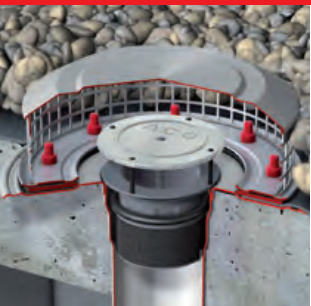




CLICK ANYWHERE on THIS PAGE to FLAT & LOW-SLOPE ROOF DRAIN SYSTEMS at [InspectApedia.com](https://www.inspectApedia.com)

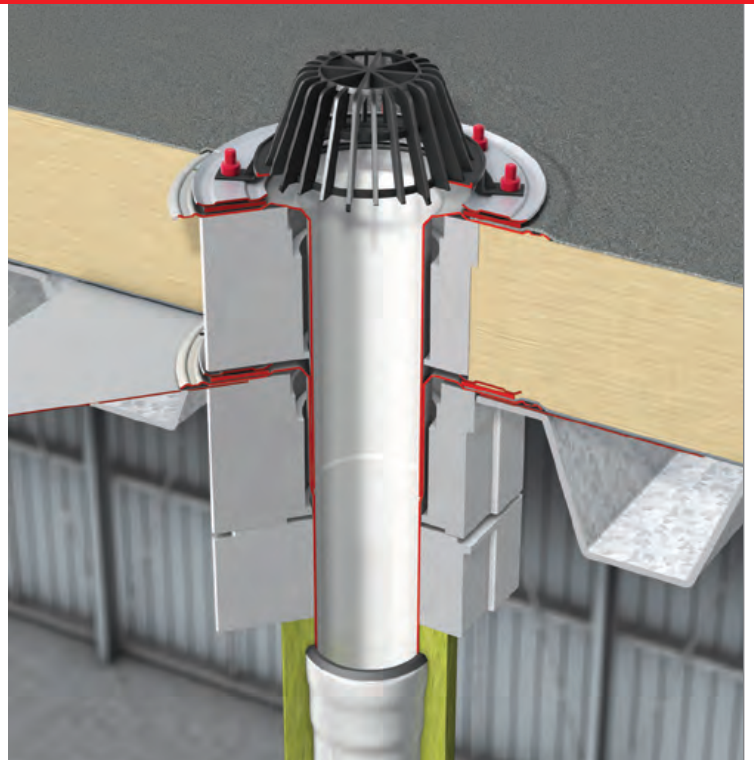
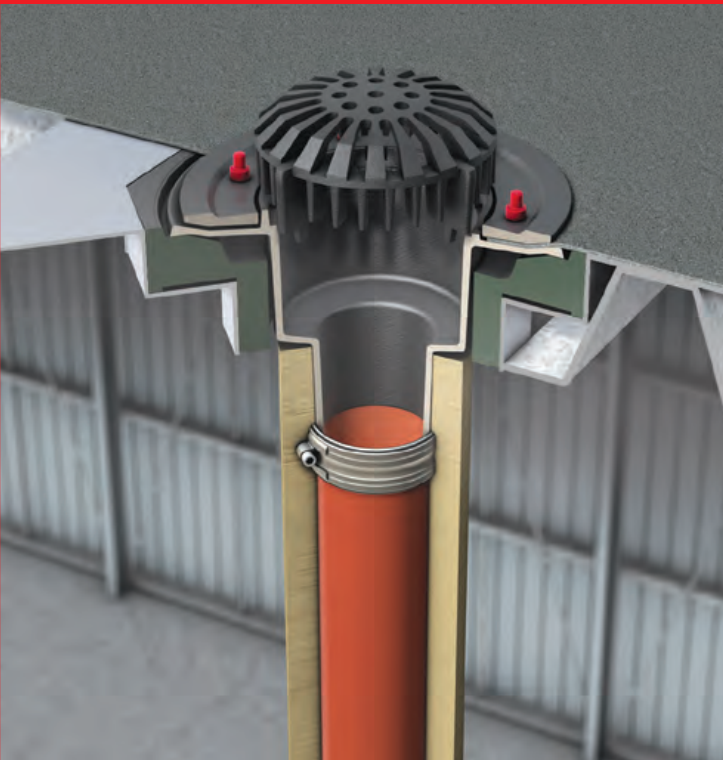


**System solutions for
Flat roofs - Gravity-drainage**





Gravity drainage



ACO Spin flat roof drains for gravity drainage

The roof forms the upper boundary of a building. The roof seals are very important because of the severe stress the roof is exposed to from precipitation, strongly fluctuating climatic influences, and a whole range of traffic loads and stresses.

Roof structures can therefore be divided up into two groups depending on the seal:

- Flat roof structures with one seal
- Flat roof structures with two seals

The Spin flat roof drains can be used in all types of roofs thanks to their modular system. In roofs with two seals, the drain body is integrated with the vapour seal, whilst the riser is incorporated in the roof sealing membrane. The drains are fitted with compression sealing flanges which allow them to be integrated within all standard sealing membranes. The drain bodies are installed in special



A stainless steel flat roof drain for two sealing membranes.

insulating bodies to prevent the formation of condensation water around the drain body – this is particularly important for thermally-insulated flat roofs, green roofs and parking decks.

- Planning must comply with EN 12056-3, as well as the flat roof regulations and, where applicable, the green roof regulations.



Flat roof with a gravel protection layer

Roof drainage

General

Drainage can be implemented using roof drains or roof gutters hung in front of the roofs with appropriate eaves. Internal drainage is recommended for roofs with gentle slopes (up to 5°).

Roof surfaces with internal drainage systems must have at least two drains or one drain and a safety overflow independent of the size of the roof.

Roof drains

The drains of internal roof drainage systems must be arranged at the lowest points of the roof and capable of being connected to the roof seal with a permanent and watertight joint.

Roof drains must generally be positioned at least 30 cm away from other installations on the roof, joints or other ducts penetrating the roof sealing membrane. They must also be installed so that they create no thermal bridge in the construction of the roof.

Roof drains must be freely accessible for maintenance purposes.

Roof drains must be fastened within the substructure.

The flanges in roof drains should be incorporated within the substructure where possible. Two-piece roof drains should be used in thermally insulated roof structures with vapour seals.

Thermally insulated roof drains must be installed if heated spaces or used rooms are located directly below the ceiling.

Roof drains are integrated within the roof sealing membranes by fixed and loose flanges, adhesive flanges or integrated connecting membranes. The connecting membranes must be suitable for the specific roof sealing membrane used in each case.

Pre-fabricated roof drains must comply with EN 1253.

In the case of green roofs, there should be no planting in the area immediately around the roof drains.

Emergency drainage

Flat roof drainage systems must always be laid out in accordance with the reference rainfall figures. The reference rainfall can be exceeded during periods of heavy rainfall. This can cause water to pool on the surface of a flat roof.

An independent emergency drainage system for flat roof drains is therefore required in accordance with EN 12056-3. This emergency drainage system must enable rainwater to be drained safely onto empty surfaces. It is forbidden to connect the emergency drainage system to the regular drainage system.

Fire protection

Flat roof drains with fire protection are required on flat roofs in accordance with state building regulations if the separation between the roof drains and a rising wall in these areas is less than 5 metres (walls with openings or with no fire resistance capacity).

In this case, an appropriate fire protection roof drain without an odour seal must be installed. This prevents the spread of fire and smoke into neighbouring parts of the building.

Special attention should be given to the fire resistance class of the roof structure. The roof drain must have at least the same fire resistance class or a higher fire resistance class than the ceiling.

Calculating the number of flat roof drains and emergency roof drains required for gravity drainage systems

The following parameters are specified in DIN 1986-100 (version May 2008) Chapter 14.2.1, to calculate the number of drains required for a flat roof drainage system:

- The size of the effective roof in square metres (A)
- Type of roof – flow coefficient (C)
- Local reference rainfall in litres/second and hectare $l/(s \cdot ha)$ ($r_{(D,T)}$)

Effective roof area

In accordance with DIN 1986-100, Chapter 14.2.4.1, calculating the effective roof area must be based on the roof area projected onto the floor plan.

Flow coefficient

The flow coefficient (C) is determined by the type of roof to be drained. This is selected from Table 9 in DIN 1986-100. The following is a short extract:

Type of drained area	Flow coefficient (C)
Membrane roof	1.0
Concrete roof	1.0
Gravel roof	0.5
Extensive greening under 10 cm layered structure	0.5
Intensive greening	0.3

Reference rainfall

The variable reference rainfall $r_{(D,T)}$ consists of two parameters:

D = rainfall duration in minutes

T = annularity of the reference rainfall

The reference rainfall for flat roof drainage systems is based on a rainfall period of 5 minutes and an annularity of five years.

Calculations therefore refer to a reference rainfall of $r_{(5,5)}$.

The relevant reference rainfall for rainwater drainage in gravity drainage systems $r_{(5,5)}$ is taken from KOSTRA/DWD 2000¹ in accordance with the specific location.

Abbreviations are explained as follows:

Reference rainfall	Duration of the rainfall event	Annularity of the rainfall event	Application
$r_{(5,5)}$	5 minutes	Every 5 years	Rainfall discharge for gravity drainage systems
$r_{(5,100)}$	5 minutes	Every 100 years	Rainwater discharge for emergency drainage systems

Calculating the rainwater drainpipes

■ Downpipes
DIN 1986-100, Section 14.2.7.2 specifies that the nominal widths of the downpipes must not be smaller than the connected nominal width of the associated flat roof drain or the collective connecting line. The rainwater downpipes can be calculated with a level of fill up to $f = 0.33$. Downpipes with inclines $\geq 10^\circ$ are ignored when calculating the drainage capacity.

In the case of inclined drainpipe sections with gradients of $< 10^\circ$, the dimensions of the rainwater downpipes must be calculated using the gradient of the inclined section and a level of fill of $h/d1 = 0.7$.

■ Single and connective connecting lines
DIN 1986-100, Section 14.2.7.1 specifies that single connecting pipes must be dimensioned in the same way as collective connecting pipes. However, the nominal width of the pipes must not be smaller than the nominal width of the flat roof drain. In addition, collective connecting pipes must be dimensioned in the same way as connecting lines.

■ Connecting lines and buried pipes
DIN 1986-100, Section 14.2.7.3 specifies that the minimum diameter of buried pipes must be DN 100. The dimensioning

of buried pipes outside of buildings must take into account a minimum flow rate of $v = 0.7$ m/s and a maximum flow rate of $v = 2.5$ m/s. The minimum gradient must be 1:DN. The limit for the level of fill $h/d1$ is 0.7. Caution: collecting pipes and buried pipes within buildings must be dimensioned with a level of fill of $h/d1 = 0.7$ taking into consideration a minimum gradient of 0.5 cm/m.

¹KOordinierte STarkniederschlags-Regionalisierungs-Auswertungen des Deutschen Wetterdienstes, Bezug: CD-Rom über ITWH, Hannover. Im Anhang A von DIN 1986-100 befindet sich ein Auszug mit Regenspenden für wichtige deutsche Städte.

Calculation example**Flat roof drain for gravity drainage system**

A gravity rainwater drainage system for a flat roof is planned for a large warehouse in Rosenheim/Germany. The roof will have an effective area of 1300 m² and is designed as an air-insulated roof with a gravel cover. Six buried pipeline connections are available to drain the roof.

The dimensioning figures for the rainwater drainage are selected in accordance with the parameters.

These are:

- Effective roof area (A) = 1.300 m²
- Flow coefficient (C) for gravel covered roof = 0.5 in Table 9 pursuant to DIN 1986-100
- Reference rainfall $r_{(5,5)}$ for Rosenheim pursuant to KOSTRA-DWD = 452 l/(s)* ha

These figures are input into the following formula to calculate the rainwater flow capacity:

Reference rainfall $r_{(5,5)}$	x	flow coefficient C	x	effective roof area A	/	10.000	=	rainwater flow capacity Q
452	x	0.5	x	1.300	/	10.000	=	29.38 l/s

Preliminary considerations for selecting the flat roof drains

Because the downpipes can be connected directly to the flat roof drains, vertical downpipes will be used. Gravel baskets are required to optimally drain the rainwater from the gravel roof. Drain bodies only require one compression-sealing flange because the roof is air-insulated with only one sealing membrane. These considerations and calculations lead to the selection of the ACO Spin flat

roof drain DN 100 made of stainless steel with a stainless steel gravel basket. According to the specifications table (see page 15) the flat roof drain has an outflow capacity of 5.6 l/s.

The number of flat roof drains required is calculated from the rainwater outflow divided by the outflow capacity of the flat roof drain:

Rainwater flow capacity Q	/	outflow capacity of the selected flat roof drain	=	number of flat roof drains required
29.38	/	5.6	=	5.246 drains

Discussion of the results

The calculated figure of 5.246 is rounded upwards. 6 flat roof drains are required for the proper drainage of the roof. Consideration also has to be given to the outflow capacity of the drainpipes (see Fig. 26 from DIN 1986-100 or Table 8 from DIN EN 12056-3).

The DN 100 downpipes can be assigned a degree of fill of $f = 0.33$ according to this table. This corresponds to an outflow capacity per pipe of 10.7 l/s.

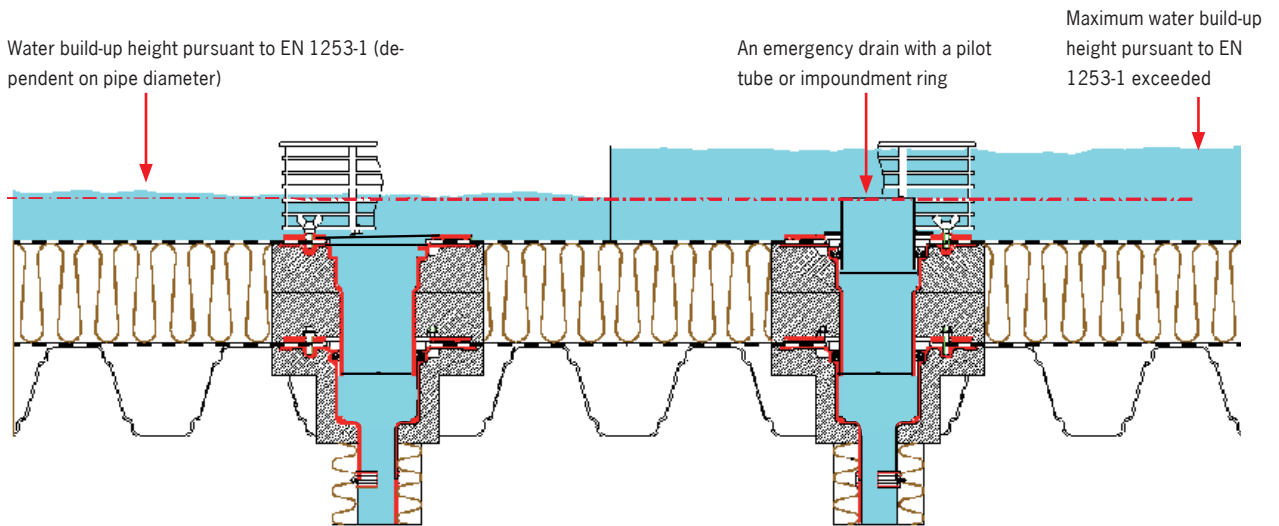
Emergency drainage

The water build-up heights required for flat roof drains for gravity drainage and the associated emergency drains are specified in EN 1253-1, Table 10. The water build-up heights for nominal widths of DN 70 – DN 150 are as follows:

Nominal width	Maximum water build-up height
DN 70	35 mm
DN 100	35 mm
DN 125	45 mm
DN 150	45 mm

Water build-up height example

The maximum water build-up height for a DN 150 flat roof drain is 45 mm. The emergency drainage system is activated when this height of 45 mm is exceeded. The maximum water build-up height at the emergency drain is again 45 mm pursuant to Table 10 in EN 1253-1. This means that the maximum water build-up height for the emergency drain is reached when the water level rises to 90 mm.



The reference rainfall for the emergency drainage Q_{Not} is calculated using the following formula:

$$(r_{(5,100)} - r_{(5,5)} \times C) \times \frac{A}{10.000} = Q_{Not}$$

Caution: note that the reference rainfall $r_{(5,5)}$ first has to be multiplied by the flow coefficient C before deducting the result from the reference rainfall for the one hundred year rainfall event $r_{(5,100)}$.

The emergency drainage system on its own should be capable of draining the 100-year rainfall if a building requires an unusual degree of protection (cf. EN 12056-3: 2001-01, Table 2).

Calculation example

Emergency drainage for a gravity drainage system

A gravity rainwater drainage system for a flat roof is planned for a large warehouse in Rosenheim/Germany. The roof will have an effective area of 1300 m² and is designed as an air-insulated roof with a gravel cover.

The dimensioning figures for the rainwater drainage are selected in accordance with the parameters. These are:

- Effective roof area (A) = 1.300 m²
- Flow coefficient (C) for gravel covered roof = 0.5 in Table 9 pursuant to DIN 1986-100
- Reference rainfall for 100-year rain $r_{(5,100)}$ für Rosenheim pursuant to KOSTRA-DWD = 853 l/(s*ha)

This value is incorporated in the following formula to calculate the rainwater flow capacity.

$$(853 - 452 \times 0.5) \times \frac{1.300}{1.0000} = 81.51 \text{ l/s}$$

The Spin DN 100 Attika roof drain made of stainless steel (Article No. 0174.78.24) is selected for the emergency drainage in this example. The outflow capacity of this drain is 6.0 l/s according to DIN.

The number of flat roof drains required is calculated by dividing the rainwater flow capacity for the emergency drainage Q_{Emer} by the outflow capacity of the selected parapet roof drain:

Rainwater flow capacity for emergency drainage	/	Outflow capacity of a selected flat roof drain	=	Number of flat roof drains required
81.51	/	6.0	=	13.58 drains

Explanation of the results

The calculated figure of 13.58 is rounded upwards. This means that 14 emergency drains are required to properly drain the roof area. To ensure that the volumes of water which have to be drained during an emergency are transferred to the designated area, each parapet drain is drained by a separate pipe.

Outflow capacity

ACO Spin flat roof drains

The outflow capacities of the flat roof drains are dependent on the nominal width of the drain body, the type of grating used, the inclination of the pipes, and whether an upper part with a compression sealing flange is placed on top of the drain body. Make sure that the pipes used are properly dimensioned.

