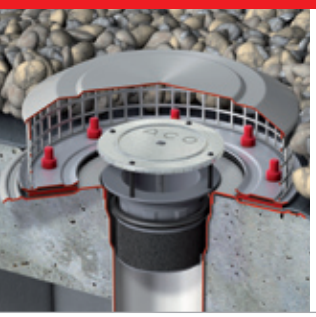
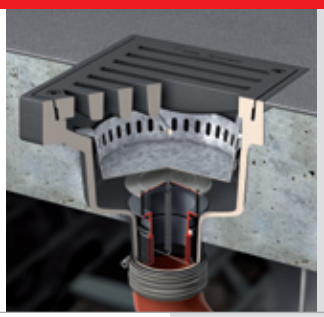
Drainage



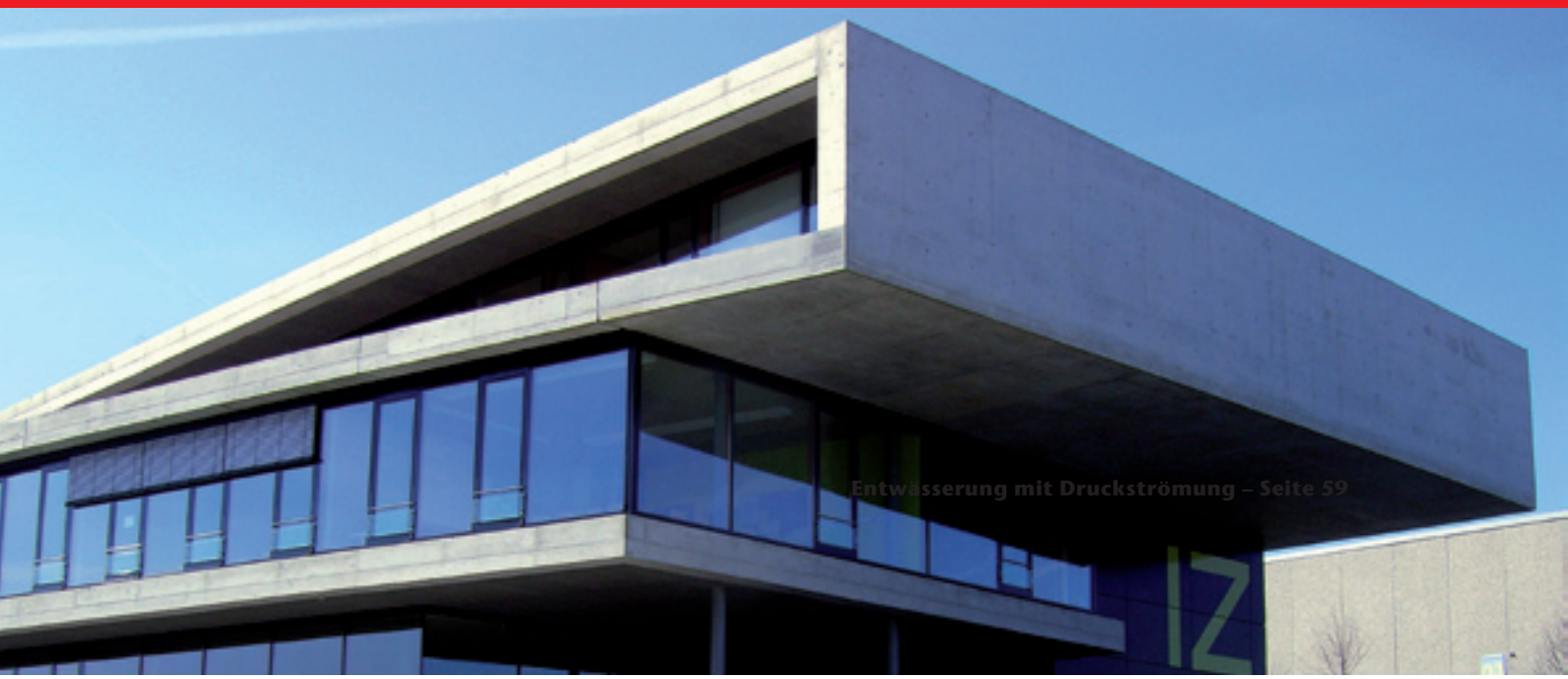


System solutions for

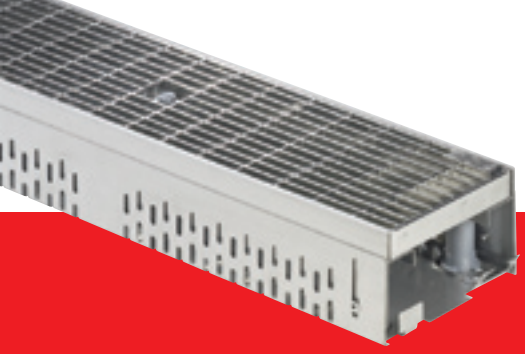
Flat roofs, parking decks, balconies, facades and terraces

Contents

System solutions for flat roofs, parking decks, balconies, facades and terraces



Flat roofs, parking decks, balconies, facades and terraces are all architectural features with their own special problems. They all benefit in particular from professional planning of the drainage aspects. In the light of the general increase in the occurrence of heavy rainfall, we have adjusted to the changing conditions and developed a complete system which delivers the optimum drainage solution for every situation.



Broad service spectrum for planners

Project assistance
ACO Applications Technology helps you with the drainage plan for each project – from housing complexes to distribution centres. The Applications Technology assistance provided by our back office and field staff includes a wide range of services:

- Technical layout / product selection
- Installation recommendations
- Article descriptions
- Customised on-site advice

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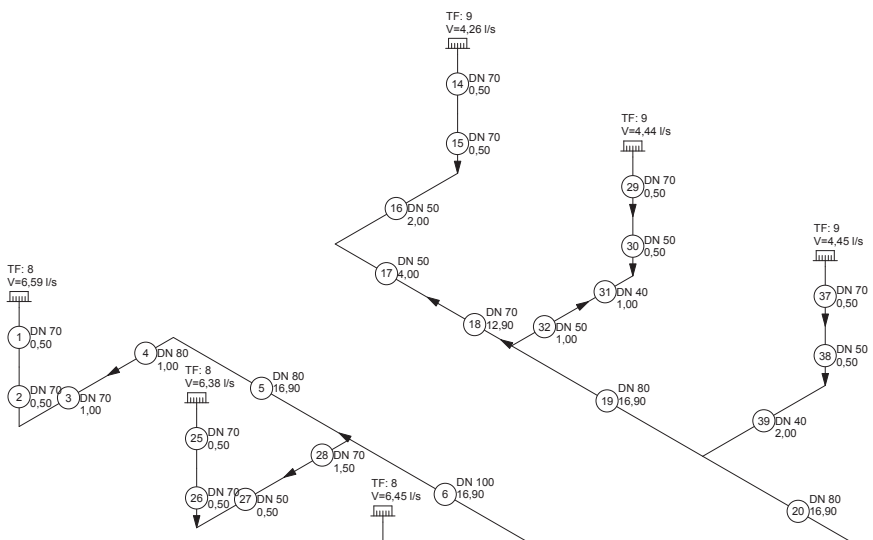
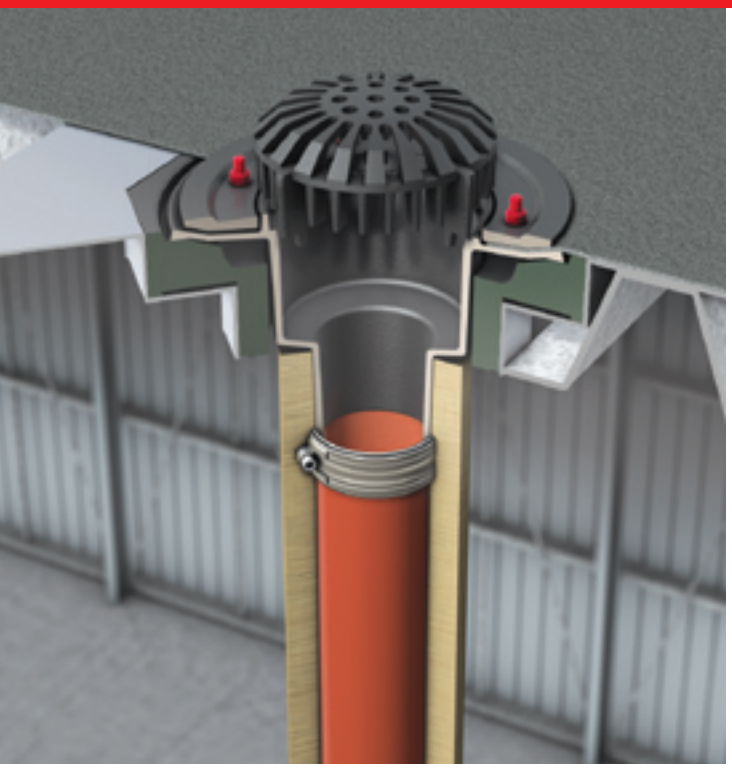
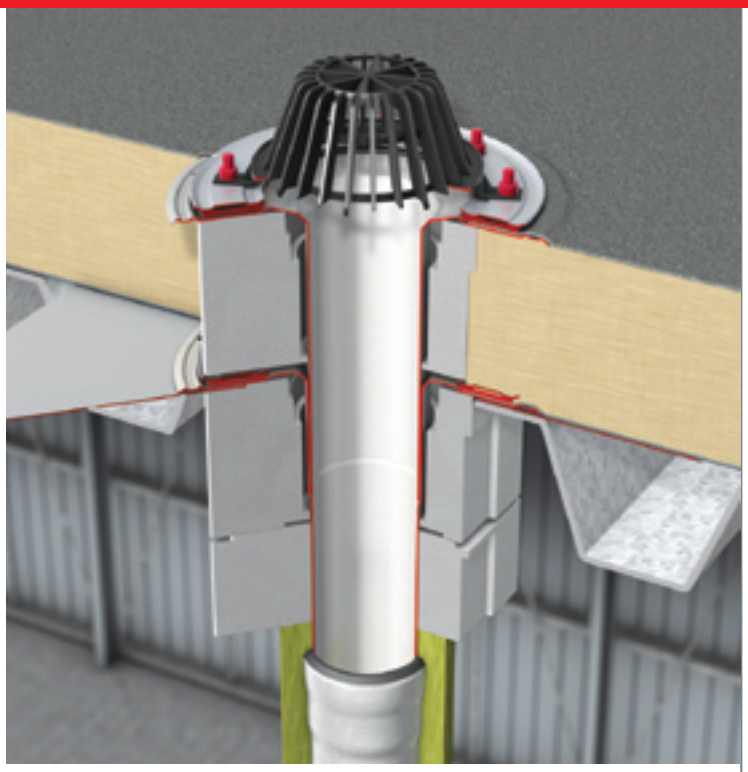
Syphonic drainage systems
The hydraulic calculation of syphonic drainpipe networks and the selection of the relevant drain systems must be carried out in compliance with the applicable regulations and standards. Applications Technology can help you with:

- Hydraulic capacity calculations
- Isometrics and lists of materials



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

A stainless steel flat roof drain for two sealing membranes.

- 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 recommen ded 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 join.

Roof drains must generally be positi oned 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∗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	**1.5**
Extensive greening < 10 cm layer	**1.5**
Extensive greening exceeding 10 cm layer	**0.3**
Intensive greening	**0.3**

Reference rainfall

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

D = rainfall duration in minutes
T = annuality of the reference rainfall

The reference rainfall for flat roof drainage systems is based on a rainfall period of 5 minutes and an annuality 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 2000/[1] in accordance with the specific location. It is forbidden to use the value for emergency drainage $r_{(5,100)}$.

Abbreviations are explained as follows:

Reference rainfall	Duration of the rainfall event	Annuality 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 ≥10° are ignored when calculating the drainage capacity.
In the case of inclined drainpipe sections with gradients of <10°, 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.

[1] **KO**ordinierte **ST**arkniederschlags-**R**egionalsierungs-**A**uswertungen 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).

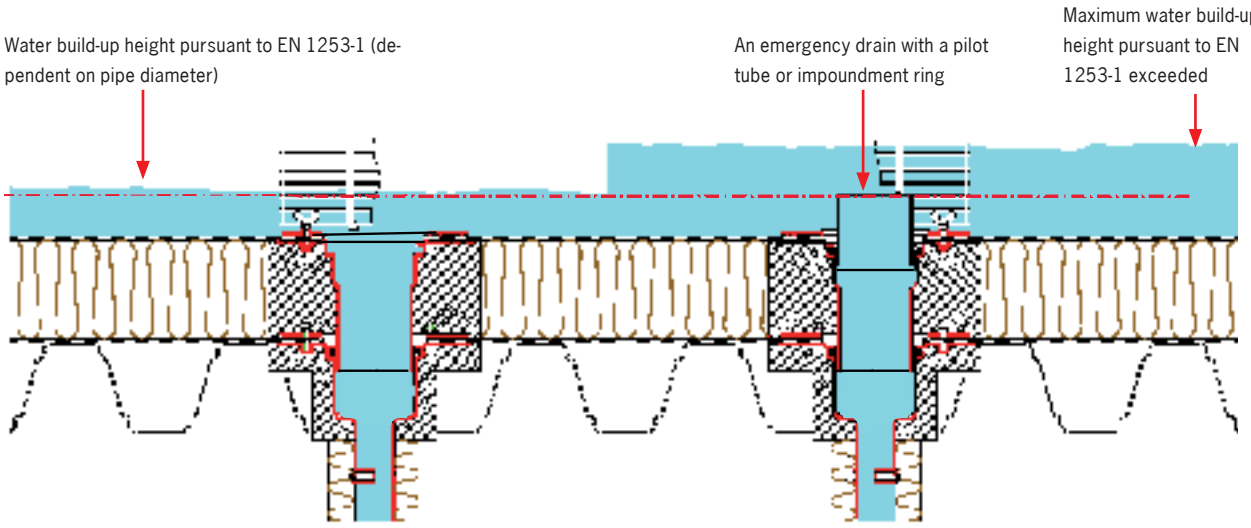
The DN 100 downpipes can be assigned a degree of fill of f = 0.33 according to this table. This corresponds to an outflow capacity per pipe of 10.7 l/s.

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 ctivated 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

Nominal width	Inclination	Model	Ball grating Article No. 7000.10.00	Flat grating Article No. 7000.20.00	Top frame with grating Article No. 7000.40.00	Top frame with grating Article No. 7000.28.00	Top frame with grating 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

Nominal width	Inclination	Model	Plastic gravel basket Article No. 0174.46.66	Stainless steel gravel basket Article No. 0174.46.59 0174.46.62
DN 70	1,5°	Without upper part	2,6 l/s	2,7 l/s
DN 70	1,5°	With upper part	2,8 l/s	3,0 l/s
DN 70	90°	Without upper part	2,5 l/s	2,6 l/s
DN 70	90°	With upper part	2,7 l/s	2,8 l/s

DN 100

Nominal width	Inclination	Model	Plastic gravel basket Article No. 0174.46.66	Stainless steel gravel basket Article No. 0174.46.59 0174.46.62
DN 100	1,5°	Without upper part	5,0 l/s	5,9 l/s
DN 100	1,5°	With upper part	4,7 l/s	5,3 l/s
DN 100	90°	Without upper part	4,7 l/s	5,6 l/s
DN 100	90°	With upper part	5,1 l/s	5,7 l/s

DN 125

Nominal width	Inclination	Model	Plastic gravel basket Article No. 0174.46.66	Stainless steel gravel basket Article No. 0174.46.59 0174.46.62
DN 125	1,5°	Without upper part	8,3 l/s	9,9 l/s
DN 125	1,5°	With upper part	8,7 l/s	8,9 l/s
DN 125	90°	Without upper part	8,5 l/s	8,4 l/s
DN 125	90°	With upper part	8,5 l/s	8,4 l/s

Stainless steel with fire protection insert

DN 100

Nominal width	Inclination	Model	Plastic gravel basket Article No. 0174.46.66	Stainless steel gravel basket Article No. 0174.46.59 0174.46.62
DN 100	90°	Without upper part	4,7 l/s	4,7 l/s
DN 100	90°	With upper part	4,7 l/s	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.

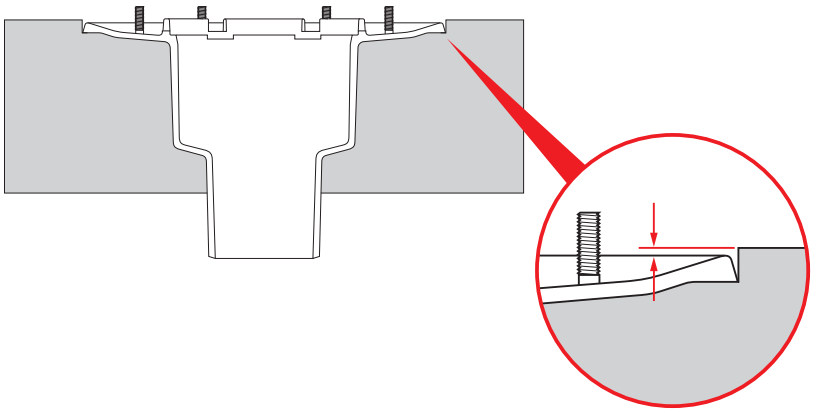
Extensive greening

Intensive greening

Installation

ACO Spin flat roof drain made of cast iron

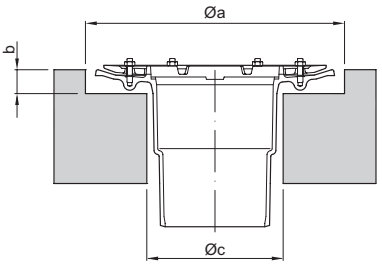
Concrete roof: Pouring in
Flat roof drains can be installed on site when the concrete is poured in. Caution: Ensure that the fixed flange is positioned slightly below the top surface of the concrete because a gradient towards the drain body must be created when the sealing membrane is installed.



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

- Ø a x b: core borehole dimensions for the flange (flange support)
- Ø 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.



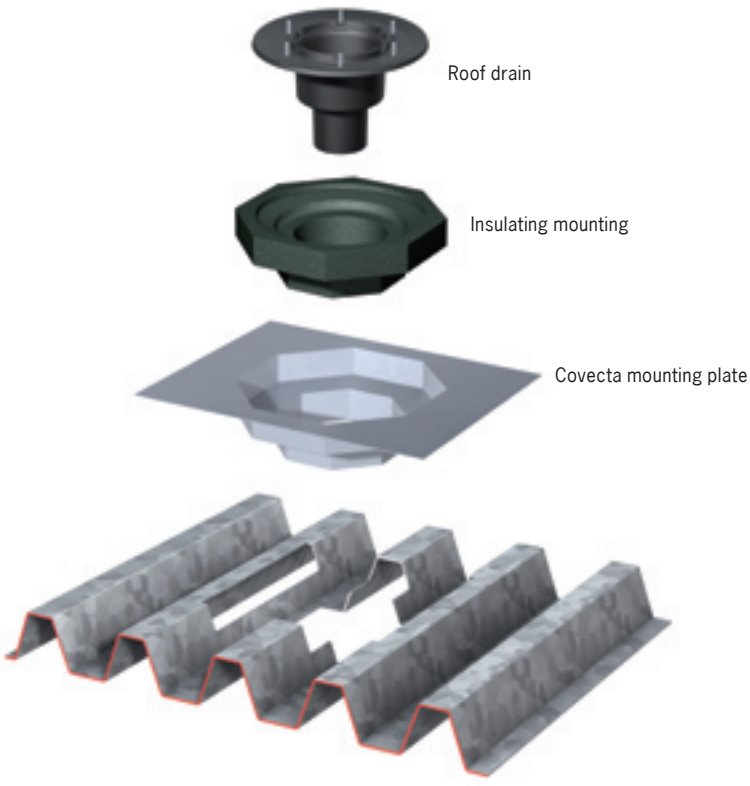
Trapezoidal sheet metal roof
Cast iron drains cannot be installed directly onto a trapezoidal sheet metal roof. A mounting plate* is required.

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.



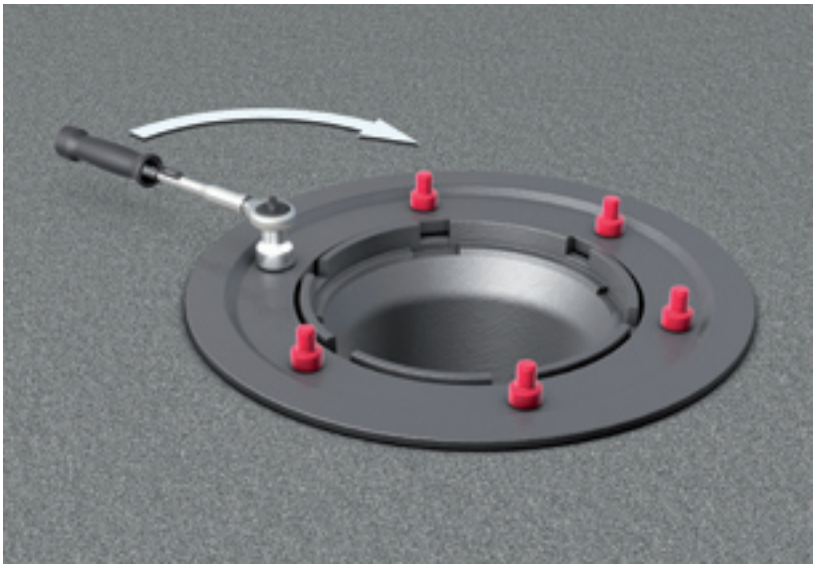
*Covecta, Deggingen, supplies mounting plates for all standard ACO flat roof drains.
Tel. +49 (0) 7334 8012, Fax +49 (0) 7334 4323

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)

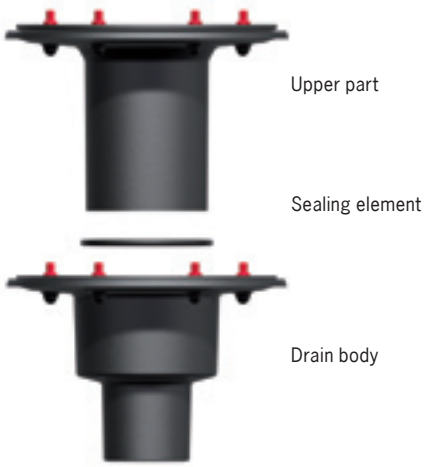
Installing the sealing membrane
Bitumen membranes as well as high polymer sealing membranes can be connected to the Spin cast iron flat roof drains by the compression sealing flange.
One spacer below and one spacer above the sealing membrane must be put into place when connecting thin high polymer sea-ling membranes to the compression sea-ling 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

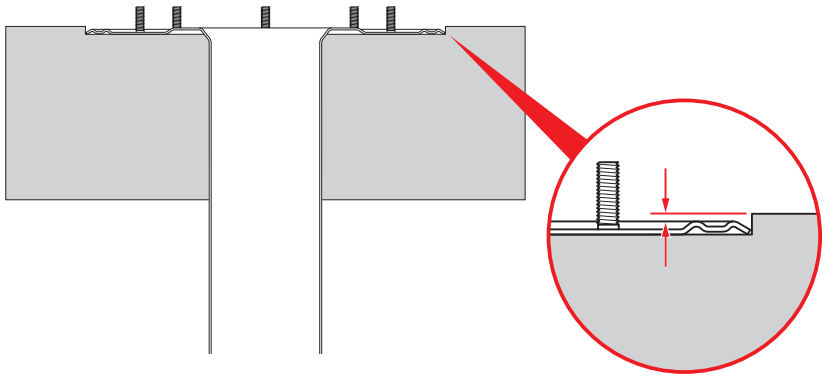
ACO Spin flat roof drains made of cast iron

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

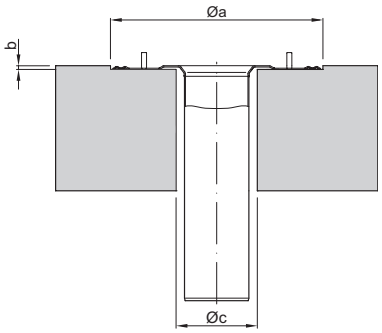
Concrete roof: Pouring in
Flat roof drains can be installed on site when the concrete is poured in. Caution: Ensure that the fixed flange is positioned slightly below the top surface of the concrete because a gradient towards the drain body must be created when the sealing membrane is installed.



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

- Ø a x b: core borehole dimensions for the flange (flange support)
- Ø 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.

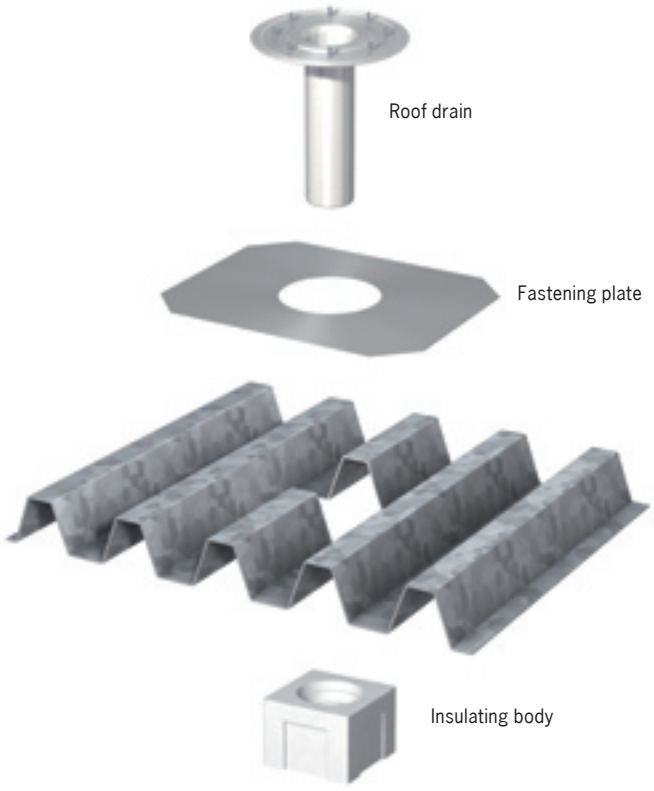


Trapezoidal sheet metal roof
Stainless steel drains cannot be installed directly onto a trapezoidal sheet metal roof. A fastening plate is required.

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.

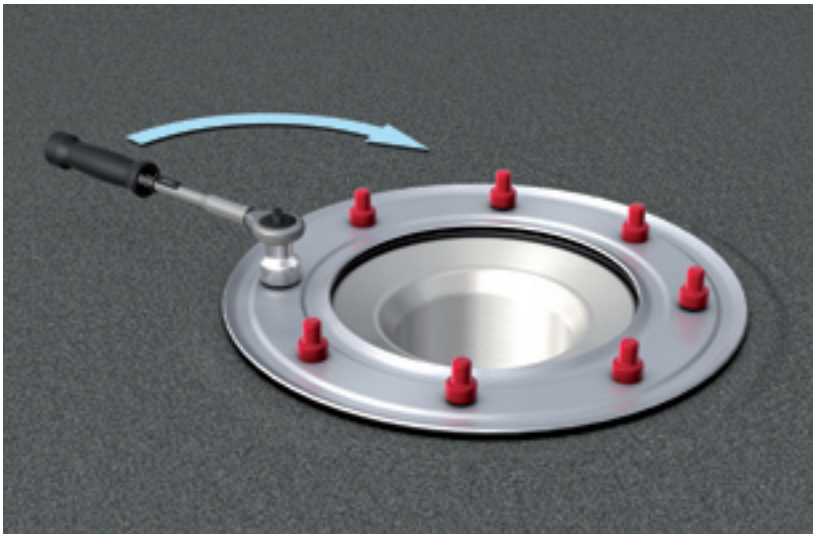


Heating
Flat roof drains can also be installed with auxiliary heating to prevent the drain from freezing. To reduce energy consumption to a minimum, it is recommended that the heated drains be controlled by an additional thermostat. Installation of an FI switch (30 mA) is recommended. When Spin two-piece 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)

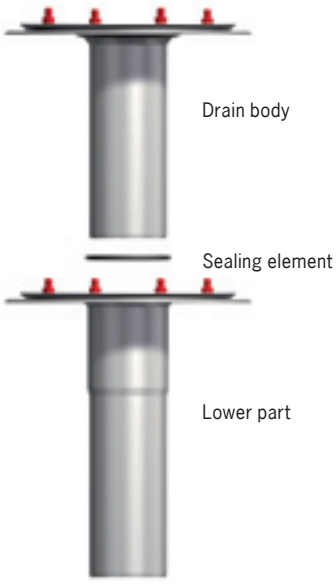
Installing the sealing membrane
Bitumen membranes as well as high polymer sealing membranes can be connected to the Spin stainless steel flat roof drains by the compression sealing flange. One spacer below and one spacer above the sealing membrane must be put into place when connecting thin high polymer 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.



