
0.70 L/s	1.60 L/s	2.50 L/s	4.50 L/s	**7.50 L/s**	10.20 L/s	vertical DN 70, with extension piece		
0.50 L/s	1.20 L/s	2.30 L/s	4.10 L/s	**5.40 L/s**	-	vertical DN 70, with terrace grate		
0.70 L/s	1.65 L/s	2.60 L/s	4.50 L/s	**7.00 L/s**	9.10 L/s	vertical DN 70, as emergency outlet		
0.70 L/s	1.50 L/s	2.30 L/s	4.00 L/s	**6.90 L/s**	9.20 L/s	vertical DN 100	DN 100 (OD 110)	
0.70 L/s	1.50 L/s	2.30 L/s	4.30 L/s	**7.50 L/s**	8.30 L/s	vertical DN 100, with extension piece		
0.70 L/s	1.70 L/s	2.70 L/s	4.60 L/s	**7.50 L/s**	8.30 L/s	vertical DN 100, with terrace grate		
0.70 L/s	1.65 L/s	2.60 L/s	4.40 L/s	**7.20 L/s**	9.60 L/s	vertical DN 100, as emergency outlet		
0.70 L/s	1.45 L/s	2.20 L/s	3.90 L/s	6.90 L/s	**9.20 L/s**	vertical DN 125	DN 125 (OD 125)	
0.70 L/s	1.45 L/s	2.20 L/s	3.90 L/s	7.00 L/s	**9.60 L/s**	vertical DN 125, with extension piece		
0.70 L/s	1.70 L/s	2.70 L/s	4.60 L/s	7.00 L/s	**8.30 L/s**	vertical DN 125, with terrace grate		
0.70 L/s	1.60 L/s	2.50 L/s	4.40 L/s	7.20 L/s	**9.60 L/s**	vertical DN 125, as emergency outlet		
0.70 L/s	1.50 L/s	2.30 L/s	3.90 L/s	6.69 L/s	**9.30 L/s**	vertical DN 150	DN 150 (OD 160)	
0.70 L/s	1.60 L/s	2.50 L/s	4.50 L/s	7.30 L/s	**10.00 L/s**	vertical DN 150, with extension piece		
0.70 L/s	1.70 L/s	2.70 L/s	4.60 L/s	7.00 L/s	**8.30 L/s**	vertical DN 150, with terrace grate		
0.70 L/s	1.65 L/s	2.60 L/s	4.80 L/s	7.30 L/s	**9.60 L/s**	vertical DN 150, as emergency outlet		
0.60 L/s	1.45 L/s	2.30 L/s	3.10 L/s	**6.47 L/s**	8.82 L/s	horizontal DN 70	DN 70 (OD 75)	horizontal W and WH
0.70 L/s	1.70 L/s	2.70 L/s	4.30 L/s	**7.40 L/s**	10.00 L/s	horizontal DN 70, with extension piece		
0.46 L/s	1.15 L/s	2.30 L/s	4.10 L/s	**5.35 L/s**	5.68 L/s	horizontal DN 70, with terrace grate		
0.60 L/s	1.60 L/s	2.60 L/s	4.50 L/s	**7.00 L/s**	9.10 L/s	horizontal DN 70, as emergency outlet		
0.60 L/s	1.30 L/s	2.00 L/s	3.80 L/s	**5.20 L/s**	6.13 L/s	horizontal DN 100	DN 100 (OD 110)	
0.50 L/s	1.40 L/s	2.30 L/s	4.10 L/s	**6.00 L/s**	6.20 L/s	horizontal DN 100, with extension piece		
0.60 L/s	1.50 L/s	2.50 L/s	3.64 L/s	**4.79 L/s**	5.01 L/s	horizontal DN 100, with terrace grate		
0.70 L/s	1.65 L/s	2.60 L/s	4.40 L/s	**7.20 L/s**	9.60 L/s	horizontal DN 100, as emergency outlet		
0.50 L/s	1.40 L/s	2.30 L/s	4.20 L/s	6.80 L/s	**9.88 L/s**	horizontal DN 125	DN 125 (OD 125)	
0.60 L/s	1.50 L/s	2.40 L/s	4.40 L/s	7.20 L/s	**9.60 L/s**	horizontal DN 125, with extension piece		
0.60 L/s	1.50 L/s	2.50 L/s	3.94 L/s	4.81 L/s	**5.01 L/s**	horizontal DN 125, with terrace grate		
0.50 L/s	1.45 L/s	2.40 L/s	4.40 L/s	7.20 L/s	**9.20 L/s**	horizontal DN 125, as emergency outlet		
0.50 L/s	0.83 L/s	1.15 L/s	2.40 L/s	**4.25 L/s**	6.80 L/s	refurbishment vertical DN 70		refurbish-ment
0.30 L/s	1.00 L/s	1.70 L/s	3.50 L/s	**5.60 L/s**	7.90 L/s	refurbishment vertical DN 100		
0.70 L/s	1.45 L/s	2.20 L/s	3.90 L/s	7.00 L/s	**9.60 L/s**	refurbishment vertical DN 125		
0.03 L/s	0.06 L/s	0.09 L/s	0.23 L/s	**0.43 L/s**	0.63 L/s	water spout S DN 50		emergency overflows (water spouts)
0.05 L/s	0.10 L/s	0.16 L/s	0.35 L/s	**0.62 L/s**	0.93 L/s	water spout S DN 70		
0.06 L/s	0.13 L/s	0.21 L/s	0.65 L/s	**0.83 L/s**	1.26 L/s	water spout S DN 100		
-	-	-	0.22 L/s	**0.37 L/s**	-	water spout SF 50		
-	-	0.11 L/s	0.30 L/s	**0.55 L/s**	0.85 L/s	water spout SF 70		
-	-	0.14 L/s	0.39 L/s	**0.74 L/s**	1.17 L/s	water spout SF 100		
-	-	0.15 L/s	0.42 L/s	**0.79 L/s**	1.26 L/s	water spout SF 125		
-	-	0.18 L/s	0.48 L/s	**0.93 L/s**	1.49 L/s	water spout SF 150		
-	-	-	0.22 L/s	**0.37 L/s**	-	water spout SW 50		
-	-	0.11 L/s	0.30 L/s	**0.55 L/s**	0.85 L/s	water spout SW 70		
-	-	0.14 L/s	0.39 L/s	**0.74 L/s**	1.17 L/s	water spout SW 100		
0.37 L/s	0.74 L/s	1.14 L/s	2.02 L/s	**3.13 L/s**	4.42 L/s	water spout SF rectangular 100/300[1]		
0.55 L/s	1.10 L/s	1.90 L/s	3.59 L/s	**5.43 L/s**	7.67 L/s	water spout SF rectangular 100/500[1]		
0.37 L/s	0.74 L/s	1.14 L/s	2.02 L/s	**3.13 L/s**	4.42 L/s	water spout SW rectangular 100/300[1]		
0.55 L/s	1.10 L/s	1.90 L/s	3.59 L/s	**5.43 L/s**	7.67 L/s	water spout SW rectangular 100/500[1]		