Cast Iron

DN 70			Ball grating	Flat grating	Top section	Cast iron top section
Nominal width	Inclination	Model	Article No. 7000.09.00	Article No. 7000.19.00	Article No. 5141.81.00 5141.87.00 5141.89.00	Article No. 5141.83.00
DN 70	1.5°	without upper part	6.0 l/s	5.4 l/s	5.2 l/s	4.8 l/s
DN 70	1.5°	with upper part	5.5 l/s	4.4 l/s	4.2 l/s	3.8 l/s
DN 70	90°	without upper part	7.0 l/s	6.7 l/s	6.2 l/s	5.8 l/s
DN 70	90°	with upper part	6.5 l/s	5.7 l/s	5.2 l/s	4.8 l/s

DN 100			Ball grating	Flat grating	Top section	Cast iron top section	Top frame with grating
Nominal width	Inclination	Model	Article No. 7000.10.00	Article No. 7000.20.00	Article No. 7000.40.00	Article No. 7000.28.00	Article No. 7000.41.00 7000.42.00
DN 100	1.5°	without upper part	9.0 l/s	8.4 l/s	10.7 l/s	7.6 l/s	12.1 l/s
DN 100	1.5°	with upper part	9.0 l/s	8.4 l/s	10.7 l/s	7.6 l/s	12.1 l/s
DN 100	90°	without upper part	8.0 l/s	6.2 l/s	10.7 l/s	7.6 l/s	15.2 l/s
DN 100	90°	with upper part	8.0 l/s	6.2 l/s	10.7 l/s	7.6 l/s	15.2 l/s

DN 125			Ball grating	Flat grating	Top section	Cast iron top section	Top frame with grating
Nominal width	Inclination	Model	Article No. 7000.10.00	Article No. 7000.20.00	Article No. 7000.40.00	Article No. 7000.28.00	Article No. 7000.41.00 7000.42.00
DN 125	1.5°	without upper part	12.0 l/s	10.2 l/s	12.6 l/s	7.6 l/s	16.4 l/s
DN 125	1.5°	with upper part	12.0 l/s	10.2 l/s	12.6 l/s	7.6 l/s	16.4 l/s
DN 125	90°	without upper part	12.0 l/s	10.2 l/s	12.6 l/s	7.6 l/s	16.4 l/s
DN 125	90°	with upper part	12.0 l/s	10.0 l/s	12.6 l/s	7.6 l/s	16.4 l/s

DN 150			Ball grating	Flat grating	Top section	Cast iron top section	Top frame with grating
Nominal width	Inclination	Model	Article No. 7000.10.00	Article No. 7000.20.00	Article No. 7000.40.00	Article No. 7000.28.00	Article No. 7000.41.00 7000.42.00
DN 150	1.5°	without upper part	14.5 l/s	12.6 l/s	15.0 l/s	7.6 l/s	21.2 l/s
DN 150	1.5°	with upper part	14.5 l/s	12.6 l/s	15.0 l/s	7.6 l/s	21.2 l/s
DN 150	90°	without upper part	13.5 l/s	11.0 l/s	15.0 l/s	7.6 l/s	18.5 l/s
DN 150	90°	with upper part	13.5 l/s	11.0 l/s	15.0 l/s	7.6 l/s	18.5 l/s

Cast iron with fire protection insert

DN 100			Ball grating	Flat grating	Top frame with grating	Top frame with grating	Top frame with grating
Nominal width	Inclination	Model	Article No. 7000.10.00	Article No. 7000.20.00	Article No. 7000.40.00	Article No. 7000.28.00	Article No. 7000.41.00 7000.42.00
DN 100	90°	without upper part	7.4 l/s	7.3 l/s	8.9 l/s	6.8 l/s	11.8 l/s
DN 100	90°	with upper part	7.4 l/s	7.0 l/s	8.5 l/s	6.5 l/s	11.8 l/s

Stainless Steel

DN 70			Plastic gravel basket	Stainless steel gravel basket
Nominal width	Inclination	Model	Article No. 0174.46.66	Article No. 0174.46.59 0174.46.62
DN 70	1.5°	without lower part	2.6 l/s	2.7 l/s
DN 70	1.5°	with lower part	2.8 l/s	3.0 l/s
DN 70	90°	without lower part	2.5 l/s	2.6 l/s
DN 70	90°	with lower part	2.7 l/s	2.8 l/s

DN 100			Plastic gravel basket	Stainless steel gravel basket
Nominal width	Inclination	Model	Article No. 0174.46.66	Article No. 0174.46.59 0174.46.62
DN 100	1.5°	without lower part	5.0 l/s	5.9 l/s
DN 100	1.5°	with lower part	4.7 l/s	5.3 l/s
DN 100	90°	without lower part	4.7 l/s	5.6 l/s
DN 100	90°	with lower part	5.1 l/s	5.7 l/s

DN 125			Plastic gravel basket	Stainless steel gravel basket
Nominal width	Inclination	Model	Article No. 0174.46.66	Article No. 0174.46.59 0174.46.62
DN 125	1.5°	without lower part	8.3 l/s	9.9 l/s
DN 125	1.5°	with lower part	8.7 l/s	8.9 l/s
DN 125	90°	without lower part	8.5 l/s	8.4 l/s
DN 125	90°	with lower part	8.5 l/s	8.4 l/s

Stainless steel with fire protection insert

DN 100			
Stainless steel gravel basket			
Nominal width	Inclination	Model	Article No. 0174.46.59 0174.46.62
DN 100	90°	without lower part	4.7 l/s
DN 100	90°	with lower part	4.7 l/s

ACO Spin flat roof drains

For green roof drainage

The countryside is being increasingly paved over as built-up areas grow more extensive. The associated faster run-off of rainwater gives rise to high water levels and flooding and the associated serious damage. Greened roofs make it possible to retain at least 50 % of the yearly average rainwater depending on the type of roof.

Green roofs are a relatively easy way of compensating for areas which have been paved over, and to minimise peak rainwater flows.

There are two main types of green roof:

- **Extensive greening:**
Extensive greening can generally be achieved with a minimum amount of effort. These roofs are characterised by a natural looking vegetation cover with plants adapted to extreme habitats.
- **Intensive greening:**
Intensive greening involves the planting of perennials, shrubs, lawns as well as trees. This type of green roof requires intensive gardening and regular watering and the addition of fertilizer. The soil structure for this type of green roof requires proper drainage.

ACO developed a range of additional components to ensure the safe and regulated drainage of percolated rainwater. This range can be combined with the standard flat roof drainage products.



Extensive greening

Regulations and standards

Regulations and standards must be observed when planning and executing roof drainage systems. The following lists a number of extracts from the most important regulations:

Roof greening regulations version 2008/DIN 1986-100

Roof drains in planted surfaces

Flat roof drains within planted surfaces have to be fitted with a control shaft to protect the drains from dirt and penetrating roots. This control shaft should not hinder drainage in any way. The drains can be protected by gravel or paved surrounds (Roof greening regulations, Chapter 6.5.3.1).

DIN 1986-100 (Chapter 5.8.3) also specifies in the same way as the Roof greening regulations that drains must be protected from the encroachment of plants. For instance, this standard recommends that the drains are surrounded by an at least 50 cm wide gravel protection zone.

Roof drains away from greened surfaces

Flat roof drains which do not lie within greened surfaces are usually installed in a gravel strip and are equipped with a gravel basket to prevent gravel from entering the drain (Roof greening regulations, Chapter 6.5.3.2).

Emergency drainage

Caution: Ensure that the layered structure of the green roof does not block the inflows to the emergency drains. Emergency drains must also be planned to ensure that they are kept free of encroaching vegetation.

In addition, the emergency drainage systems for greened flat roofs must comply with the same principles as for conventional flat roofs. It is therefore essential that the emergency drainage system is not connected to the normal drainage system: it must be connected to a dedicated outflow from which the water can drain safely onto floodable land without causing any damage.



Extensive greening



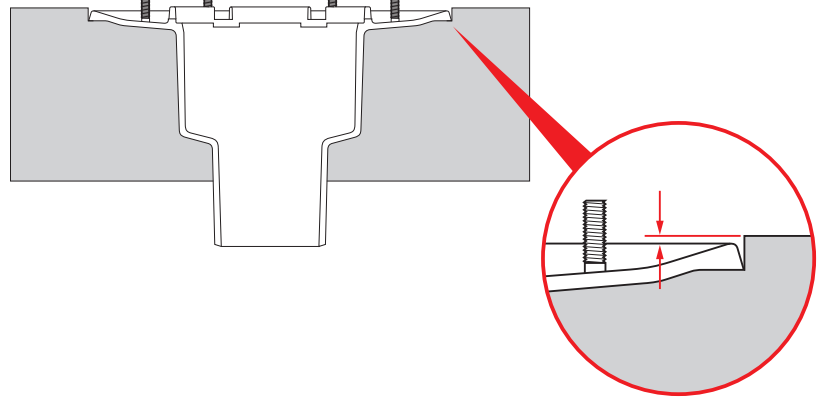
Intensive greening

Installation

ACO Spin flat roof drain made of cast iron

Concrete roof: Pouring in

Flat roof drains can be installed on site when the concrete is poured in. Caution: Ensure that the fixed flange is positioned slightly below the top surface of the concrete because a gradient towards the drain body must be created when the sealing membrane is installed.

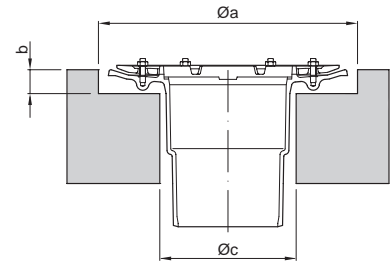


Concrete roof: Core boreholes

Core boreholes with two different diameters and two different heights have to be cut to install the flat roof drains.

- $\varnothing a \times b$: core borehole dimensions for the flange (flange support)
- $\varnothing c$: core borehole dimension for the drain body

The core hole for the flange support must be cut to enable the sealing membrane to be laid towards the drain body with a gradient as stipulated in DIN EN 18195. Each of the product pages contains the dimensions of the core boreholes required for the product.



Trapezoidal sheet metal roof

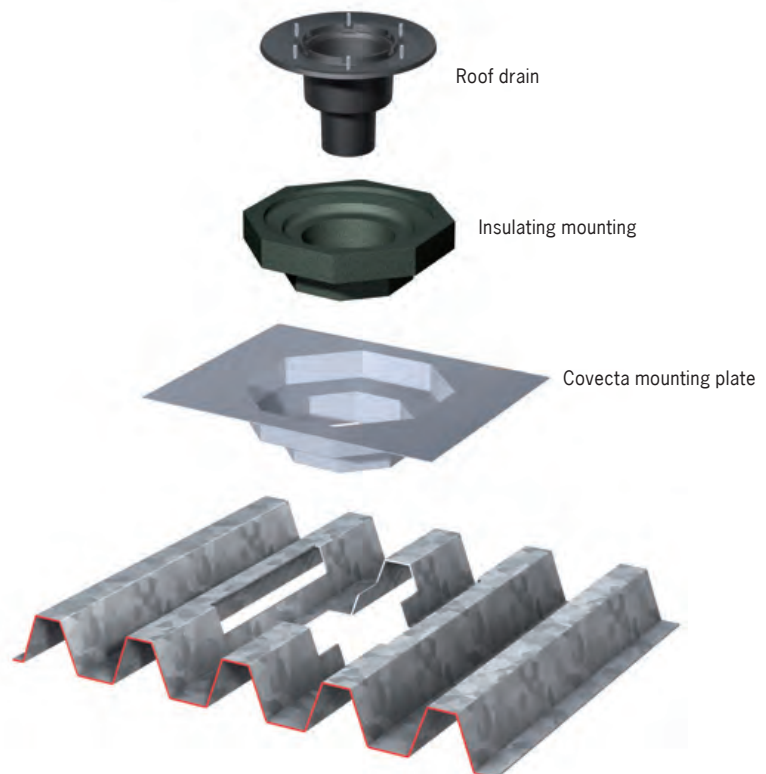
Cast iron drains cannot be installed directly onto a trapezoidal sheet metal roof. A mounting plate* is required.

The matching insulating mounting for the flat roof drain must also be installed in the mounting plate to ensure that the drain body is perfectly positioned on the mounting plate.

The mounting plate and the trapezoidal sheet roofing must be connected pursuant to DIN 18807. The mounting plate must be connected to the trapezoidal sheet roof as follows:

- Two connecting elements on the transverse side in the top beam
- One connecting element next to every covered gutter
- Connecting elements on the longitudinal edge, separation: 120 mm

Caution: Every hole cut in the trapezoidal roof reduces its load-bearing capacity. Verification of the load-bearing capacity of the combined mounting plate and trapezoidal sheet roof can only be issued by a structural engineer.



*Covecta, Deggingen, supplies mounting plates for all standard ACO flat roof drains.
Tel. +49 (0) 7334 8012, Fax +49 (0) 7334 4323

Heating

Flat roof drains can also be installed with auxiliary heating to prevent the drain from freezing. To reduce energy consumption to a minimum, it is recommended that the heated drains be controlled by an additional thermostat. Installation of an FI switch (30 mA) is recommended. When Spin two-piece cast iron flat roof drains are installed, the heating is always installed on the drain body (below the lower sealing level).



2-piece Spin flat roof drain with heating (Article No. 7000.85.00) and thermostat (not supplied)

Installing the sealing membrane

Bitumen membranes as well as high polymer sealing membranes can be connected to the Spin cast iron flat roof drains by the compression sealing flange. One spacer below and one spacer above the sealing membrane must be put into place when connecting thin high polymer sealing membranes to the compression sealing flange. These spacers ensure that any unevenness in the fixed and loose flanges on the drain are compensated for to ensure that a watertight seal is created when the flanges are tightened up. The spacers can also be made on site from spare material from the same sealing membrane.

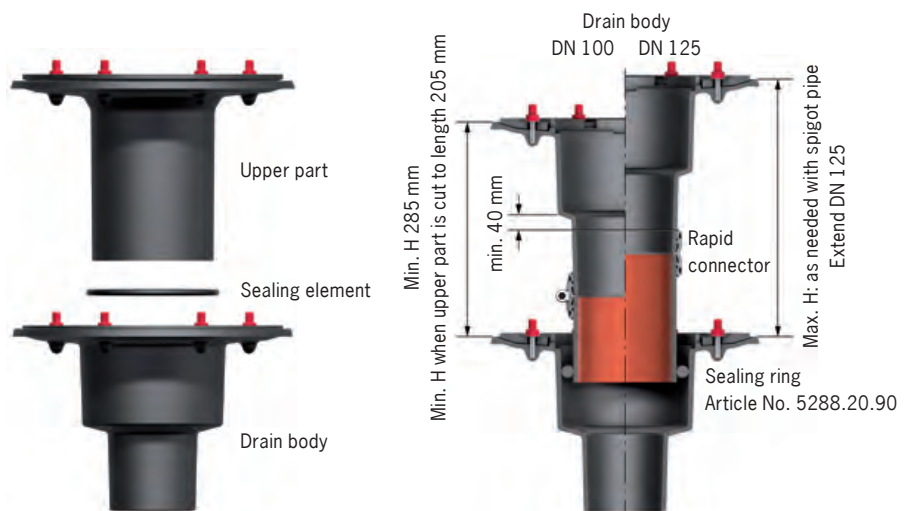
After placing the loose flange on top, the nuts must be tightened up one after the other with a torque.



Using the extension element (= top section)

DIN 1986-100, Chapter 5.7.3.1 stipulates that in the case of two-piece flat roof drains, there must be a tight seal between the drain body and the top section. This ensures that the thermal insulation is not damaged by rainwater in the event that wastewater backflows up the pipe.

The upper parts for cast iron flat roof drains are always supplied as standard with a sealing ring. This is installed between the drain body and the upper part.



Pipe connections

ACO Spin flat roof drains made of cast iron

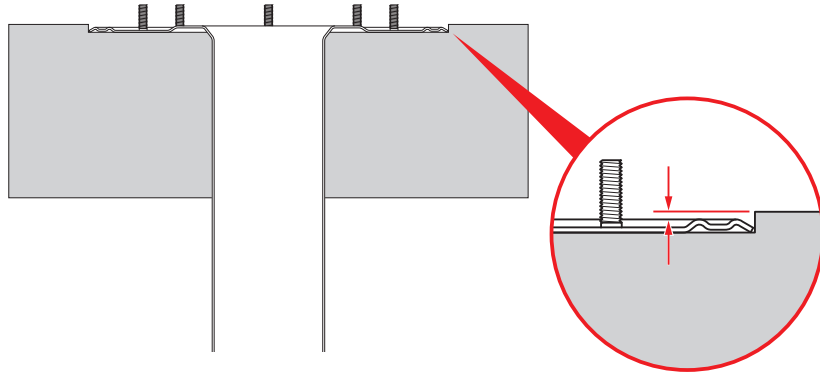
Pipe type	With transition elements	Suitable for connection to
DN 70		
GM-X pipe with coupling socket	CV connector transition 0174.14.26	Spin flat roof drain made of cast iron DN 70
Spigot pipe with no coupling socket	CV connector DN 70	
HT pipe with coupling socket	HT/spigot pipe connector DN70/DN70	
DN 100		
GM-X pipe with coupling socket	CV connector DN 100	Spin flat roof drain made of cast iron DN 100
Spigot pipe with no coupling socket	Transition 0174.14.27	
HT pipe with coupling socket	CV connector DN 100	
DN 125		
GM-X pipe with coupling socket	Direct connection	Spin flat roof drain made of cast iron DN 125
Spigot pipe with no coupling socket	CV connector DN 125	
HT pipe with coupling socket	HT-spigot pipe connector DN 125/DN 125	
DN 150		
GM-X pipe with coupling socket	Direct connection	Spin flat roof drain made of cast iron DN 150
Spigot pipe with no coupling socket	CV connector DN 150	
HT pipe with coupling socket	HT-spigot pipe connector DN 150/DN 150	

Installation

ACO Spin flat roof drain made of stainless steel

Concrete roof: Pouring in

Flat roof drains can be installed on site when the concrete is poured in. Caution: Ensure that the fixed flange is positioned slightly below the top surface of the concrete because a gradient towards the drain body must be created when the sealing membrane is installed.

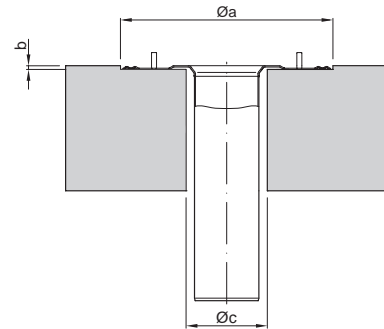


Concrete roof: Core boreholes

Core boreholes with two different diameters and two different heights have to be cut to install the flat roof drains.

- $\varnothing a \times b$: core borehole dimensions for the flange (flange support)
- $\varnothing c$: core borehole dimension for the drain body

The core hole for the flange support must be cut to enable the sealing membrane to be laid towards the drain body with a gradient as stipulated in DIN EN 18195.