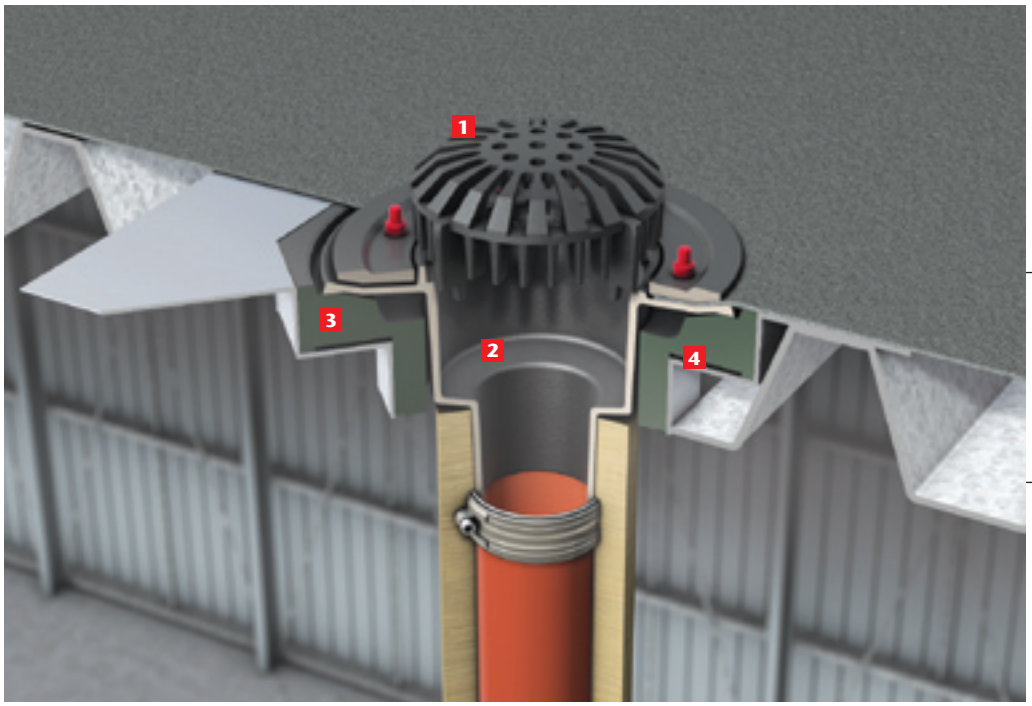
Pipe connections

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

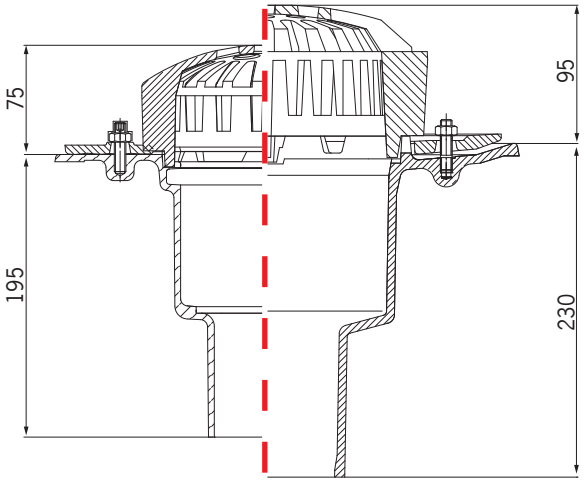


1 **Ball grating**
Article No. 7000.10.00

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

3 **Insulating mounting**
Article No. 7040.21.00

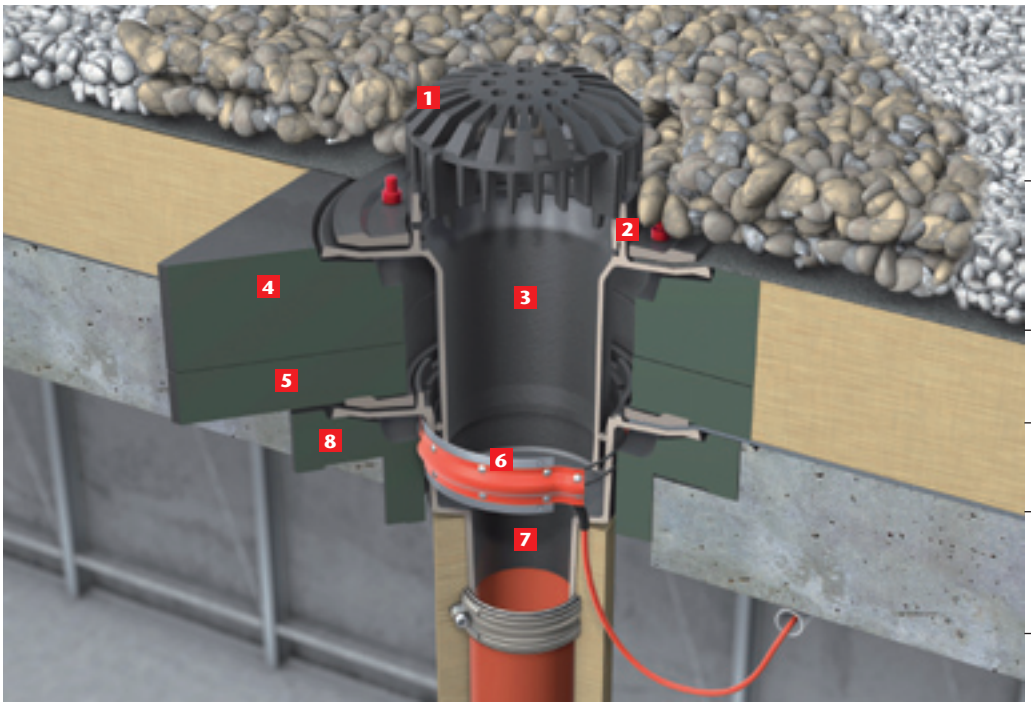
4 **Mounting sheet**
Delivery details:
Covecta Vertrieb
Burgsteige 35
73326 Deggingen
Germany
Tel. +49 (0) 7334 8012

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



- Gravel layer
- Sealing membrane
- Insulation
- Sealing membrane (vapour seal)
- Ceiling (thickness according to the structural engineering specifications)

1 Ball grating
Article No. 7000.10.00

2 Top ring
Article No. 7000.35.00

3 Upper part
Article No. 7044.10.25

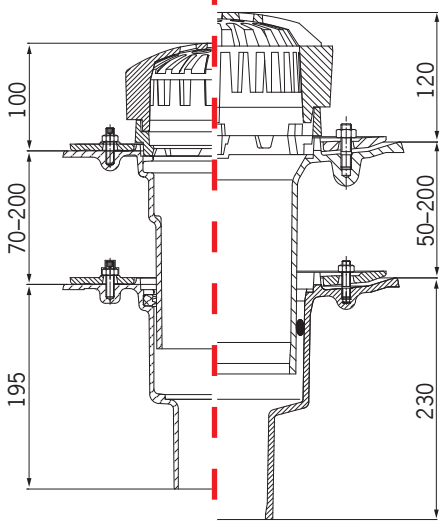
4 Insulating ring
Article No. 7040.11.00

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

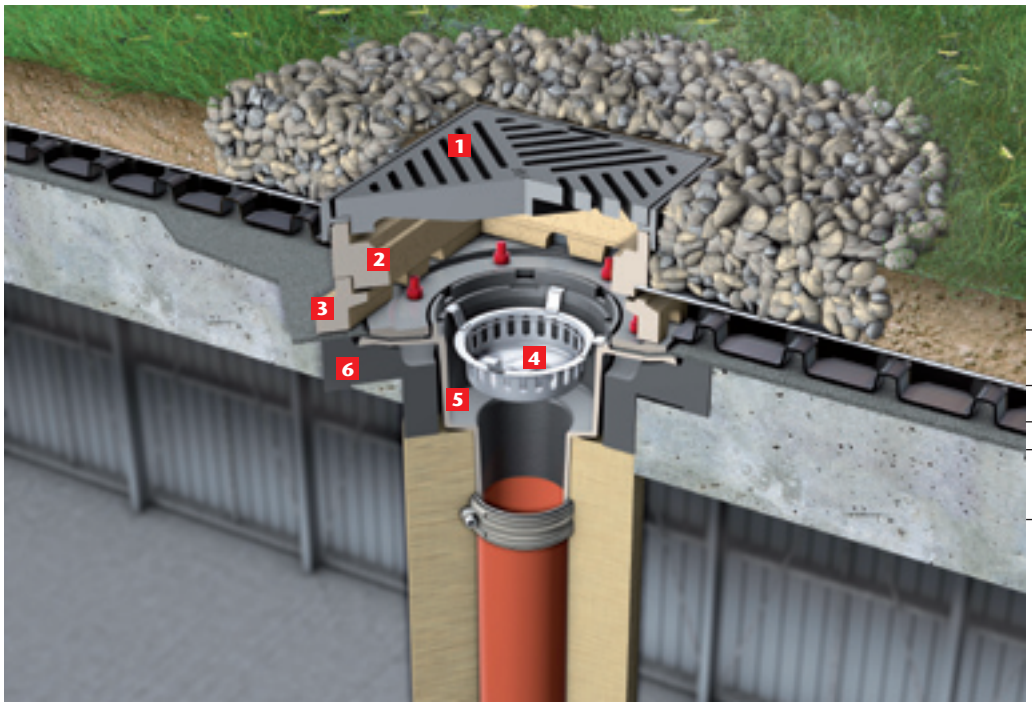
8 Insulating mounting
Article No. 7040.21.00

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 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

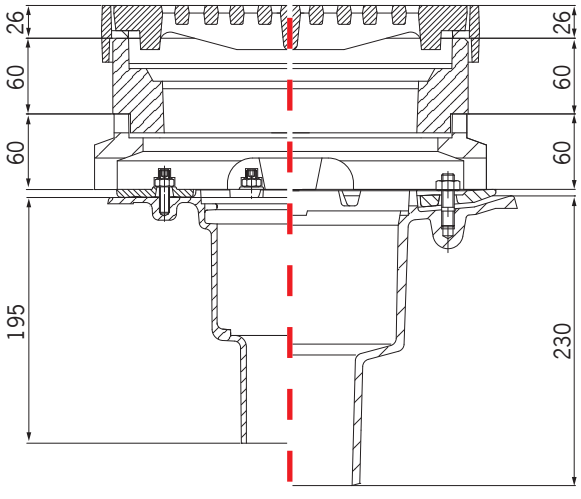
2 **Spacer**
Article No. 7000.52.00

3 **Transition frame**
Article No. 7000.55.00

4 **Stainless steel bucket**
Article No. 7000.13.00

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

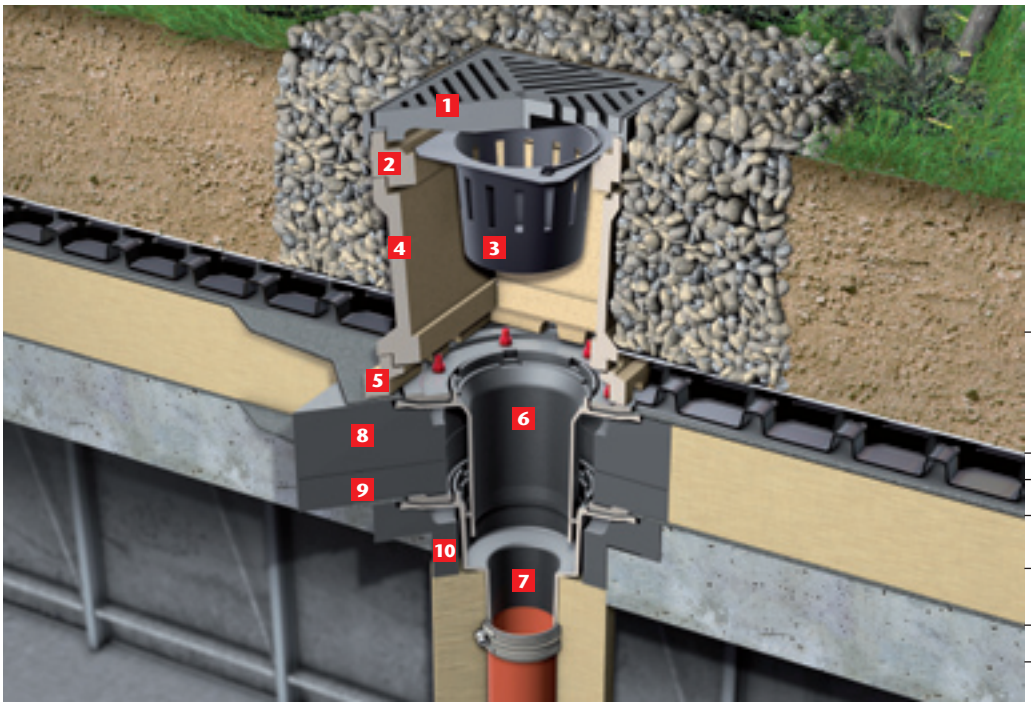
6 **Insulating mounting**
Article No. 7040.21.00

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 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

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

3 **Bucket**
Article No. 7000.53.00

5 **Adapter frame**
Article No. 7000.55.00

6 **Upper part**
Article No. 7044.10.25

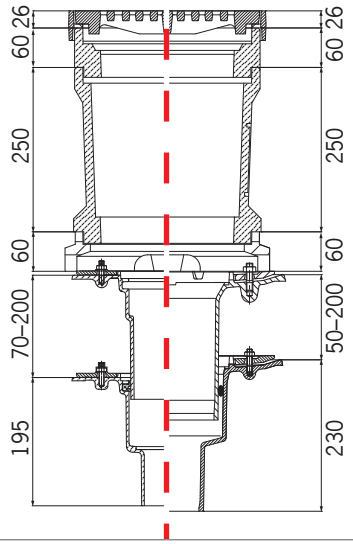
7 **Cast iron flat roof drain**
DN 100, 90°
Article No. 7034.10.10

8 **Insulating ring**
Article No. 7040.11.00

9 **Levelling element**
Article No. 7040.01.00

10 **Insulating mounting**
Article No. 7040.21.00

DN 70	DN 100–DN 150

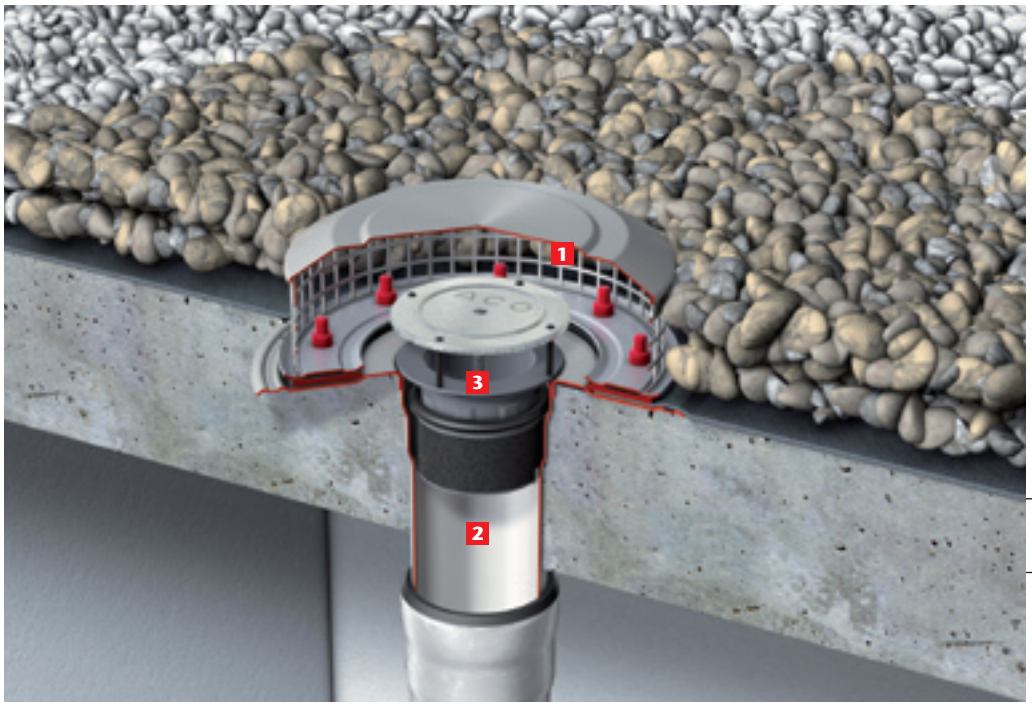


Additional spacers (Article No. 7000.54.00) height: 250 mm, can be stacked on top of one another to match the thickness of the soil on green roofs.

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:

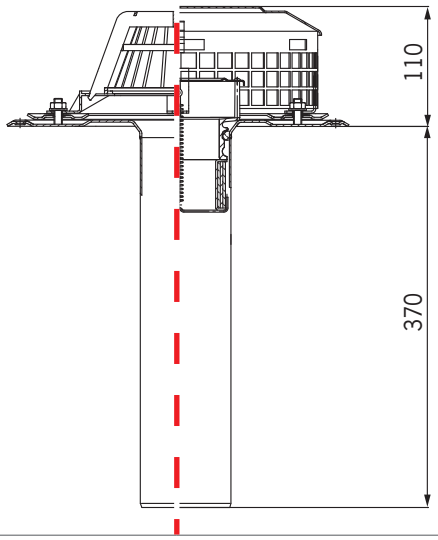
1 Stainless steel gravel basket
Article No. 0174.46.59

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!

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

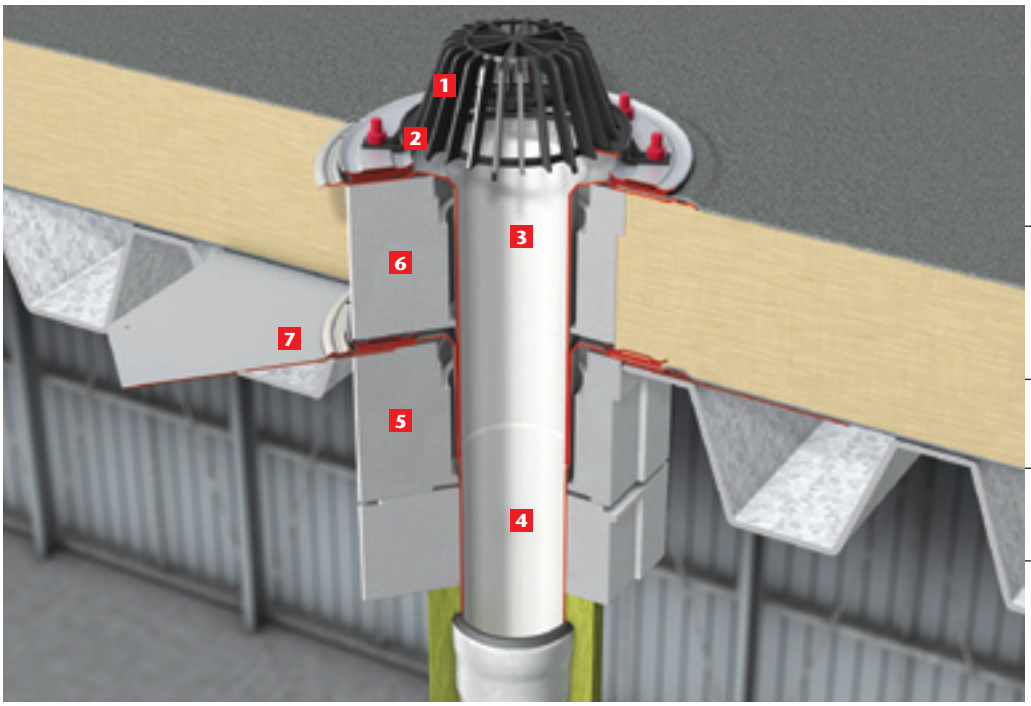


The extension height of 110 mm is the same for the stainless steel gravel basket (shown on the right of the diagram) and the plastic gravel basket (shown on the left of the diagram). Attention! The fire protection insert is only available for the vertical Spin flat roof drain DN 100.

Extension heights in mm

Installation example trapezoidal sheet metal roof with insulation

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



Sealing membrane

Insulation

Sealing membrane
(Damp proof membrane)

Trapezoidal sheet metal roof

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

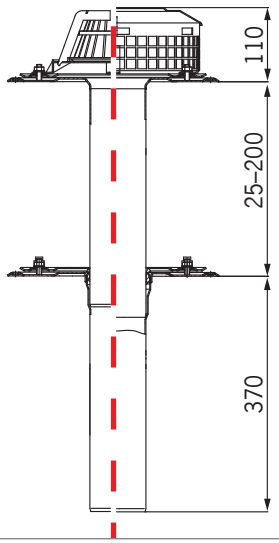
5 Polystyrene insulation DN 100
Article No. 0174.47.19

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

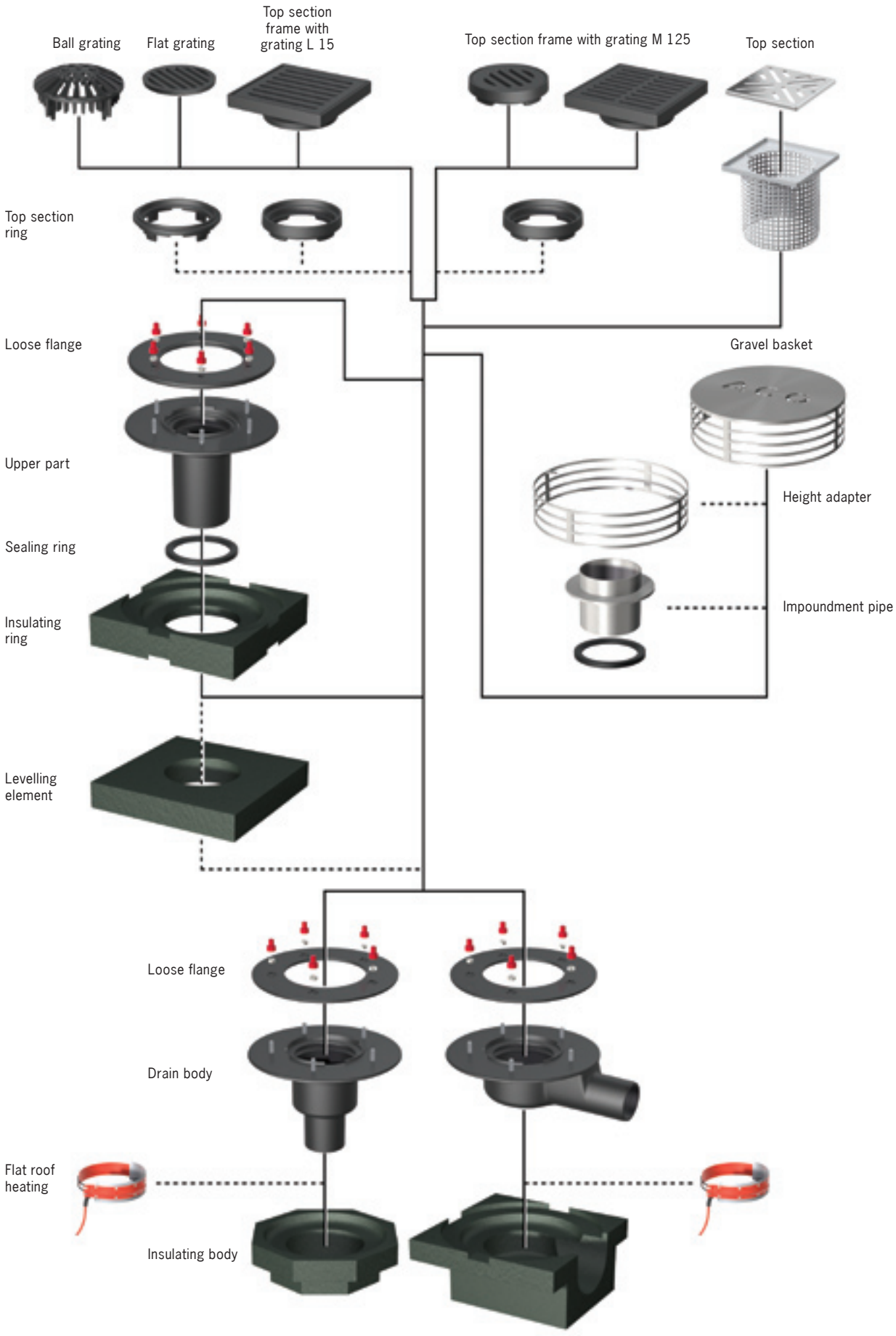


The extension height of 110 mm is the same for the stainless steel gravel basket (shown on the right of the diagram) and the plastic gravel basket (shown on the left of the diagram).

Extension heights in mm

Modular system

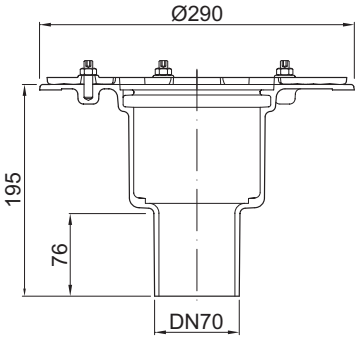
ACO Spin flat roof drain DN 70 made of cast iron for gravity drainage



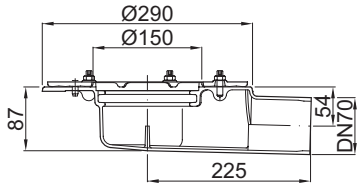
ACO Spin flat roof drain made of cast iron

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

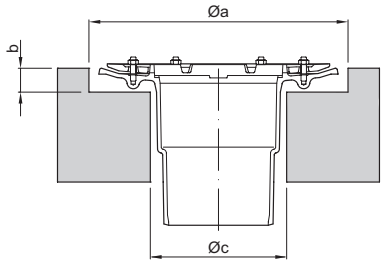


Model with horizontal outlet socket

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**

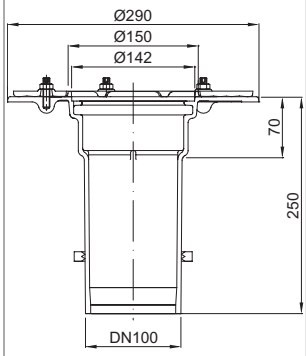
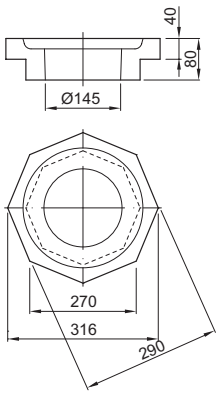
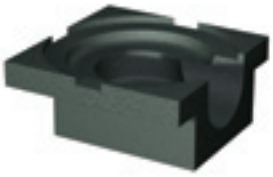
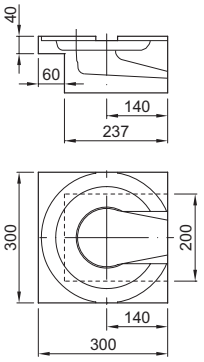
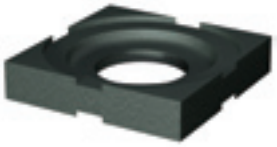
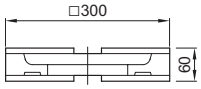
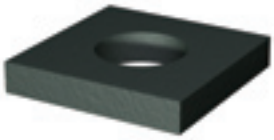
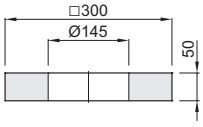


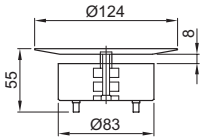
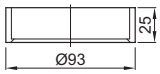
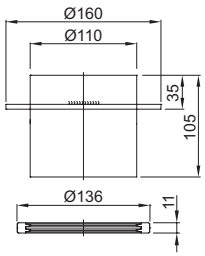
Recess dimensions

Nominal width	Type	Outlet inclination	Article No.	Recess dimensions Drain body without insulating body	Recess dimensions 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

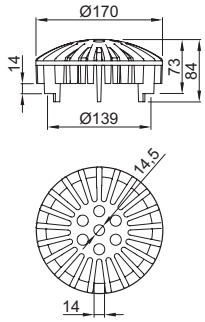
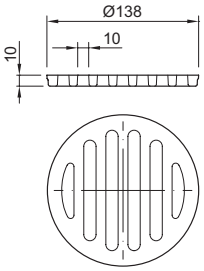
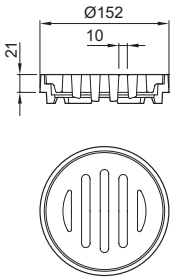
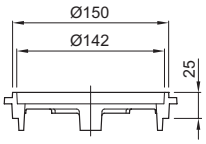
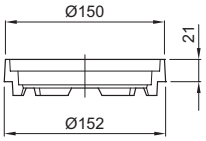
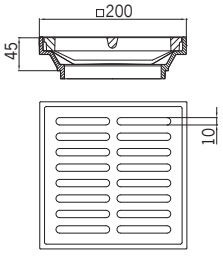
ACO Spin flat roof drain DN 70/DN 80 made of cast iron

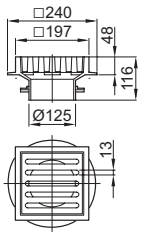
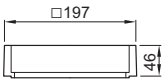
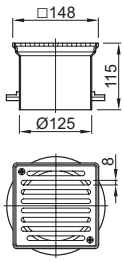
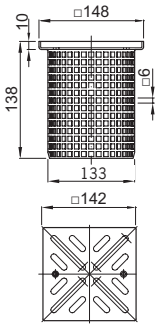
	Scale drawing	Product description	Model	Article No.
		**Upper part** Cast iron, DN 70 for sealing with two sealing membranes, with compression sealing flange, seepage openings and sealing ring	Coated	**7047.10.25**
		**Insulating body** For flat roof drain with vertical outlet socket, made of foam glass		**7040.22.00**
		**Insulating body** For flat roof drain with lateral outlet socket, made of foam glass		**7040.34.00**
		**Insulating ring** For upper part of flat roof drain DN 70, made of foam glass		**7040.12.00**
		**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

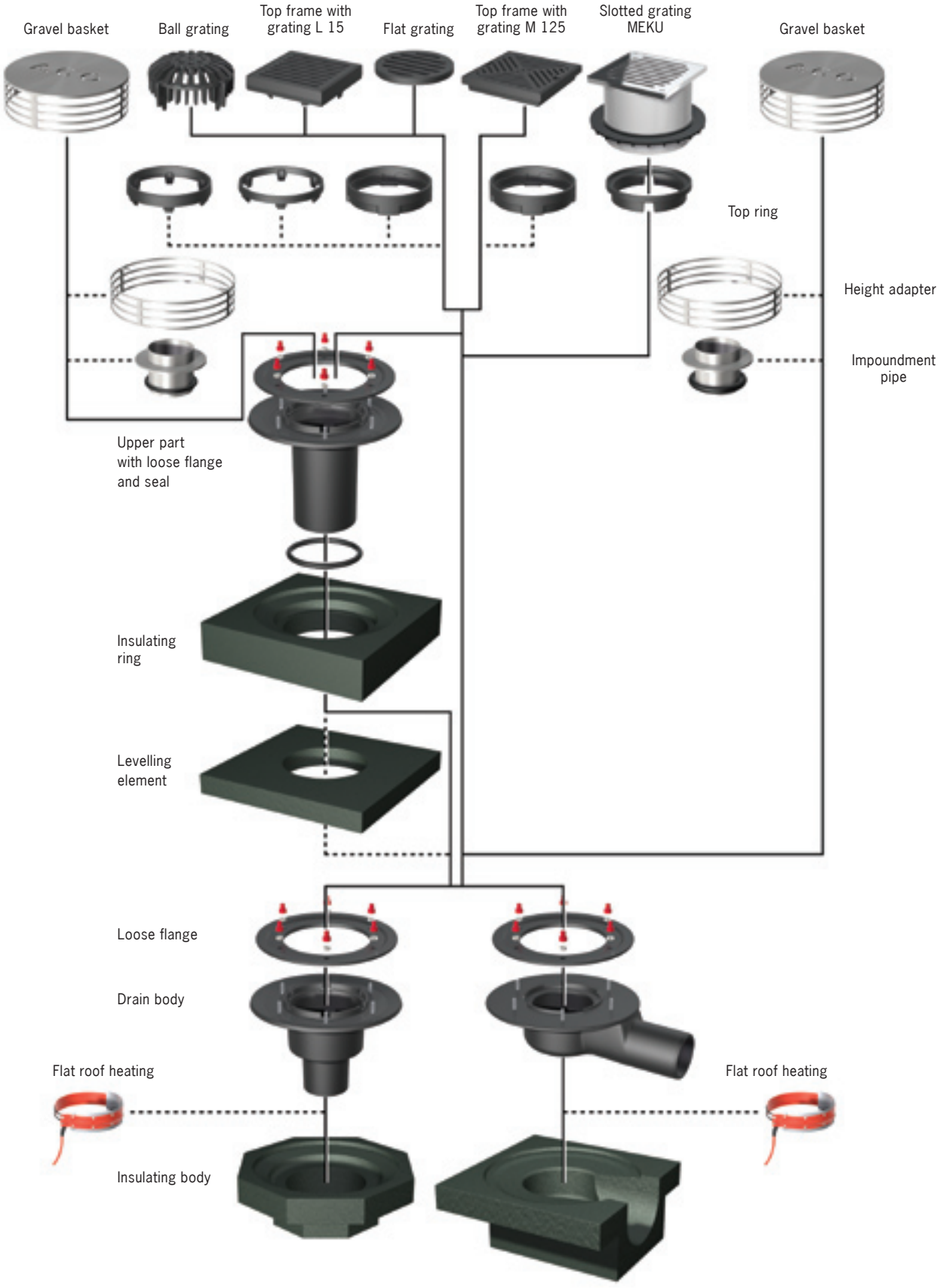
ACO Spin flat roof drain DN 70/DN 80 made of cast iron

	Scale drawing	Product description	Model	Article No.
		**Ball grating** cast iron, fits all Spin flat roof drains DN 70, external dimensions: Ø 170 mm	Class H1,5	**7000.09.00**
		**Flat grating** cast iron, fits all Spin flat roof drains DN 70, External dimensions: Ø 138 mm	Class L15	**7000.19.00**
		**Grating** cast iron, fits all Spin flat roof drains DN 70, external dimensions: Ø 152 mm	Class M125	**7000.08.00**
		**Top ring** Cast iron, fits gratings with Article Nos. 7000.09.00 7000.19.00 7000.43.00		**7000.06.00**
		**Top ring** Cast iron, fits grating with Article No. 7000.08.00 7000.44.00		**7000.05.00**
		**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		**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		**0154.55.78**

Modular system

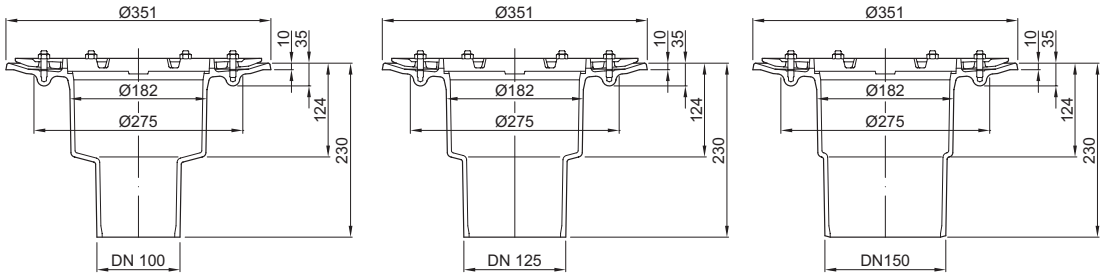
ACO Spin flat roof drain DN 100 – DN 150 made of cast iron for gravity drainage