All discharge rates in litres/second [L/s] with leaf guard/gravel stop or wired domed leaf guard installed - No rate determined [1]Open inlet

Overview of alwitra rainwater and emergency outlets

Vertical outlet
also available with heating 230 V AC

DN 70 (OD 75)	**DN 100 / DN 125** (OD 100 / OD 125)	**DN 150** (OD 160)
S 110/125, SH 110/125	S 110/125, SH 110/125	S 110/125, SH 110/125
		
DN 125 (OD 125) + reducer 125/75	DN 125 (OD 125) incl. reducer to DN 100 (OD 110)	DN 125 (OD 125) + adapter 125/160
Extension pieces (fitting all alwitra rainwater outlets)		
Extension piece 200	Extension piece 400	Extension piece SL
		
for thermal insulation thicknesses from 50 - 200 mm	for thermal insulation thicknesses from 50 - 400 mm	for thermal insulation thicknesses according to customer specification
Connecting flange (fitting all alwitra rainwater outlets and extension pieces)		
Connecting flange EVALON® light grey	Connecting flange EVALON® white	Connecting flange EVALON® slate grey
		
Thickness 1.5 mm, Ø 480 mm	Thickness 1.5 mm, Ø 480 mm	Thickness 1.5 mm, Ø 480 mm
Accessories (fitting all alwitra rainwater outlets and extension pieces)		
Emergency outlet 40	Emergency outlet 100	Emergency outlet SL
		
for extending all alwitra rainwater outlets and extension pieces with a ponding height of 20 - 40 mm	for extending all alwitra rainwater outlets and extension pieces with a ponding height of 20 - 100 mm	for extending all alwitra rainwater outlets and extension pieces with a ponding height according to customer specification

Horizontal outlet

also available with heating 230 V AC

DN 70 / DN 100

(OD 75 / OD 110)

W 75/110, WH 75/110

DN 70 (OD 75) incl. adapter to DN 100 (OD 110)

DN 125

(OD 125)

W 125, WH 125

DN 125 (OD 125)

Extension pieces (fitting all alwitra rainwater outlets)

Extension pieces UKD 200

for thermal insulation thicknesses at inverted roofs from 50 - 200 mm

Extension pieces UKD 400

for thermal insulation thicknesses at inverted roofs from 200 - 400 mm

Connecting flange (fitting all alwitra rainwater outlets and extension pieces)

Connecting flange EVALON®
various colours (on request)

Thickness 1.5 mm, Ø 480 mm

Connecting flange EVALASTIC® grey

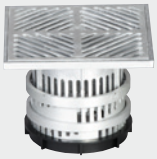
Thickness 1.5 mm, Ø 480 mm

Connecting flange bitumen

Thickness 4,0 mm, Ø 500 mm

Accessories (fitting all alwitra rainwater outlets and extension pieces)

Terrace grate



made of aluminium, height-adjustable

alwitra

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