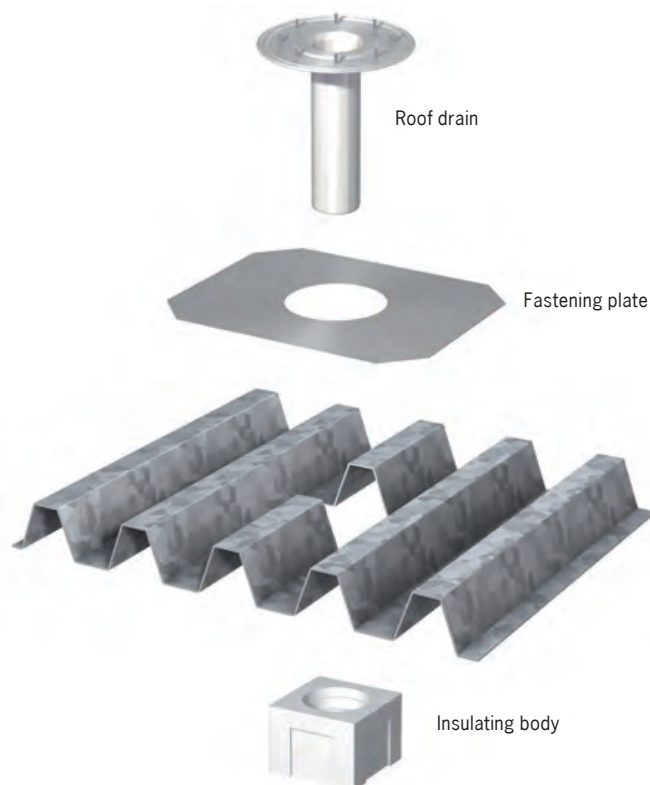
Trapezoidal sheet metal roof

Stainless steel drains cannot be installed directly onto a trapezoidal sheet metal roof. A fastening plate is required.

The fastening plate and the trapezoidal sheet roofing must be connected pursuant to DIN 18807. The fastening plate must be connected to the trapezoidal sheet roof as follows:

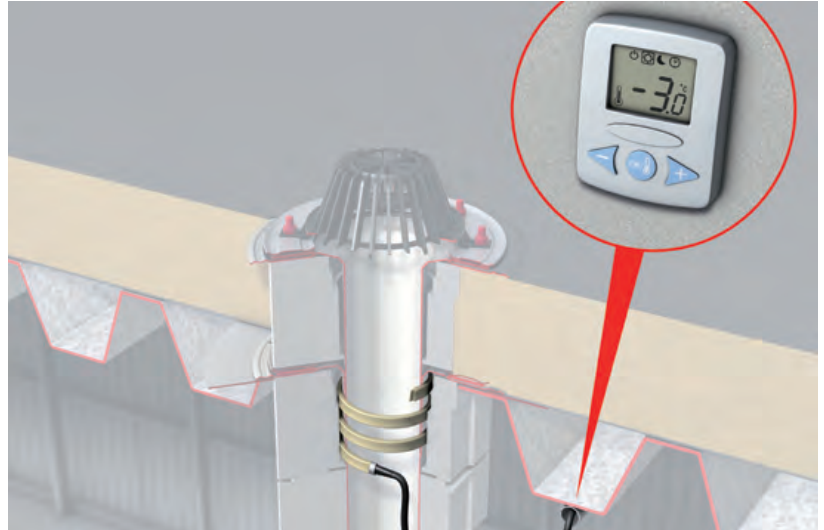
- Two connecting elements on the transverse side in the top beam
- One connecting element next to every covered gutter

Caution: Every hole cut in the trapezoidal roof reduces its load-bearing capacity. Verification of the load-bearing capacity of the combined mounting plate and trapezoidal sheet roof can only be issued by a structural engineer.



Heating

Flat roof drains can also be installed with auxiliary heating to prevent the drain from freezing. To reduce energy consumption to a minimum, it is recommended that the heated drains be controlled by an additional thermostat. Installation of an FI switch (30 mA) is recommended. When Spin two-piece stainless steel flat roof drains are installed, the heating is always installed on the drain body (below the lower sealing level).



2-piece Spin flat roof drain with heating (Article No. 0174.84.32) and thermostat (not supplied)

Installing the sealing membrane

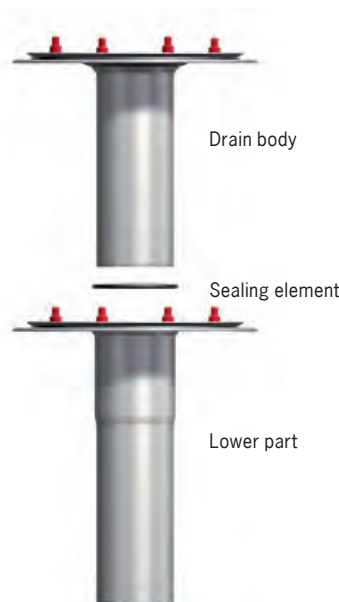
Bitumen membranes as well as high polymer sealing membranes can be connected to the Spin stainless steel flat roof drains by the compression sealing flange. One spacer below and one spacer above the sealing membrane must be put into place when connecting thin high polymer sealing membranes to the compression sealing flange. These spacers ensure that any unevenness in the fixed and loose flanges on the drain are compensated for to ensure that a watertight seal is created when the flanges are tightened up. The spacers can also be made on site from spare material from the same sealing membrane.



After placing the loose flange on top, the nuts must be tightened up one after the other with a torque.

Two-piece drains, consisting of a drain body and a lower part

DIN 1986-100 stipulates that in the case of two-piece flat roof drains, there must be a tight seal between the drain body and the lower part. This ensures that the thermal insulation is not damaged by rainwater if the pipes become blocked.



The drain bodies for stainless steel flat roof drains are always supplied as standard with a sealing ring. This is installed between the drain body and the lower part.

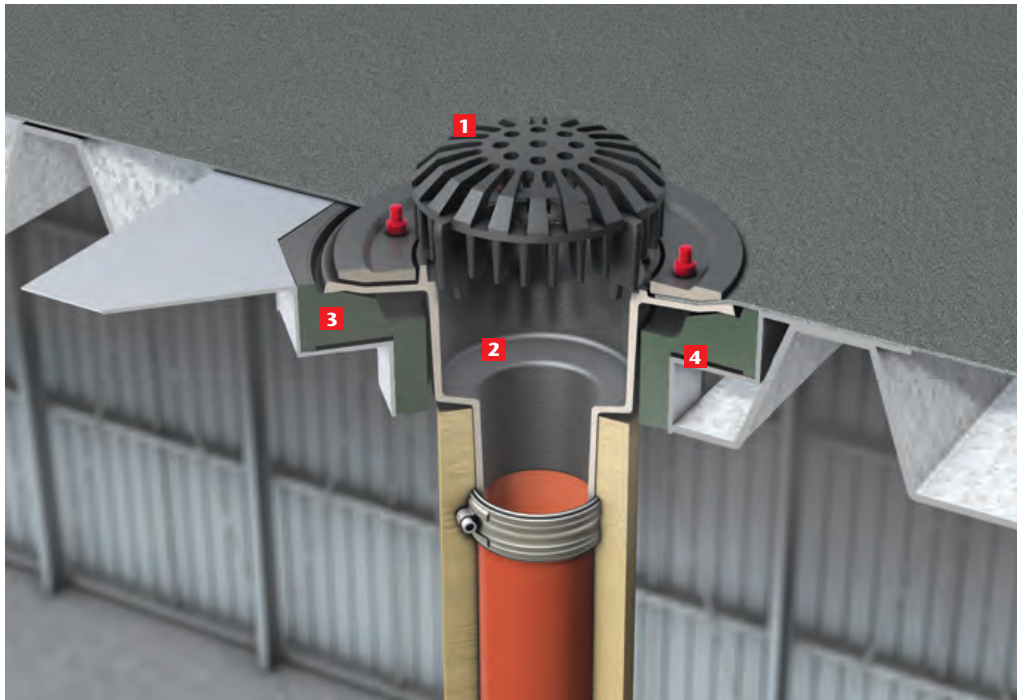
Pipe connections

ACO Spin flat roof drains made of stainless steel

Pipe type	With transition elements	Suitable for connection to
DN 70		
GM-X pipe with coupling socket	Direct connection	Spin flat roof drain made of stainless steel DN 70
Spigot pipe with no coupling socket	Connector fitting Article No. 0174.12.82	
HT pipe with coupling socket	Connector fitting Article No. 0174.12.95	
DN 100		
GM-X pipe with coupling socket	Direct connection	Spin flat roof drain made of stainless steel DN 100
Spigot pipe with no coupling socket	Connector fitting Article No. 0174.12.86	
HT pipe with coupling socket	Connector fitting Article No. 0174.12.98	
DN 125		
GM-X pipe with coupling socket	Direct connection	Spin flat roof drain made of stainless steel DN 125
Spigot pipe with no coupling socket	Direct connection	
HT pipe with coupling socket	Connector fitting Article No. 0174.13.00	

Installation example trapezoidal sheet metal roof

Gravity drainage with ACO Spin flat roof drain made of cast iron



Sealing membrane
Trapezoidal sheet metal roof

- 1** Ball grating
Article No. 7000.10.00
- 2** Cast iron flat roof drain
DN 100, 90 °
Article No. 7034.10.10

- 3** Insulating mounting
Article No. 7040.21.00

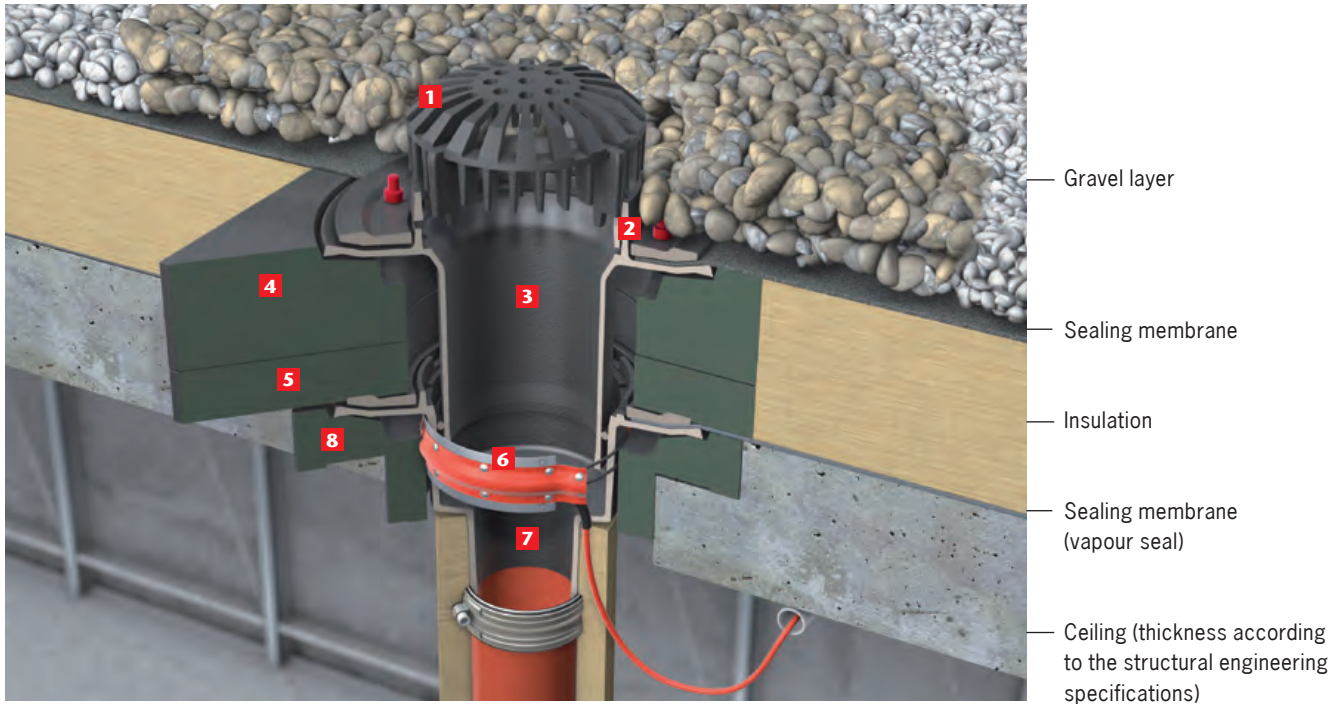
- 4** Mounting sheet
Delivery details:
Covecta Vertrieb
Burgsteige 35
73326 Deggingen
Germany
Tel. +49 (0) 7334 8012

DN 70	DN 100–DN 150
The outlet socket of the drain body can be shortened on site by max. 44 mm.	The outlet socket of the drain body can be shortened on site by max. 35 mm.

Extension heights in mm

Installation example in a warm roof

Gravity drainage with ACO Spin flat roof drain made of cast iron



1 Ball grating
Article No. 7000.10.00

2 Top ring
Article No. 7000.35.00

3 Upper part
Article No. 7044.10.25

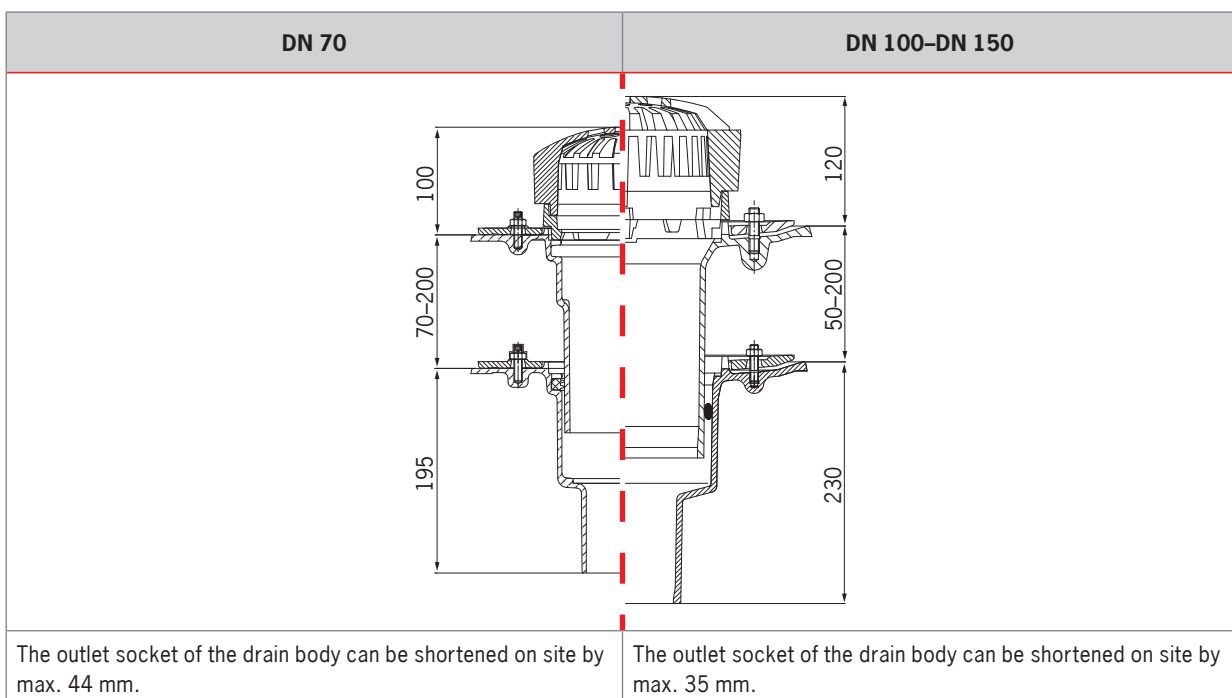
4 Insulating ring
Article No. 7040.11.00

5 Levelling element
Article No. 7040.01.00

6 Heating
Article No. 7000.85.00

7 Cast iron flat roof drain
DN 100, 90°
Article No. 7034.10.10

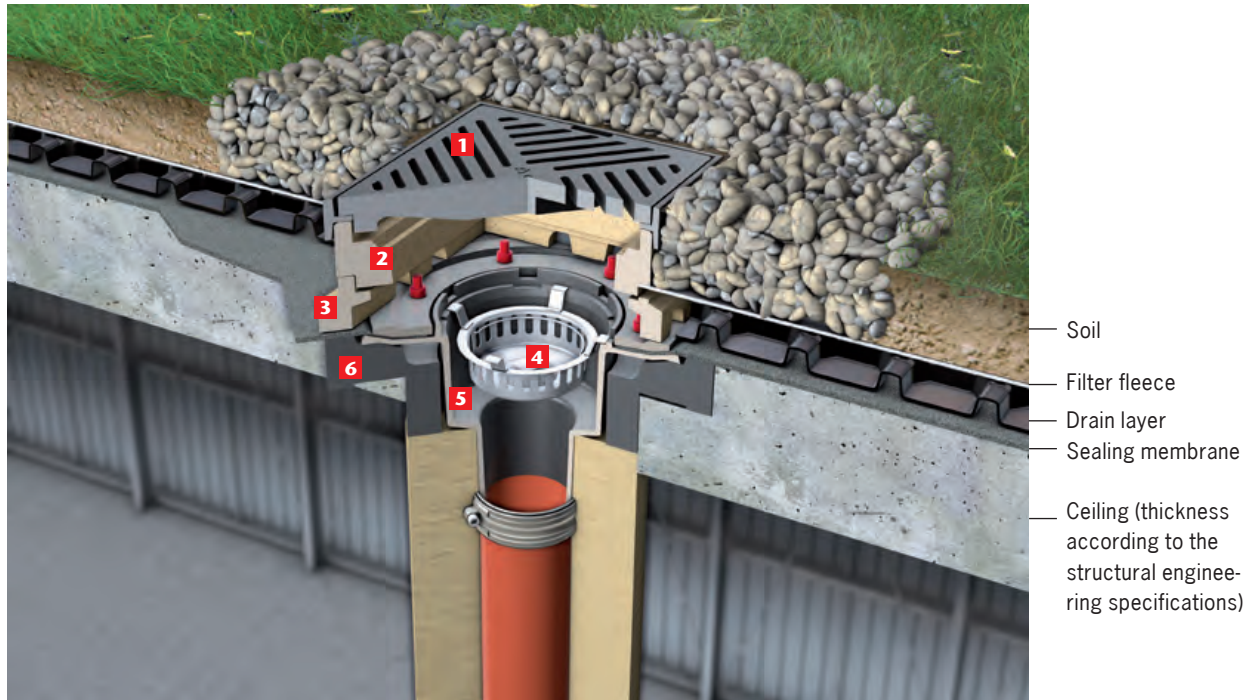
8 Insulating mounting
Article No. 7040.21.00