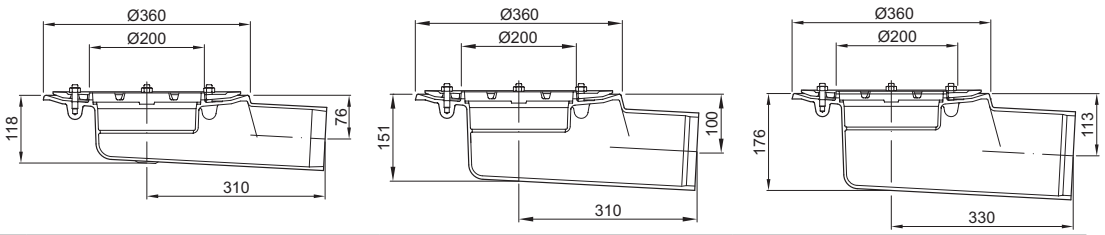
ACO Spin flat roof drain made of cast iron

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



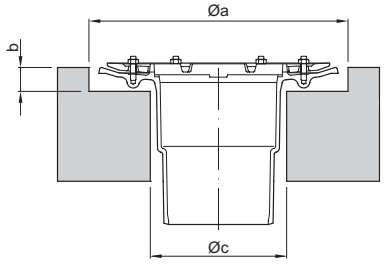
With vertical outlet socket			
Nominal width	DN 100	DN 125	DN 150
Weight	13,1 kg	13,6 kg	14,4 kg
Article No.	**7034.10.10**	**7035.10.10**	**7036.10.10**



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**

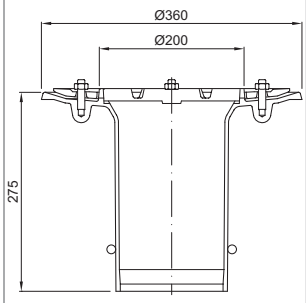
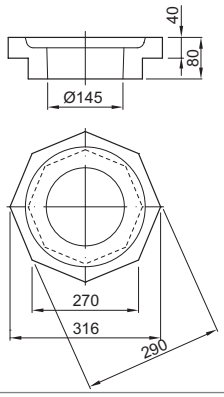
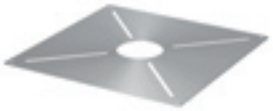
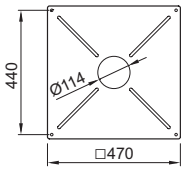
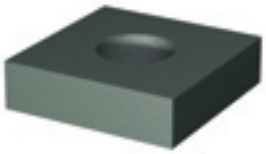
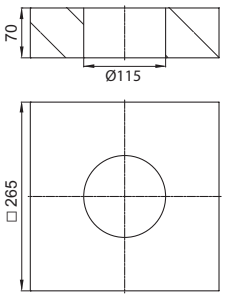
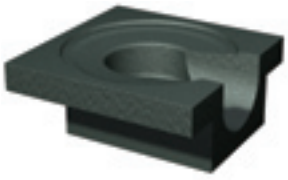
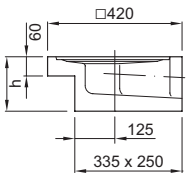


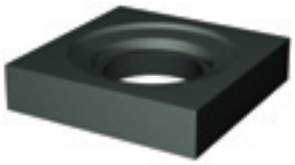
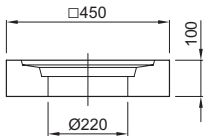
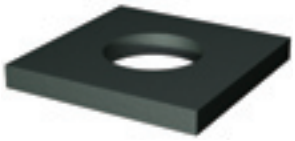
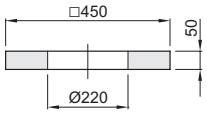
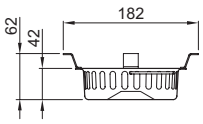
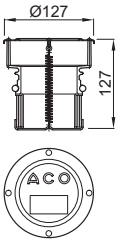
Recess dimensions

Nominal width	Type	Outlet inclination	Article No.	Recess dimensions Drain body without insulating body	Recess dimensions 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

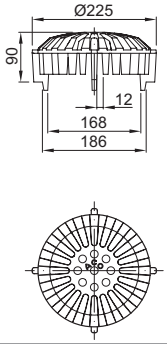
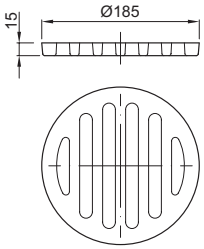
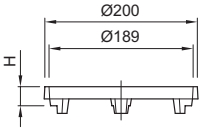
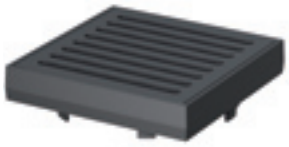
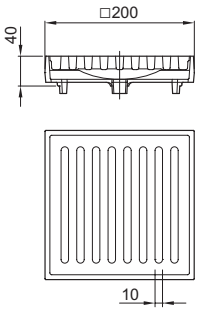
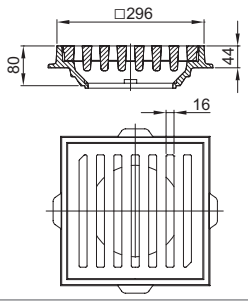
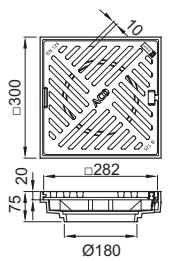
ACO Spin flat roof drain DN 100 – DN 150 made of cast iron

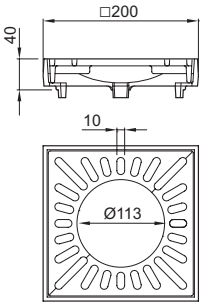
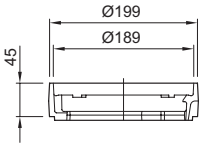
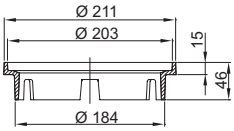
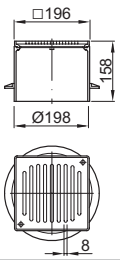
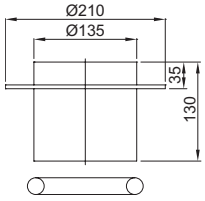
	Scale drawing	Product description	Model	Article No.
		**Upper part** cast iron, DN 100-DN 150 for sealing with two sealing membranes, with compression sealing flange, seepage openings and sealing ring	Coated	**7044.10.25**
		**Insulating body** for flat roof drain with vertical outlet socket, foam glass		**7040.21.00**
		**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**
		**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**
		**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 mm², 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 performance reduced by the insert! (refer to page 15)		**7034.20.15**

Top sections, gratings and top frames

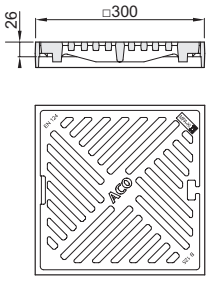
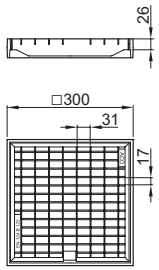
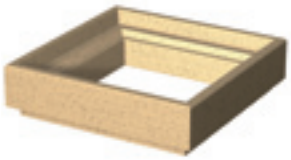
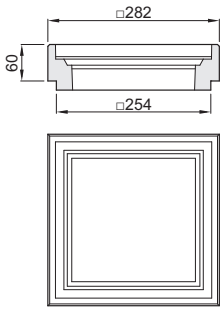
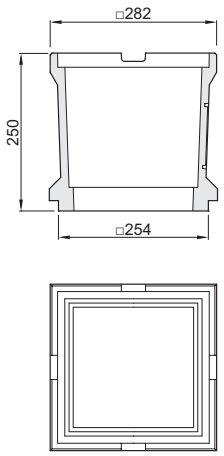
ACO Spin flat roof drains DN 100 – DN 150 made of cast iron

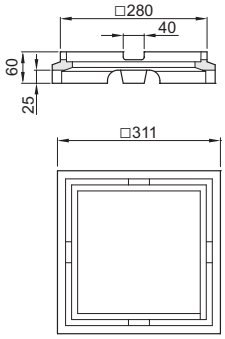
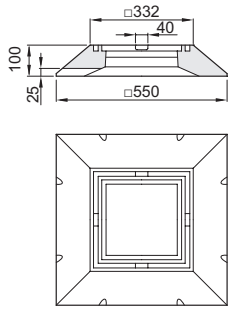
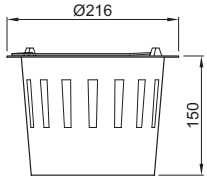
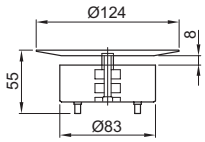
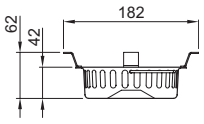
	Scale drawing	Product description	Model	Article No.
		**Ball grating** cast iron, fits all Spin flat roof drains DN 100 – DN 150, external dimensions: Ø 225 mm	Class H1,5	**7000.10.00**
		**Flat grating** cast iron, fits all Spin flat roof drains DN 100 – DN 150, external dimensions: Ø 185 mm	Class L15	**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: □ 200 x 200 mm	Class L15	**7000.40.00**
		**Top frame** cast iron, with slotted grating Frame dimensions: □ 296 mm	unbolted bolted	**7000.41.00** **7000.42.00**
		**Top frame** with boltless locking, cast iron, with slotted grating Frame dimensions: □ 300 x 300 mm	Class M125, bolted	**7000.46.00**

	Scale drawing	Product description	Model	Article No.
		**Top frame** cast iron, with slotted grating, Frame dimensions: ☐ 200 x 200 mm	Class L15	**7000.39.00**
		**Top ring** cast iron, fits Article No. 7000.46.00 7000.28.00 7000.41.00 7000.42.00		**7000.45.00**
		**Transition ring** cast iron, fits top section Article No. 5084.81.00 Build height: 24 mm		**7000.31.00**
		**MEKU top section** frame dimensions: ☐ 196 mm, plastic top section, frame and slotted grating made of stainless steel Transition ring required	Class K3, bolted	**5084.81.00**
		**Impoundment pipe** made of CrNi, material 1.4301, with a sealing ring for Spin flat roof drains made of cast iron	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

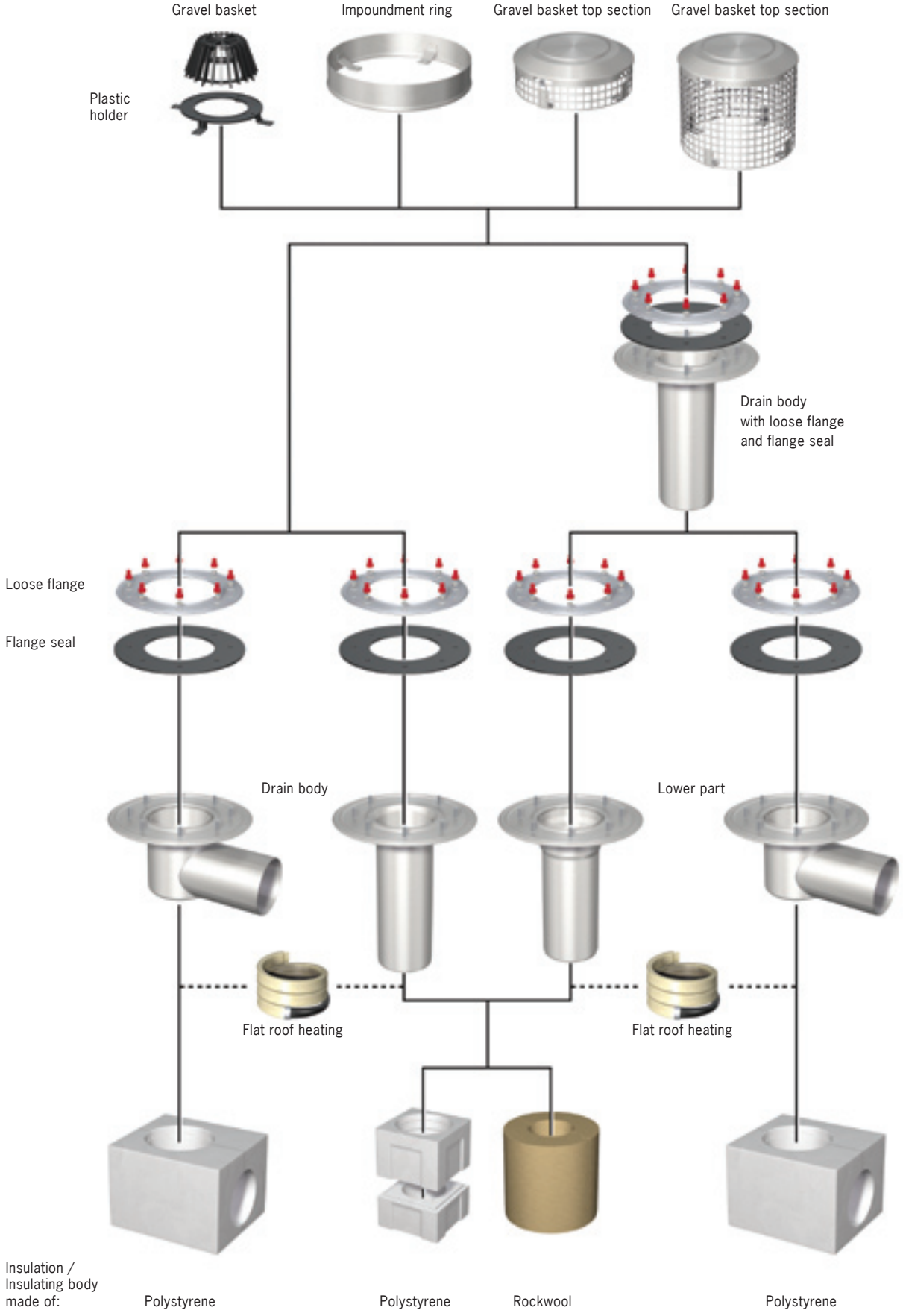
ACO Spin flat roof drain DN 70 – DN 150 made of cast iron

	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**

	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**

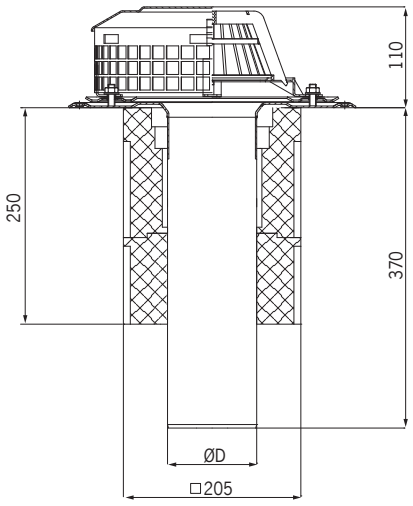
Modular system

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

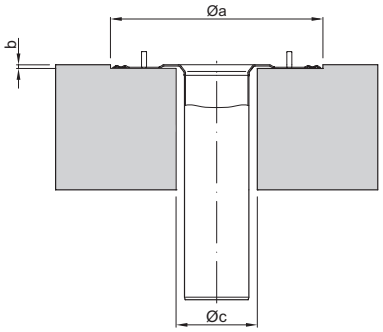


- Flat roof drain DN 70 – DN 125 with vertical outlet socket pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With compression sealing flange for sealing one sealing membrane
  Warning! It is NOT possible to install a second sealing membrane after the vertical drain has been installed!
- Optionally available with a gravel basket made of plastic or stainless steel.
- Optionally available uninsulated, insulated with polystyrene or rock wool, and optionally with/without heating.
- Direct connection to ACO GM-X pipe system, connection to other types of pipe require transition fittings, see page 162 and 163.

Nominal width	Stainless steel gravel basket				Plastic gravel basket		
	Model	Weight	D	Article No.	Weight	D	Article No.
DN 70	uninsulated	4,5	73	**1179.10.60**	3,7	73	**1179.10.10**
	insulated, polystyrene	4,7	73	**1179.15.60**	3,9	73	**1179.15.10**
	insulated, rock wool	4,7	73	**1179.17.60**	3,9	73	**1179.17.10**
	insulated, polystyrene, heated	4,9	73	**1179.15.90**	4,1	73	**1179.15.40**
	insulated, rock wool, heated	4,9	73	**1179.17.90**	4,1	73	**1179.17.40**
DN 100	uninsulated	4,9	103	**1119.10.60**	4,1	103	**1119.10.10**
	insulated, polystyrene	5,0	103	**1119.15.60**	4,2	103	**1119.15.10**
	insulated, rock wool	5,0	103	**1119.17.60**	4,2	103	**1119.17.10**
	insulated, polystyrene, heated	5,2	103	**1119.15.90**	4,4	103	**1119.15.40**
	insulated, rock wool, heated	5,2	103	**1119.17.90**	4,4	103	**1119.17.40**
DN 125	uninsulated	5,9	133	**1129.10.60**	5,1	133	**1129.10.10**
	insulated, polystyrene	6,0	133	**1129.15.60**	5,2	133	**1129.15.10**
	insulated, rock wool	6,0	133	**1129.17.60**	5,2	133	**1129.17.10**
	insulated, polystyrene, heated	6,2	133	**1129.15.90**	5,4	133	**1129.15.40**
	insulated, rock wool, heated	6,2	133	**1129.17.90**	5,4	133	**1129.17.40**

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

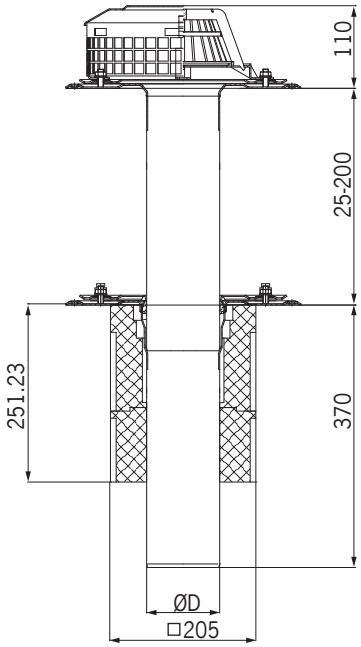


Recess dimensions

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

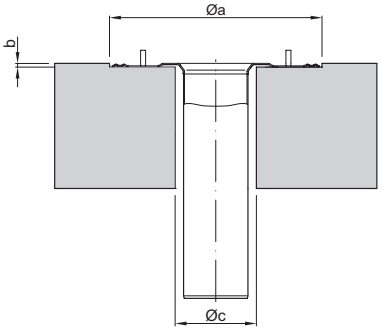


- Flat roof drain DN 70 – DN 125 with vertical outlet socket pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With two compression sealing flanges for sealing with two sealing membranes
- Optionally available with a gravel basket made of plastic or stainless steel.
- Optionally available uninsulated, insulated with polystyrene or rock wool, and optionally with/without heating.
- Direct connection to ACO GM-X pipe system, connection to other types of pipe require transition fittings, see page 162 and 163.

Nominal width	Stainless steel gravel basket				Plastic gravel basket		
	Model	Weight	D	Article No.	Weight	D	Article No.
DN 70	uninsulated	7,3	73	**1179.20.60**	6,4	73	**1179.20.10**
	insulated, polystyrene	8,4	73	**1179.25.60**	6,5	73	**1179.25.10**
	insulated, rock wool	8,4	73	**1179.27.60**	6,5	73	**1179.27.10**
	insulated, polystyrene, heated	8,6	73	**1179.25.90**	6,7	73	**1179.25.40**
	insulated, rock wool, heated	8,6	73	**1179.27.90**	6,7	73	**1179.27.40**
DN 100	uninsulated	7,9	103	**1119.20.60**	7,0	103	**1119.20.10**
	insulated, polystyrene	8,2	103	**1119.25.60**	7,1	103	**1119.25.10**
	insulated, rock wool	8,2	103	**1119.27.60**	7,1	103	**1119.27.10**
	insulated, polystyrene, heated	8,4	103	**1119.25.90**	7,3	103	**1119.25.40**
	insulated, rock wool, heated	8,4	103	**1119.27.90**	7,3	103	**1119.27.40**
DN 125	uninsulated	9,5	133	**1129.20.60**	8,6	133	**1129.20.10**
	insulated, polystyrene	9,6	133	**1129.25.60**	8,8	133	**1129.25.10**
	insulated, rock wool	9,6	133	**1129.27.60**	8,8	133	**1129.27.10**
	insulated, polystyrene, heated	9,8	133	**1129.25.90**	9,0	133	**1129.25.40**
	insulated, rock wool, heated	9,8	133	**1129.27.90**	9,0	133	**1129.27.40**

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

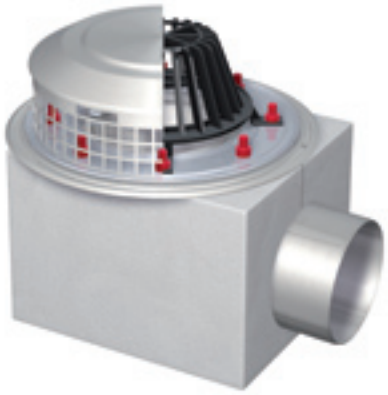


Recess dimensions

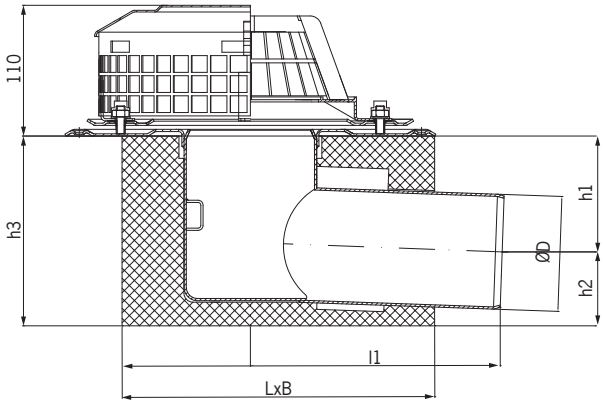
Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 70	Spin	90°	120 x 260 mm	230 x 360 mm
DN 100	Spin	90°	150 x 290 mm	230 x 360 mm
DN 125	Spin	90°	190 x 300 mm	230 x 360 mm

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.
- Optionally available uninsulated, insulated with polystyrene or rock wool, and optionally with/without heating.
- Direct connection to ACO GM-X pipe system, connection to other types of pipe require transition fittings, see page 162 and 163.



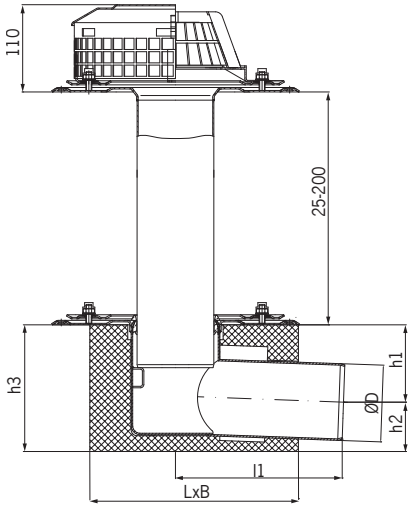
L x B = DN 70: 260 x 190
DN 100/125: 280 x 230

Nominal width	Model	Stainless steel gravel basket		Plastic gravel basket		D	h1	h2	h3	l1
		Weight	Article No.	Weight	Article No.					
DN 70	uninsulated	4,4	**1175.10.60**	3,7	**1175.10.10**	73	95	118	140	213
	insulated, polystyrene	4,6	**1175.15.60**	3,9	**1175.15.10**	73	95	118	140	213
	insulated, rock wool	4,6	**1175.17.60**	3,9	**1175.17.10**	73	95	118	140	213
	insulated, polystyrene, heated	4,8	**1175.15.90**	4,1	**1175.15.40**	73	95	118	140	213
	insulated, rock wool, heated	4,8	**1175.17.90**	4,1	**1175.17.40**	73	95	118	140	213
DN 100	uninsulated	4,9	**1115.10.60**	4,1	**1115.10.10**	103	104	148	170	226
	insulated, polystyrene	5,1	**1115.15.60**	4,2	**1115.15.10**	103	104	148	170	226
	insulated, rock wool	5,1	**1115.17.60**	4,2	**1115.17.10**	103	104	148	170	226
	insulated, polystyrene, heated	5,3	**1115.15.90**	4,4	**1115.15.40**	103	104	148	170	226
	insulated, rock wool, heated	5,3	**1115.17.90**	4,4	**1115.17.40**	103	104	148	170	226
DN 125	uninsulated	5,6	**1125.10.60**	5,1	**1125.10.10**	133	124	178	200	230
	insulated, polystyrene	5,8	**1125.15.60**	5,2	**1125.15.10**	133	124	178	200	230
	insulated, rock wool	5,8	**1125.17.60**	5,2	**1125.17.10**	133	124	178	200	230
	insulated, polystyrene, heated	6,0	**1125.15.90**	5,4	**1125.15.40**	133	124	178	200	230
	insulated, rock wool, heated	6,0	**1125.17.90**	5,4	**1125.17.40**	133	124	178	200	230

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
- Optionally available with a gravel basket made of plastic or stainless steel.
- Optionally available uninsulated, insulated with polystyrene or rock wool, and optionally with/without heating.
- Direct connection to ACO GM-X pipe system, connection to other types of pipe require transition fittings, see page 162 and 163.

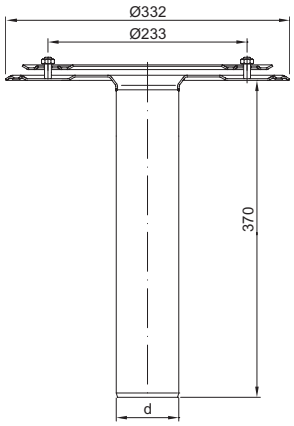
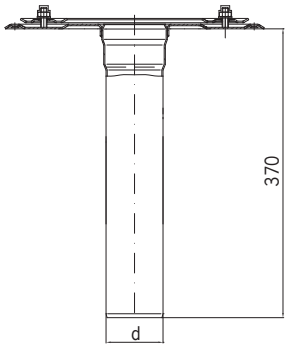
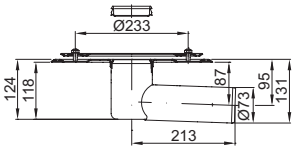
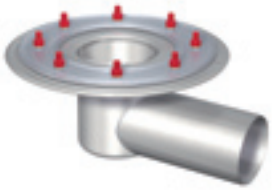
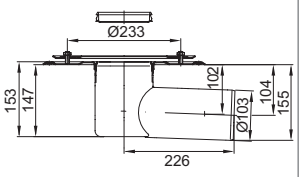
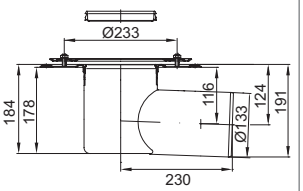
Nominal width	Model	Stainless steel gravel basket		Plastic gravel basket		D	h1	h2	h3	l1
		Weight	Article No.	Weight	Article No.					
DN 70	uninsulated	7,2	**1175.20.60**	6,5	**1175.20.10**	73	95	118	140	213
	insulated, polystyrene	7,4	**1175.25.60**	6,7	**1175.25.10**	73	95	118	140	213
	insulated, rock wool	7,4	**1175.27.60**	6,7	**1175.27.10**	73	95	118	140	213
	insulated, polystyrene, heated	7,6	**1175.25.90**	6,9	**1175.25.40**	73	95	118	140	213
	insulated, rock wool, heated	7,6	**1175.27.90**	6,9	**1175.27.40**	73	95	118	140	213
DN 100	uninsulated	7,9	**1115.20.60**	7,1	**1115.20.10**	103	104	148	170	226
	insulated, polystyrene	8,1	**1115.25.60**	7,3	**1115.25.10**	103	104	148	170	226
	insulated, rock wool	8,1	**1115.27.60**	7,3	**1115.27.10**	103	104	148	170	226
	insulated, polystyrene, heated	8,2	**1115.25.90**	7,5	**1115.25.40**	103	104	148	170	226
	insulated, rock wool, heated	8,2	**1115.27.90**	7,5	**1115.27.40**	103	104	148	170	226
DN 125	uninsulated	9,2	**1125.20.60**	8,4	**1125.20.10**	133	124	178	200	230
	insulated, polystyrene	9,4	**1125.25.60**	8,6	**1125.25.10**	133	124	178	200	230
	insulated, rock wool	9,4	**1125.27.60**	8,6	**1125.27.10**	133	124	178	200	230
	insulated, polystyrene, heated	9,6	**1125.25.90**	8,8	**1125.25.40**	133	124	178	200	230
	insulated, rock wool, heated	9,6	**1125.27.90**	8,8	**1125.27.40**	133	124	178	200	230

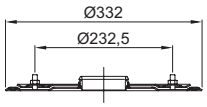
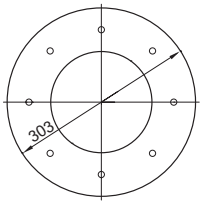
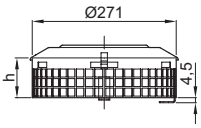
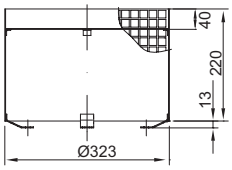
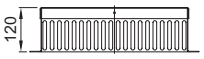
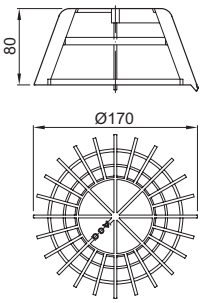
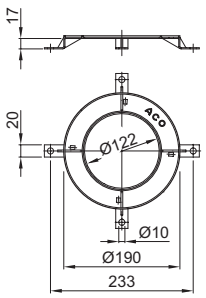
Recess dimensions

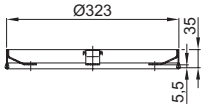
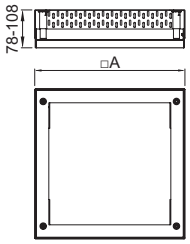
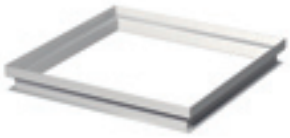
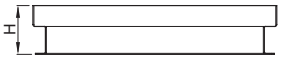
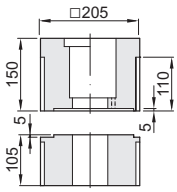
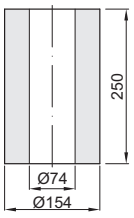
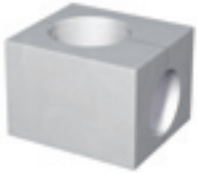
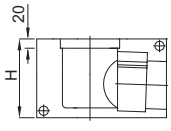
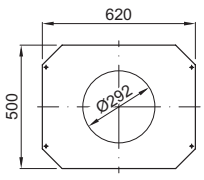
Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 70	Spin	90°	120 x 360 mm	220 x 360 mm
DN 100	Spin	90°	150 x 400 mm	260 x 430 mm
DN 125	Spin	90°	190 x 400 mm	260 x 430 mm

Additional components

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

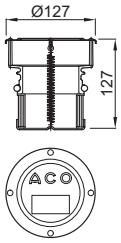
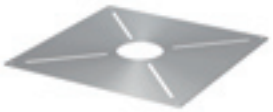
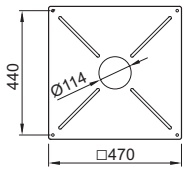
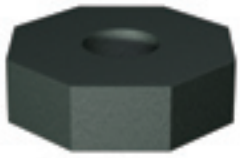
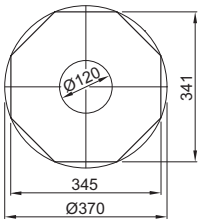
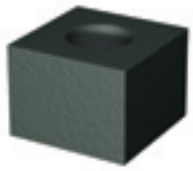
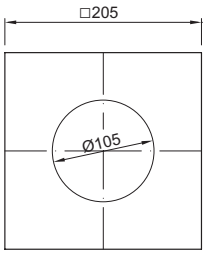
	Scale drawing	Product description	Model	Article No.
		**Drain body for a one-piece or two-piece flat roof drain with vertical or horizontal outlet socket** stainless steel, material 1.4301, with compression sealing flange. Warning! No extension piece for a second sealing membrane level can be installed 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**

	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 For heated model	**0174.46.53** **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	**0174.46.59** **0174.46.62**
		**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, only in combination with the plastic support described below		**0174.46.66**
		**Plastic support** for plastic gravel basket		**0174.46.67**