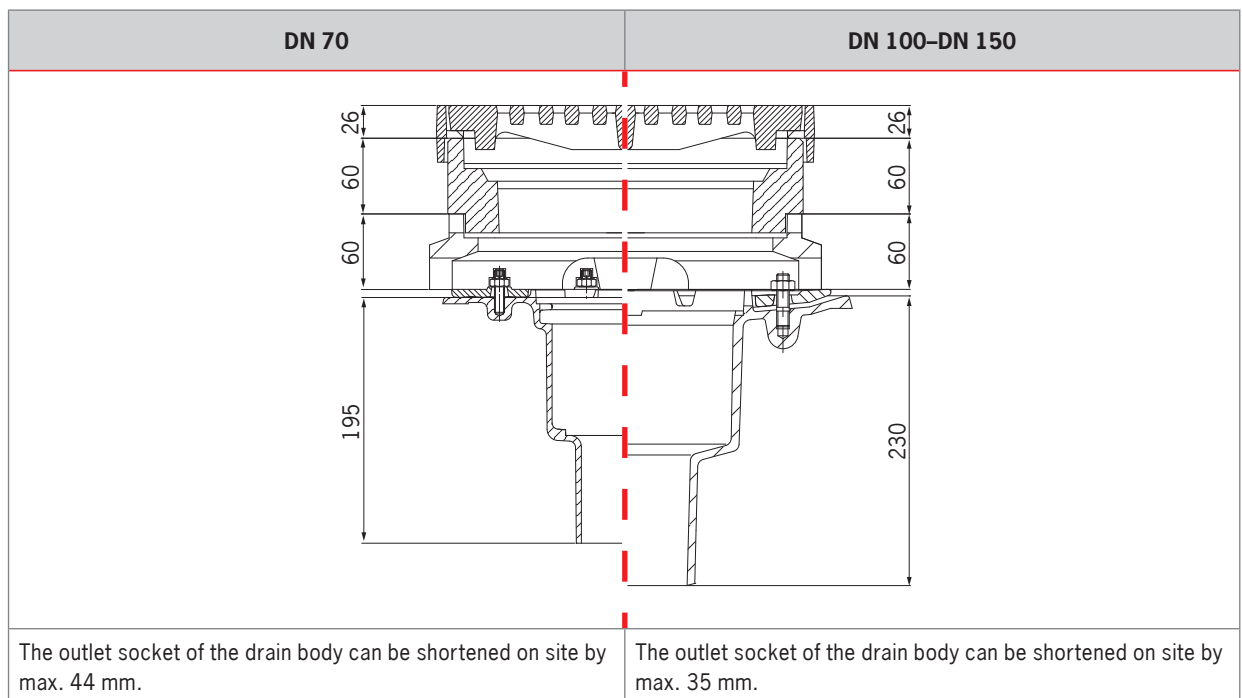
Extension heights in mm

Installation example green roof (extensive greening)

Gravity drainage with ACO Spin flat roof drain made of cast iron



- | | | |
|---|---|---|
| 1 Frame with cast iron grating
Article No. 7000.51.00 | 3 Transition frame
Article No. 7000.55.00 | 5 Cast iron flat roof drain
DN 100, 90°
Article No. 7034.10.10 |
| 2 Spacer
Article No. 7000.52.00 | 4 Stainless steel bucket
Article No. 7000.13.00 | 6 Insulating mounting
Article No. 7040.21.00 |

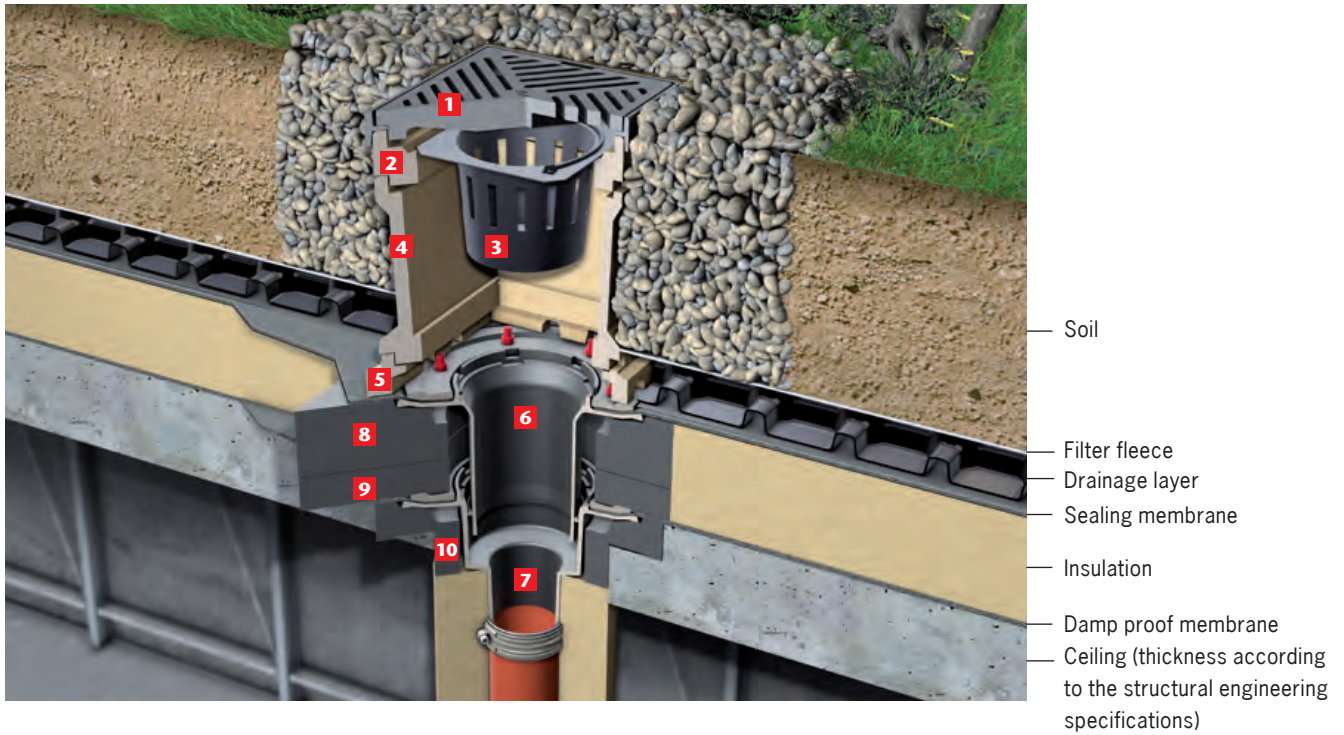


Extension heights in mm

Contents
 Gravity drainage
 Syphonic drainage
 Parking deck drainage
 Balcony and terrace drainage
 Facade drainage
 Pipe systems

Installation example green roof (intensive greening)

Gravity drainage with ACO Spin flat roof drain made of cast iron



1 Frame with cast iron grating
Article No. 7000.51.00

5 Adapter frame
Article No. 7000.55.00

8 Insulating ring
Article No. 7040.11.00

Intermediate section
2 Article No. 7000.52.00
4 Article No. 7000.54.00

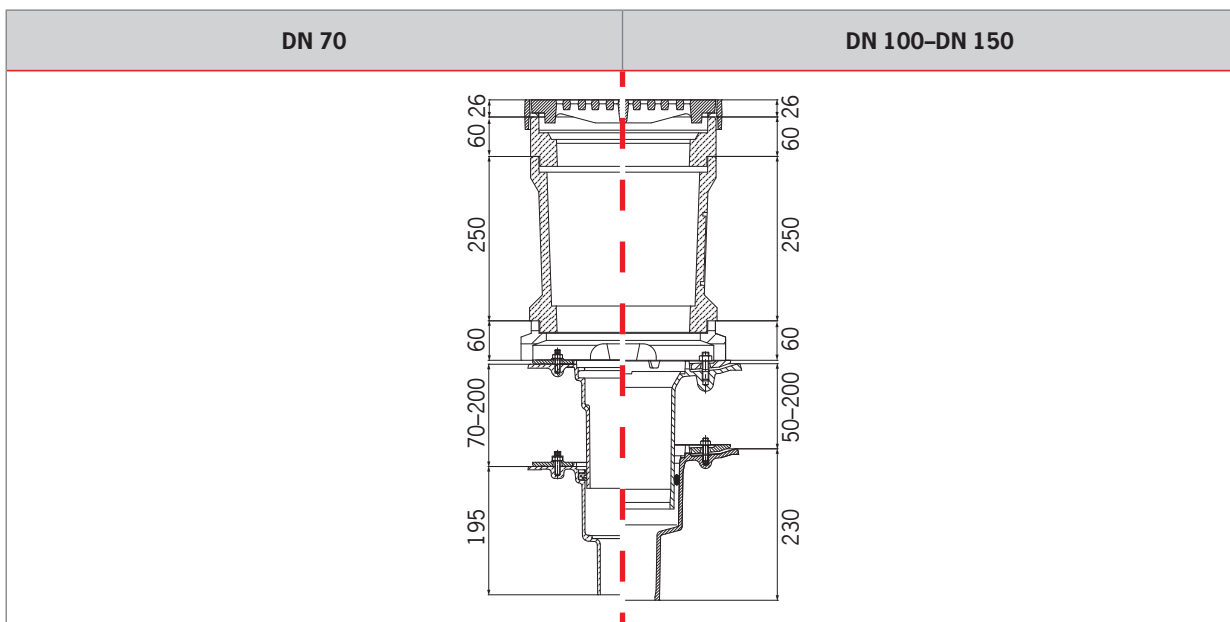
6 Upper part
Article No. 7044.10.25

9 Levelling element
Article No. 7040.01.00

3 Bucket
Article No. 7000.53.00

7 Cast iron flat roof drain
DN 100, 90°
Article No. 7034.10.10

10 Insulating mounting
Article No. 7040.21.00

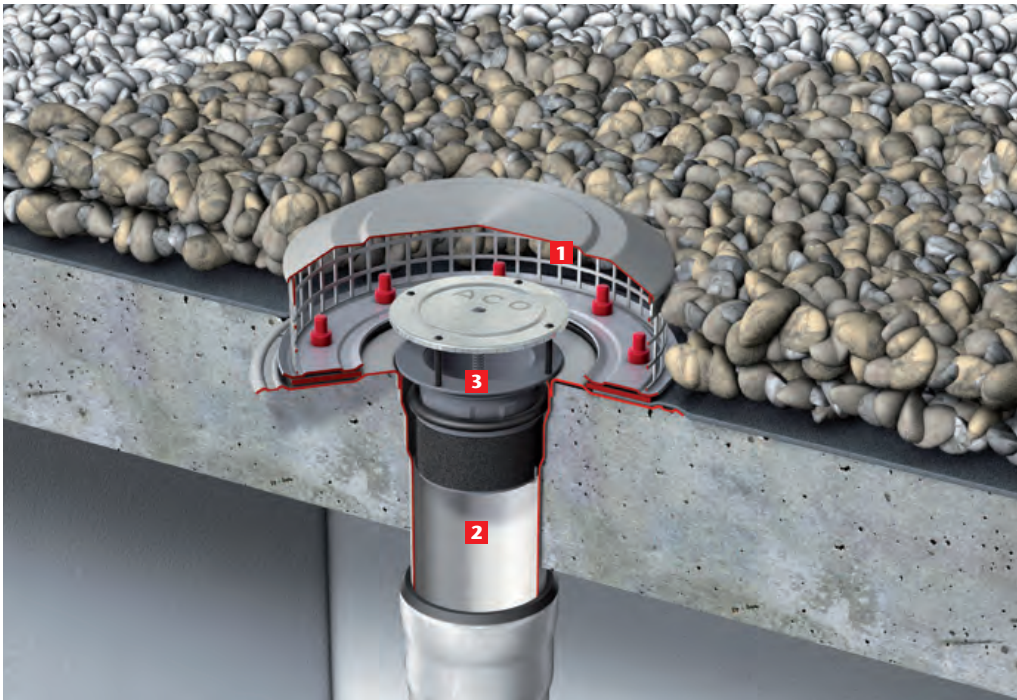


Additional spacers (Article No. 7000.54.00) height: 250 mm, can be stacked on top of one another to match the thickness of the soil on green roofs.

Extension heights in mm

Installation example concrete ceiling with fire protection

Gravity drainage with ACO Spin flat roof drain made of stainless steel



Sealing membrane
Ceiling (thickness according to the structural engineering specifications)

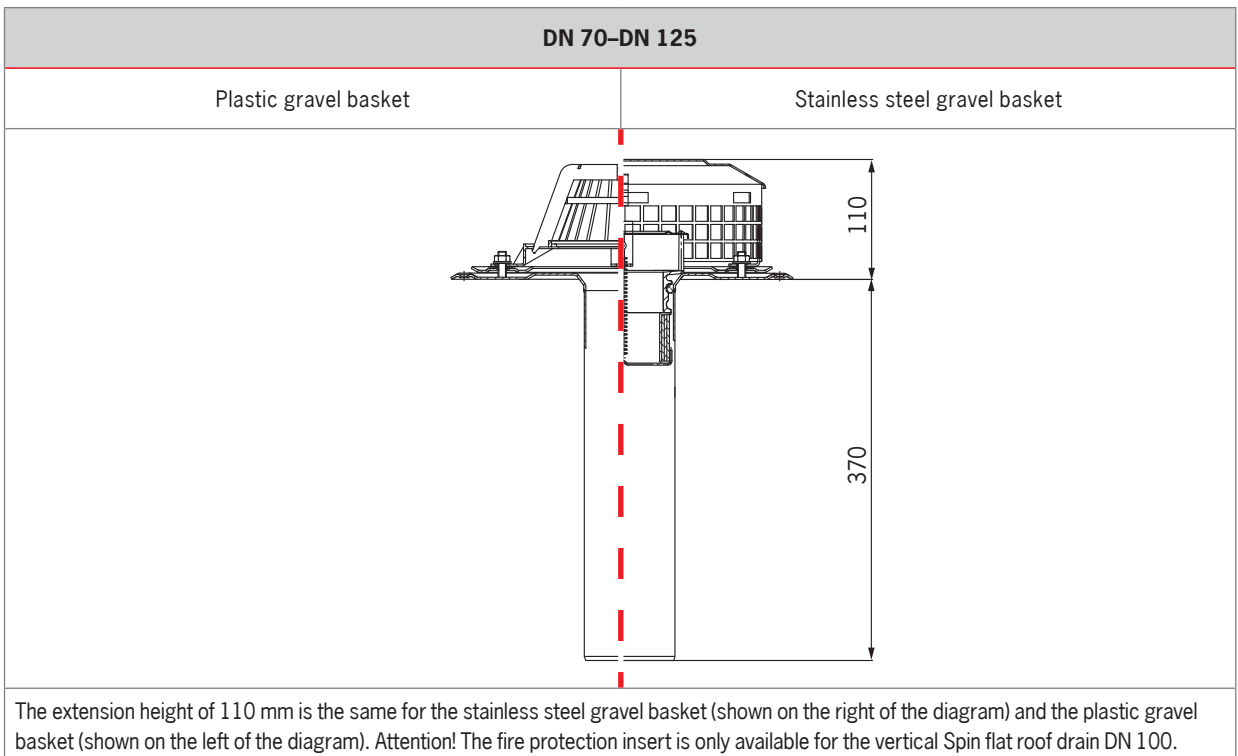
Complete drain Article No. 1119.10.60 consisting of:

1 Stainless steel gravel basket
Article No. 0174.46.59

2 Stainless steel flat roof drain DN 100, 90°
Article No. 0174.47.16

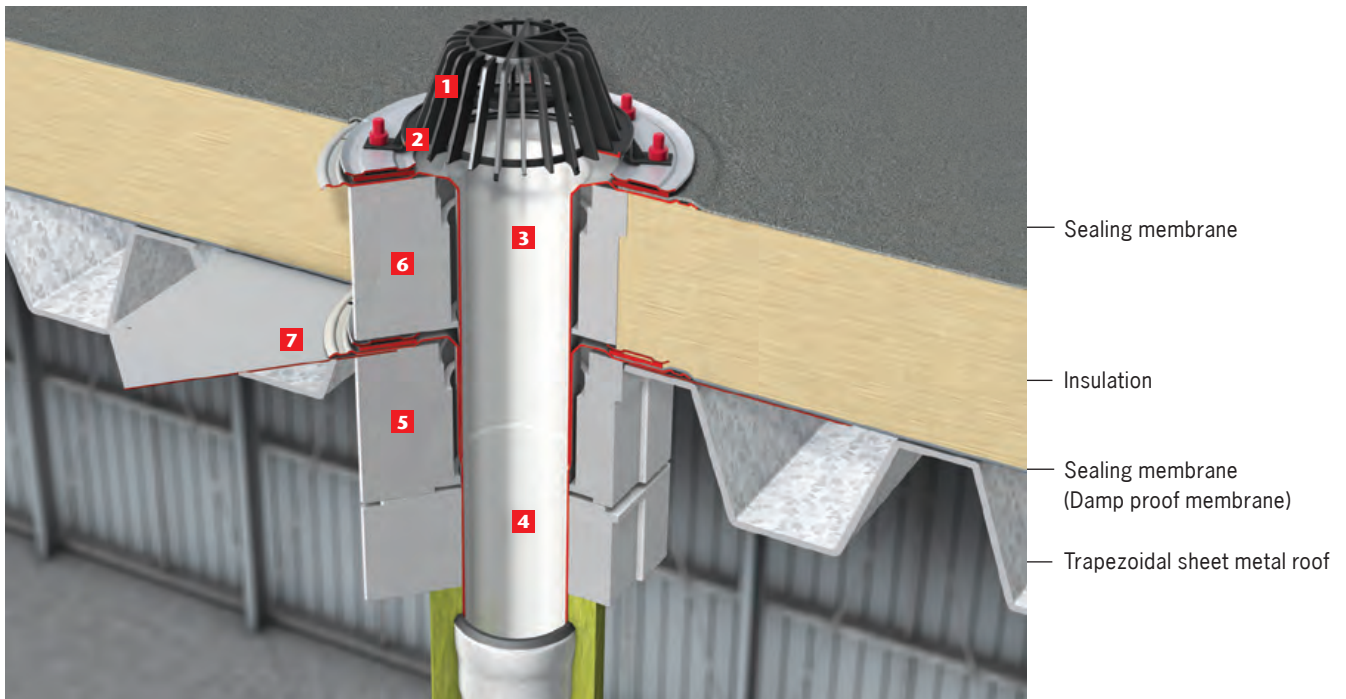
Accessories:
3 Fire protection insert
Article No. 7034.20.15

Warning: Only use a stainless steel gravel basket when installing a fire protection insert!