	Scale drawing	Product description	Model	Article No.
		**Impoundment ring stainless steel, material 1.4301**	DN 70/DN100, Height: 35 mm DN 125, Height: 45 mm	**0174.46.76** **0174.46.77**
		**Profiline top section steel, galvanised, dimensions: 400x400 mm height adjustable from 78-108 mm (gratings see page 137 and 138)**		**38801**
		**Extension for Profiline top section for frame dimensions 400x400 mm**	Height: 30 mm Height: 60 mm Height: 120 mm	**38685** **38687** **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 mm², 1.5 m G 1.5		**0174.84.32**
		**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**
		**Rock wool insulation, construction material class A1** for all vertical drain bodies Spin and lower parts	DN 70 DN 100	**0174.46.57** **0174.47.21**
		**Polystyrene insulation, PS 30** for lateral lower parts Spin	DN 70, 260x190x140 DN 100, 280x230x170 DN 125, 280x230x200	**0174.48.06** **0174.48.07** **0174.48.08**
		**Mounting sheet for trapezoidal sheet roofs** steel, galvanised		**0174.46.61**

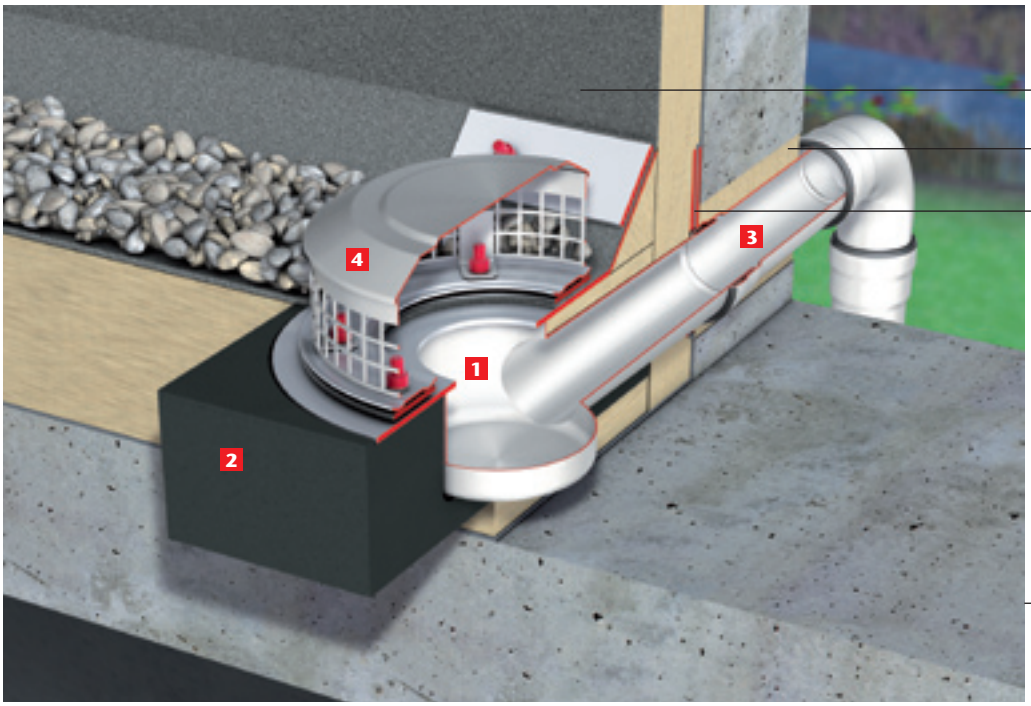
Fire protection accessories

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. Warning! The outflow capacity is reduced when this insert is installed (refer to page 15).		**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



Sealing membrane

Insulation

Sealing membrane (vapour trap)

Ceiling (thickness according to the structural engineering specifications)

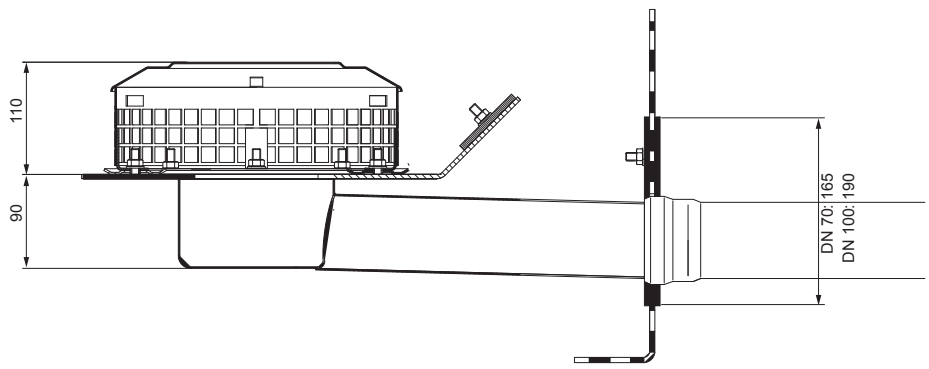
1 **Attika flat roof gully made of stainless steel DN 70, 1.5° socket outlet inclination for sealing with bitumen**
Article No. 0174.78.22

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

DN 70 – DN 100

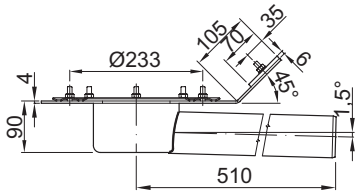


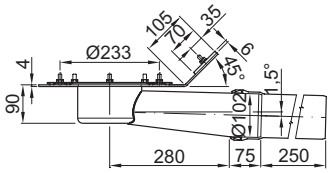
Extension heights in mm

Attika flat roof drains made of stainless steel

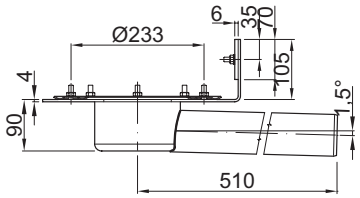
DN 70–DN 100

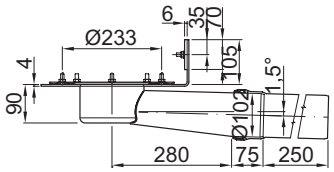
- Drain body DN 70 or DN 100
- Stainless steel, material 1.4301
- With compression sealing flange
- Direct connection to ACO GM-X pipe system, connection to other types of pipe requires transition fittings see page 162 and 163





For bitumen sealing membranes		
Nominal width	DN 70	DN 100
Article No.	**0174.78.22**	**0174.78.24**





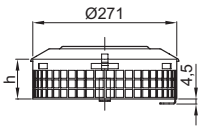
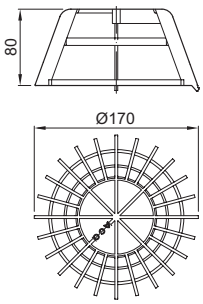
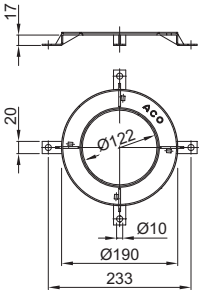
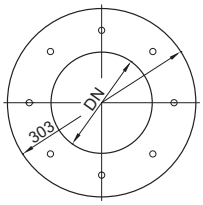
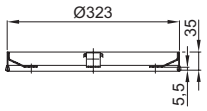
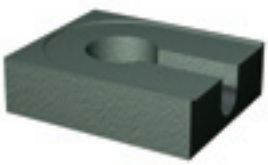
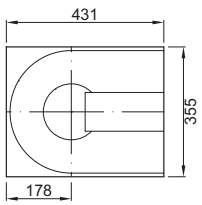
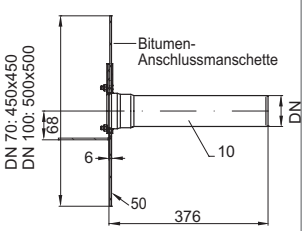
For plastic sealing membranes		
Nominal width	DN 70	DN 100
Article No.	**0174.78.23**	**0174.78.25**

Outflow capacities

Nominal width	Pursuant to DIN (l/s)	With 75 mm impoundment (l/s)
DN 70	5,7	16,9
DN 100	6,0	22,0

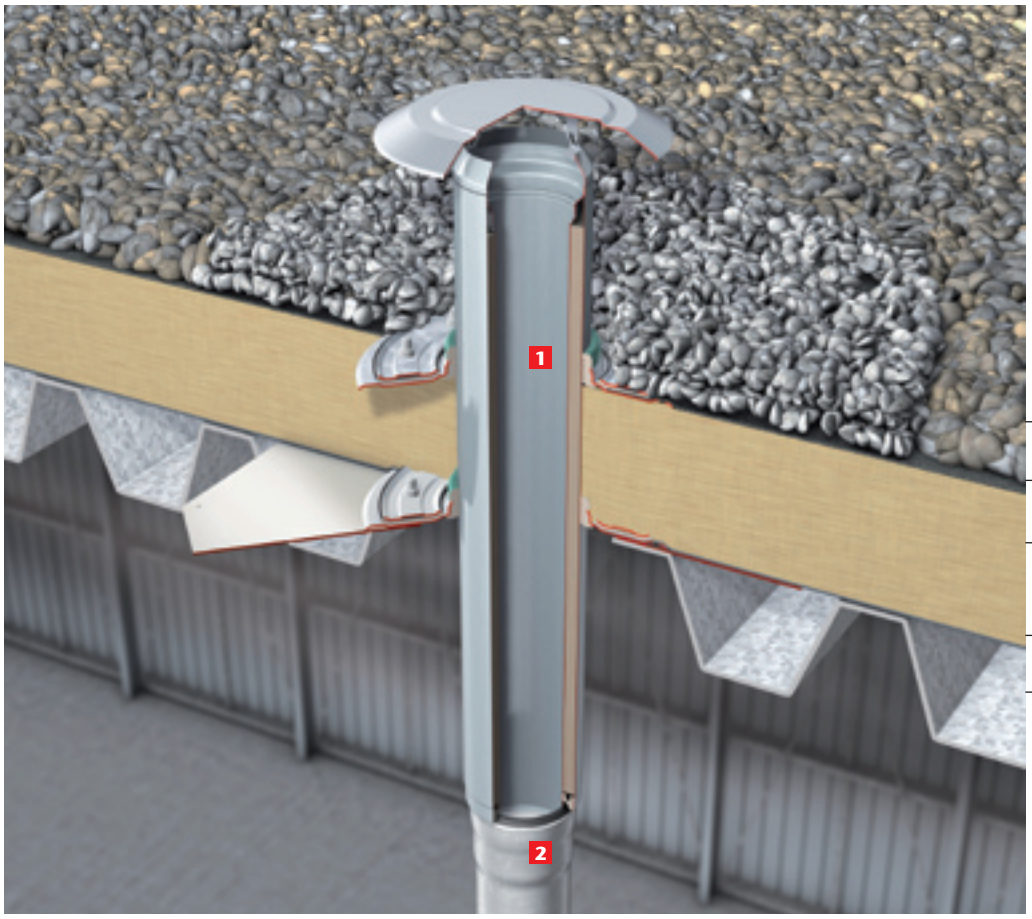
Additional components

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	**0174.46.59** **0174.46.62**
		**Plastic gravel basket** fits all Spin flat roof drains made of stainless steel		**0174.46.66**
		**Plastic support** for plastic gravel basket		**0174.46.67**
		**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**

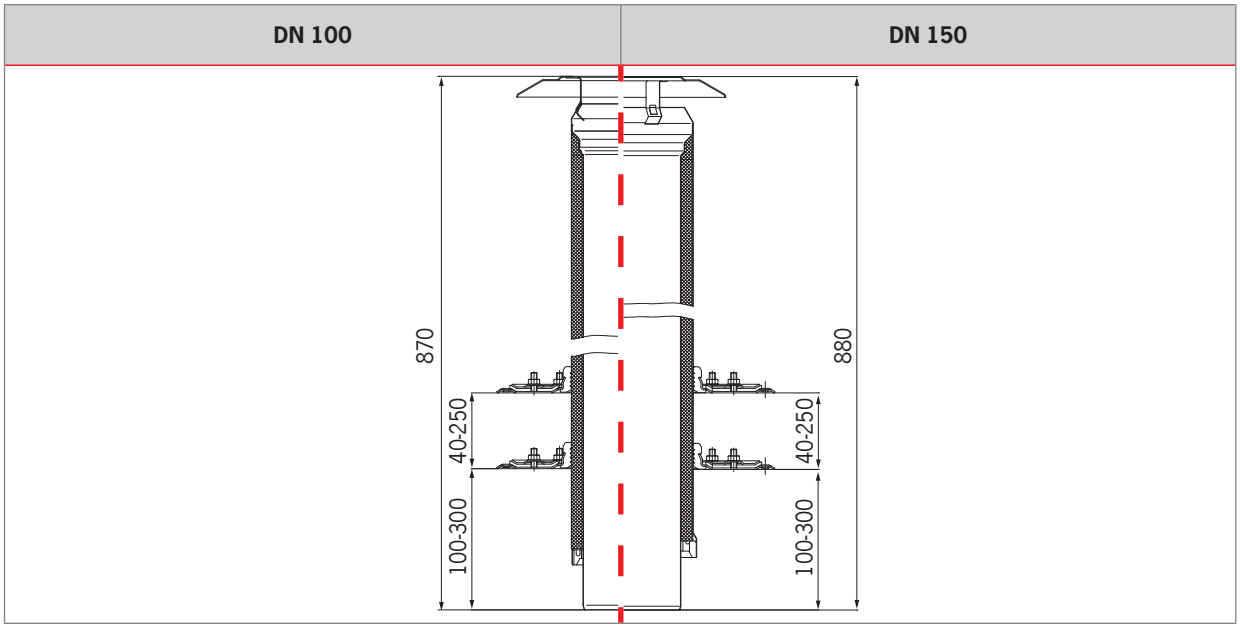
Installation recommendation

Multiflex flat roof duct made of stainless steel



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

2 **GM-X pipe**

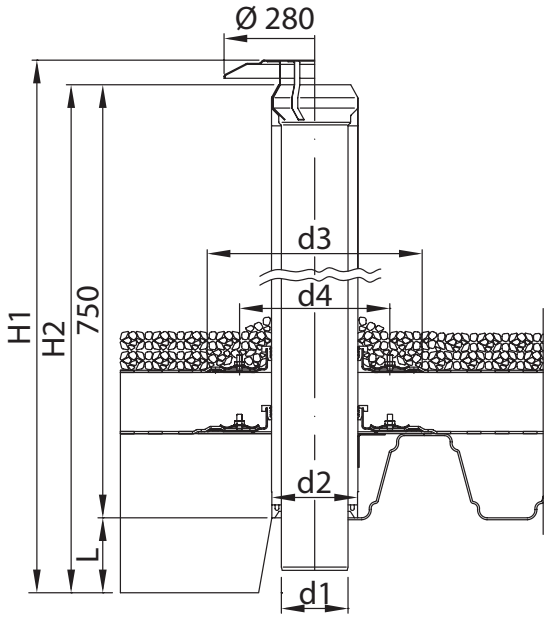


Extension heights in mm

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, see pages 162 and 163



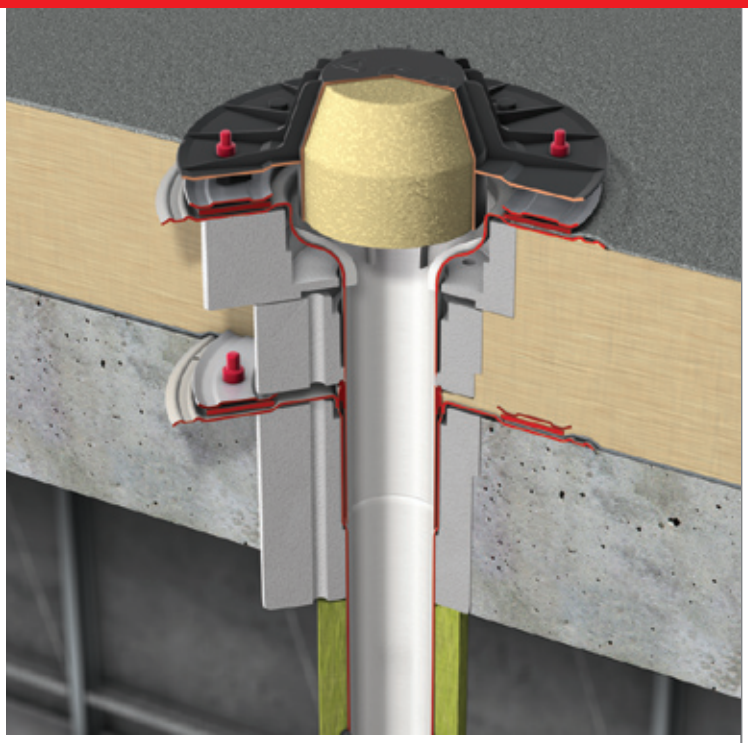
d_3 = external flange diameter
d_4 = bolt circle diameter, z minus number of bolts
d_2 = outer sleeve minus diameter
d_1 = pointed end minus diameter

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

Syphonic drainage



ACO Jet flat roof drain

for syphonic drainage

Syphonic drainage systems operate with specially designed flat roof drains which, unlike gravity drainage systems, are configured to work with completely full pipes (degree of fill h/d 1.0). This can only be achieved by assuring amongst other things that no air is sucked in with the rain water to form bubble vortexes in the pipe systems. Special components are used in the ACO Jet flat roof drains to prevent these vortexes from forming. Once the dimensioning rainfall volumes are reached which get the syphonic system operational, the system works with completely filled pipes which rapidly and safely drain the roof. Syphonic drainage systems can be used to drain a roof if the following criteria are fulfilled:

- Adequate difference in height of at least 4 metres between the roof and the buried drains.
- Drainage of large roof surfaces requiring a minimum outflow capacity of 1.0 l/s.
- If it is possible for each of the drains connected to a downpipe to be hydraulically matched to one another.
- Initiation height of at least 0.3-0.4m between the inflow level to the centre of the inclined pipe.
- Distance between two drains max. 20 metres.

Regulations and standards
The stipulations in DIN and DIN EN standards must be complied with when planning and installing flat roof drains for syphonic drainage. The standards also apply to floor drains and flat roof drains.

Emergency drainage
DIN 1986-100, Chapter 5.9 stipulates that emergency drainage systems can either drain freely through parapets, or that emergency drainage systems must be installed as gravity drainage systems or as planned completely full pipes with syphonic drainage.

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.

Specifications for green roofs
If a green roof is to be drained using a syphonic drainage system, analysis should be carried out in each case during the planning stage to ensure that this is feasible on a green roof (Green Roof Regulations, Chapter 5.8 and 6.5.2).

Calculating the syphonic drainage system parameters
Syphonic drainage calculations have to be carried out to ensure that the overall system functions properly. This calculation is based on the volume flow, which is itself derived from the reference rainfall to be drained by the pipe system.

The hydraulic calculation can be carried out using Aquaperfect software.
This software generates the following data:

- Isometric diagram of the pipe systems
- Hydraulic calculations
- Material listing
- Specifications

The following pages contain a calculation datasheet for syphonic drainage systems pursuant to DIN 1986-100, as well as a check list for the calculation data parameters. The calculation for syphonic drainage systems can be carried out by our own applications engineers.

Decision tree for syphonic drainage

Basic conditions

Syphonic drainage

- Large roofs, per drain ≥ 150 m²
- Adequate height difference of 4.2 m between the roof and the buried pipes
- Situation with only limited space beneath the ceiling (no room for installing inclined pipes)
- Long collection pipes

Gravity drainage

- Small roof areas, per drain ≥ 150 m²
- Plenty of room
- Short collection pipe

Influencing factors

- Local reference rainfall
- Connection to buried pipe
- Design of the piping system
- Roof construction
- Height

Dimensioning

DIN 1986-100
Drainage systems for buildings and building lots

DIN EN 12056
DIN 1986-100
Gravity drainage systems within buildings

Material selection

Jet drains made of stainless steel or cast iron

Spin drains made of stainless steel or cast iron

GM-X drain pipe
GM-X compound pipe

Dimensioning

Drainage using a syphonic system pursuant to DIN 1968-100

Please fill in this questionnaire for dimensioning your roof drainage system, and fax the pages to the ACO Applications Technology in Stadtlengsfeld/Germany:

Applications Technology
Flat roof drainage
Tel. +49 (0) 36965 819–0
Fax +49 (0) 36965 819–364
gmx@aco-online.de

General information

Building:
Name _____
Address _____
Postcode, Place _____
Country _____
☐ New building ☐ Extension ☐ Renovation ☐ Other

Planning phase: ☐ Blueprint planning ☐ Approval planning ☐ Implementation planning

Owner:
Name _____
Address _____
Postcode, Place _____
Country _____
Telephone _____
Fax _____

Planner/fabricator:
Name _____
Contact person _____
Address _____
Postcode, Place _____
Country _____
Telephone _____
Fax _____
E-mail _____

Reference rainfall details

☐ Reference rainfall pursuant to KOSTRA DWD 2000 ☐ or different rainfall details from the planner

$r_{(5,5)}$ in l/s hectare _____ $r_{(5,100)}$ in l/s hectare _____

Flow coefficient C/Ψ _____

Does the building require special protection? ☐ no ☐ yes

Do you need plans for an emergency drainage system? ☐ yes ☐ No

Emergency drainage via…

☐ A second pipe network? ☐ Parapet drains? ☐ Parapet slots?

Pipe system / roof construction details

Roof construction:

- ☐ Concrete roof
- ☐ Trapezoidal sheet roof

Vapour trap manufacturer / type _____

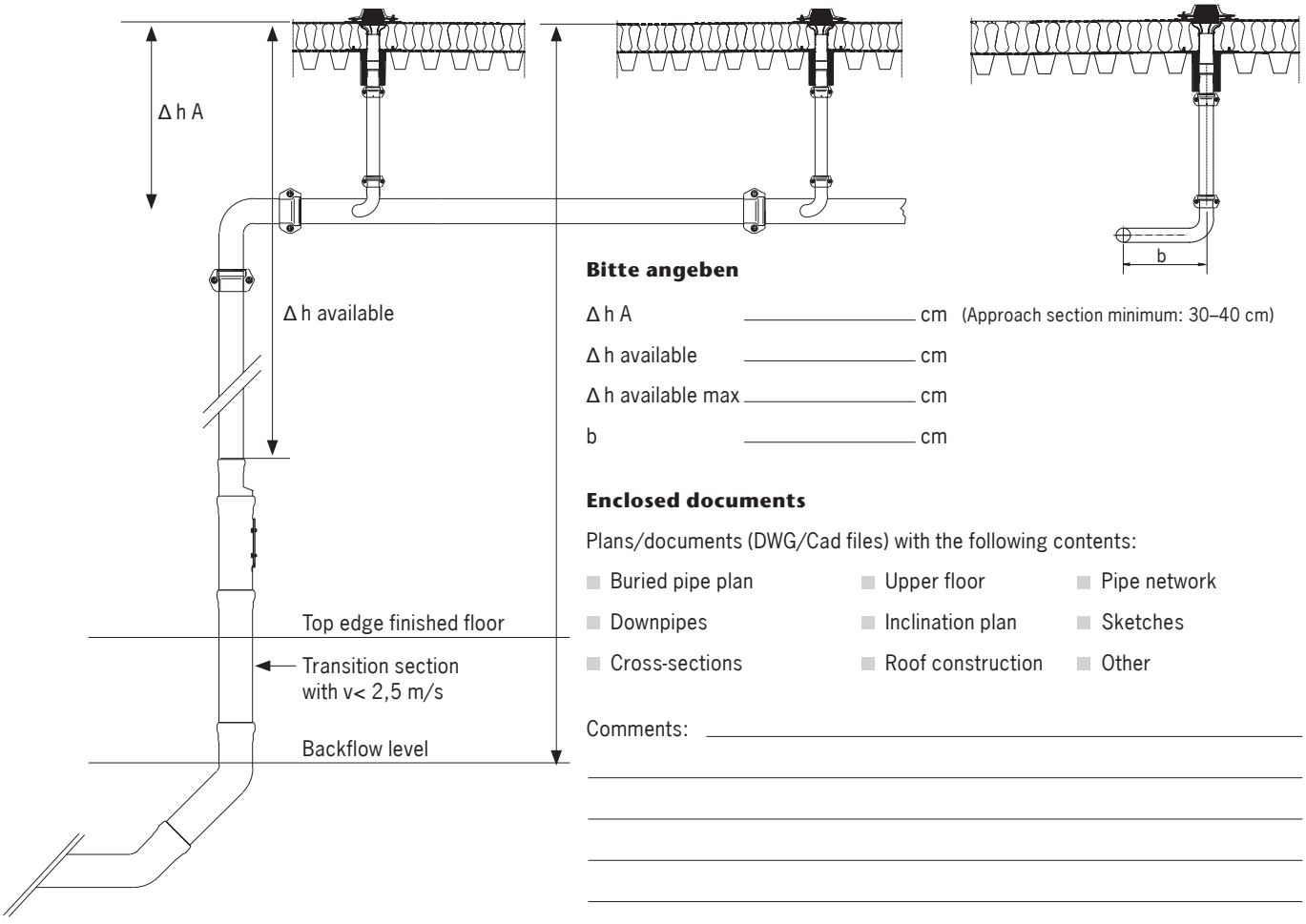
Sealing membrane manufacturer / type _____

Drain Jet – type:

Stainless steel	Cast iron
☐ 1-piece	☐ 1-piece
☐ 2-piece	☐ 2-piece
☐ Insulated: polystyrene	☐ Insulated: foam glass
☐ Insulated: rock wool	☐ Insulated: rock wool
☐ Insulated: foam glass	☐ Heated: optional
☐ Heated: optional	☐ With fire protection
☐ With fire protection	

Pipe type: ☐ GM-X steel pipe ☐ GM-X compound pipe

Connection situation of the roof drain



Bitte angeben

Δ h A	_____ cm	(Approach section minimum: 30–40 cm)
Δ h available	_____ cm	
Δ h available max	_____ cm	
b	_____ cm	

Enclosed documents

Plans/documents (DWG/Cad files) with the following contents:

- ☐ Buried pipe plan
- ☐ Upper floor
- ☐ Pipe network
- ☐ Downpipes
- ☐ Inclination plan
- ☐ Sketches
- ☐ Cross-sections
- ☐ Roof construction
- ☐ Other

Comments: _____

Dimensioning

Check list for calculation data parameters

Tick off the points in the check list which have already been dealt with. When complete, nothing more stands in the way of the precise planning of your drainage system.

- Defining the roof
  - Take into consideration the sub-roof areas
    Consider minimum specific output for symphonic drainage!
    (Minimum specific output/outlet 2–3 l/s)
  - Take into consideration the high points and low points
  - Take into consideration firewalls
  - Take into consideration fire protection zones

- Assigning the roof drains to the roof areas
  - When there are different sub-roofs
  - When there are different roof constructions
  - Define the flow coefficients for different parts of the roof

- Define the reference rainfall
  - $r_{5,5}$
  - $r_{5,100}$

- Request the construction plans (DWG/Cad files)
  - Roof floor plan with high points and low points
  - Cross-section with height figures
  - Cross-section through the floors with positions of the pipes
  - Position of buried pipes
  - Specify the following data when only sketches are available:
  - Position of the drains
  - Position of the collecting pipes
  - Position of the buried pipes
  - High points and low points on the roofs

- Defining the emergency drainage
  - Emergency drainage via parapet slots?
  - Emergency drainage via a second pipe system?

ACO Jet flat roof drain – volume flow

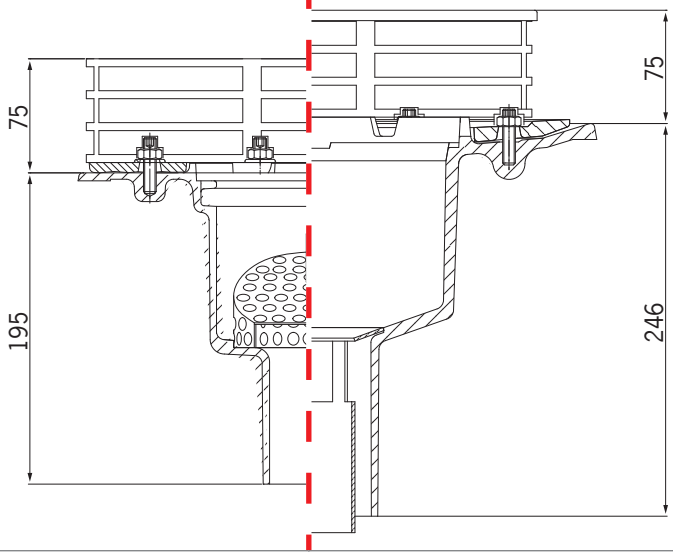
Nominal width	Material of drain body	Outlet inclination	required outflow value according to DIN	actual outflow value according to DIN
DN 40	stainless steel	0°	3 l/s	5,2 l/s
DN 50	stainless steel	0°	6 l/s	8,5 l/s
DN 70	stainless steel	90°	12 l/s	15 l/s
DN 70	stainless steel	0°	12 l/s	16 l/s
DN 100	stainless steel	90°	–	39 l/s
DN 50	cast iron	90°	5 l/s	9 l/s
DN 80	cast iron	90°	–	17 l/s

Installation example concrete roof with gravel layer

Syphonic drainage using ACO Jet flat roof drain made of cast iron

1 **Gravel basket**
Article No. 7000.12.00

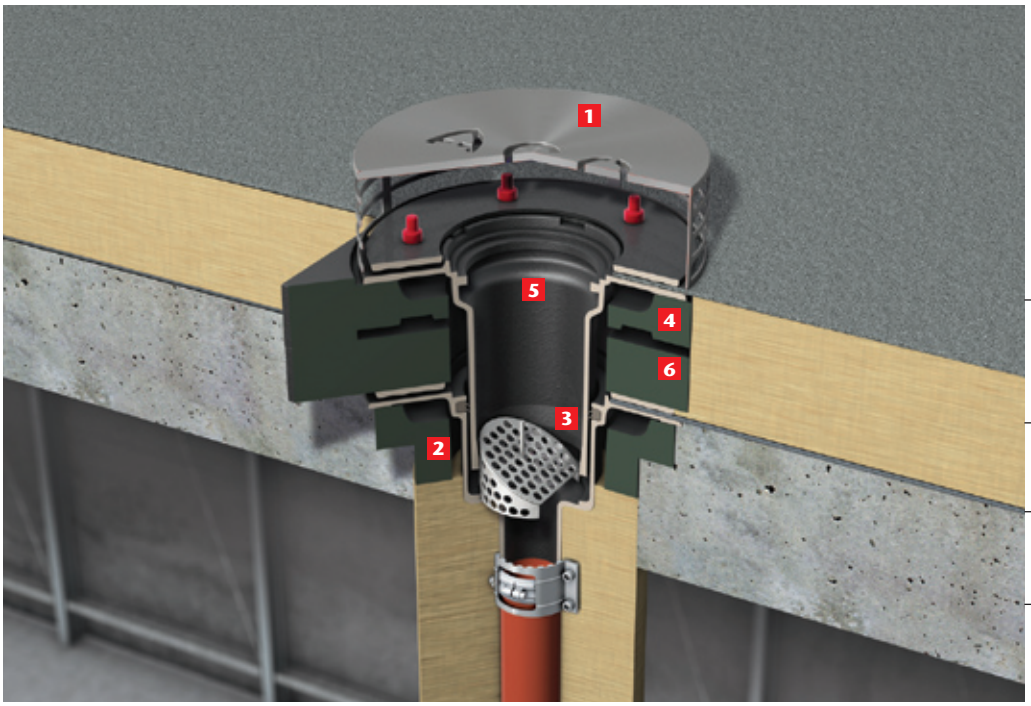
2 **ACO Jet flat roof drain DN 80 made of cast iron**
Article No. 7038.10.10

DN 50	DN 80
	
The outlet socket of the drain body must not be shortened on site	The outlet socket of the drain body must not be shortened on site
The gravel basket (75 mm height) can be raised in 65 mm steps using a height adapter. Please see page 74.	

Extension heights in mm

Installation example reversed roof

Syphonic drainage using ACO Jet flat roof drain made of cast iron



Sealing membrane

Insulation

Sealing membrane (vapour trap)

Concrete roof (thickness pursuant to structural engineering specifications)

1 **Gravel basket**
Article No. 7000.02.00

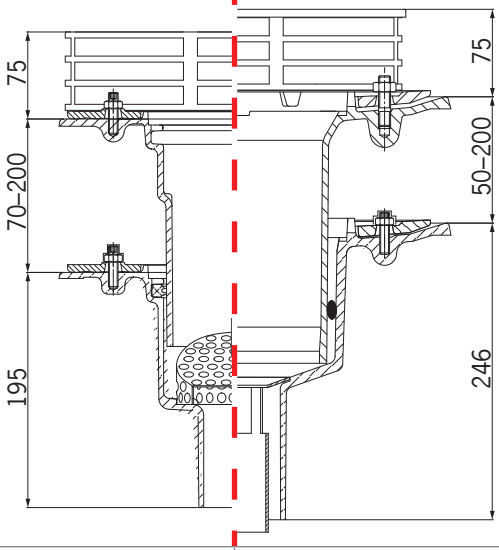
2 **Insulating body**
Article No. 7040.22.00

3 **ACO Jet flat roof drain DN 50 made of cast iron**
Article No. 7037.10.10

4 **Insulating ring**
Article No. 7040.12.00

5 **Upper part**
Article No. 7047.10.25

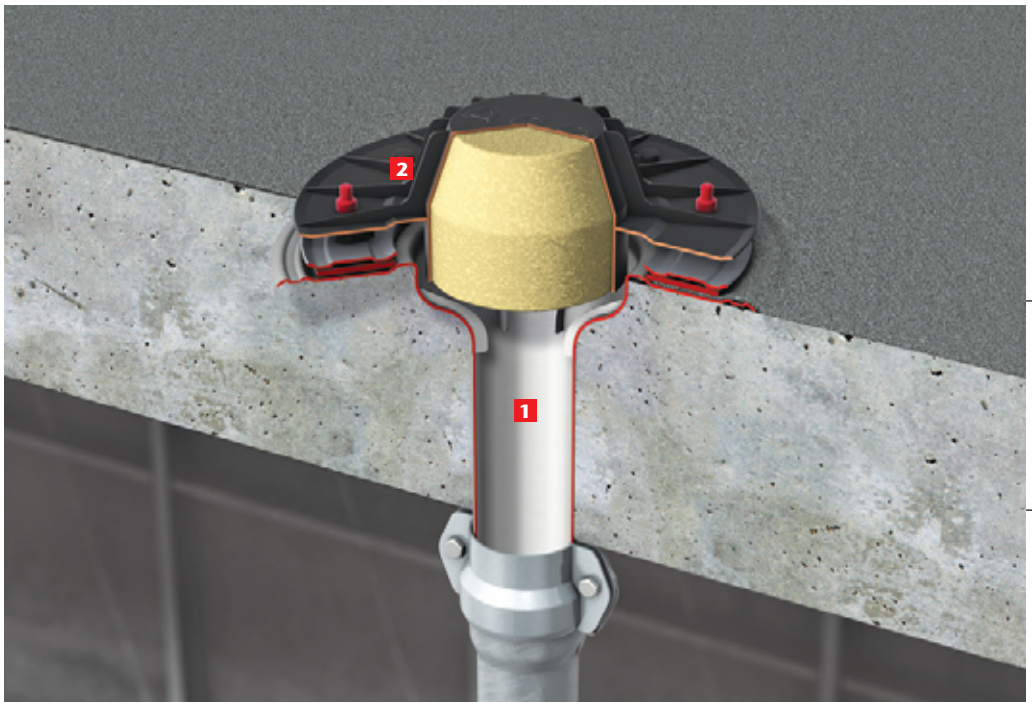
6 **Levelling element**
Article No. 7040.02.00

DN 50	DN 80
	
The outlet socket of the drain body must not be shortened on site	The outlet socket of the drain body must not be shortened on site
The gravel basket (75 mm height) can be raised in 65 mm steps using a height adapter. Please see page 74.	

Extension heights in mm

Installation example concrete roof

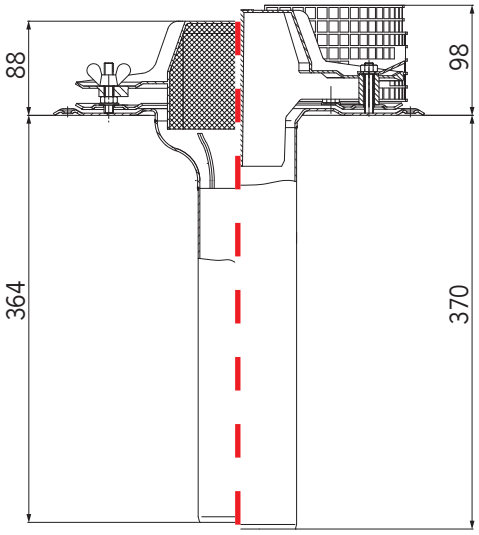
Syphonic drainage with ACO Jet flat roof drain made of stainless steel



Complete drain Article No.1279.10.00 consisting of:

1 **ACO Jet flat roof drain, stainless steel, DN 70, 90°**
Article No. 0174.46.60

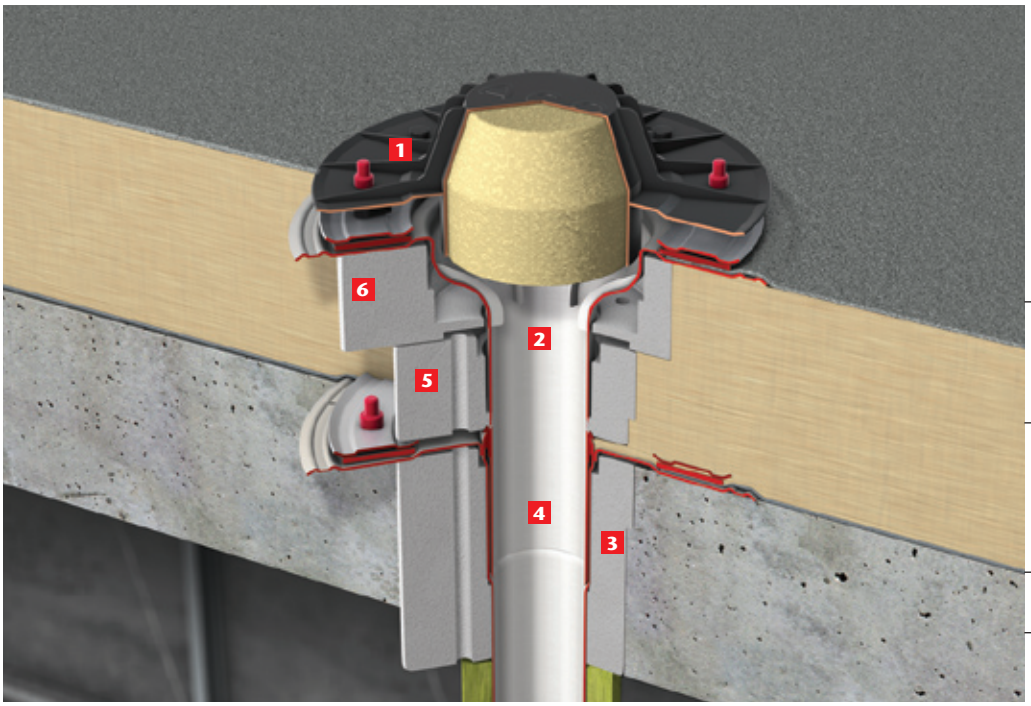
2 **Air lock**
Article No. 0174.46.74

DN 70	DN 100
	
The gravel basket top section for the Jet drain DN 70 has an extension height of either 70 mm or 225 mm.	The gravel basket top section for the Jet drain DN 100 must always be installed.

Extension heights in mm

Installation example concrete roof with insulation

Syphonic drainage with ACO Jet flat roof drain made of stainless steel



Complete drain Article No. 1279.25.00 consisting of:

1 **Air lock**
Article No. 0174.77.03

2 **ACO Jet drain body, DN 70, made of stainless steel**
Article No. 0174.76.48

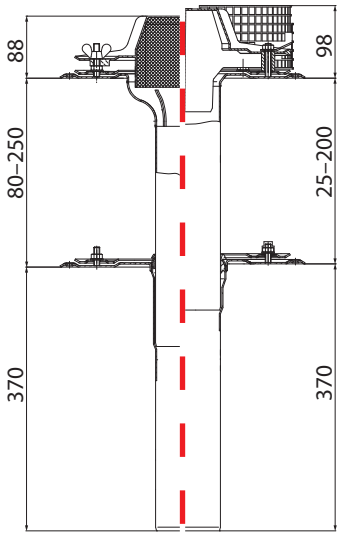
3 **Polystyrene insulation DN 70**
Article No. 0174.46.55

4 **Jet lower part DN 70, stainless steel**
Article No. 0174.46.69

Accessories:

5 **Polystyrene insulation DN 70**
Article No. 0174.46.55

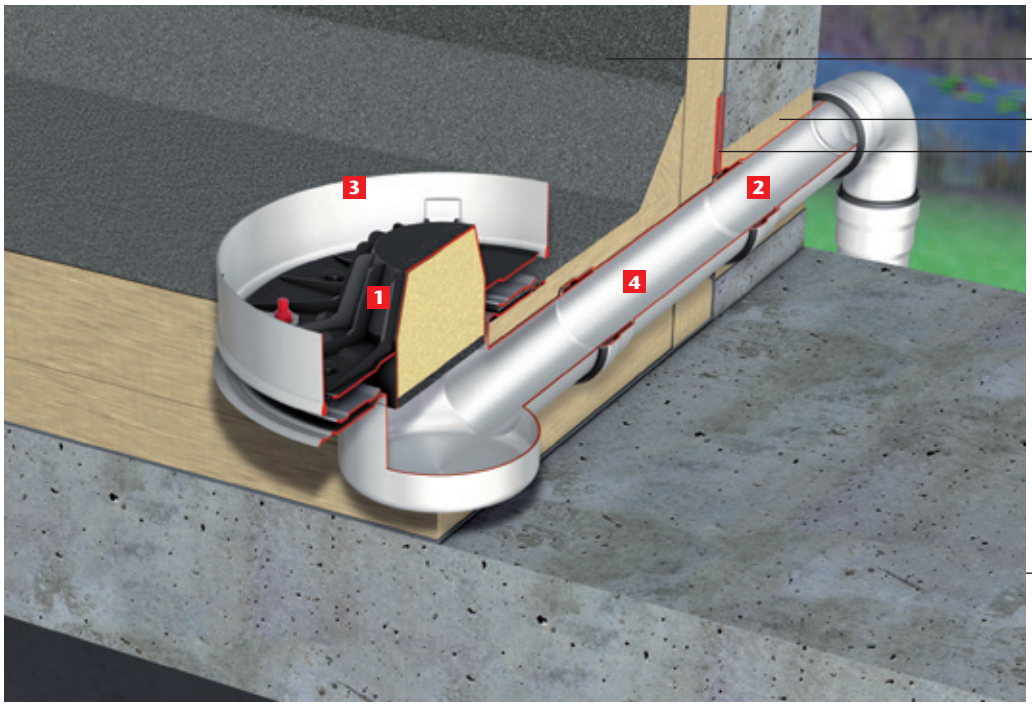
6 **Insulation for inflow cone, polystyrene DN 70**
Article No. 0174.46.56

DN 70	DN 100
	
The gravel basket top section for the Jet drain DN 70 has an extension height of either 70 mm or 225 mm.	The gravel basket top section for the Jet drain DN 100 must always be installed.

Extension heights in mm

Installation example

ACO flat roof drain made of stainless steel, emergency drainage system

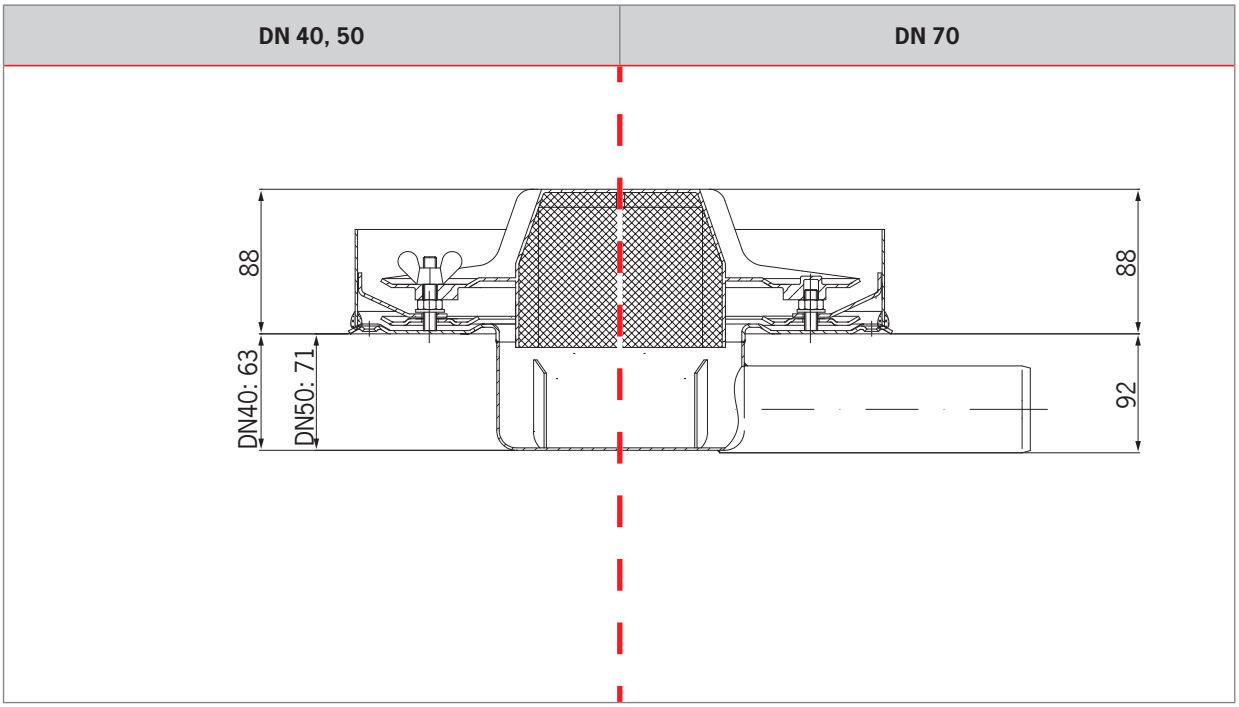


1 **ACO Jet flat roof drain made of stainless steel**
DN 70, 1,5° socket outlet inclination, for sealing with bitumen
Article No. 0174.46.45

2 **Attika duct with compression sealing flange**
Article No. 0174.48.66

3 **Impoundment ring**
Article No. 0174.46.75

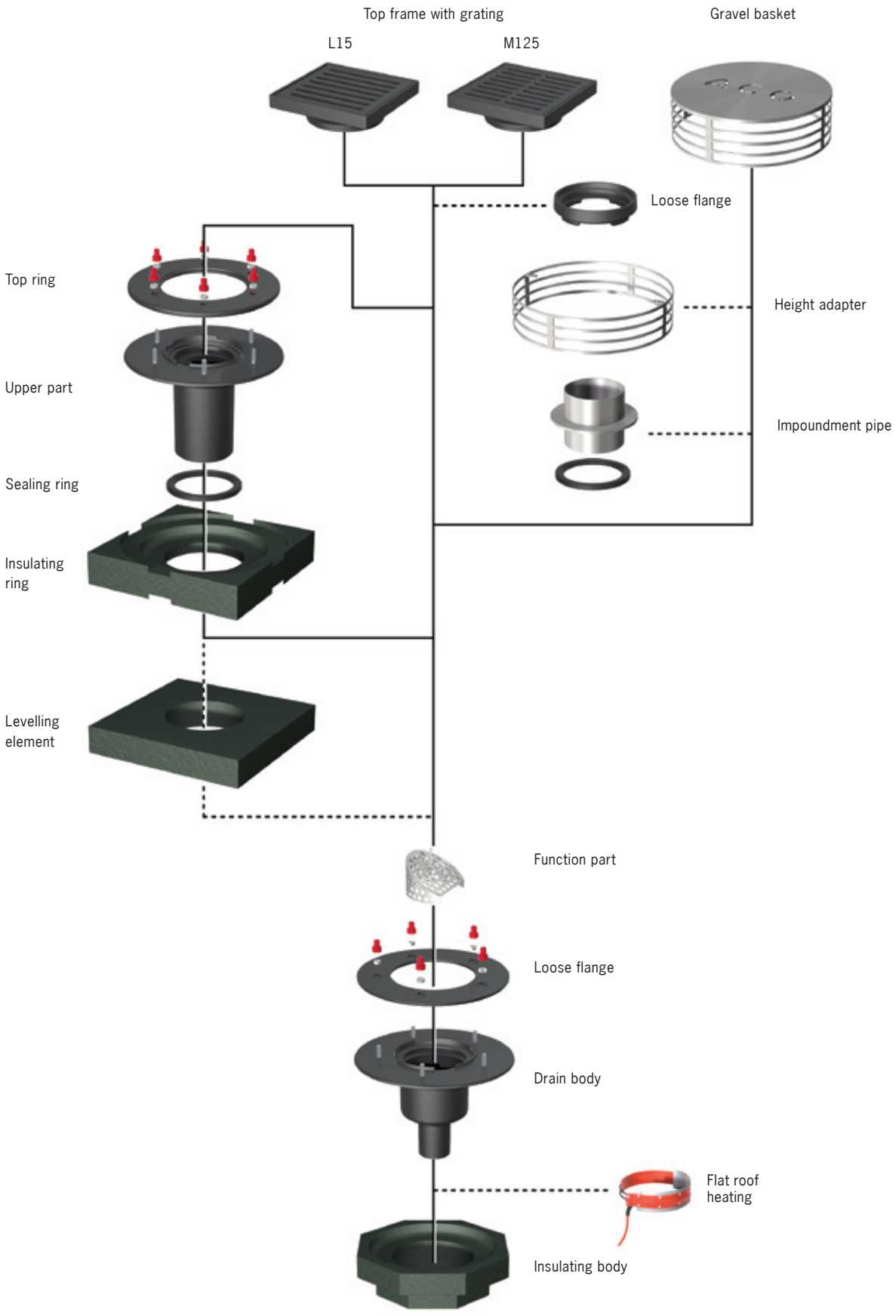
4 **GM-X pipe**
of galvanized steel
Lenght: 500 mm
Article No. 0174.10.62



Extension heights in mm

Modular system

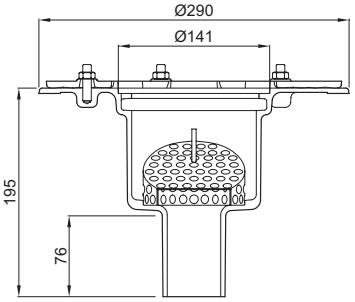
ACO Jet flat roof drain made of cast iron for syphonic drainage



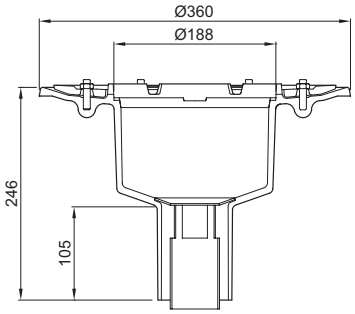
ACO Jet flat roof drain made of cast iron

DN 50 – DN 80

- Drain body DN 50 or DN 80
- Cast iron, construction material class A1, coated
- With compression sealing flange and seepage openings and function component
- Can be connected to spigot pipe pursuant to DIN 19522 / DIN EN 877



Model with vertical outlet socket
DN 50

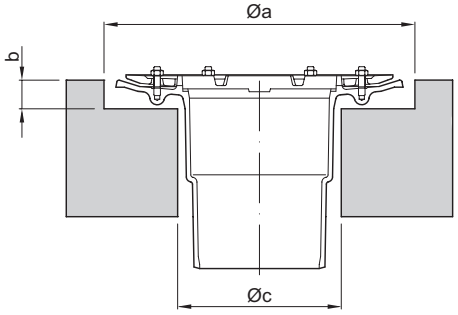


Model with vertical outlet socket
DN 80

Model	Weight	Article No.
DN 50	5 kg	**7037.10.10**
DN 80	12 kg	**7038.10.10**

Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]	Article No.
For drain body without insulating body				
DN 50	300	150	30	**7037.10.10**
DN 80	380	200	35	**7038.10.10**
For drain body with insulating body				
DN 50	315	220	45	**7037.10.10**
DN 80	430	270	65	**7038.10.10**

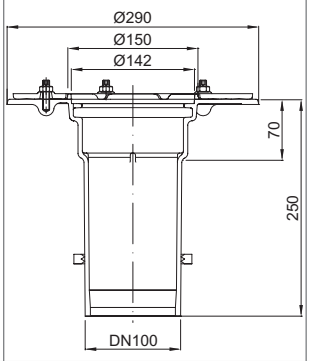
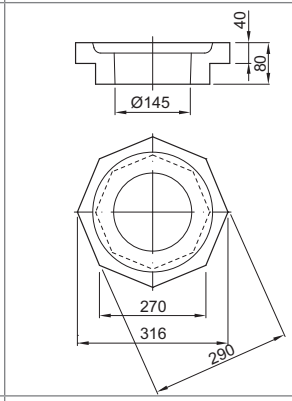
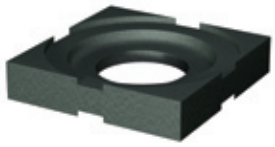
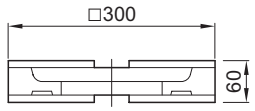
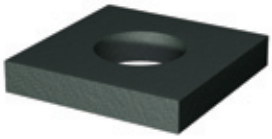
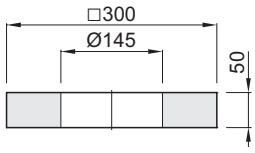
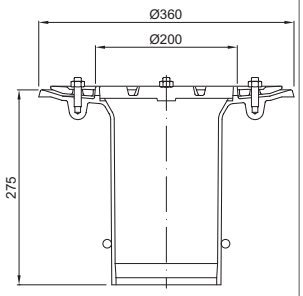
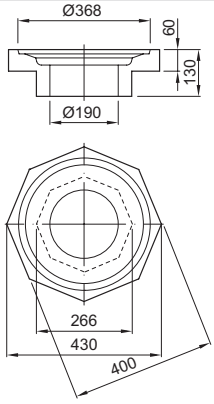


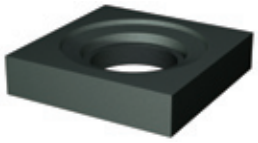
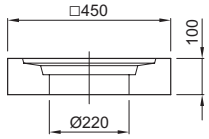
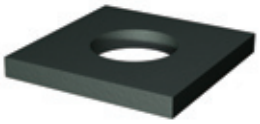
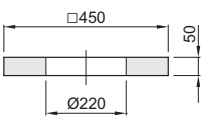
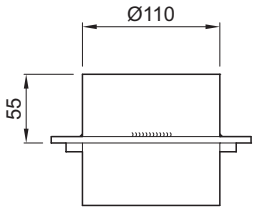
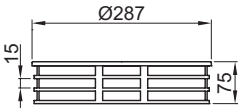
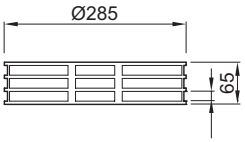
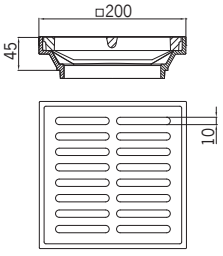
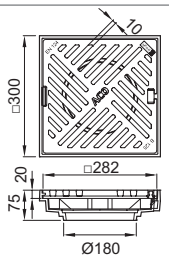
Recess dimensions

Nominal width	Type	Outlet inclination	Recess dimensions Drain body without insulating body	Recess dimensions Drain body with insulating body
DN 50	Jet	90°	230 x 320 mm	320 x 320 mm
DN 80	Jet	90°	290 x 410 mm	450 x 450 mm

Additional components

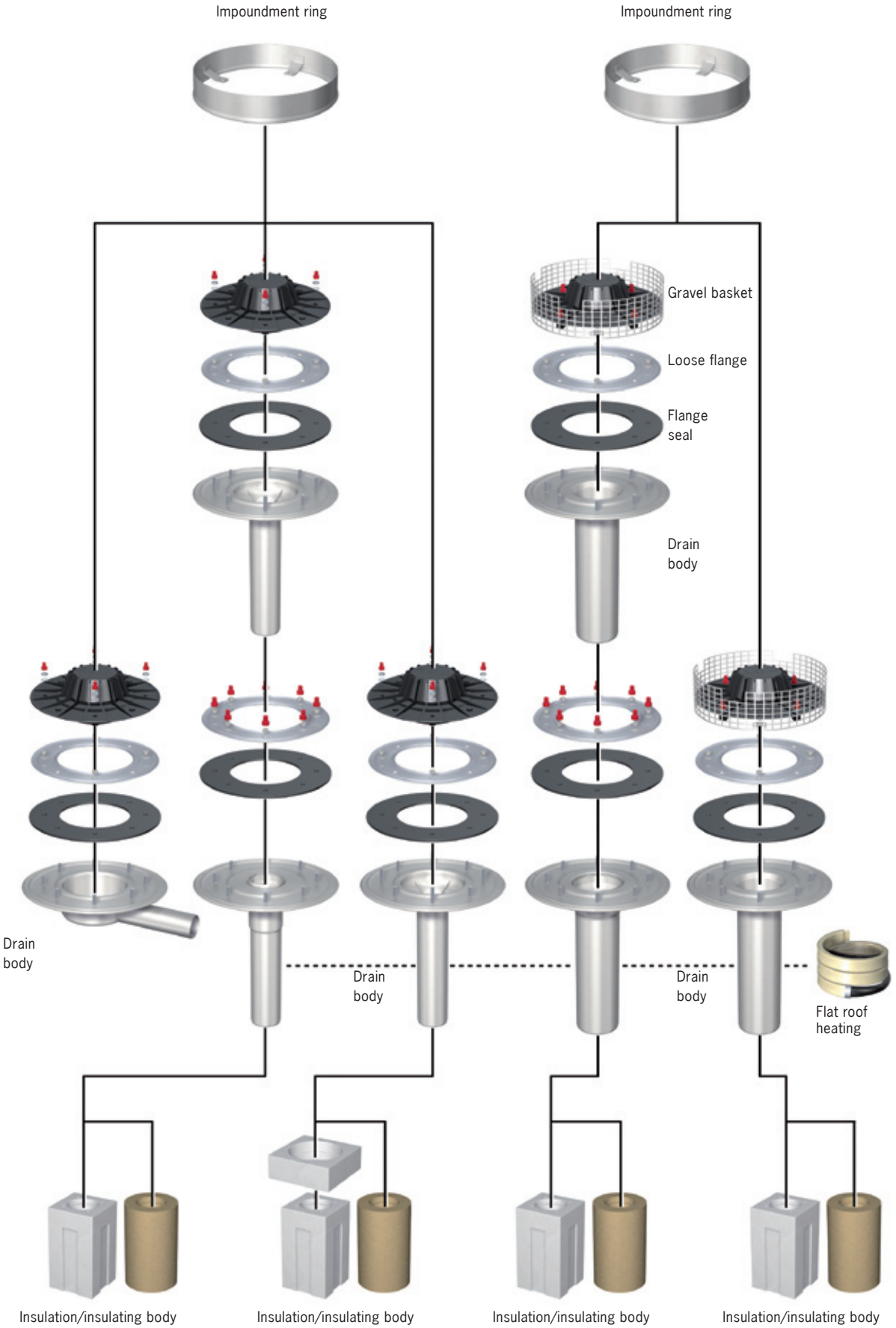
For ACO Jet flat roof drains made of cast iron

	Scale drawing	Product description	Model	Article No.
		**Upper part** cast iron, fits Jet flat roof drains made of cast iron, for sealing with two sealing membranes, with compression sealing flange, seepage openings and sealing ring.	DN 50	**7047.10.25**
		**Insulating body** for flat roof drain with vertical outlet socket, foam glass	DN 50	**7040.22.00**
		**Insulating ring** for flat roof drain upper part, foam glass	DN 50	**7040.12.00**
		**Gravel basket** fits Jet flat roof drains made of cast iron, basket made of stainless steel with two fastening screws	DN 50	**7040.02.00**
		**Upper part** cast iron, fits Jet flat roof drains made of cast iron, for sealing with two sealing membranes, with compression sealing flange, seepage openings and sealing ring.	DN 80	**7044.10.25**
		**Insulating body** for flat roof drain with vertical outlet socket, foam glass	DN 80	**7040.21.00**

	Scale drawing	Product description	Model	Article No.
		**Insulating ring** for flat roof drain upper part, foam glass	DN 80	**7040.11.00**
		**Levelling element** for flat roof drain upper part DN 50, DN 80, foam glass	DN 80	**7040.01.00**
		**Impoundment pipe** 55 mm high, for converting a Jet flat roof drain to an emergency drain, including sealing ring	DN 50,one-piece and two-piece DN 80, one-piece DN 80, two-piece	**7047.10.55** **7048.10.50** **7048.20.50**
		**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 mm², 1.5 m G 1.5		**7000.85.00**
		**Levelling element** for flat roof drain upper part DN 50, DN 80, foam glass	DN 50 DN 80	**7000.02.00** **7000.12.00**
		**Height adapter** Height: 65 mm, fits gravel basket for Jet flat roof drains made of cast iron. Height adapter made of stainless steel with two fixing screws.	DN 50/DN 80	**7000.11.00**
		**Top frame with grating** Cast iron	DN 50, Class L15 DN 50, Class M125	**7000.43.00** **7000.44.00**
		**Top frame with grating** Cast iron	DN 80, Class M125	**7000.46.00**

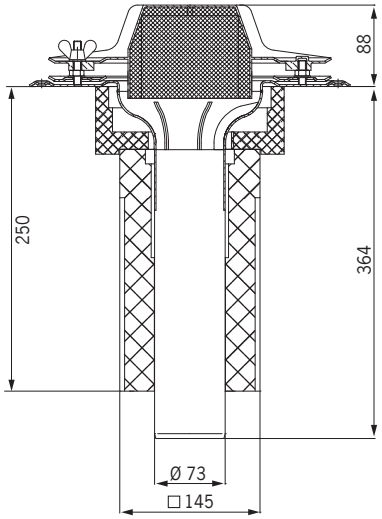
Modular system

ACO Jet flat roof drains made of stainless steel for syphonic drainage



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

DN 70

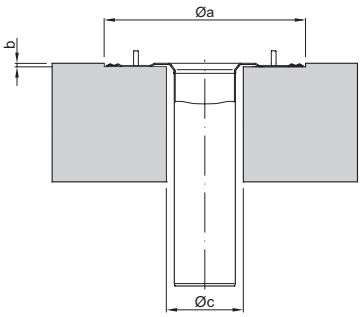


- Flat roof drain for syphonic drainage DN 70 with vertical outlet socket, pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With compression sealing flange for sealing one sealing membrane
  Warning! It is NOT possible to install a second sealing membrane after the vertical drain has been installed!
- With air lock made of PP
- Optionally available uninsulated, insulated with polystyrene or rock wool, and optionally with/without heating
- Direct connection to ACO GM-X pipe system

Model	Weight	Article No.
uninsulated	3,6	**1279.10.00**
insulated (polystyrene)	3,7	**1279.15.00**
insulated (rock wool)	3,7	**1279.17.00**
insulated (polystyrene) heatable	3,9	**1279.15.40**
insulated (rock wool) heatable	3,9	**1279.17.40**

Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]	Article No.
For drain bodies without insulating bodies				
DN 70	340	90	10	**1279.10.00**
For drain bodies with insulating bodies				
DN 70	340	290	10	**1279.15.00**
				1279.17.00
				1279.15.40
				1279.17.40

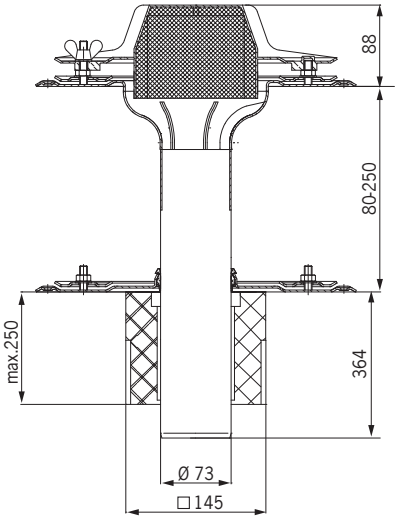


Recess dimensions

Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 70	Jet	90°	120 x 260 mm	230 x 360 mm