Extension heights in mm

Installation example trapezoidal sheet metal roof with insulation
Gravity drainage with ACO Spin flat roof drain made of stainless steel



Complete drain Article No. 1119.25.10 consisting of:

- 1** Plastic gravel basket
Article No. 0174.46.66
- 2** Fastening frame for gravel basket
Article No. 0174.46.67

3 Upper part DN 100
Article No. 0174.47.31

4 Lower part for flat roof drain
DN 100, 90°
Article No. 0174.47.16

5 Polystyrene insulation DN 100
Article No. 0174.47.19

Accessories:

6 Polystyrene insulation DN 100
Article No. 0174.47.19

7 Mounting sheet
Article No. 0174.46.61

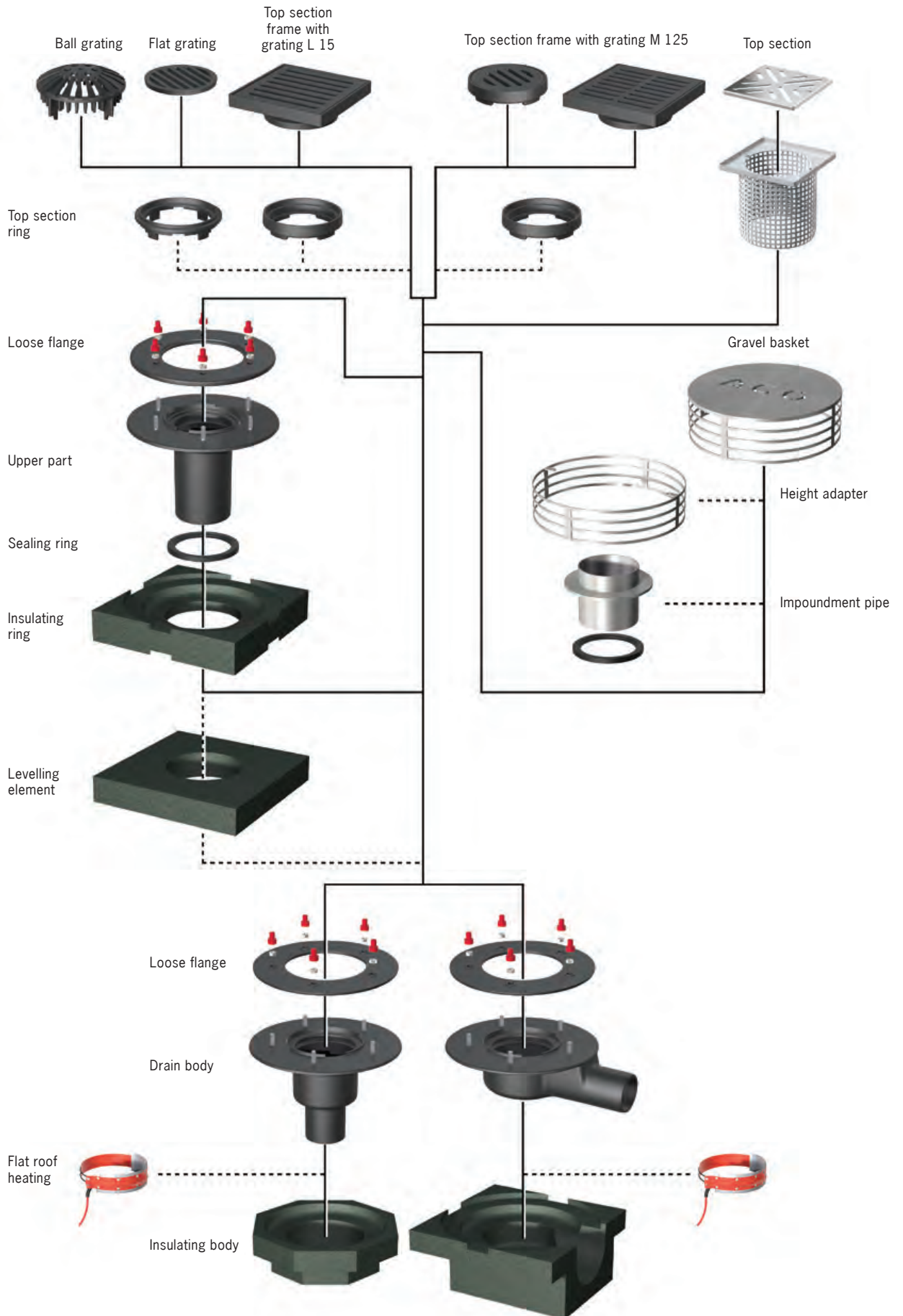
DN 70	DN 125 – DN 150
Plastic gravel basket	Stainless steel gravel basket

The extension height of 110 mm is the same for the stainless steel gravel basket (shown on the right of the diagram) and the plastic gravel basket (shown on the left of the diagram).

Extension heights in mm

Modular system

ACO Spin flat roof drain DN 70 made of cast iron for gravity drainage



Contents

Gravity drainage

Syphonic drainage

Parking deck drainage

Balcony and terrace drainage

Facade drainage

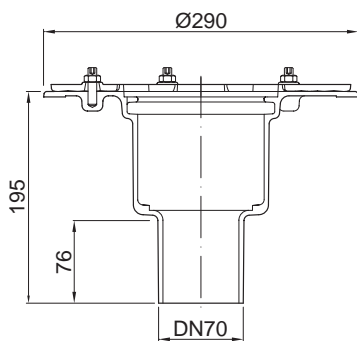
Pipe systems

ACO Spin flat roof drain made of cast iron

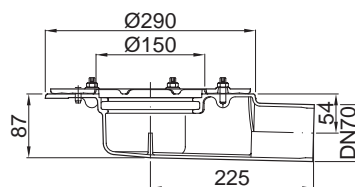
DN 70/DN 80



- Drain body DN 70 – DN 80 pursuant to DIN EN 1253
- Cast iron, construction material class A1, coated
- With compression sealing flange and seepage openings
- Can be connected to spigot pipe pursuant to DIN 19522 / DIN EN 877
- Weight approx. 7.5 kg



Model with vertical outlet socket

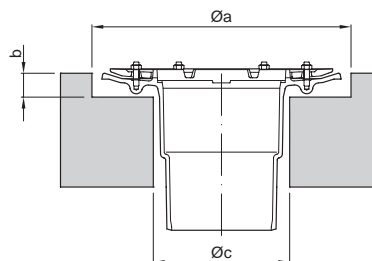


Model with horizontal outlet socket

Model	Weight	Article No.
With vertical outlet socket	7,4	5169.20.00
With horizontal outlet socket	7,7	5169.40.00

Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]	Article No.
For drain body without insulating body				
DN 70	300	150	30	5169.20.00
For drain body with insulating body				
DN 70	315	220	45	5169.20.00




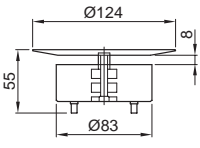

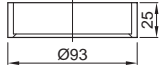


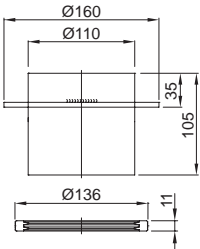
Recess dimensions

Nominal width	Type	Outlet inclination	Article No.	Recess dimensions	
				Drain body without insulating body	Drain body with insulating body
DN 70	Spin	1,5°	5169.40.00	230 x 530 mm	320 x 530 mm
DN 70	Spin	90°	5169.20.00	230 x 320 mm	320 x 320 mm

Extension components

ACO Spin flat roof drain DN 70/DN 80 made of cast iron

	Scale drawing	Product description	Model	Article No.
Gravity drainage		Upper part Cast iron, DN 70 for sealing with two sealing membranes, with compression sealing flange, seepage openings and sealing ring	Coated	7047.10.25
Syphonic drainage		Insulating body For flat roof drain with vertical outlet socket, made of foam glass		7040.22.00
Parking deck drainage		Insulating body For flat roof drain with lateral outlet socket, made of foam glass		7040.34.00
Balcony and terrace drainage		Insulating ring For upper part of flat roof drain DN 70, made of foam glass		7040.12.00
Facade drainage		Levelling element For upper part of flat roof drain, DN 70, made of foam glass		7040.02.00

	Scale drawing	Product description	Model	Article No.
		Bucket Stainless steel, material 1.4301, fits cast iron flat roof drain DN 70		7000.03.00
		Hose element DN 70/80 For connecting DN 70 floor drains to spigot pipe DN 80		5170.70.80
		Flat roof heating Suitable for all flat roof drains DN 50 – DN 150, Electrical supply: 220-240 V AC, Nominal power: 25 W, Protection class: I, Protection type: IP 67, Connecting cable: SIHF 3 x 1 mm ² , 1.5 m G 1.5		7000.85.00
		Impoundment pipe 35 mm high, for one-piece and two-piece drains		7033.10.50

Top sections, gratings and top frames

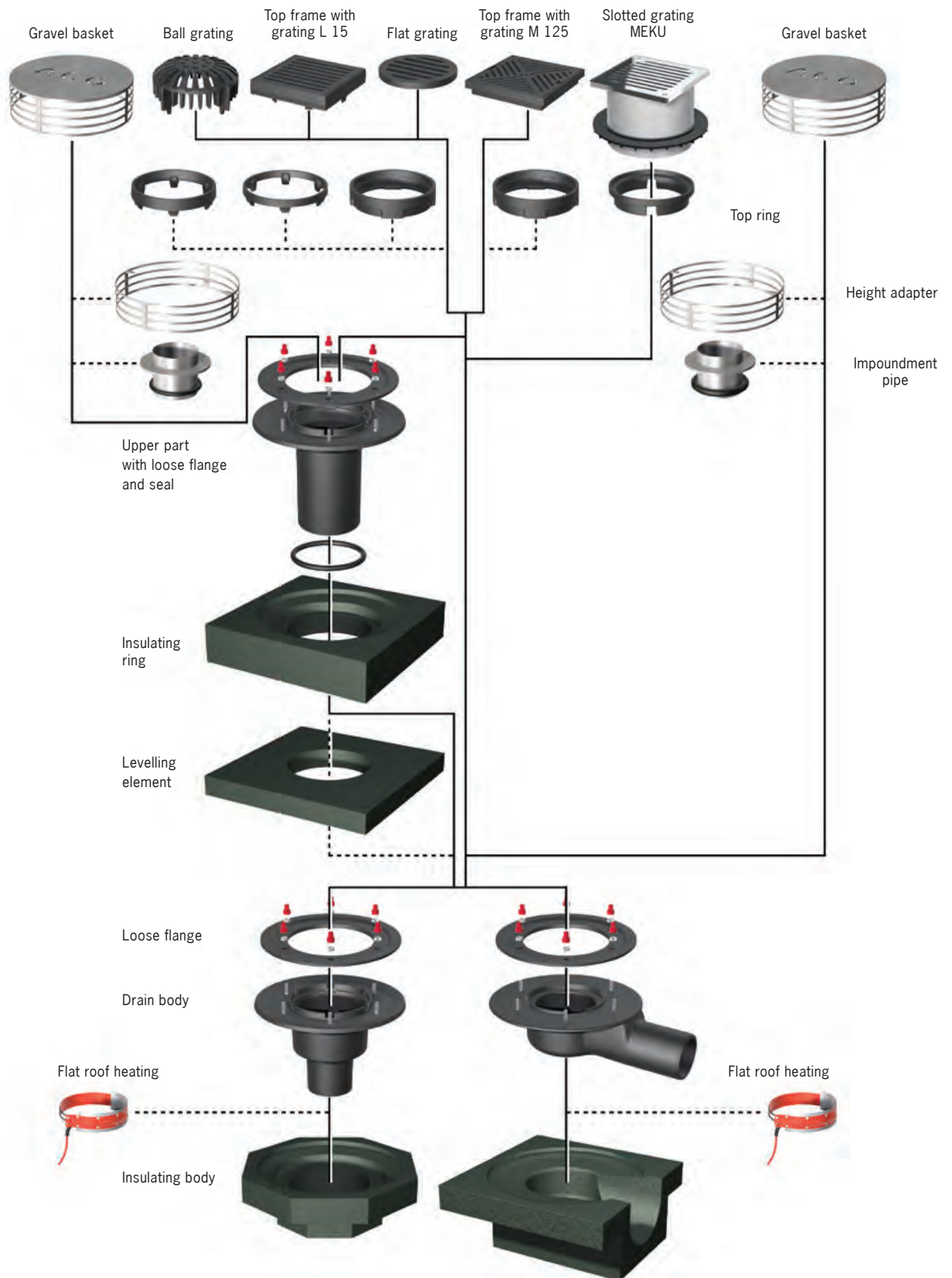
ACO Spin flat roof drain DN 70/DN 80 made of cast iron

	Scale drawing	Product description	Model	Article No.
Gravity drainage		Ball grating cast iron, fits all Spin flat roof drains DN 70, external dimensions: Ø 170 mm	Class H1,5	7000.09.00
Syphonic drainage		Flat grating cast iron, fits all Spin flat roof drains DN 70, External dimensions: Ø 138 mm	Class L15	7000.19.00
Parking deck drainage		Grating cast iron, fits all Spin flat roof drains DN 70, external dimensions: Ø 152 mm	Class M125	7000.08.00
Balcony and terrace drainage		Top ring Cast iron, fits gratings with Article Nos. 7000.09.00 7000.19.00 7000.43.00	Class L15	7000.06.00
Facade drainage		Top ring Cast iron, fits grating with Article No. 7000.08.00 7000.44.00	Class M125	7000.05.00
Pipe systems		Top frame with grating cast iron	Class L15 Class M125	7000.43.00 7000.44.00

	Scale drawing	Product description	Model	Article No.
		Top section cast iron, frame dimensions: □ 197 mm, top section and frame, cast iron, slotted cast iron grating	Class M125	5141.83.00
		Top frame cast iron, fits top section Article No. 5141.83.00	Class M125	5095.80.00
		Top section stainless steel, with slotted frame stainless steel, threaded, class K3, frame dimensions: □ 148 mm	With anti-slip surface Without anti-slip surface	5141.89.00 5141.89.11
		Top section with sieve holes frame dimensions: □ 148 mm stainless steel top section and slotted lid	Height adjusta- bility: 35–130 mm 35–225 mm	0154.55.78 0154.83.39

Modular system

ACO Spin flat roof drain DN 100 – DN 150 made of cast iron for gravity drainage



Contents

Gravity drainage

Syphonic drainage

Parking deck drainage

Balcony and terrace drainage

Facade drainage

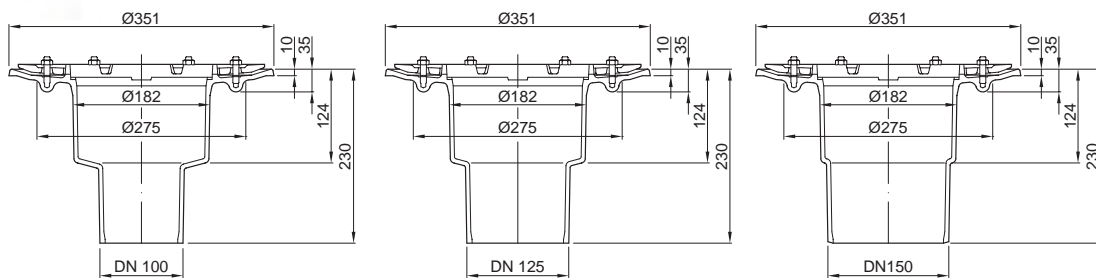
Pipe systems

ACO Spin flat roof drain made of cast iron

DN 100 – DN 150

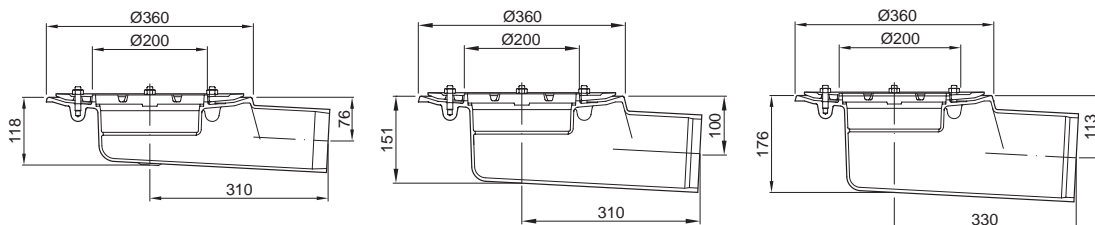


- Drain body DN 100 – DN 150 pursuant to DIN EN 1253
- Cast iron, construction material class A1, coated
- With compression sealing flange and seepage openings
- Can be connected to spigot pipe pursuant to DIN 19522 / DIN EN 877



With vertical outlet socket

Nominal width	DN 100	DN 125	DN 150
Weight	13.1 kg	13.6 kg	14.4 kg
Article No.	7034.10.10	7035.10.10	7036.10.10

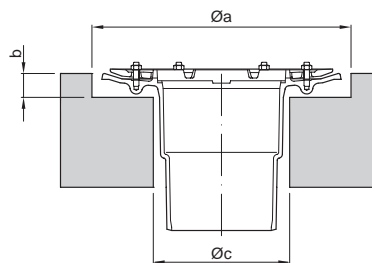


With horizontal outlet socket

Nominal width	DN 100	DN 125	DN 150
Weight	15.2 kg	15.7 kg	18.2 kg
Article No.	7054.11.10	7055.11.10	7056.11.10

Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]	Article No.
For drain body without insulating body				
DN 100	380	200	35	7034.10.10
DN 125	380	200	35	7035.10.10
DN 150	380	200	35	7036.10.10
For drain body with insulating body				
DN 100	430	270	65	7034.10.10
DN 125	430	270	65	7035.10.10
DN 150	430	270	65	7036.10.10


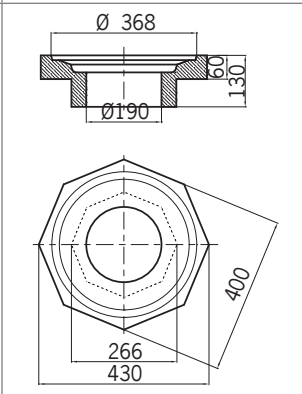
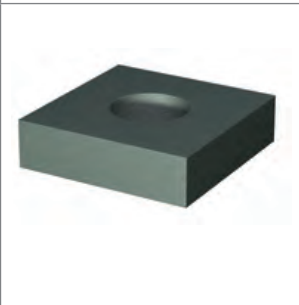
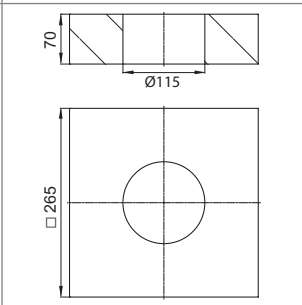
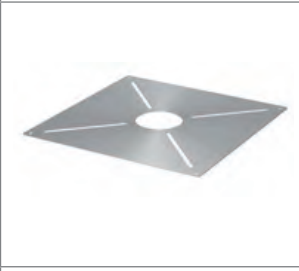
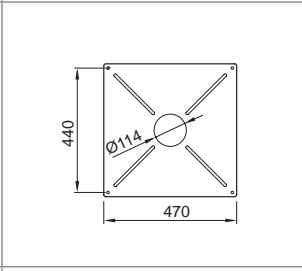
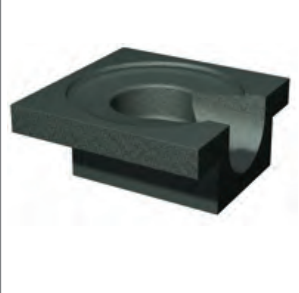
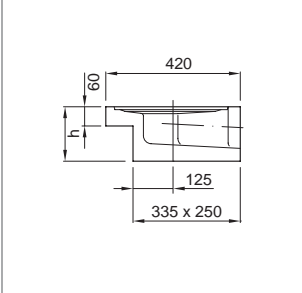


Recess dimensions

Nominal width	Type	Outlet inclination	Article No.	Recess dimensions	
				Drain body without insulating body	Drain body with insulating body
DN 100	Spin	1.5°	7054.11.10	290 x 670 mm	500 x 670 mm
DN 125	Spin	1.5°	7055.11.10	290 x 700 mm	500 x 700 mm
DN 150	Spin	1.5°	7056.11.10	290 x 750 mm	500 x 750 mm
DN 100	Spin	90°	7034.10.10	290 x 410 mm	450 x 450 mm
DN 125	Spin	90°	7035.10.10	290 x 410 mm	450 x 450 mm
DN 150	Spin	90°	7036.10.10	290 x 410 mm	450 x 450 mm