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

DN 70

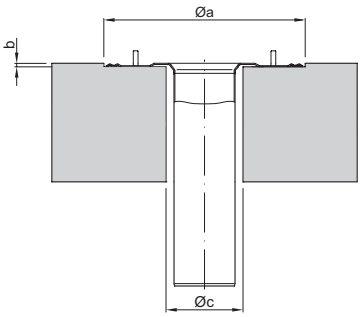


- Flat roof drain for syphonic drainage DN 70 with vertical outlet socket, pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With two compression sealing flanges for sealing two sealing membranes
- With air lock made of PP
- Optionally available uninsulated, insulated with polystyrene or rock wool, and optionally with/without heating
- Direct connection to ACO GM-X pipe system

Model	Weight	Article No.
uninsulated	5,9	**0174.46.90**
insulated (polystyrene)	6,0	**0174.46.92**
insulated (rock wool)	6,0	**0174.46.94**
insulated (polystyrene) heatable	6,2	**0174.46.95**
insulated (rock wool) heatable	6,2	**0174.46.97**

Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]	Article No.
For drain bodies without insulating bodies				
DN 70	340	90	10	**0174.46.90**
For drain bodies with insulating bodies				
DN 70	340	290	10	**0174.46.92**
				0174.46.94
				0174.46.95
				0174.46.97

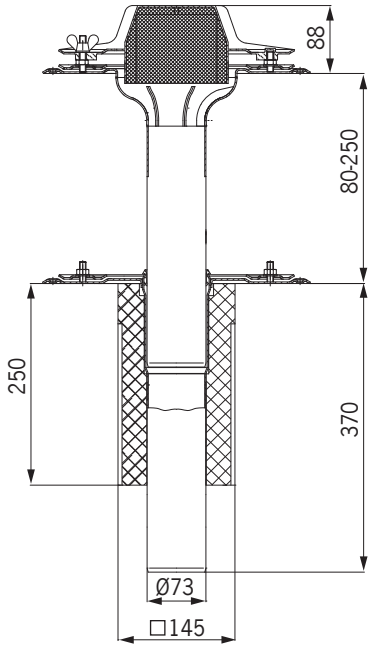


Recess dimensions

Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 70	Jet	90°	120 x 260 mm	230 x 360 mm

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

DN 70

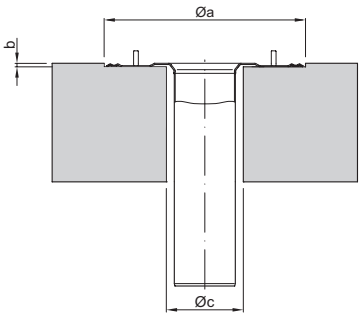


- Flat roof drain for syphonic drainage DN 70 with vertical outlet socket, pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With two compression sealing flanges for sealing two sealing membranes
- With air lock made of PP
- Optionally available uninsulated, insulated with polystyrene or rock wool, and optionally with/without heating
- Direct connection to ACO GM-X pipe system

Model	Weight	Article No.
uninsulated	6,0	**1279.20.00**
insulated (polystyrene)	6,1	**1279.25.00**
insulated (rock wool)	6,1	**1279.27.00**
insulated (polystyrene) heatable	6,3	**1279.25.40**
insulated (rock wool) heatable	6,3	**1279.27.40**

Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]	Article No.
For drain bodies without insulating bodies				
DN 70	340	90	10	**1279.20.00**
For drain bodies with insulating bodies				
DN 70	340	290	10	**1279.25.00**
				1279.27.00
				1279.25.40
				1279.27.40

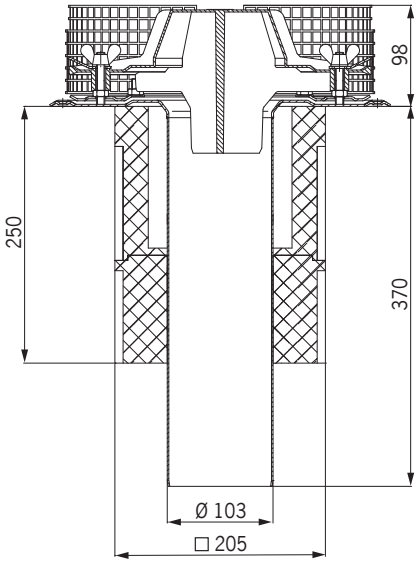


Recess dimensions

Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 70	Jet	90°	120 x 260 mm	230 x 360 mm

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

DN 100

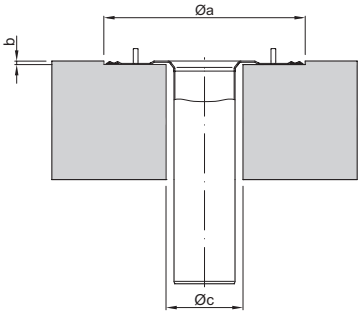


- Flat roof drain for syphonic drainage DN 100 with vertical outlet socket, pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With compression sealing flange for sealing one sealing membrane
  Warning! It is NOT possible to install a second sealing membrane after the vertical drain has been installed!
- With a gravel basket from stainless steel, material grade 304 and air lock made of PP
- Optionally available uninsulated, insulated with polystyrene or rock wool, and optionally with/without heating
- Direct connection to ACO GM-X pipe system

Model	Weight	Article No.
uninsulated	4,9	**1219.10.60**
insulated (polystyrene)	5,1	**1219.15.60**
insulated (rock wool)	5,1	**1219.17.60**
insulated (polystyrene) heatable	5,3	**1219.15.90**
insulated (rock wool) heatable	5,3	**1219.17.90**

Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]	Article No.
For drain bodies without insulating bodies				
DN 100	340	110	10	**1219.10.60**
For drain bodies with insulating bodies				
DN 100	340	290	10	**1219.15.60**
				1219.17.60
				1219.15.90
				1219.17.90

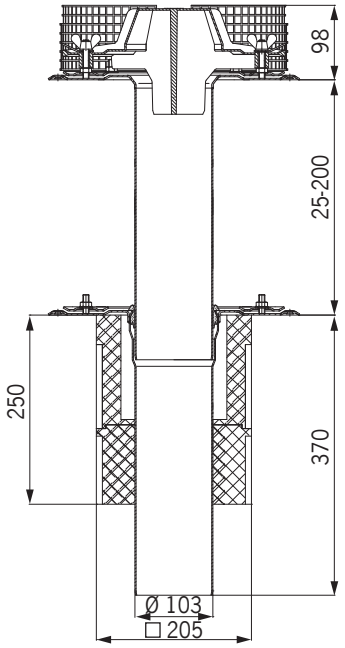


Recess dimensions

Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 100	Jet	90°	150 x 290 mm	230 x 360 mm

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

DN 100

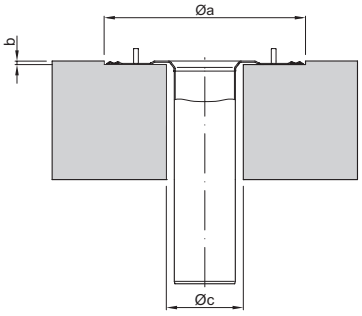


- Flat roof drain for syphonic drainage DN 100 with vertical outlet socket, pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- With two compression sealing flanges for sealing two sealing membranes
- With a gravel basket from stainless steel, material grade 304 and air lock made of PP
- Optionally available uninsulated, insulated with polystyrene or rock wool, and optionally with/without heating
- Direct connection to ACO GM-X pipe system

Model	Weight	Article No.
uninsulated	7,9	**1219.20.60**
insulated (polystyrene)	8,1	**1219.25.60**
insulated (rock wool)	8,1	**1219.27.60**
insulated (polystyrene) heatable	8,3	**1219.25.90**
insulated (rock wool) heatable	8,3	**1219.27.90**

Core borehole dimensions

Nominal width	Ø a	Ø c	b [mm]	Article No.
For drain bodies without insulating bodies				
DN 100	340	110	10	**1219.20.60**
For drain bodies with insulating bodies				
DN 100	340	290	10	**1219.25.60**
				1219.27.60
				1219.25.90
				1219.27.90

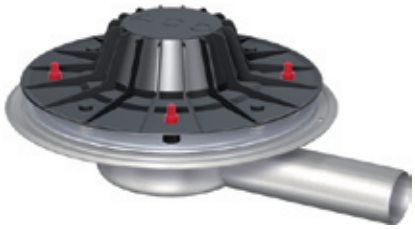


Recess dimensions

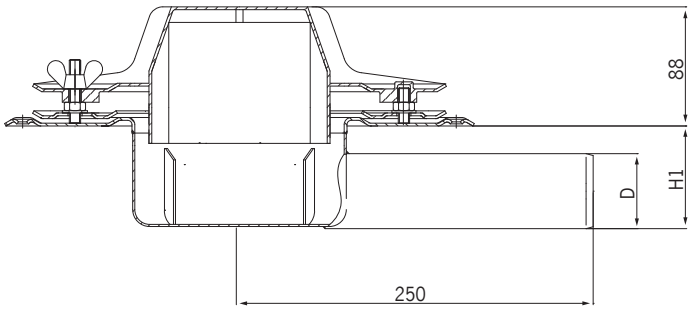
Nominal width	Type	Inclination	Recess dimensions drain body without insulating body	Recess dimensions drain body with insulating body
DN 100	Jet	90°	150 x 290 mm	230 x 360 mm

ACO Jet flat roof drains made of stainless steel with horizontal outlet socket

DN 40 – DN 70



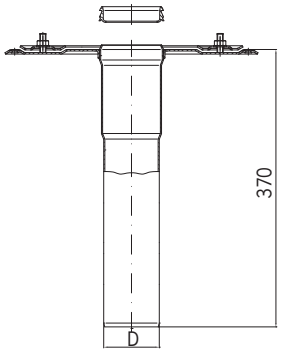
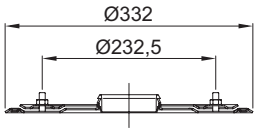
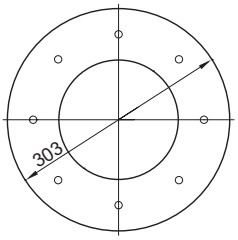
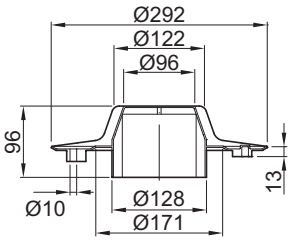
- Flat roof drains for syphonic drainage DN 40, 50 or 70,
- Horizontal outlet socket
- Stainless steel, material 1.4301
- With compression sealing flange
- Airlock made of PP
- Direct connection to ACO GM-X pipe system

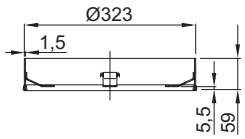
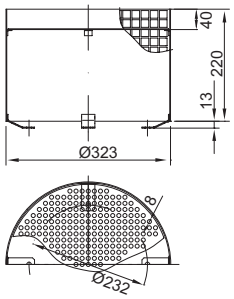
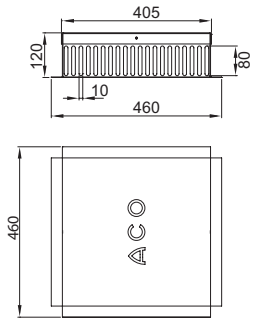
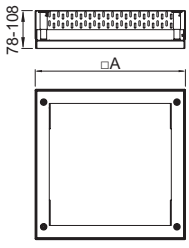


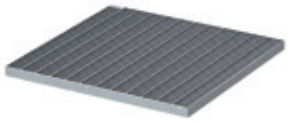
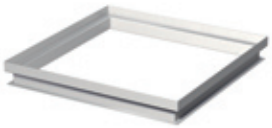
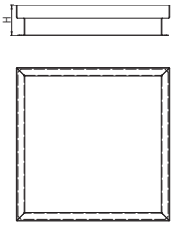
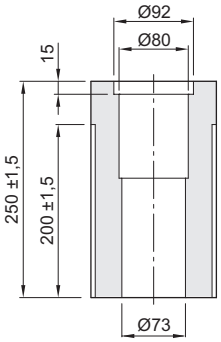
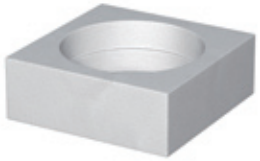
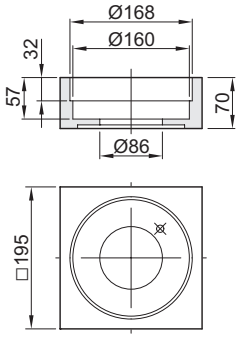
Model	D	H1	Weight	Article No.
DN 40	42	63	5,2	**1245.10.00**
DN 50	53	71	8,5	**1255.10.00**
DN 70	73	92	16,1	**1275.10.00**

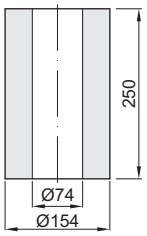
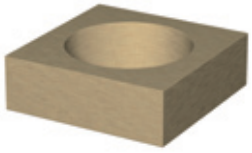
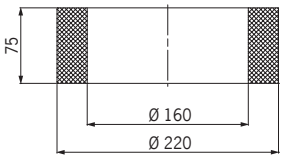
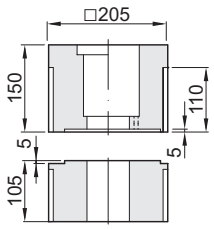
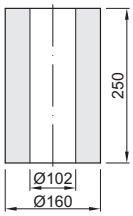
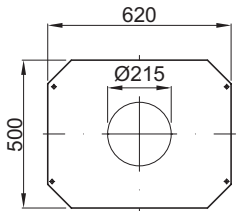
Additional components

ACO Spin flat roof drains made of stainless steel

	Scale drawing	Product description	Model	Article No.
		**Lower part for two-piece flat roof drain for syphonic drainage** stainless steel, material 1.4301 with compression sealing flange	DN 70, D: 73 mm DN 100, D: 103 mm	**0174.46.69** **0174.47.16**
		**Positioning flange** with compression sealing flange, stainless steel, material 1.4301, for vertical drain body DN 70 in the Jet product line	unheated heated	**0174.46.53** **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**
		**Air lock** polypropylene	DN 70 DN 100	**0174.46.74** **0174.75.50**

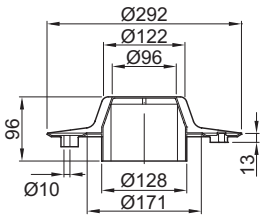
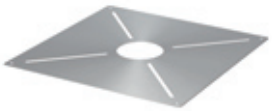
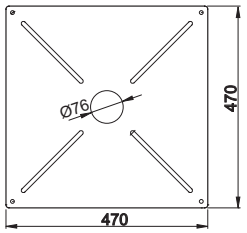
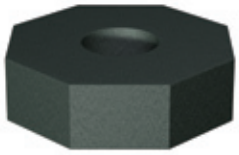
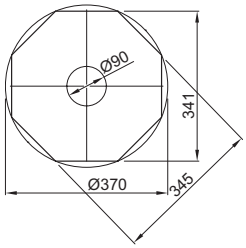
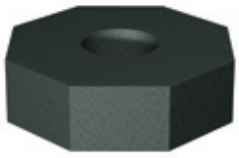
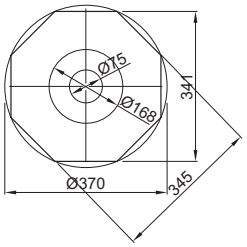
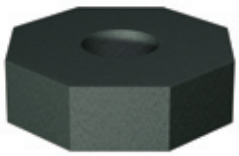
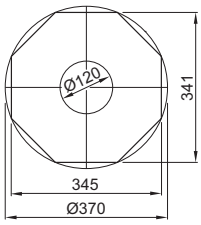
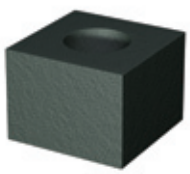
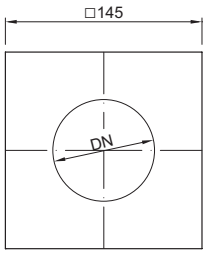
	Maßzeichnung	Produktbeschreibung	Ausführung	Artikel-Nr.
		**Impoundment ring** stainless steel, material 1.4301		**0174.46.75**
		**Gravel basket for reversed roof** stainless steel, material 1.4301, load class H 1.5		**0153.60.01**
		**Control shaft** stainless steel, material 1.4301, dimensions: 400 x 400 mm, height: 120 mm, load class H 1.5		**0153.73.05**
		**Profiline top section** steel, galvanised, dimensions: 400 x 400 mm Height adjustable from 78 – 108 mm		**38801**

	Scale drawing	Product description	Model	Article No.
		**Lattice grating for Profiline top section** steel, galvanised, dimensions: 400 x 400 mm Lattice dimensions 30 x 10		**38570**
		**Extension for Profiline top section** steel, galvanised, for frame dimensions 400 x 400 mm	Bauhöhe: 30 mm Bauhöhe: 60 mm Bauhöhe: 120 mm	**38685** **38687** **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 mm², 1.5 m G 1.5		**0174.84.32**
		**Polystyrene insulation, PS 30** for all Jet vertical flat roof drains DN 70		**0174.46.55**
		**Insulation for inlet cone, polystyrene, PS 30** for all Jet vertical flat roof drains DN 70 drain bodies		**0174.46.56**

	Scale drawing	Product description	Model	Article No.
		**Rock wool insulation, construction material class A1** for all Jet vertical flat roof drains DN 70		**0174.46.57**
		**Insulation for inlet cone, rock wool, construction material class A1** For all Jet vertical flat roof drains DN 70 drain bodies		**0174.81.22**
		**Polystyrene insulation, PS 30** for all Jet vertical flat roof drains DN 100		**0174.47.19**
		**Rock wool insulation, construction material class A1** for all Jet vertical flat roof drains DN 100		**0174.47.21**
		**Mounting sheet for trapezoidal sheet metal roofs** steel, galvanised		**0174.46.61**

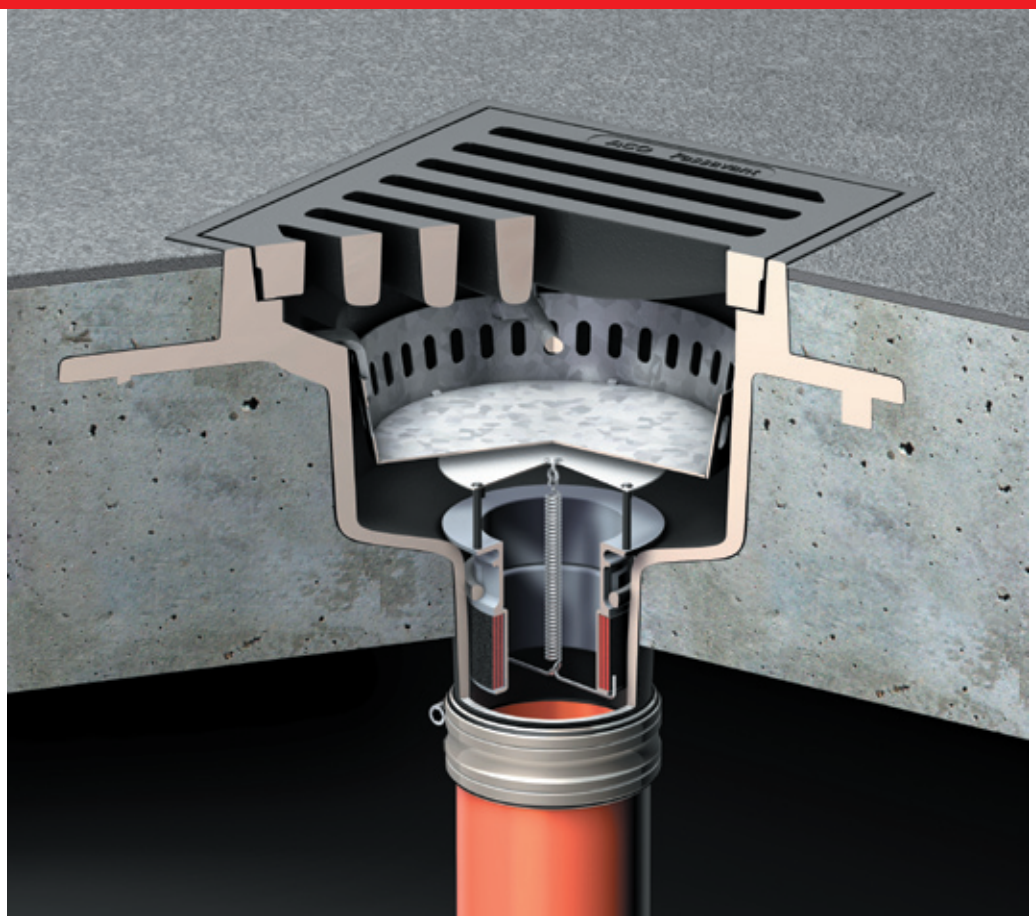
Accessories

ACO Jet flat roof drains with fire protection

	Scale drawing	Product description	Model	Article No.
		**Air lock with fire protection sealant** for jet drain body DN 70		**0174.77.30**
		**Heat shield** stainless steel, for Jet flat roof drains DN 70, with impact dowel M 8, and hexagonal bolts M 8 x 16		**0174.77.97**
		**Insulating body** foam glass, for Jet vertical flat roof drain lower parts DN 70		**0150.12.69**
		**Insulating body** foam glass, for Jet vertical drain bodies DN 70		**0150.12.70**
		**Insulating body** foam glass, for Jet vertical flat roof drains DN 100		**0174.77.95**
		**Insulating sleeve** foam glass, for Jet vertical drain bodies and lower parts for length adjustment	DN 70, height: 100 mm DN 100, height: 150 mm	**0174.77.93** **0174.77.94**

Notes

Parking deck drainage



ACO drains and channels for parking deck drainage

There are two categories of parking deck drainage: outdoor drains exposed to the weather, and inside parking decks protected from the weather. Both types have to cope with heavy loads, moisture, and the accumulation of water. ACO parking deck drains and channels reliably handle large volumes of rainwater, and are rugged enough to cope with the harsh conditions associated with rainwater, and the accumulation of snow in winter brought in on cars and especially in car wheel arches.

Drain components such as channels and parking deck drains integrated within the structure of a multi-storey car park should be permanently watertight and tightly sealed off from the different layers. An optimal adhesion bond prevents any part of the system becoming loose. To guarantee this effect, a recess must be incorporated in the transition zone, either built in during construction or cut out afterwards. This recess is subsequently filled with the coating material. The selected sealing system is then laid all the way to the drain system.

There is much higher traffic exposure in busy multi-storey car parks and underground garages (e.g. the industrially used parking areas at shopping centres, park-and-ride stations, airports).
The structural and mechanical loads are much higher than those affecting private homes for instance. The transition from building parts in this case have profiles which can be driven on. Each of the layers forming the surface coating extend in this case right up to the join profile.

The DN 100 vertical ACO parking deck drains made of cast iron can be equipped with fire protection inserts where necessary. Parking deck drains need to be cleaned when required because of the large amount of dirt which collects.

ACO drains and channels safely remove water accumulating on parking decks

Regulations and standards
DIN and DIN EN standards must be complied with when planning and constructing parking deck drains. These standards also apply to floor drains and flat roof drains.

Load classes
The drain model and the load-bearing capacity of the grating is selected depending on the installation location and the associated traffic load and the use of the surface. Drains are classified according to the type of installation situation.

Load classes L15 and M125 are suitable for parking deck drainage.

Load class	Application area
A/L 15	for areas with light traffic and no forklift trucks
B/M 125	for areas with traffic movement, e.g. parking decks

Fire protection
State construction regulations specify the use of fire protection drains in multi-storey car parks when the distance between the roof drains and a rising wall (with openings or no fire resistance capacity) is smaller than 5 metres.

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.

Drainage type
Gravity drainage systems are recommended for parking decks with vehicular traffic because of the accumulation of dirt on the surfaces. Gravity drainage systems have wider pipes than syphonic drainage systems and are therefore less likely to become blocked. ACO Building Services therefore has no syphonic drainage systems specially for parking deck drains.

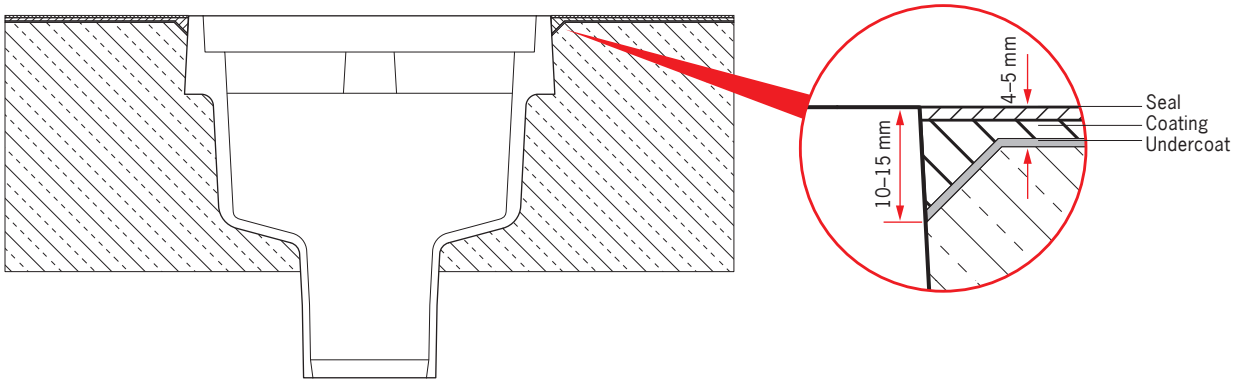
ACO parking deck drains and channels are very rugged and can easily cope with the tough conditions and high mechanical loads associated with the frequent movement of cars.

Cast iron parking deck drains

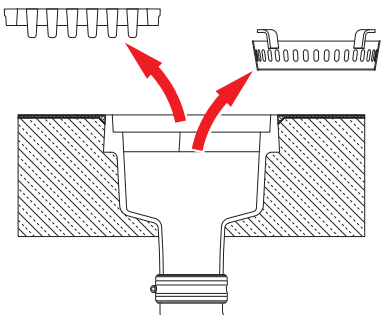
Sealing[2] cast iron parking deck drains

Built-in parking deck drains have to be connected with a permanent watertight seal to the coating system. An optimal adhesion join prevents parts of the two systems from becoming loose.

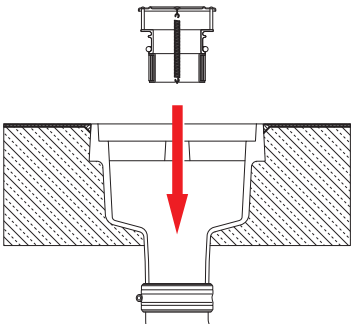
To achieve this, an approx. 10 – 15 mm deep notch is cut into the concrete in the transition zone and filled with coating material. Each of the sealing layers is then laid right up to the drain system.



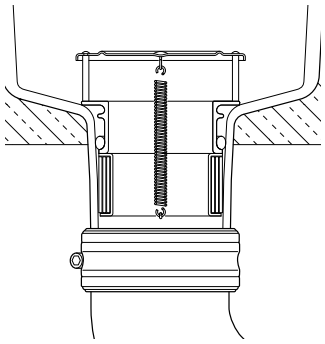
Retrofitting parking deck drains with fire protection inserts



Remove the grating and the sludge bucket



Install the fire protection insert into the outlet socket – make sure that the seal is properly fitted



Install the fire protection cartridge

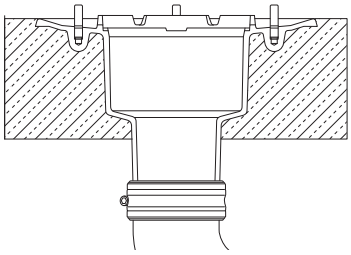
Pipe connections for parking deck drains

Type of pipe	with transitions	suitable for connection to
GM-X pipe DN 100 with coupling socket	CV connector transition 0174.14.27	Parking deck drain, cast iron DN 100
Spigot pipe DN 100 (no coupling socket)	CV connector	

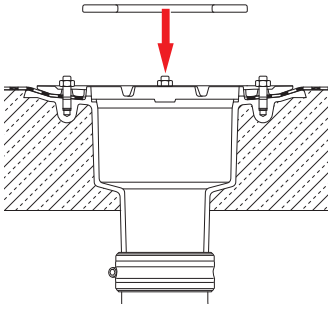
[3] e.g. using the sealing system produced by Sika, Zürich (www.sika.ch)

Cast iron parking deck channels

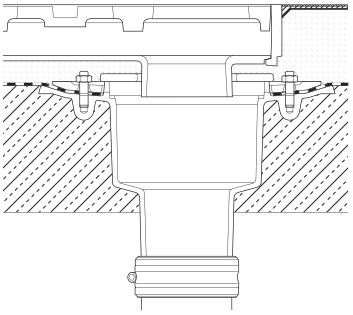
Parking deck channel assembly



Setting a Spin flat roof drain, cast iron, DN 100, in a suitable recess, or pouring the drain into the concrete slab



The cover plate 5801.00.90 is placed on top of the flat roof drain.

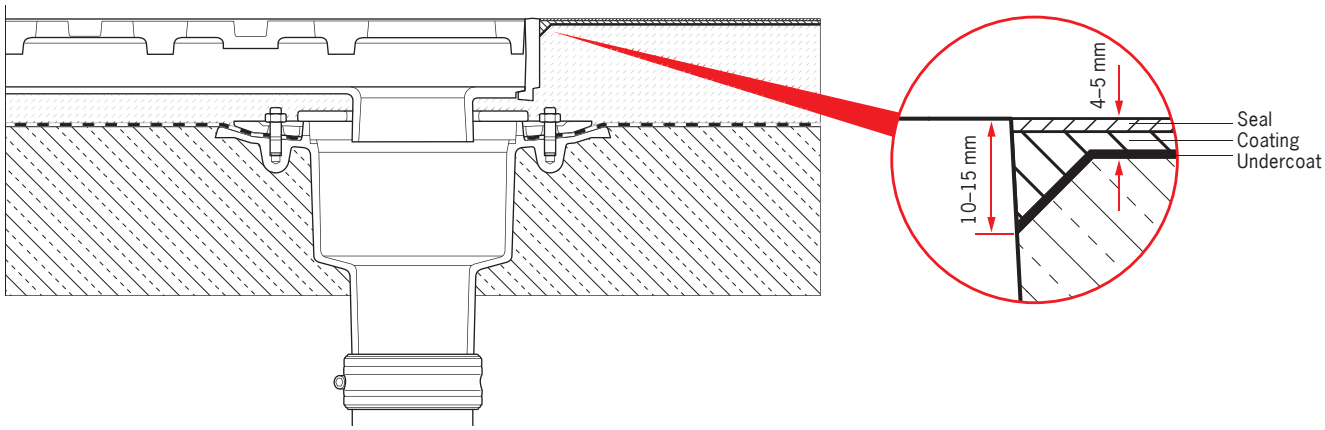


Installing the parking deck channel and constructing the rest of the floor structure

Sealing[3] cast iron parking deck drains

Built-in parking deck drains have to be connected with a permanent watertight seal to the coating system. An optimal adhesion join prevents parts of the two systems from becoming loose.

To achieve this, an approx. 10 – 15 mm deep notch is cut into the concrete in the transition zone and filled with coating material. Each of the sealing layers is then laid right up to the drain system.