Additional components

ACO Spin flat roof drain DN 100 – DN 150 made of cast iron


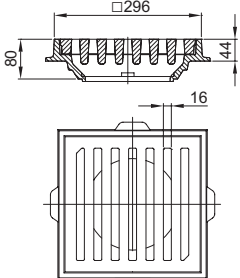

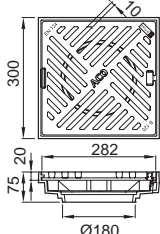

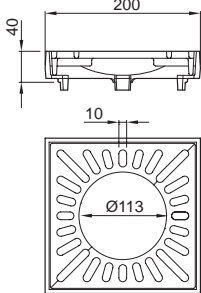

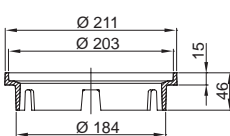

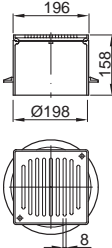

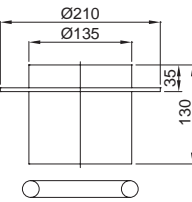
	Scale drawing	Product description	Model	Article No.
		Upper part cast iron, DN 100-DN 150 for sealing with two sealing membranes, with compression sealing flange, seepage openings and sealing ring	Coated	7044.10.25
		Insulating body for flat roof drain with vertical outlet socket, foam glass		7040.21.00
		Isolating plate foam glass 265 x 265 mm for Spin flat roof drain DN 100 – DN 150 made of cast iron with insulation and fire protection		7040.23.00
		Heat shield with impact dowels M 8 x 16 for Spin flat roof drain DN 100 made of cast iron or stainless steel with insulation and fire protection		7034.20.17
		Insulating body for flat roof drain with horizontal outlet socket, foam glass	DN 100, height: 170 mm DN 125, height: 215 mm DN 150, Höhe: 240 mm height	7040.31.00 7040.32.00 7040.33.00

	Scale drawing	Product description	Model	Article No.
		Insulating ring for flat roof drain upper part DN 100 – DN 150, foam glass		7040.11.00
		levelling element for flat roof upper part DN 100 – DN 150, foam glass		7040.01.00
		Bucket stainless steel, material 1.4301, fits flat roof drain DN 100 – DN 150 made of cast iron		7000.13.00
		Flat roof heating Suitable for all flat roof drains DN 50 – DN 150, Electrical supply: 220-240 V AC, Nominal power: 25 W, Protection class: I, Protection type: IP 67, Connecting cable: SIHF 3 x 1 mm ² , 1.5 m G 1.5		7000.85.00
		Fire protection insert fits Spin flat roof drain DN 100 with 90° outlet inclination. Warning! Outflow perfor- mance reduced by the insert!		7034.20.15

Top sections, gratings and top frames


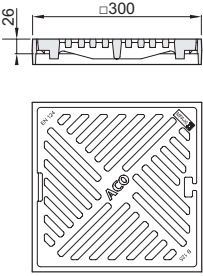
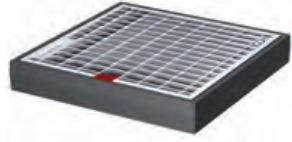
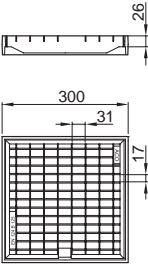

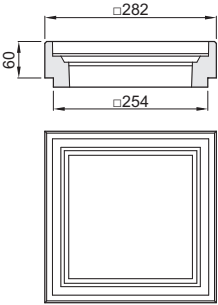

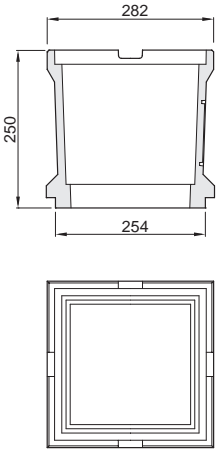
ACO Spin flat roof drains DN 100 – DN 150 made of cast iron

	Scale drawing	Product description	Model	Article No.
		Ball grating cast iron, fits all Spin flat roof drains DN 100 – DN 150, external dimensions: Ø 225 mm	Class H1,5	7000.10.00
		Stacking frame with grating from cast iron, suitable for all flat roof drains Spin DN 100 – DN 150 without insulation, outer diameter: Ø 200 mm	Class M125	7000.28.00
		Top ring cast iron, fits Article No. 7000.46.00, 7000.28.00, 7000.41.00, 7000.42.00	Class M125	7000.45.00
		Flat grating cast iron, fits all Spin flat roof drains DN 100 – DN 150, external dimensions: Ø 185 mm	Class L15	7000.20.00
		Top ring cast iron, fits Article Nos. 7000.10.00, 7000.20.00, 7000.39.00 and 7000.40.00	Height: 25 mm Height: 35 mm	7000.25.00 7000.35.00
		Top frame cast iron, with slotted grating Frame dimensions: □ 200x200 mm	Class L15	7000.40.00

	Scale drawing	Product description	Model	Article No.
		<p>Top frame cast iron, with slotted grating Frame dimensions: □ 296 mm</p>	Class M125, unbolted	7000.41.00
			bolted	7000.42.00
		<p>Top frame with boltless locking, cast iron, with slotted grating Frame dimensions: □ 300x300 mm</p>	Class M125, locked	7000.46.00
		<p>Top frame cast iron, with slotted grating, Frame dimensions: □ 200 x 200 mm</p>	Class L15	7000.39.00
		<p>Transition ring cast iron, fits top section Article No. 5084.81.00 Build height: 24 mm</p>	Class K3	7000.31.00
		<p>MEKU top section frame dimensions: □ 196 mm, plastic top section, frame and slotted grating made of stainless steel Transition ring required (previous Article No.)</p>	Class K3, bolted	5084.81.00
		<p>Impoundment pipe made of CrNi, material 1.4301, with a sealing ring for Spin flat roof drains made of cast iron</p>	35 mm, DN 100, one-piece 35 mm, DN 100, two-piece 45 mm, DN 125/DN150, one-piece 45 mm, DN 125/150, two-piece	7034.10.50 7044.10.50 7035.10.50 7045.10.50

Green roof / Parking deck top sections

ACO Spin flat roof drain DN 70 – DN 150 made of cast iron

	Scale drawing	Product description	Model	Article No.
		Frame with slotted grating with boltless locking, cast iron, coated, frame dimensions: □ 300 mm	Class L15/M125	7000.51.00
		Frame with slotted grating with adjustment, steel, galvanised, lattice dimensions 31 x 17 mm, frame dimensions: □ 300 mm	Class L15/M125	7000.50.00
		Intermediate sections polymer concrete, height: 60 mm	Class L15/M125	7000.52.00
		Intermediate section polymer concrete, height: 250 mm	Class L15/M125	7000.54.00

Contents

Gravity drainage



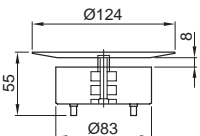

Syphonic drainage

Parking deck drainage

Balcony and terrace drainage

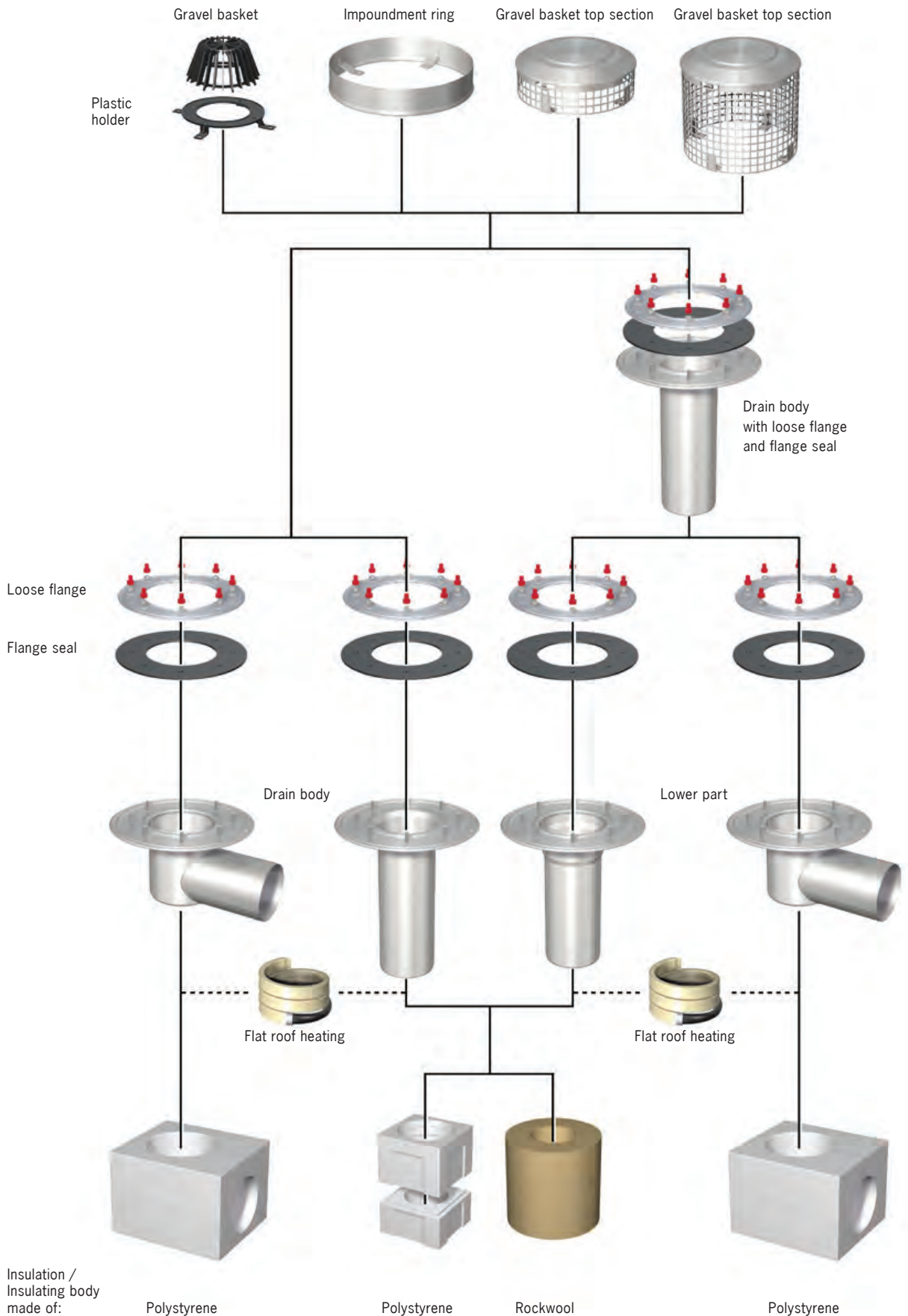
Facade drainage

Pipe systems

	Scale drawing	Product description	Model	Article No.
		Adapter frame polymer concrete height: 60 mm	Class L15	7000.55.00
		Adapter frame polymer concrete height: 100 mm	Class M125	7000.56.00
		Bucket polypropylene for top sections min 180 mm in combination with Article No. 7000.50.00 and 7000.51.00		7000.53.00
		Bucket Stainless steel for top sections up to 180 mm, for flat roof drains DN 70		7000.03.00
		Bucket stainless steel, for top sections up to 180 mm, for flat roof drains DN 100 – DN 150		7000.13.00

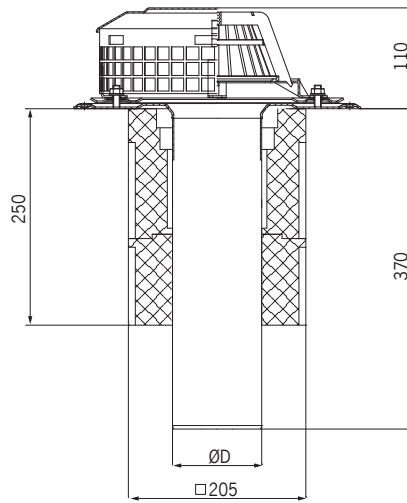
Modular system

ACO Spin flat roof drains made of stainless steel for gravity drainage



ACO Spin flat roof drains made of stainless steel with vertical outlet socket

DN 70 – DN 125

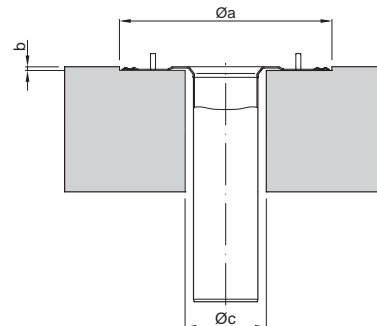


- Flat roof drain DN 70 – DN 125 with vertical outlet socket pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With compression sealing flange for sealing one sealing membrane
Warning! It is NOT possible to install a second sealing membrane after the vertical drain has been installed!
- Sarnafil TG 66-15
 - for loose placement
 - for greened, gravelled roofs with foot and vehicle traffic
 - for roofs with additional loads
- Sikaplan 15 G
 - for loose placement with mechanical fixing
 - up to a roof gradient of maximum 20%
 - for roofs without additional loads

Nominal Width	Model	D [mm]	Weight [kg]	Stainless steel gravel basket			Weight [kg]	Plastic gravel basket		
				without ceiling membrane Article No.	Sarnafil TG 66-15 Article No.	Sikaplan 15 G Article No.		without ceiling membrane Article No.	Sarnafil TG 66-15 Article No.	Sikaplan 15 G Article No.
DN 70	uninsulated	73	4.5	1179.10.60	1179.10.62	1179.10.67	3.7	1179.10.10	1179.10.12	1179.10.17
	polystyrene	73	4.7	1179.15.60	1179.15.62	1179.15.67	3.9	1179.15.10	1179.15.12	1179.15.17
	rock wool	73	4.7	1179.17.60	1179.17.62	1179.17.67	3.9	1179.17.10	1179.17.12	1179.17.17
	polystyrene, heated	73	4.9	1179.15.90	1179.15.92	1179.15.97	4.1	1179.15.40	1179.15.42	1179.15.47
	rock wool, heated	73	4.9	1179.17.90	1179.17.92	1179.17.97	4.1	1179.17.40	1179.17.42	1179.17.47
DN 100	uninsulated	103	4.9	1119.10.60	1119.10.62	1119.10.67	4.1	1119.10.10	1119.10.12	1119.10.17
	polystyrene	103	5.0	1119.15.60	1119.15.62	1119.15.67	4.2	1119.15.10	1119.15.12	1119.15.17
	rock wool	103	5.0	1119.17.60	1119.17.62	1119.17.67	4.2	1119.17.10	1119.17.12	1119.17.17
	polystyrene, heated	103	5.2	1119.15.90	1119.15.92	1119.15.97	4.4	1119.15.40	1119.15.42	1119.15.47
	rock wool, heated	103	5.2	1119.17.90	1119.17.92	1119.17.97	4.4	1119.17.40	1119.17.42	1119.17.47
DN 125	uninsulated	133	5.9	1129.10.60	1129.10.62	1129.10.67	5.1	1129.10.10	1129.10.12	1129.10.17
	polystyrene	133	6.0	1129.15.60	1129.15.62	1129.15.67	5.2	1129.15.10	1129.15.12	1129.15.17
	rock wool	133	6.0	1129.17.60	1129.17.62	1129.17.67	5.2	1129.17.10	1129.17.12	1129.17.17
	polystyrene, heated	133	6.2	1129.15.90	1129.15.92	1129.15.97	5.4	1129.15.40	1129.15.42	1129.15.47
	rock wool, heated	133	6.2	1129.17.90	1129.17.92	1129.17.97	5.4	1129.17.40	1129.17.42	1129.17.47

Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]
For drain bodies without insulating bodies			
DN 70	340	90	10
DN 100	340	130	10
DN 125	340	160	10
For drain bodies with insulating bodies			
DN 70	340	290	10
DN 100	340	290	10
DN 125	340	290	10

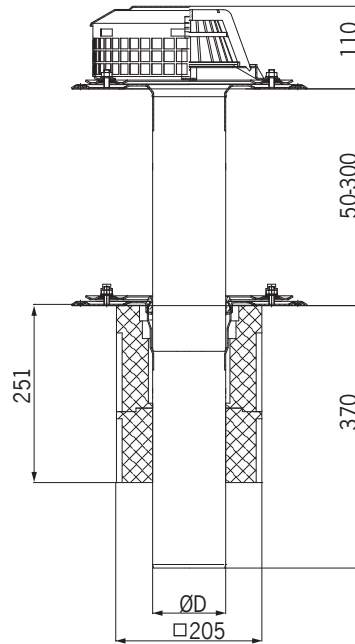


Recess dimensions

Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 70	Spin	90°	120 x 260 mm	230 x 360 mm
DN 100	Spin	90°	150 x 290 mm	230 x 360 mm
DN 125	Spin	90°	190 x 300 mm	230 x 360 mm

ACO Spin flat roof drains made of stainless steel with vertical outlet socket

DN 70 – DN 125

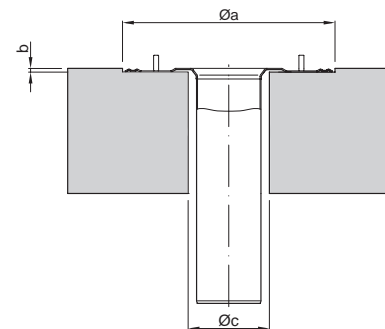


- Flat roof drain DN 70 – DN 125 with vertical outlet socket pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With two compression sealing flanges for sealing with two sealing membranes
- Sarnafil TG 66-15
 - for loose placement
 - for greened, gravelled roofs with foot and vehicle traffic loads
 - for roofs with additional loads
- Sikaplan 15 G
 - for loose placement with mechanical fixing
 - up to a roof gradient of maximum 20%
 - for roofs without additional loads