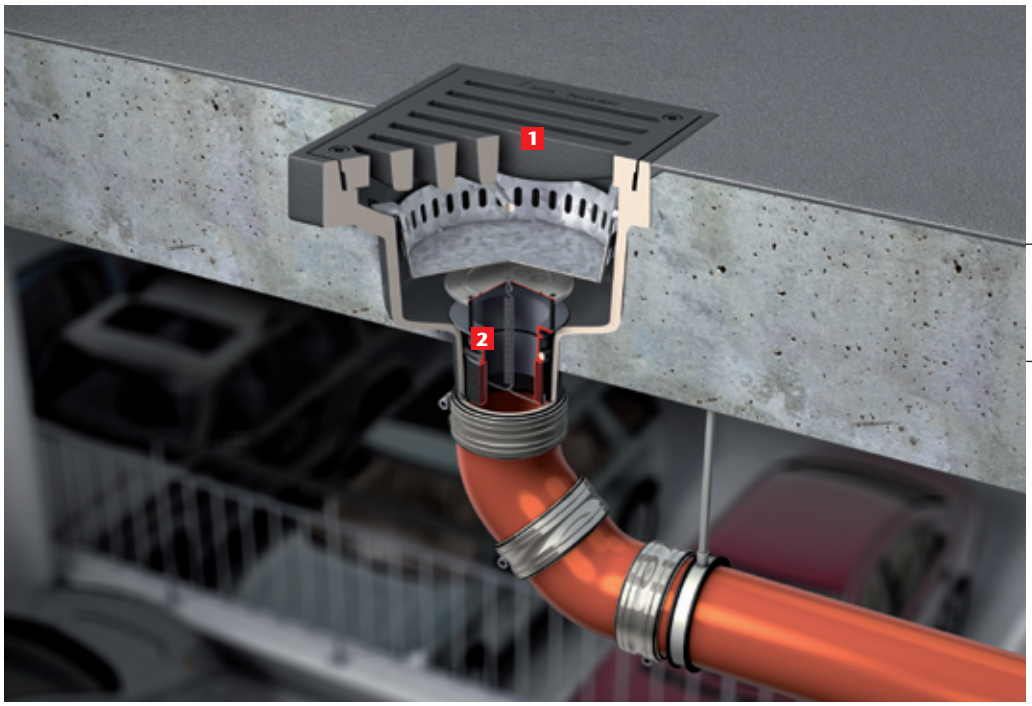


Fire protection

It is not possible to equip the combination parking deck channel and flat roof gully Spin DN 100 of cast iron with a fire protection cartidge!

[2] e.g. using the sealing system produced by Sika, Zürich (www.sika.ch)

Installation recommendation parking deck drainage with a cast iron parking deck drain

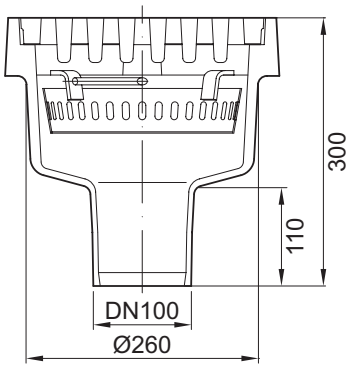


Top surface covering in accordance with the building requirements

Parking deck ceiling (thickness in accordance with the structural engineering specifications)

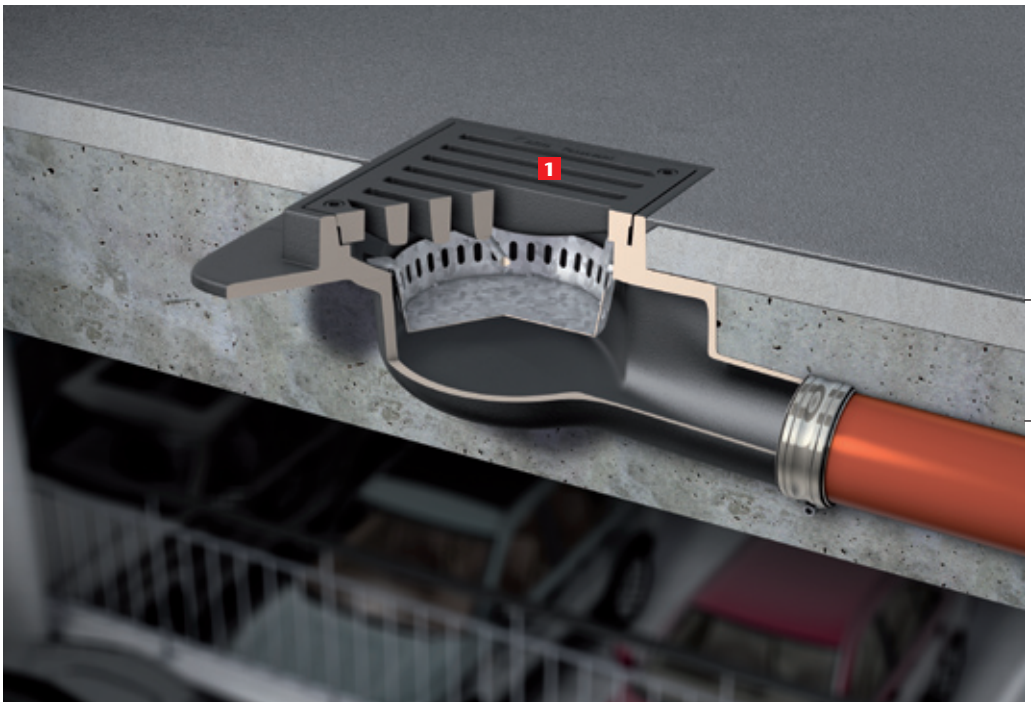
1 **Parking deck drain with gland and galvanised steel bucket, outlet socket inclination 90°, frame dimensions 300x300 mm Article No. 5935.00.00**

2 **Fire protection insert, tested pursuant to AbZ-Z-19.17.1887 Article No. 7034.20.15**

DN 100

The outlet socket of the drain body can be shortened on site by max. 35 mm (without fire protection).

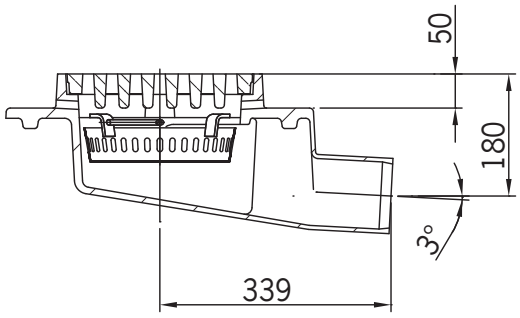
Extension heights in mm.

Installation recommendation parking deck drainage with a cast iron parking deck drain



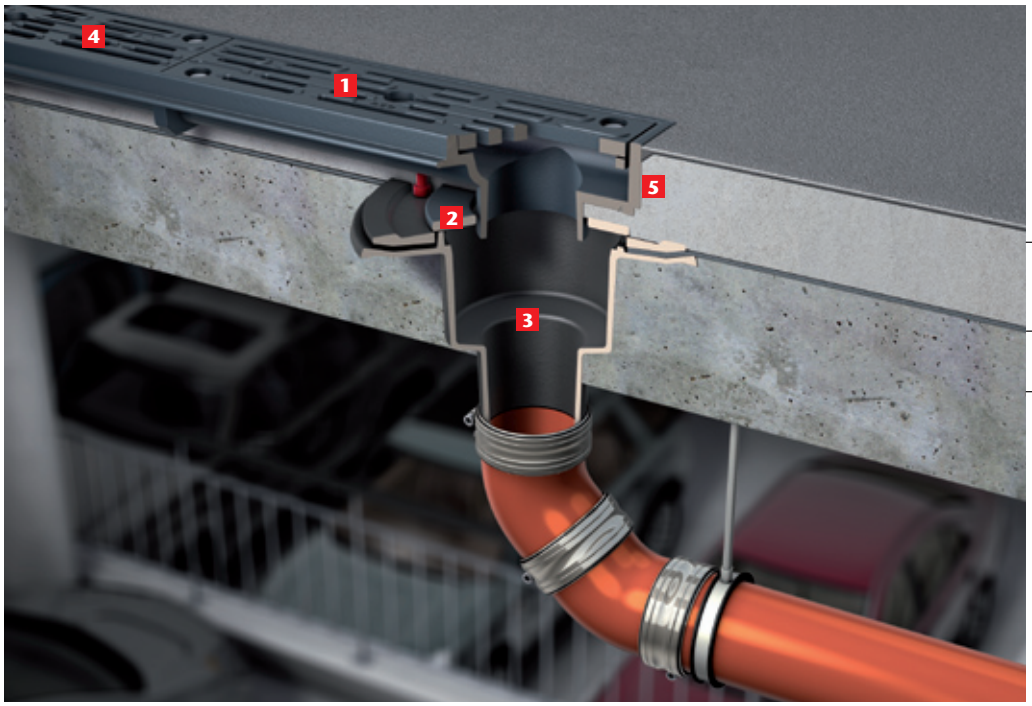
1 **Parking deck drain without gland, with connection collar and galvanised steel bucket, outlet socket inclination 1.5°, frame dimensions 300 x 300 mm Article No. 5935.60.00**

DN 100



Extension heights in mm

Installation recommendation parking deck drainage with cast iron drainage channel and drain body



The top surface coating in accordance with the building specifications
Sealing membrane
Reinforced concrete

1 Aquapass drainage channel
Article No. 5801.62.00

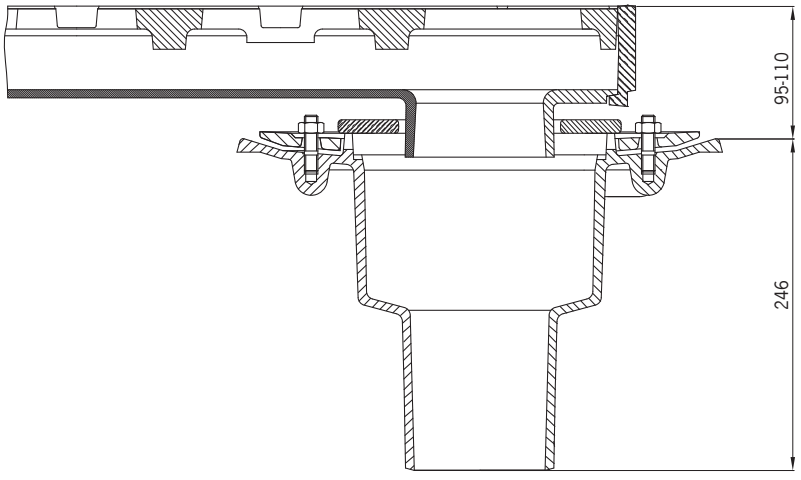
2 Cover plate
Article No. 5801.00.90

3 Drain body
Article No. 7034.10.10

4 Channel unit
Article No. 5801.60.00

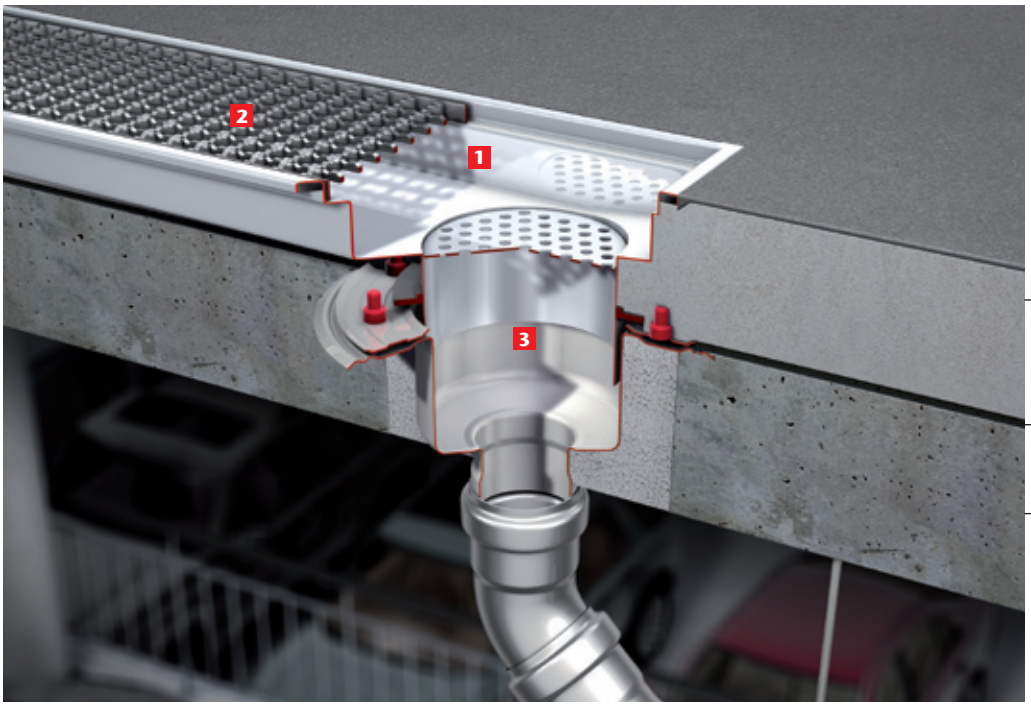
5 Cast iron end wall
Artikle No. 5801.00.80

DN 100



Extension heights in mm

Installation recommendation parking deck drainage with stainless steel drainage channel and drain body

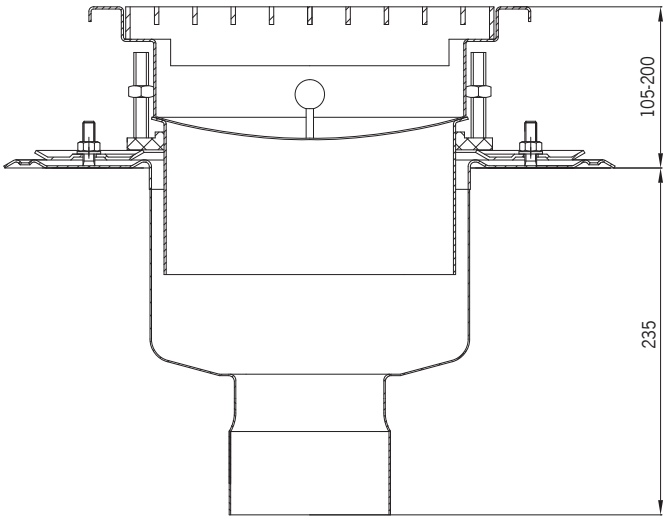


1 **Variant-CR drainage channel, stainless steel, length: 1050 mm Article No. 9013.10.10**

2 **Stainless steel lattice grating, MW 22x22 mm, Class M, length: 500 mm Article No. 9306.05.05 (2-piece)**

3 **Stainless steel drain body DN 100 Article No. 9390.10.00**

DN 100



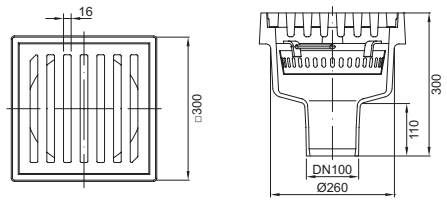
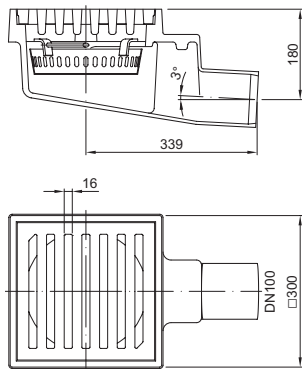
Warning! Drain bodies for parking deck drainage systems must not be retrofitted with an odour seal!

Extension heights in mm

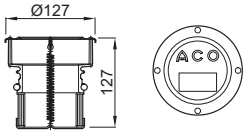
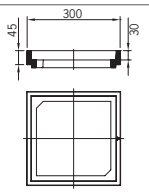
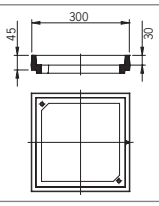
ACO parking deck drains made of cast iron

DN 100

- Drain DN 100
- Cast iron, construction material class A1, coated
- With galvanised steel bucket
- With cast iron grating, slot width 16 mm for load class B/M 125 pursuant to DIN EN 124 – DIN 1229 – DIN 19599/DIN EN 1253
- Recess dimensions 350 x 350 mm (vertical model)
- Recess dimensions 350 x 700 mm (horizontal model)
- To be connected to spigot pipe pursuant to DIN 19522 / DIN EN 877

Scale drawing	Outlet socket inclination	Gland	Weight	Article No.
	90°	Without	35 kg	**5935.00.00**
		With	35 kg	**5935.09.00**
	1,5°	Without	40 kg	**5935.50.00**
		With	40 kg	**5935.59.00**

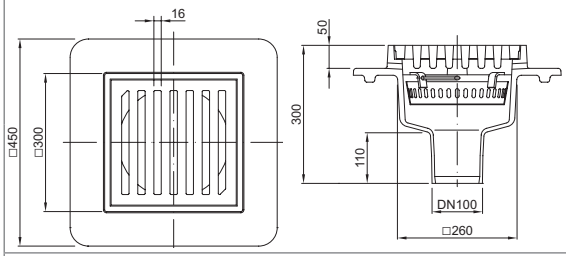
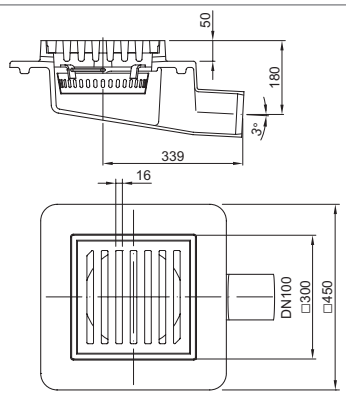
Additional components

	Scale drawing	Product description	Article No.
		**Fire protection insert** to fit parking deck drain DN 100, with 90° socket outlet inclination Warning! This insert reduces the outflow capacity	**7034.20.15**
		**Top frame** 300 x 300 mm, cast iron, primed, for height adjustment in steps of 45 mm	**5935.20.10**
		**Top frame** 300 x 300 mm, cast iron, primed, step-wise height adjustment by 45 mm suitable for parking deck drains with glands	**5935.29.10**

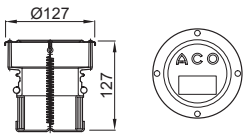
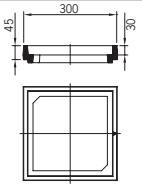
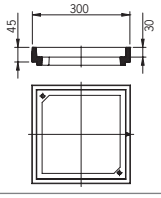
ACO parking deck drains

with connecting collar, cast iron

- Drain DN 100
- With connecting collar
- Cast iron, construction material class A1, coated
- With galvanised steel bucket
- With cast iron grating, slot width 16 mm for load class B/M 125 pursuant to DIN EN 124 – DIN 1229 – DIN 19599/DIN EN 1253
- Recess dimensions 350 x 350 mm (vertical model)
- Recess dimensions 350 x 700 mm (horizontal model)
- To be connected to spigot pipe pursuant to DIN 19522 / DIN EN 877

Scale drawing	Outlet socket inclination	Gland	Weight	Article No.
	90°	Without	47 kg	**5935.10.00**
		With	47 kg	**5935.19.00**
	1,5°	Without	52 kg	**5935.60.00**
		With	52 kg	**5935.69.00**

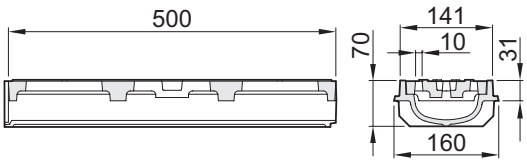
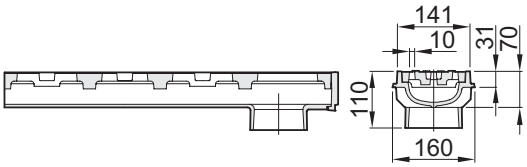
Additional components

	Scale drawing	Product description	Article No.
		**Fire protection insert** to fit parking deck drain DN 100, with 90° socket outlet inclination Warning! This insert reduces the outflow capacity.	**7034.20.15**
		**Top frame** 300 x 300 mm, cast iron, primed, for height adjustment in steps of 45 mm	**5935.20.10**
		**Top section frame** 300 x 300 mm, cast iron, primed, step-wise height adjustment by 45 mm suitable for parking deck drains with glands	**5935.29.10**

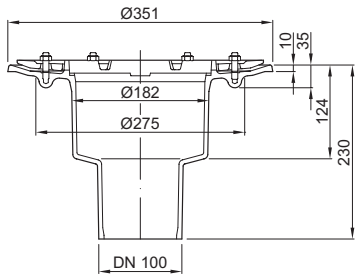
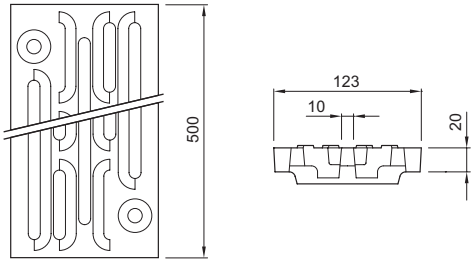
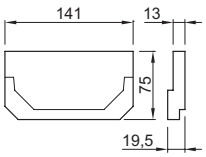
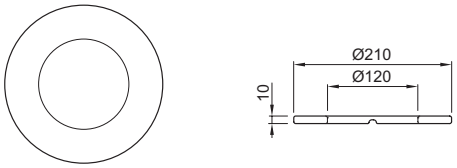
ACO Aquapass parking deck drainage channel, cast iron

DN 100

- Cast iron
- No built-in gradient
- Load class B/M 125 pursuant to DIN EN 124/1253/ DIN 1229
- Internal longitudinal slotted grating, gland
- Inlet section 340 cm^2/m

Scale drawing	Model	Weight	Article No.
	Channel without outlet socket	13,0 kg	**5801.60.00**
	Channel with moulded outlet socket	13,2 kg	**5801.62.00**

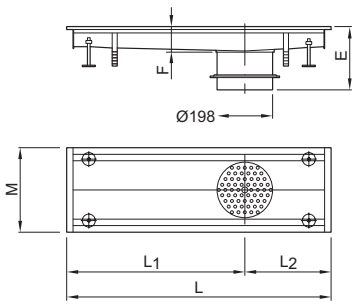
Accessories

Scale drawing	Product description	Weight	Article No.
	**Drain body, cast iron** with compression sealing flange DN 100, 90° socket outlet inclination	13,1 kg	**7034.10.10**
	**Longitudinal slotted channel, cast iron** length: 500 mm load class B125/C250, slot width: 10 mm	13,2 kg	**5801.60.20**
	**Cast iron end walls**	1,2 kg	**5801.00.80**
	**Cover plate for the annulus between the drain body and the channel outlet socket**	1,2 kg	**5801.00.90**

Installation recommendation

ACO Variant-CR box channel, stainless steel, material 1.4301*

*Material 1.4571 upon request

	Scale drawing	Article description
		■ Variant-CR stainless steel channel in material 1.4301 ■ Channel width (M): 300 mm ■ Height at the outlet socket (E): ... mm ■ With support ring and sieve grating to trap dirt, with welded end pieces ■ Channel profile type: NH ■ Additional dimensions: L : .....mm L1: .....mm L2: .....mm ■ Article-No: .....

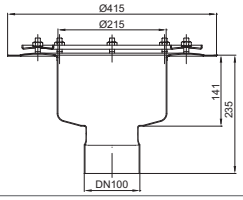
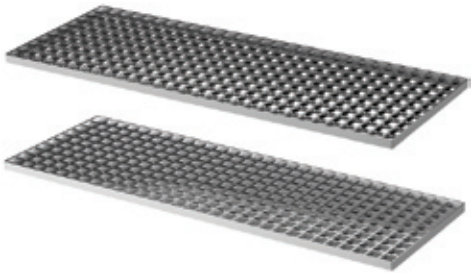
Article No. list for the box channels**

**Other dimensions upon request

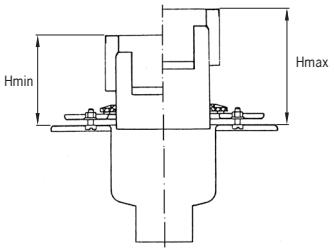
Length	Space between socket outlets		E	Hmin	Hmax	F	Weight kg	Profile type NH*** Article No.
	L1	L2						
550	390	160	205	105	135	65	4,8	9013.10.05
1050	890	160	205	105	135	65	7,2	9013.10.10
1050	525	525	205	105	135	65	7,7	9013.10.11
1550	1390	160	205	105	135	65	9,6	9013.10.15
1550	775	775	205	105	135	65	9,8	9013.10.16
2050	1890	160	205	105	135	65	12,1	9013.10.20
2050	1025	1025	205	105	135	65	12,6	9013.10.21
2550	2390	160	205	105	135	65	14,5	9013.10.25
2550	1275	1275	205	105	135	65	15,0	9013.10.26
3050	1525	1525	205	105	135	65	17,4	9013.10.30
3550	1775	1775	225	120	200	85	21,5	9013.10.35
4050	2025	2025	225	120	200	85	25,3	9013.10.40
4550	2275	2275	225	120	200	85	27,2	9013.10.45
5050	2525	2525	225	120	200	85	29,6	9013.10.50

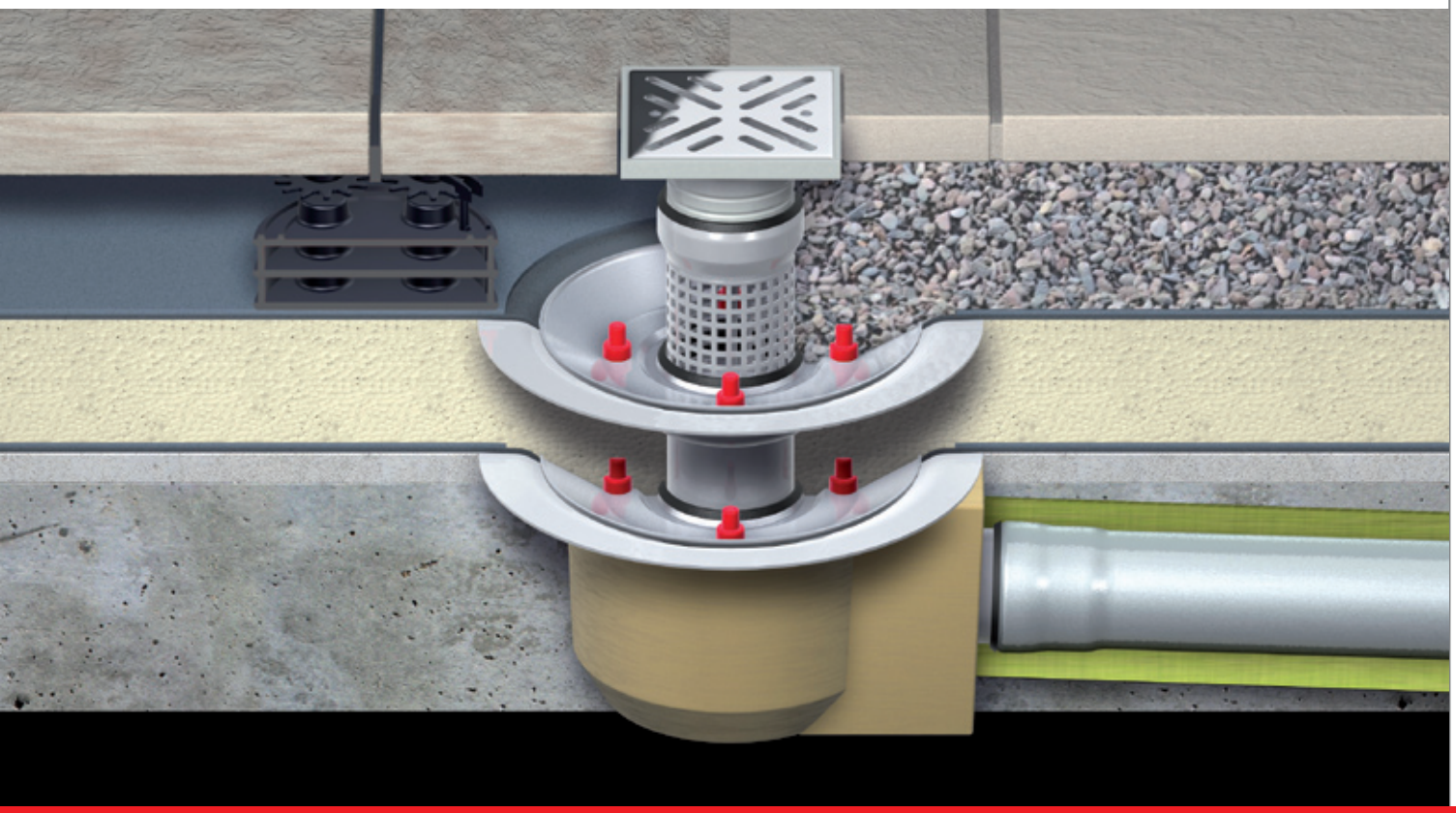
***Delivery time approx. 2 – 3 weeks after receipt of order

Accessories

	Scale drawing	Product description	Weight	Article No.
		**Drain body with compression sealing flange,** Stainless steel, DN 100	Without odour seal	**9390.10.00**
		**Lattice grating, stainless steel** for channel width 300 mm, with anti-slip surface, lattice width: 22 x 22 mm	Load class M 125 Length: 250 mm	**9306.05.02**
			Load class M 125 Length: 500 mm	**9306.05.05**

Height adjustment of the box channel in connection with the drain body





Balcony and terrace drainage

ACO Balcony and terrace drains

Flooding on balconies and terraces is a regular occurrence when drains overflow during periods of heavy rainfall.
This is one of the reasons why there are laws stipulating that rainwater must be properly drained from balconies (DIN 1986-100 Paragraph 5.10). To cater to this need, ACO developed a comprehensive modular system for the point drainage of terraces and balconies.
This product line not only complies with the regulations, it also satisfies a very large number of individual requirements. After all, planning not only has to take into account the differences between terraces and balconies on a whole range of buildings, but also the individual requirements of owners and occupiers.

The ACO range is divided up into four main categories for balcony and terrace drains:

- Single and direct drains (joining up several balconies)
- Insulated and uninsulated installation
- With a supporting flange and with a compression sealing flange
- Outlet socket inclinations of 90° and 1.5°

All ACO balcony and terrace drains are made of stainless steel, material 1.4301. All of the drains are available in nominal widths of DN 50 or DN 70, as well as a few in DN 100. Thanks to the comprehensive spectrum of accessories – intermediate sections and top section systems, loose flanges and flange seals, sieve pipes, full sieves and annular sieves, grid supports and gratings, formwork bells etc., our balcony and terrace drains satisfy almost every specification.

Standards
Standards have to be observed when planning and constructing drainage systems for balconies, terraces and loggias. Some of the most important aspects are discussed in the following:

Drains for balconies and loggias
DIN 1986-100, Chapter 5.10 specifies that balconies and loggias must have a drain or channel hung in front of the balcony.

Emergency drainage
Balconies and loggias with closed balustrades must also have an additional emergency drain with an internal width of at least 40 mm in the balustrade (DIN 1986-100, Chapter 5.10).

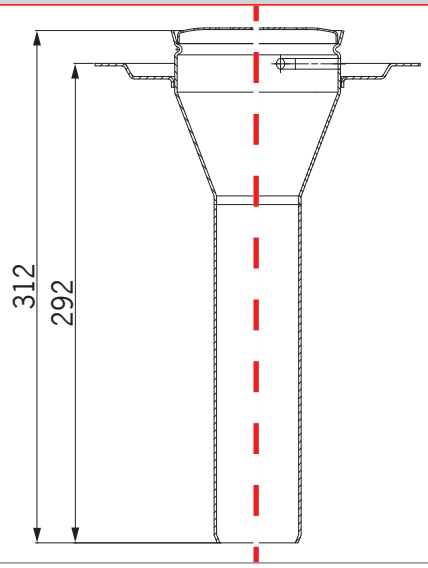
Connecting balcony drains to roof rainwater downpipes
DIN 1986-100, Chapter 5.10 specifies that none of the underlying floors with balconies, loggia and terrace drains must be connected to rainwater downpipes draining the roof. This could lead to flooding and is also forbidden even if the balustrades have emergency drainage systems.