Nominal Width	Model	D [mm]	Weight [kg]	Stainless steel gravel basket			Weight [kg]	Plastic gravel basket		
				without ceiling membrane Article No.	Sarnafil TG 66-15 Article No.	Sikaplan 15 G Article No.		without ceiling membrane Article No.	Sarnafil TG 66-15 Article No.	Sikaplan 15 G Article No.
DN 70	uninsulated	73	7.3	1179.20.60	1179.20.65	1179.20.69	6.4	1179.20.10	1179.20.15	1179.20.19
	polystyrene	73	8.4	1179.25.60	1179.25.65	1179.25.69	6.5	1179.25.10	1179.25.15	1179.25.19
	rock wool	73	8.4	1179.27.60	1179.27.65	1179.27.69	6.5	1179.27.10	1179.27.15	1179.27.19
	polystyrene, heated	73	8.6	1179.25.90	1179.25.95	1179.25.99	6.7	1179.25.40	1179.25.45	1179.25.49
	rock wool, heated	73	8.6	1179.27.90	1179.27.95	1179.27.99	6.7	1179.27.40	1179.27.45	1179.27.49
DN 100	uninsulated	103	7.9	1119.20.60	1119.20.65	1119.12.69	7.0	1119.20.10	1119.20.15	1119.20.19
	polystyrene	103	8.2	1119.25.60	1119.25.65	1119.25.69	7.1	1119.25.10	1119.25.15	1119.25.19
	rock wool	103	8.2	1119.27.60	1119.27.65	1119.27.69	7.1	1119.27.10	1119.27.15	1119.27.19
	polystyrene, heated	103	8.4	1119.25.90	1119.25.95	1119.25.99	7.3	1119.25.40	1119.25.45	1119.25.49
	rock wool, heated	103	8.4	1119.27.90	1119.27.95	1119.27.99	7.3	1119.27.40	1119.27.45	1119.27.49
DN 125	uninsulated	133	9.5	1129.20.60	1129.20.65	1129.20.69	8.6	1129.20.10	1129.20.15	1129.20.19
	polystyrene	133	9.6	1129.25.60	1129.25.65	1129.25.69	8.8	1129.25.10	1129.25.15	1129.25.19
	rock wool	133	9.6	1129.27.60	1129.27.65	1129.27.69	8.8	1129.27.10	1129.27.15	1129.27.19
	polystyrene, heated	133	9.8	1129.25.90	1129.25.95	1129.25.99	9.0	1129.25.40	1129.25.45	1129.25.49
	rock wool, heated	133	9.8	1129.27.90	1129.27.95	1129.27.99	9.0	1129.27.40	1129.27.45	1129.27.49

Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]
For drain bodies without insulating bodies			
DN 70	340	90	10
DN 100	340	130	10
DN 125	340	160	10
For drain bodies with insulating bodies			
DN 70	340	290	10
DN 100	340	290	10
DN 125	340	290	10

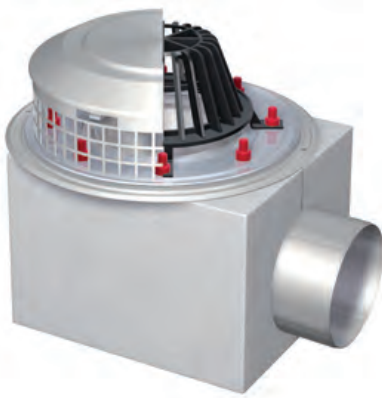


Recess dimensions

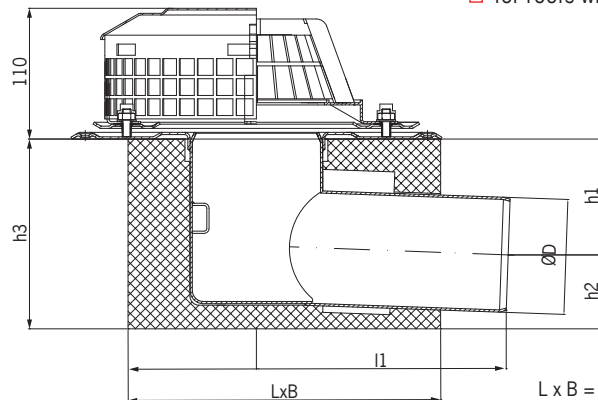
Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 70	Spin	90°	120 x 260 mm	230 x 360 mm
DN 100	Spin	90°	150 x 290 mm	230 x 360 mm
DN 125	Spin	90°	190 x 300 mm	230 x 360 mm

ACO Spin flat roof drains made of stainless steel with lateral outlet socket

DN 70 – DN 125



- Flat roof drain DN 70 – DN 125 with lateral outlet socket pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With compression sealing flange for sealing one sealing membrane
- Optionally available with a gravel basket made of plastic or stainless steel
- Sarnafil TG 66-15
 - for loose placement
 - for greened, gravelled roofs with foot and vehicle traffic
 - for roofs with additional loads
- Sikaplan 15 G
 - for loose placement with mechanical fixing
 - up to a roof gradient of maximum 20%
 - for roofs without additional loads



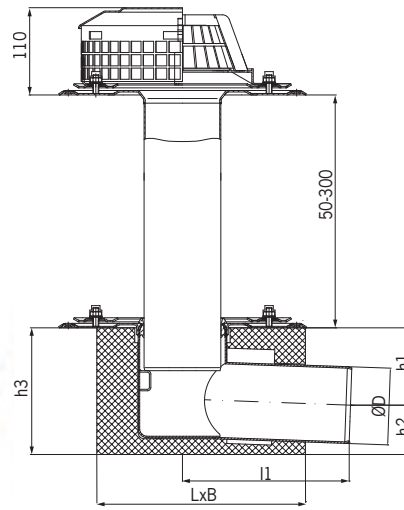
L x B = DN 70: 260 x 190
DN 100/125: 280 x 230

Nominal Width	76						Stainless steel gravel basket			Plastic gravel basket				
	Model	D [mm]	h1	h2	h3	l1	Weight [kg]	without ceiling membrane Article No.	Sarnafil TG 66-15 Article No.	Sikaplan 15 G Article No.	Weight [kg]	without ceiling membrane Article No.	Sarnafil TG 66-15 Article No.	Sikaplan 15 G Article No.
DN 70	uninsulated	73	95	45	140	213	4.4	1175.10.60	1175.10.62	1175.10.67	3.7	1175.10.10	1175.10.12	1175.10.17
	polystyrene	73	95	45	140	213	4.6	1175.15.60	1175.15.62	1175.15.67	3.9	1175.15.10	1175.15.12	1175.15.17
	rock wool	73	95	45	140	213	4.6	1175.17.60	1175.17.62	1175.17.67	3.9	1175.17.10	1175.17.12	1175.17.17
	polystyrene, heated	73	95	45	140	213	4.8	1175.15.90	1175.15.92	1175.15.97	4.1	1175.15.40	1175.15.42	1175.15.47
	rock wool, heated	73	95	45	140	213	4.8	1175.17.90	1175.17.92	1175.17.97	4.1	1175.17.40	1175.17.42	1175.17.47
DN 100	uninsulated	103	104	66	170	226	4.9	1115.10.60	1115.10.62	1115.10.67	4.1	1115.10.10	1115.10.12	1115.10.17
	polystyrene	103	104	66	170	226	5.1	1115.15.60	1115.15.62	1115.15.67	4.2	1115.15.10	1115.15.12	1115.15.17
	rock wool	103	104	66	170	226	5.1	1115.17.60	1115.17.62	1115.17.67	4.2	1115.17.10	1115.17.12	1115.17.17
	polystyrene, heated	103	104	66	170	226	5.3	1115.15.90	1115.15.92	1115.15.97	4.4	1115.15.40	1115.15.42	1115.15.47
	rock wool, heated	103	104	66	170	226	5.3	1115.17.90	1115.17.92	1115.17.97	4.4	1115.17.40	1115.17.42	1115.17.47
DN 125	uninsulated	133	124	76	200	230	5.6	1125.10.60	1125.10.62	1125.10.67	5.1	1125.10.10	1125.10.12	1125.10.17
	polystyrene	133	124	76	200	230	5.8	1125.15.60	1125.15.62	1125.15.67	5.2	1125.15.10	1125.15.12	1125.15.17
	rock wool	133	124	76	200	230	5.8	1125.17.60	1125.17.62	1125.17.67	5.2	1125.17.10	1125.17.12	1125.17.17
	polystyrene, heated	133	124	76	200	230	6.0	1125.15.90	1125.15.92	1125.15.97	5.4	1125.15.40	1125.15.42	1125.15.47
	rock wool, heated	133	124	76	200	230	6.0	1125.17.90	1125.17.92	1125.17.97	5.4	1125.17.40	1125.17.42	1125.17.47

Recess dimensions

Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 70	Spin	1.5°	120 x 360 mm	220 x 360 mm
DN 100	Spin	1.5°	150 x 400 mm	260 x 430 mm
DN 125	Spin	1.5°	190 x 400 mm	260 x 430 mm

ACO Spin flat roof drains made of stainless steel with lateral outlet socket DN 70 – DN 125



L x B = DN 70: 260 x 190
DN 100/125: 280 x 230

- Flat roof drain DN 70 – DN 125 with lateral outlet socket pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With two compression sealing flanges for sealing with two sealing membranes
- Sarnafil TG 66-15
 - for loose placement
 - for greened, gravelled roofs with foot and vehicle traffic
 - for roofs with additional loads
- Sikaplan 15 G
 - for loose placement with mechanical fixing
 - up to a roof gradient of maximum 20%
 - for roofs without additional loads


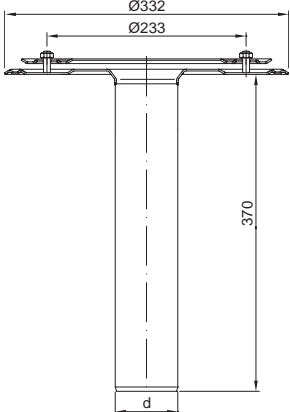

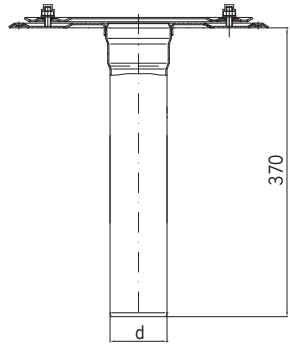

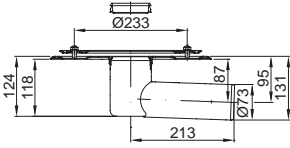

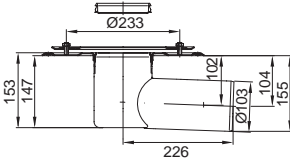

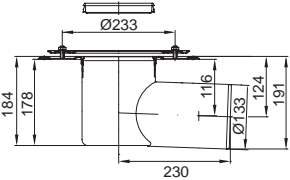
Nominal width	Model	D [mm]	h1	h2	h3	l1	Stainless steel gravel basket			Plastic gravel basket				
							Weight [kg]	without ceiling membrane Article No.	Sarnafil TG 66-15 Article No.	Sikaplan 15 G Article No.	Weight [kg]	without ceiling membrane Article No.	Sarnafil TG 66-15 Article No.	Sikaplan 15 G Article No.
DN 70	uninsulated	73	95	118	140	213	7.1	1175.20.60	1175.20.65	1175.20.69	6.4	1175.20.10	1175.20.15	1175.20.19
	polystyrene	73	95	118	140	213	7.3	1175.25.60	1175.25.65	1175.25.69	6.6	1175.25.10	1175.25.15	1175.25.19
	rock wool	73	95	118	140	213	7.5	1175.27.60	1175.27.65	1175.27.69	6.8	1175.27.10	1175.27.15	1175.27.19
	polystyrene, heated	73	95	118	140	213	7.3	1175.25.90	1175.25.95	1175.25.99	6.6	1175.25.40	1175.25.45	1175.25.49
	rock wool, heated	73	95	118	140	213	7.5	1175.27.90	1175.27.95	1175.27.99	6.8	1175.27.40	1175.27.45	1175.27.49
DN 100	uninsulated	103	104	148	170	226	7.6	1115.20.60	1115.20.65	1115.20.69	6.8	1115.20.10	1115.20.15	1115.20.19
	polystyrene	103	104	148	170	226	7.8	1115.25.60	1115.25.65	1115.25.69	6.9	1115.25.10	1115.25.15	1115.25.19
	rock wool	103	104	148	170	226	8.0	1115.27.60	1115.27.65	1115.27.69	7.1	1115.27.10	1115.27.15	1115.27.19
	polystyrene, heated	103	104	148	170	226	7.8	1115.25.90	1115.25.95	1115.25.99	6.9	1115.25.40	1115.25.45	1115.25.49
	rock wool, heated	103	104	148	170	226	8.0	1115.27.90	1115.27.95	1115.27.99	7.1	1115.27.40	1115.27.45	1115.27.49
DN 125	uninsulated	133	124	178	200	230	8.3	1125.20.60	1125.20.65	1125.20.69	7.8	1125.20.10	1125.20.15	1125.20.19
	polystyrene	133	124	178	200	230	8.5	1125.25.60	1125.25.65	1125.25.69	7.9	1125.25.10	1125.25.15	1125.25.19
	rock wool	133	124	178	200	230	8.7	1125.27.60	1125.27.65	1125.27.69	8.1	1125.27.10	1125.27.15	1125.27.19
	polystyrene, heated	133	124	178	200	230	8.5	1125.25.90	1125.25.95	1125.25.99	7.9	1125.25.40	1125.25.45	1125.25.49
	rock wool, heated	133	124	178	200	230	8.7	1125.27.90	1125.27.95	1125.27.99	8.1	1125.27.40	1125.27.45	1125.27.49

Recess dimensions

Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 70	Spin	90°	120 x 360 mm	220 x 360 mm
DN 100	Spin	90°	150 x 400 mm	260 x 430 mm
DN 125	Spin	90°	190 x 400 mm	260 x 430 mm

Additional components

ACO Spin flat roof drains DN 70 – DN 125 made of stainless steel

	Scale drawing	Product description	Model	Article No.
		Drain body for a one-piece or two-piece flat roof drain with vertical or horizontal outlet socket stainless steel, material 1.4301, with compression sealing flange. Warning! No extension piece for a second sealing membrane level can be installed after installation!	DN 70 (d= 73 mm) DN 100 (d= 103 mm) DN 125 (d= 133 mm)	0174.47.30 0174.47.31 0174.47.32
		Lower part for two-piece flat roof drain stainless steel, material 1.4301 with compression sealing flange	DN 70 (d= 73 mm) DN 100 (d= 103 mm) DN 125 (d= 133 mm)	0174.47.15 0174.47.16 0174.47.17
		Drain body/lower part for one-piece or two-piece flat roof drain with lateral outlet socket stainless steel, material 1.4301, with compression sealing flange	DN 70 (d= 73 mm)	0174.48.03
		Drain body/lower part for one-piece or two-piece flat roof drain with lateral outlet socket stainless steel, material 1.4301, with compression sealing flange	DN 100 (d= 103 mm)	0174.48.04
		Drain body/lower part for one-piece or two-piece flat roof drain with lateral outlet socket stainless steel, material 1.4301, with compression sealing flange	DN 125 (d= 133 mm)	0174.48.11

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Gravity drainage
Syphonic drainage
Parking deck drainage
Balcony and terrace drainage
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Pipe systems

	Scale drawing	Product description	Model	Article No.
		Positioning flange with compression sealing flange, stainless steel, material 1.4301, for lower parts DN 70 in the Spin product line	For unheated model	0174.46.54
		Flange seal	EPDM, thickness: 4 mm EPDM, thickness: 5 mm PVC-soft, thickness: 4 mm NBR/SBR, thickness: 4 mm	0174.42.87 0174.42.95 0174.42.92 0174.42.97
		Gravel basket stainless steel, fits all Spin flat roof drains made of stainless steel	Height: 75 mm Height: 225 mm	0174.46.63 0174.46.64
		Gravel basket for reversed roof stainless steel, material 1.4301, load class H 1.5		0153.60.01
		Control shaft stainless steel, material 1.4301, dimensions: 400 x 400 mm, height: 120 mm, load class H 1.5		0153.73.05
		Gravel basket made of plastic fits all Spin flat roof drains made of stainless steel		0174.87.36

	Scale drawing	Product description	Model	Article No.
		Impoundment ring stainless steel, material 1.4301	DN 70/DN100, Height: 35 mm	0174.46.76
			DN 125, Height: 45 mm	0174.46.77
		Profiline top section steel, galvanised, dimensions: 400 x 400 mm height adjustable from 78–108 mm		38801
		Extension for Profiline top section for frame dimensions 400 x 400 mm	Height: 30 mm	38685
			Height: 60 mm	38687
			Height: 120 mm	38689
		Flat roof heating fits all flat roof drains DN 70 – DN 150, Electrical supply: 220-240 V, AC, Nominal power: 25 W, Protection class: I, Protection type: IP 67, Cables: SIHF 3 x 1 mm ² , 1.5 m G 1.5		0174.84.32
		Rock wool insulation, construction material class A1 for all vertical drain bodies Spin and lower parts	DN 70 DN 100 DN 125	0174.46.57 0174.47.21 0174.47.22
		Polystyrene insulation, PS 30 for vertical drain bodies Spin and lower parts	DN 70 DN 100 DN 125	0174.47.18 0174.47.19 0174.47.20
		Polystyrene insulation, PS 30 for lateral lower parts Spin	DN 70, 260x190x140	0174.48.06
			DN 100, 280x230x170	0174.48.07
			DN 125, 280x230x200	0174.48.08
		Mounting sheet for trapezoidal sheet roofs steel, galvanised		0174.46.61

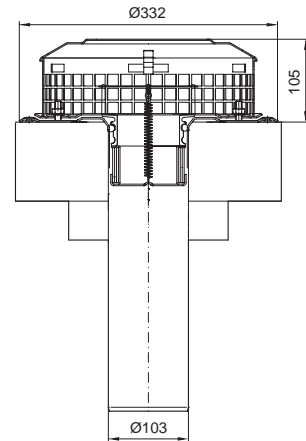
Contents
Gravity drainage
Syphonic drainage
Parking deck drainage
Balcony and terrace drainage
Facade drainage
Pipe systems

ACO fire protection drains Spin – for gravity drainage

Complete drain 1-part/inclination: 90 °



- Fire resistance class R30 – R120 tested as per Gen. Build. Sup. Z-19.17-1888
 - With factory inserted sealing membrane
 - Flat roof gully unit tested for leaks as per DIN EN 1253
 - Made from stainless steel, material grade 304
 - Airlock with fire protection insert
 - With clamping flange for sealing with 1 sealing membrane
 - Usable for 1 sealing plane
 - Socket inclination: 90°
 - Insulation: uninsulated with/ out heating
- Insulation
 - uninsulated with/without heating
 - Sarnafil TG 66-15
 - for loose placement
 - for greened, gravelled roofs with foot and vehicle traffic
 - for roofs with additional loads
 - Sikaplan 15 G
 - for loose placement with mechanical fixing
 - up to a roof gradient of maximum 20%
 - for roofs without additional loads

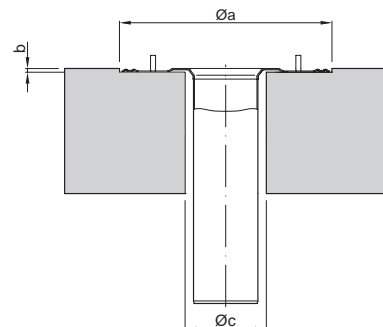


Nominal width: DN 100/Diameter: 103 mm

gravel basket	Insulation	Recess [mm]	Weight [kg]	Article No.		
				without ceiling membrane	Sarnafil TG 66-15	Sikaplan 15 G
stainless steel	uninsulated	150 x 290	5.1	1311.10.60	1311.10.62	1311.10.67
	insulated, heated	150 x 290	5.3	1311.10.90	1311.10.92	1311.10.97
	foam glass	230 x 360	6.0	1311.18.60	1311.18.62	1311.18.67
	foam glass, heated	230 x 360	3.2	1311.18.90	1311.18.92	1311.18.97


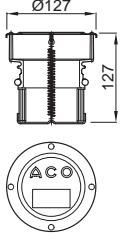
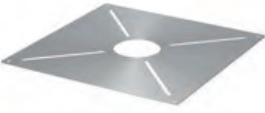
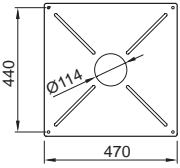
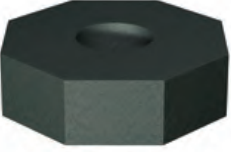
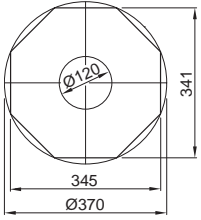

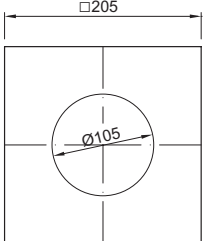
Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]
For drain bodies without insulating bodies			
DN 100	340	130	10
For drain bodies with insulating bodies			
DN 100	340	290	10



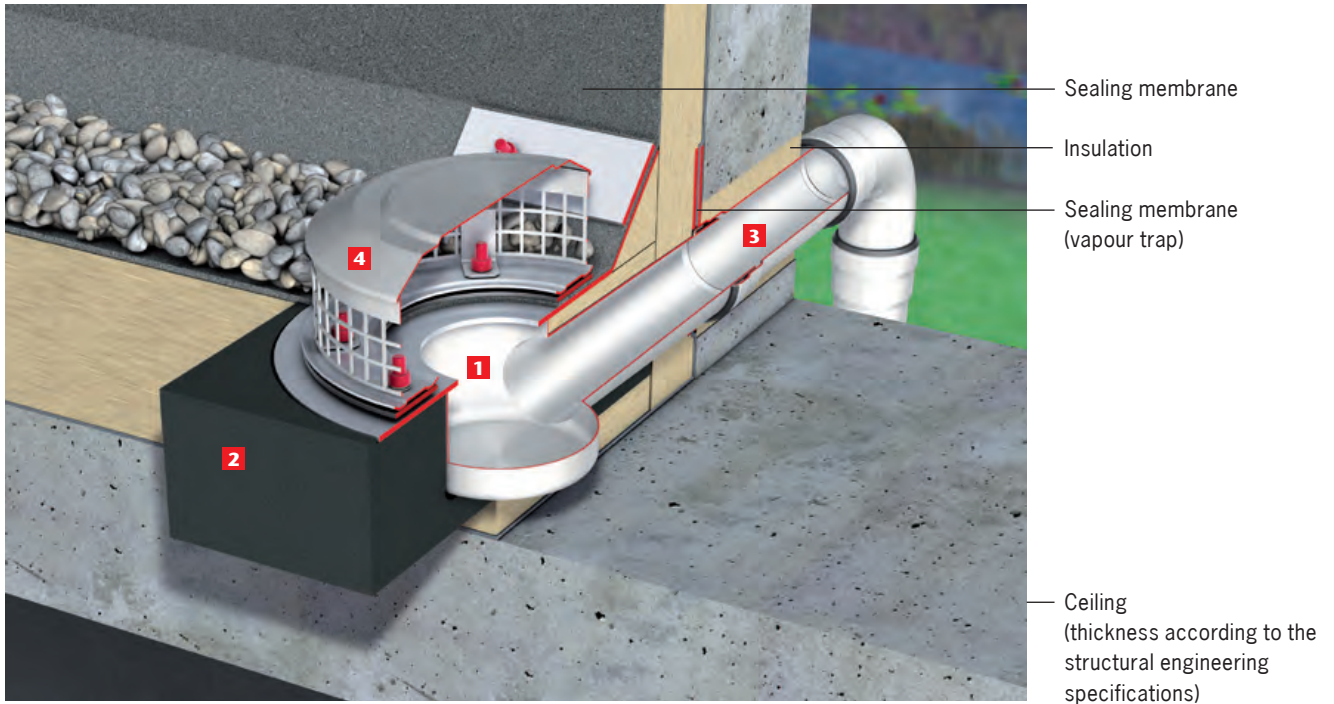
Fire protection accessories

ACO Spin flat roof drains DN 100 made of stainless steel

	Scale drawing	Product description	Model	Article No.
		Fire protection insert fits Spin flat roof drains DN 100 with 90° outlet socket inclination. <i>Warning! The outflow capacity is reduced when this insert is installed (refer to page 15).</i>		7034.20.15
		Heat shield stainless steel, for Spin flat roof drain DN 100, with impact dowels M8 x 16		7034.20.17
		Insulating body foam glass, for Spin vertical drain bodies and lower parts		0174.77.96
		Insulating sleeve foam glass, for Spin vertical drain bodies and lower parts for length adaptation (height: 150 mm)		0174.77.94

Installation recommendation

Gravity drainage with Attika flat roof gully and duct made of stainless steel

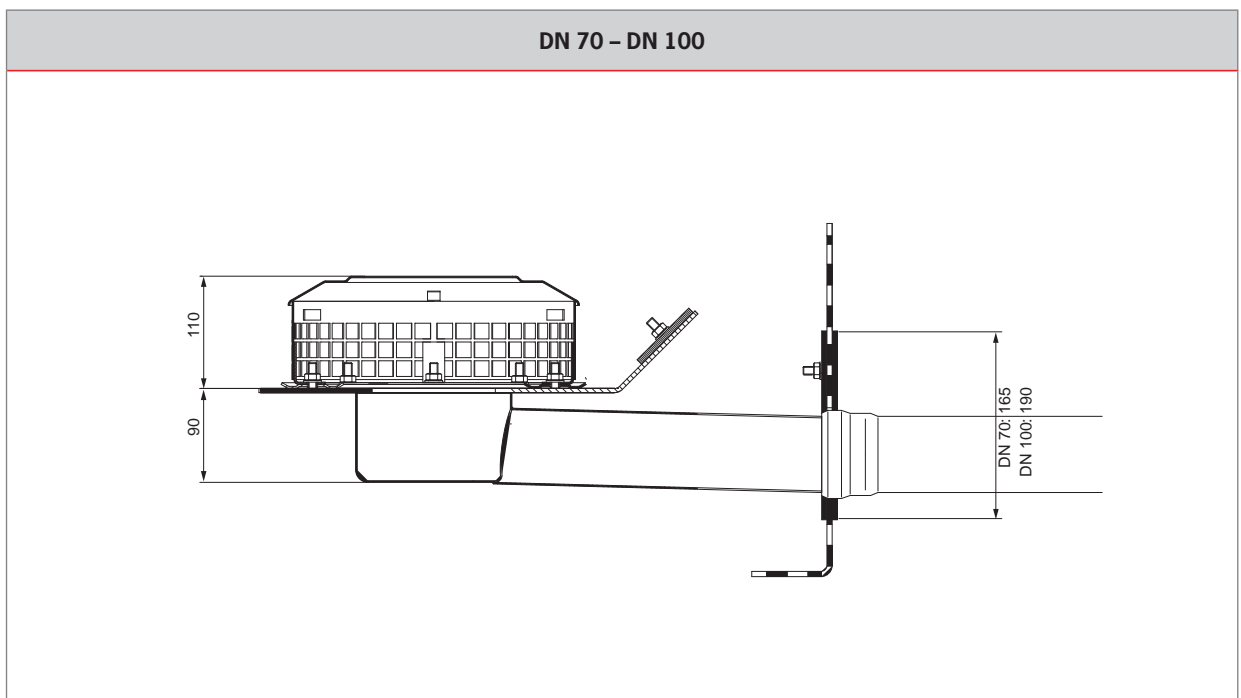


1 Attika flat roof gully made of stainless steel DN 70, 1.5° socket outlet inclination for sealing with bitumen
 Article No. 0174.78.22

2 Isolating body
 Article No. 0154.02.94

3 Attika duct DN 70
 Article No. 0174.48.66

4 Gravel bucket of stainless steel
 Article No. 0174.46.59



Extension heights in mm

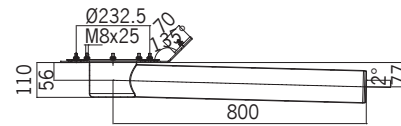
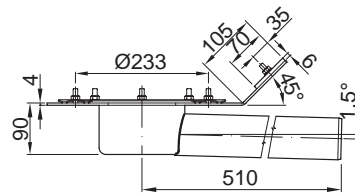
Contents
 Gravity drainage
 Syphonic drainage
 Parking deck drainage
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 Facade drainage
 Pipe systems

Attika flat roof drains made of stainless steel

DN 70–DN 100

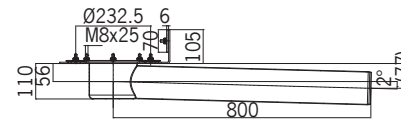
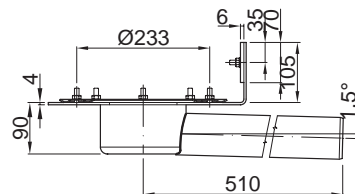


- Drain body DN 70 or DN 100
- Stainless steel, material 1.4301
- With compression sealing flange
- Direct connection to ACO GM-X pipe system, connection to other types of pipe requires transition fittings



For bitumen sealing membranes

Nominal width	DN 70	DN 100
Article No.	0174.78.22	0174.78.24



For plastic sealing membranes

Nominal width	DN 70	DN 100
Article No.	0174.78.23	0174.78.25

Outflow capacities

Nominal width	required value according to DIN with water built up 35 mm	actual value according to DIN with water built up 35 mm	actual value for water-spout 35 mm with water build up 35 mm
DN 70	1.7 l/s	5.4 l/s	3.1 l/s
DN 100	4.5 l/s	6.0 l/s	5.0 l/s

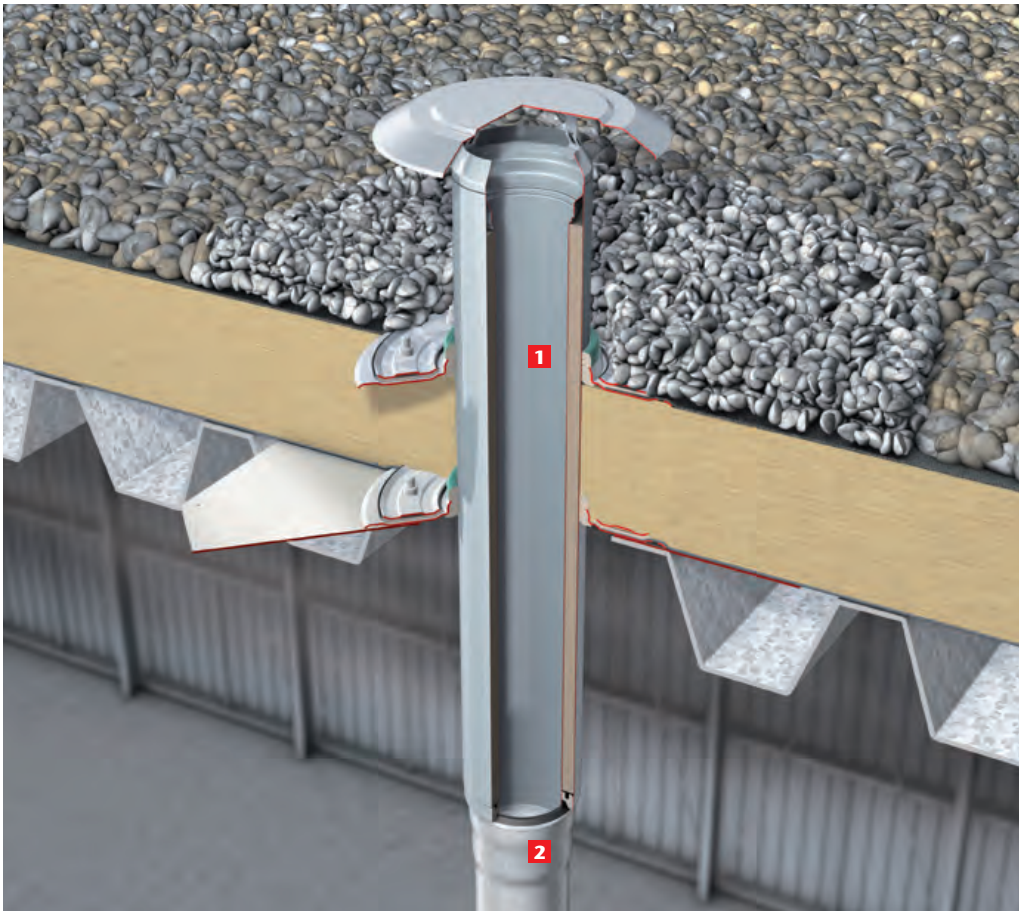
Additional components

Attika flat roof drains DN 70 – DN 100 made of stainless steel

	Scale drawing	Product description	Model	Article No.
		Stainless steel gravel basket Fits all Spin flat roof drains made of stainless steel	Height: 75 mm Height: 225 mm	0174.46.63 0174.46.64
		Plastic gravel basket fits all Spin flat roof drains made of stainless steel		0174.87.36
		Flange seal diameter: 303 mm Thickness: 4 mm	EPDM PVC-soft NBR/SBR	0174.42.87 0174.42.92 0174.42.97
		Impoundment ring for emergency drains, stainless steel, 1.4301, diameter: 324 mm, height: 35 mm		0174.46.76
		Insulating body foam glass	DN 70 DN 100	0154.02.95 0154.02.94
		Attika duct DN 100 with pre-installed clamped-in bitumen connecting sleeve	DN 70 DN 100	0174.48.66 0174.48.67

Installation recommendation

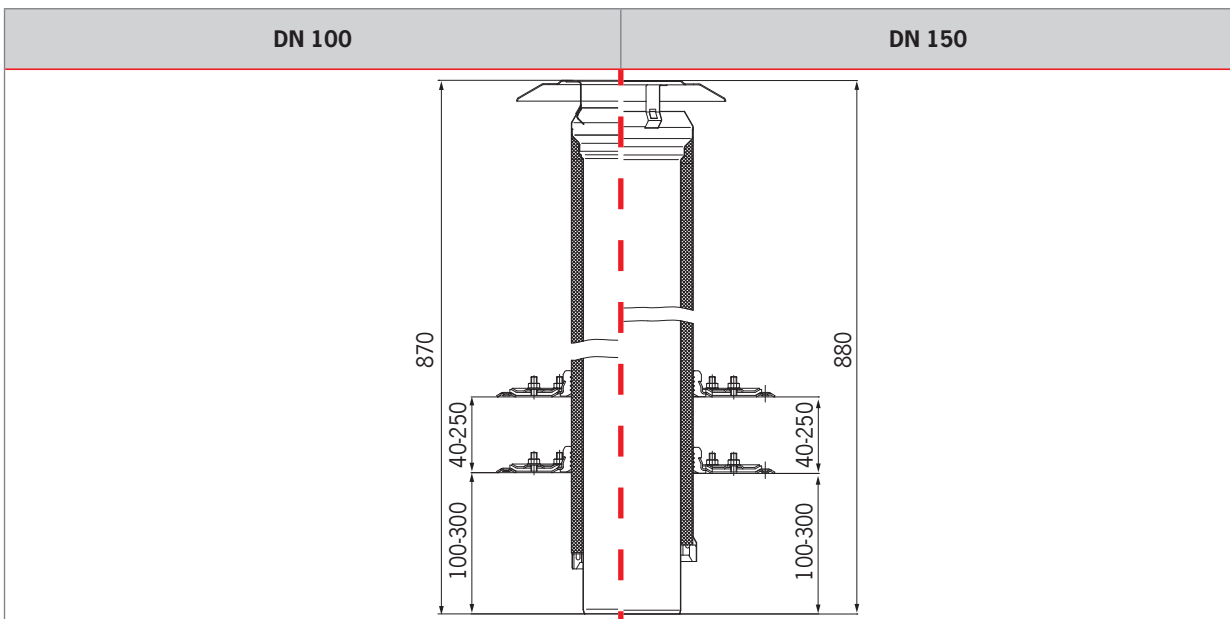
Multiflex flat roof duct made of stainless steel



- Gravel layer
- Sealing membrane
- Thermal insulation
- Sealing membrane (vapour trap)
- Trapezoidal sheet metal roof

1 Multiflex flat roof duct DN 100
With rain cap and two flanges
Article No. 0174.43.05

2 GM-X pipe



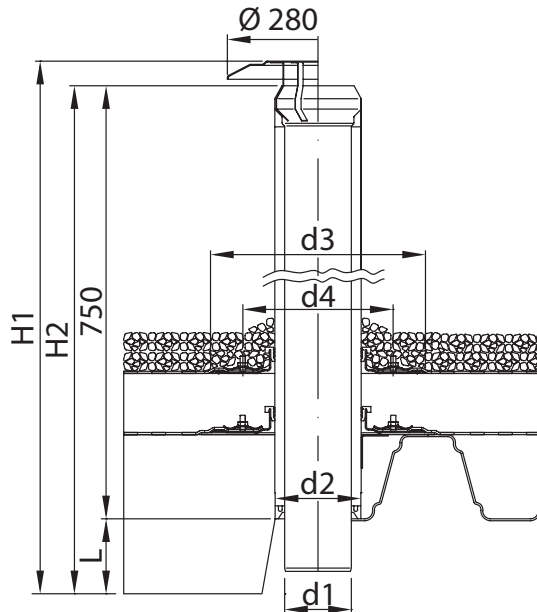
Extension heights in mm

Multiflex flat roof duct made of stainless steel

DN 100 or DN 150



- Flat roof duct DN 100 or DN 150
- Stainless steel, material 1.4301
- Thermally insulated model
- Optional with one or two height adjustable compression sealing flanges
- Optional with or without rain cap
- Direct connection to ACO GM-X pipe system, connecting to other types of pipe requires transition fittings



d_3 = external flange diameter
 d_4 = bolt circle diameter, z minus number of bolts
 d_2 = outer sleeve minus diameter
 d_1 = pointed end minus diameter

Nominal width	Number of flanges	Model	d_1	d_2	d_3	d_4	L	z	H_1	H_2	Weight	Article No.
DN 100 or DN 70*	1	with rain cap	102	133	332	233	80	8 x M8	870	830	6	0174.43.01
	2	with rain cap									8	0174.43.05
	1										5	0174.43.09
	2										7	0174.43.13
DN 150 or DN 100**	1	with rain cap	159	192	410	300	90	10 x M8	880	840	8	0174.43.03
	2	with rain cap									11	0174.43.07
	1										7	0174.43.11
	2										10	0174.43.15

*The following components must be ordered for a DN 70 duct:
 Duct DN 100 according to the previous table plus GM-X adapter piece art. no. 0174.12.73 plus GM-X sealing ring art. no. 0174.14.71

**The following components must be ordered for a DN 125 duct:
 Duct DN 150 according to the previous table plus GM-X adapter piece art. no. 0174.12.76 plus GM-X sealing ring art. no. 0174.14.74

Contents
 Gravity drainage
 Syphonic drainage
 Parking deck drainage
 Balcony and terrace drainage
 Facade drainage
 Pipe systems

Pipe systems	Facade drainage	Balcony and terrace drainage	Parking deck drainage	Syphonic drainage	Gravity drainage	Contents
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