Installation recommendation balcony slab without a moisture barrier

1 **Direct drain DN 70, stainless steel, with supporting flange installation length 300 mm Article No. 0174.42.80**

2 **Stainless steel sieve for direct drain Article No. 0174.52.48**

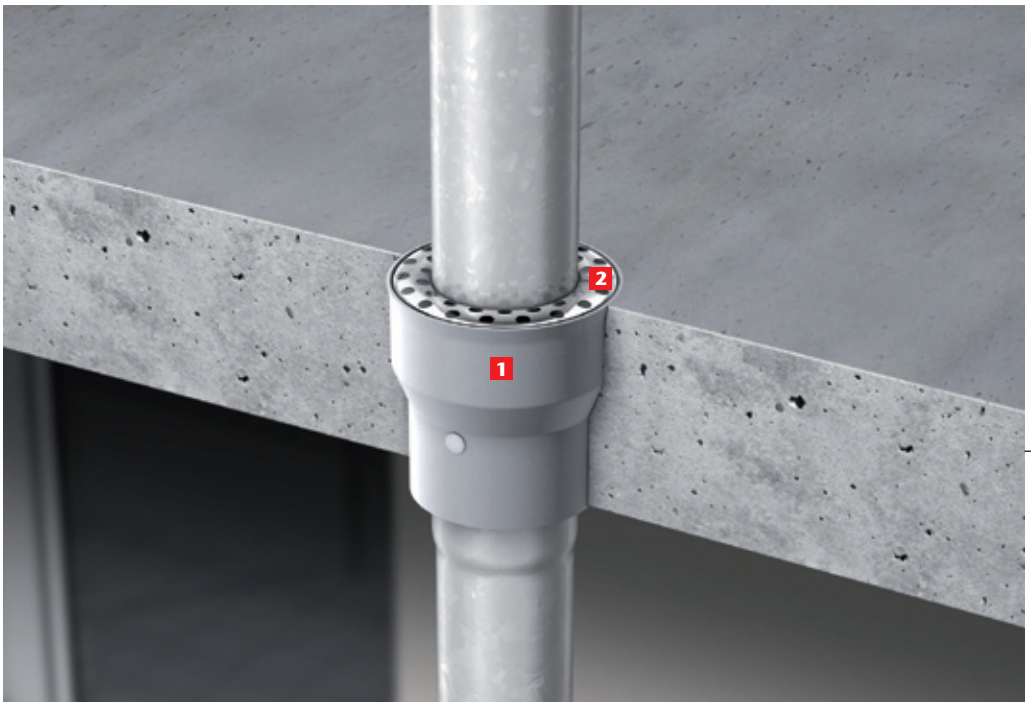
DN 50/70/100



All of the new models are also available with a length of 3012 mm.

Extension heights in mm.

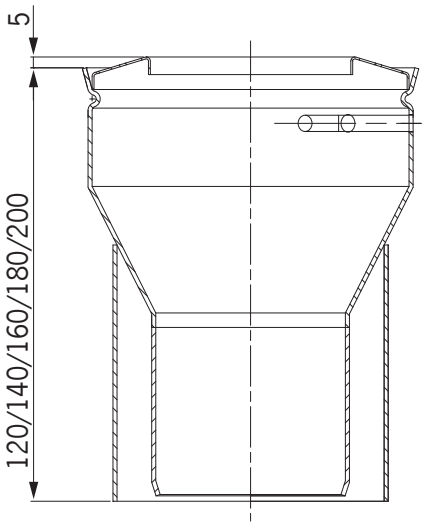
Installation recommendation balcony slab without a moisture barrier



1 **Direct drain DN 70, stainless steel, for balcony slab thickness of 140 mm**
Article No. 0174.52.67

2 **Stainless steel annulus sieve for direct drainage of media pipes up to an external diameter of 54 mm**
Article No. 0174.52.56

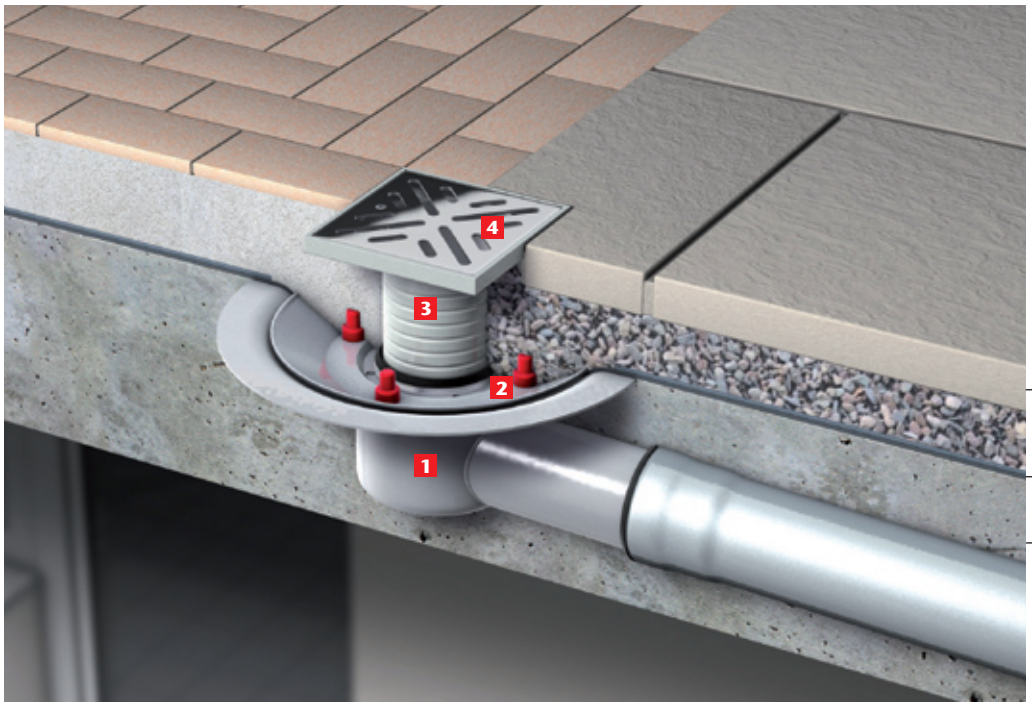
DN 50/70/100



Extension heights in mm.

Installation recommendation balcony slab

with moisture barrier in the form of a sealing membrane



Floor covering according to building specifications

Sealing membrane

Reinforced concrete

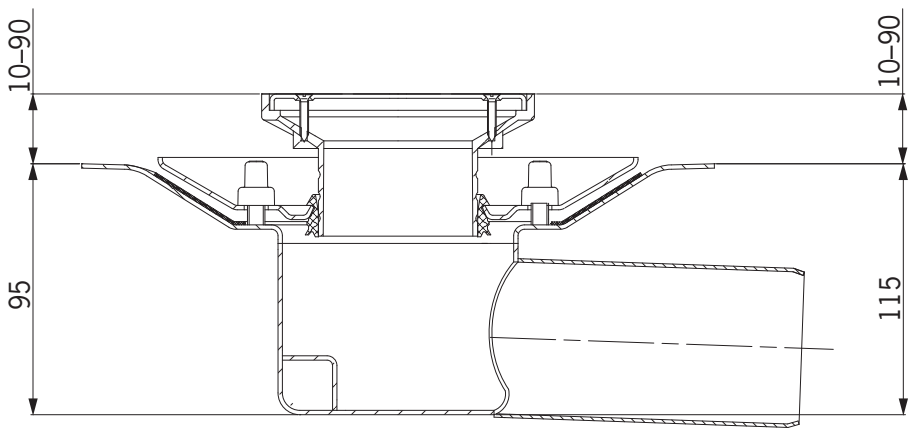
1 **Point drain DN 50, stainless steel, outlet socket inclination 1.5°**
Article No. 0174.44.05

2 **Loose flange, stainless steel with seepage openings**
Article No. 0174.43.76

3 **Grating holder □ 125 mm, plastic**
Article No. 0174.43.46

4 **Stainless steel grating □ 117 mm**
Article No. 0174.52.58

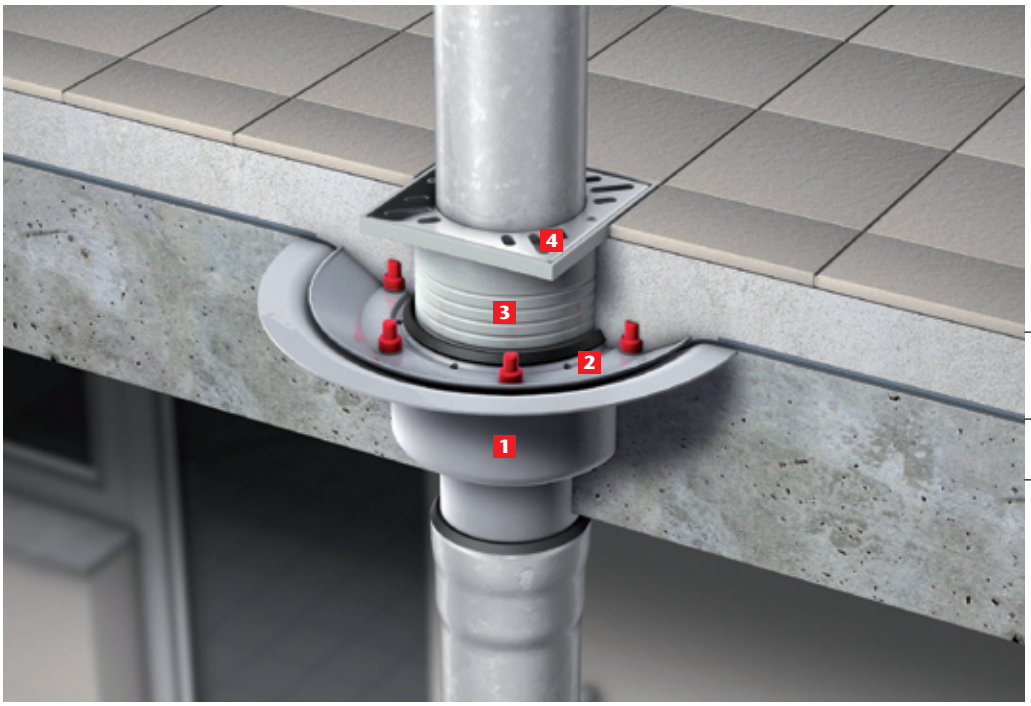
DN 50	DN 70



Extension heights in mm

Installation example balcony slab

with moisture barrier in the form of a sealing membrane



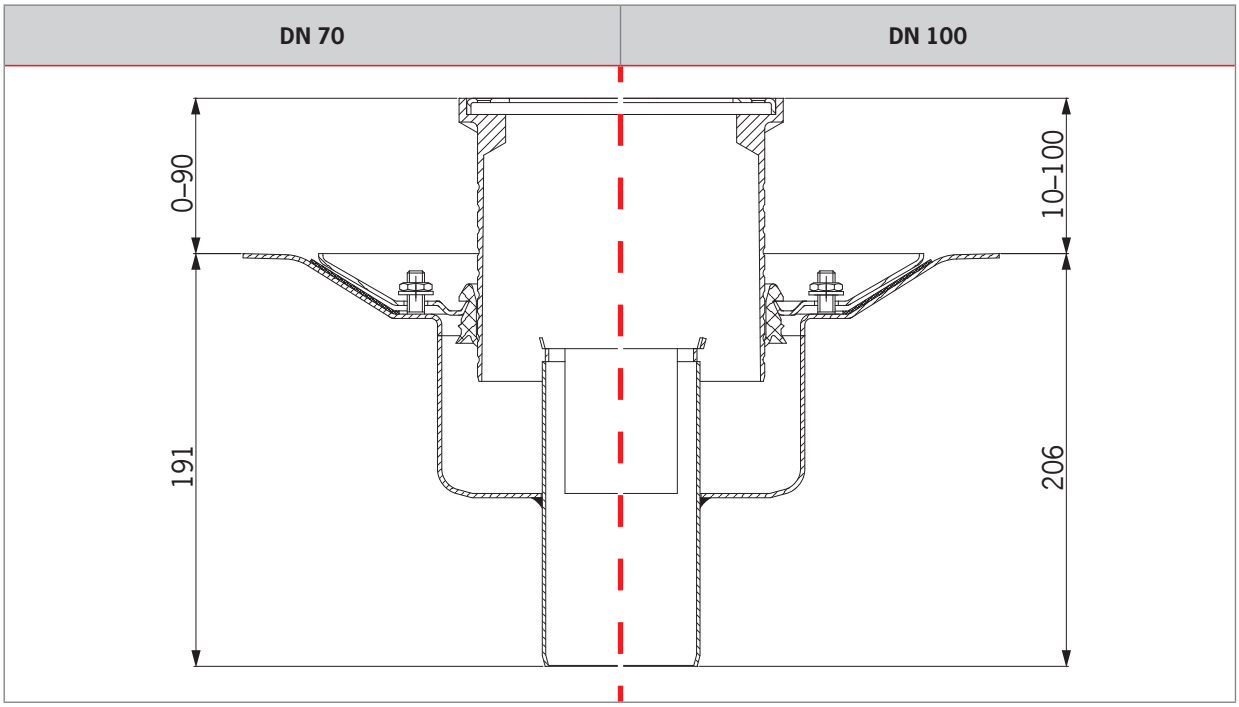
Floor covering according to building specifications
Sealing membrane
Reinforced concrete

1 Direct drain DN 100, stainless steel, socket outlet inclination 90°
Article No. 0174.44.36

2 Loose flange, stainless steel with seepage openings
Article No. 0174.44.39

3 Grating holder □ 148 mm, plastic, Article No. 0174.43.21

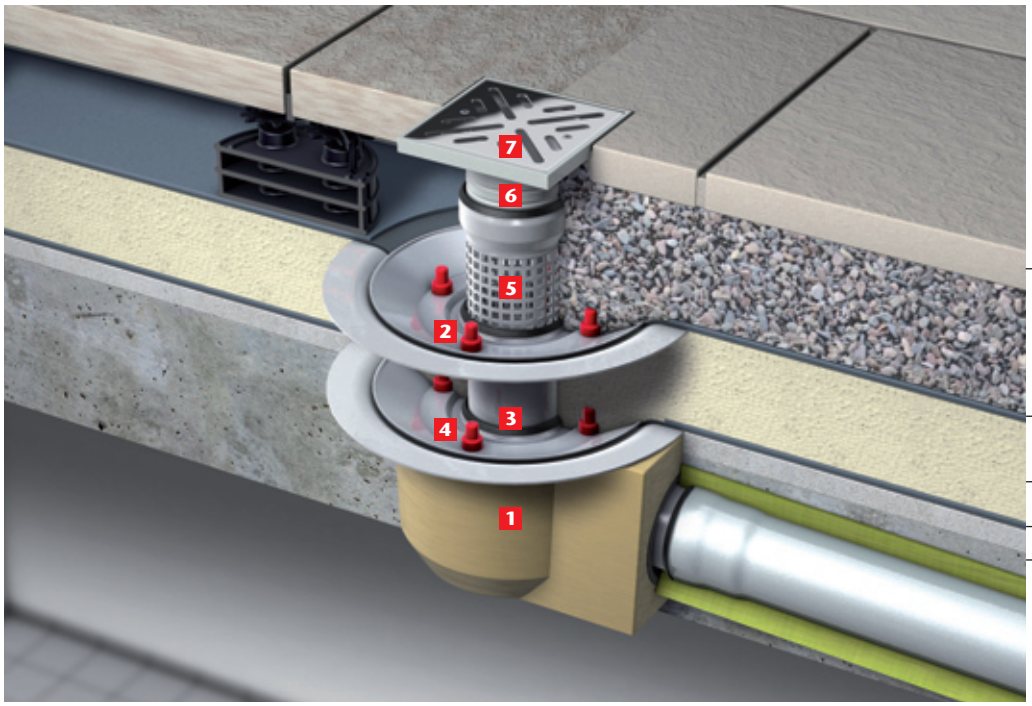
4 Stainless steel grating □ 142.5 mm with downpipe opening Ø 74 mm
Article No. 0174.52.61



Extension heights in mm

Installation recommendation balcony slab

with moisture barrier in the form of two sealing membranes



1 **Point drain DN 70, stainless steel, socket outlet inclination 1.5 °, insulated**
Article No. 0174.44.08

2 **Loose flange, stainless steel with seepage openings**
Article No. 0174.43.76

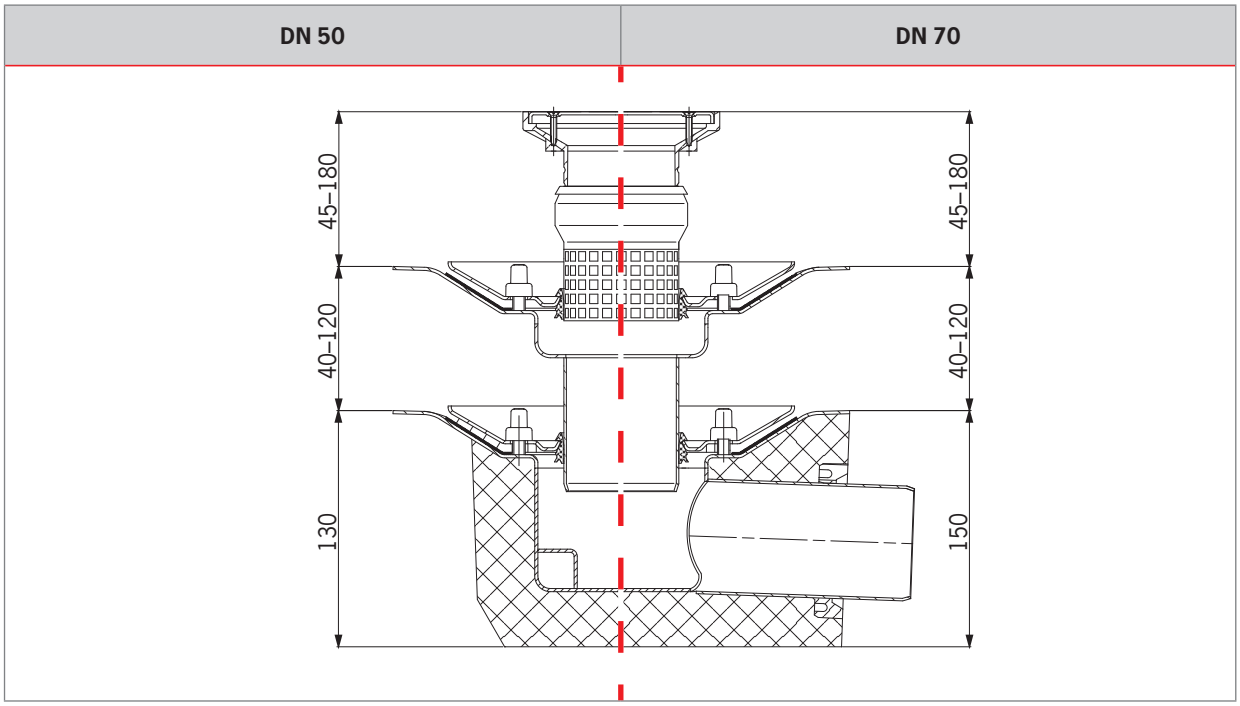
3 **Extension unit, stainless steel**
Article No. 0174.43.92

4 **Loose flange, stainless steel with seepage openings**
Article No. 0174.43.75

5 **Sieve pipe, stainless steel**
Article No. 0174.43.49

6 **Grating holder ☐ 125 mm, plastic, Article No. 0174.43.46**

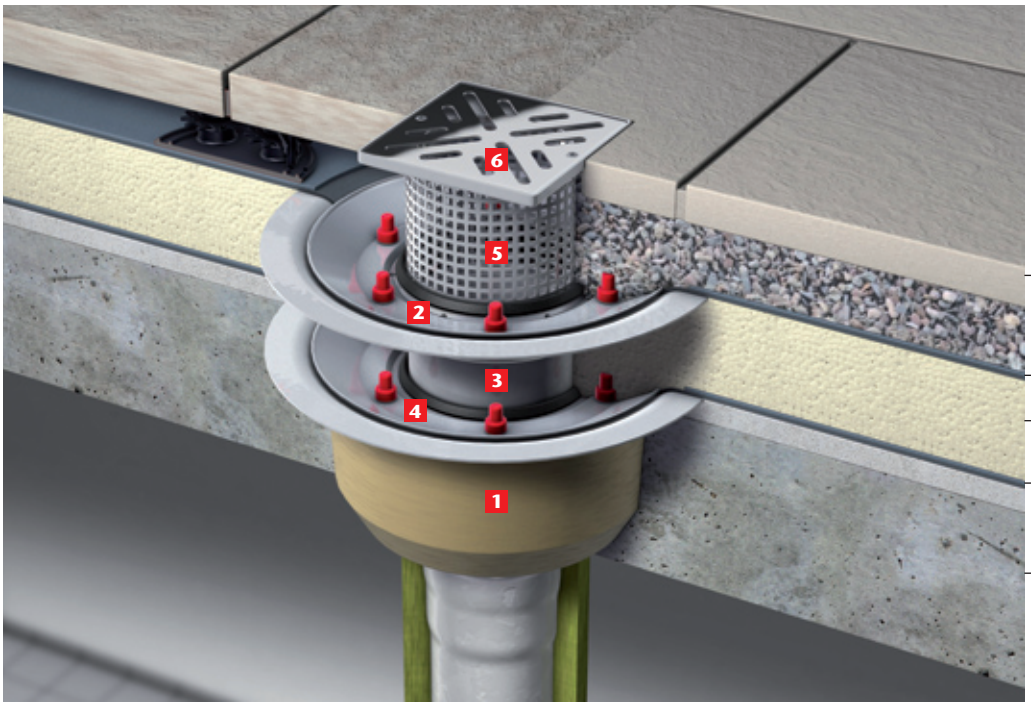
7 **Stainless steel grating ☐ 117 mm**
Article No. 0174.52.58



Extension heights in mm

Installation recommendation balcony slab

with moisture barrier formed by two sealing membranes



Floor covering according to building specifications

Sealing membrane

Insulation

Sealing membrane (Damp proof membrane)

Reinforced concrete

1 Direct drain DN 100, stainless steel
Outlet socket inclination 90°, insulated, Article No. 0174.44.41

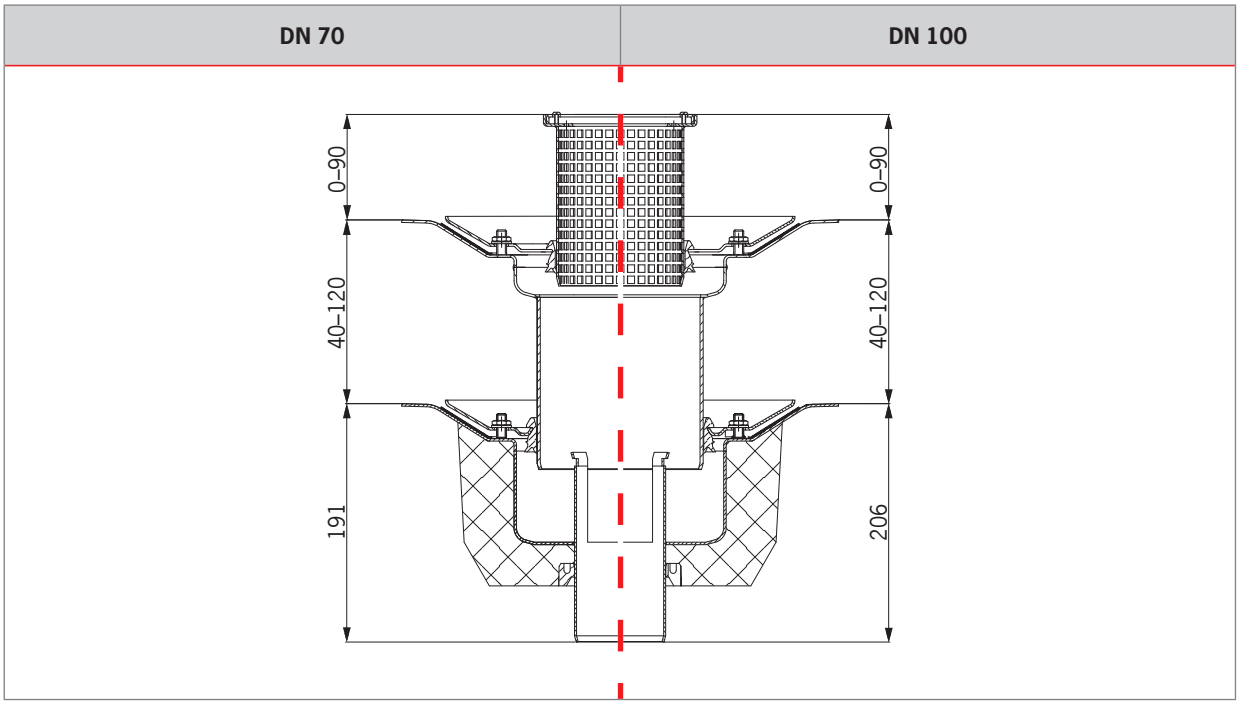
2 Loose flange, stainless steel, seepage openings
Article No. 0174.44.39

3 Extension unit, stainless steel
Article No. 0174.48.64

4 Loose flange, stainless steel, without seepage openings
Article No. 0174.44.37

5 Grating holder □ 148 mm, stainless steel with sieve holes
Article No. 0174.43.26

6 Stainless steel grating □ 142.5 mm
Article No. 0174.52.59

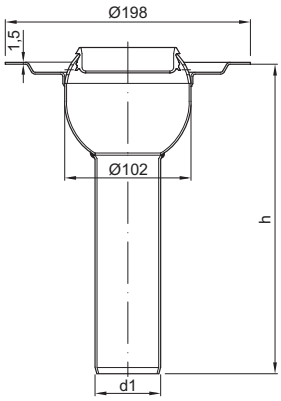
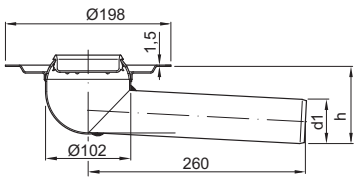


Extension heights in mm

ACO point balcony drains made of stainless steel

DN 50–DN 70

- Drain body DN 50 – DN 70 pursuant to DIN EN 1253
- Stainless steel, material 1.4301, surface pickled
- With supporting flange, not suitable for moisture barrier
- Outflow capacities
  DN 50, 90°: 3,1 l/s
  DN 70, 90°: 7,5 l/s
  DN 50, 1,5°: 2,2 l/s
  DN 70, 1,5°: 5,5 l/s

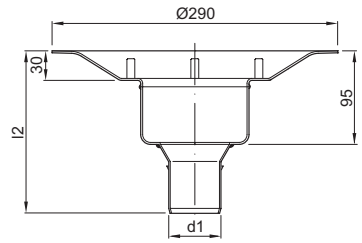
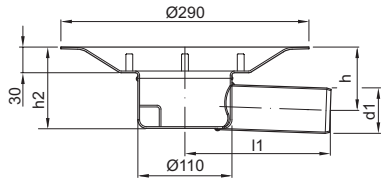
Scale drawing	Nominal width	d1	h	Article No.
	DN 50	53	250	**0174.43.55**
	DN 70	73	250	**0174.43.56**
	DN 50	53	90	**0174.43.57**
	DN 70	73	110	**0174.43.58**

ACO single balcony drain made of stainless steel

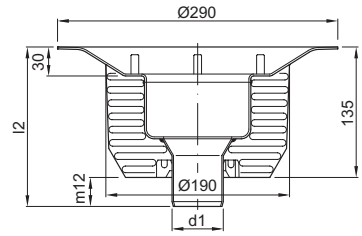
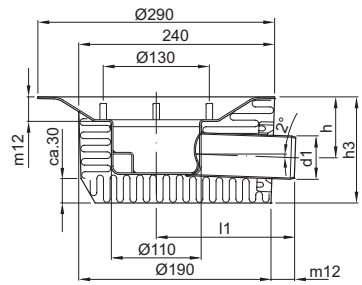
DN 50–DN 70

- Drain body DN 50 – DN 70 pursuant to DIN EN 1253
- Stainless steel, material 1.4301, surface pickled
- With fixed flange
- Loose flange for moisture barrier optionally available
- Optionally available with thermal insulation
- Outflow capacities
  DN 50, 90°: 3,1 l/s
  DN 70, 90°: 7,5 l/s
  DN 50, 1,5°: 2,2 l/s
  DN 70, 1,5°: 5,5 l/s

Uninsulated

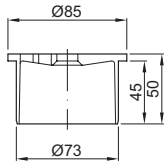
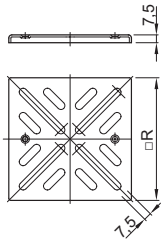
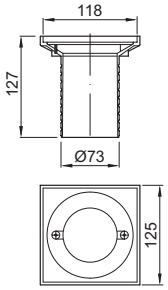
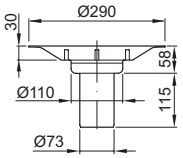
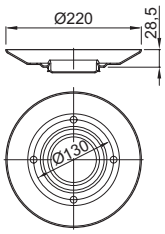
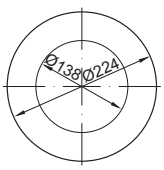
Scale drawing	Nominal width	d1	h	h2	l1	l2	Article No.
	DN 50	53	—	—	—	165	**0174.43.73**
	DN 70	73	—	—	—	180	**0174.43.74**
	DN 50	53	75	95	170	—	**0174.44.05**
	DN 70	73	85	115	185	—	**0174.44.06**

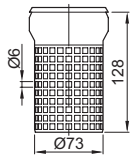
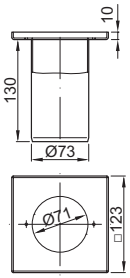
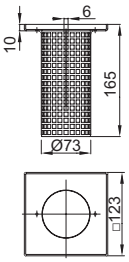
Insulated

Scale drawing	Nominal width	d1	l1	l2	h	h3	m12	Article No.
	DN 50	53	—	165	—	—	30	**0174.43.78**
	DN 70	73	—	180	—	—	45	**0174.43.79**
	DN 50	53	170	—	75	130	30	**0174.44.07**
	DN 70	73	185	—	85	150	40	**0174.44.08**

Additional components

ACO single drains DN 50 – DN 70

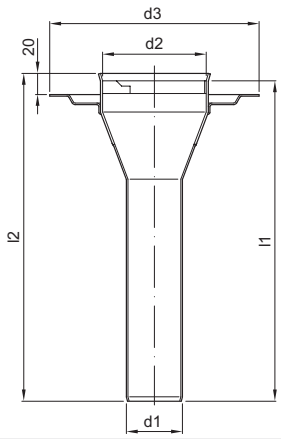
	Scale drawing	Product description	Model	Article No.
		**Plastic grating Ø 85 mm, round** grating area 21.2 cm²		**0174.43.45**
		**Stainless steel grating ☐ 117 mm** grating area 30.6 cm²		**0174.52.58**
		**Grating holder ☐ 125 mm** plastic		**0174.43.46**
		**Extension unit** stainless steel, 1.4301, with fixed flange		**0174.43.92**
		**Loose flange** stainless steel, 1.4301, including sealing element DN 70	Without seepage openings With seepage openings	**0174.43.75** **0174.43.76**
		**Flange seal** EPDM, thickness 1.5 mm		**0174.43.77**

	Scale drawing	Product description	Model	Article No.
		**Sieve pipe** stainless steel, 1.4301 installation height: 128 mm, including seal		**0174.43.49**
		**Grating holder ☐ 125 mm** stainless steel, with additional polymer coating inside		**0174.43.47**
		**Grating holder ☐ 125 mm** stainless steel, 1.4301 with square sieve holes		**0174.43.48**
		**Formwork bell,** polyethylene pushable	DN 50 DN 70	**0174.43.50** **0174.43.51**

ACO direct drain with supporting flange, stainless steel

DN 50 – DN 100

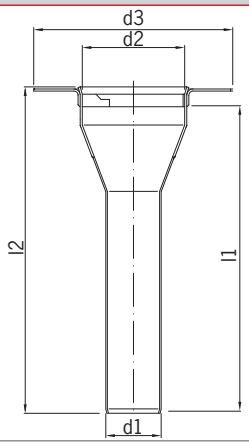
- Drain body DN 50 – DN 100 pursuant to DIN EN 1253
- Stainless steel, material 1.4301, surface pickled
- For screed or poured asphalt, height: 20 mm – without moisture barrier
- For annulus sieve/sieve cap
- Outflow capacities:
  DN 50: 5,4 l/s
  DN 70: 7,5 l/s
  DN 100: 9,0 l/s

Scale drawing	Nominal width	d1	d2	d3	l1	l2	Article No.
	DN 50	53	98	198	300	310	**0174.42.79**
					3000	3010	**0174.42.82**
	DN 70	73	117	280	300	312	**0174.42.80**
					3000	3012	**0174.42.83**
	DN 100	102	140	280	300	312	**0174.42.81**
					3000	3012	**0174.42.84**

ACO direct drain with supporting collar, stainless steel

DN 50 – DN 100

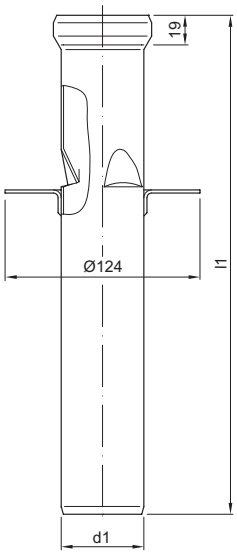
- Drain body DN 50 – DN 100 pursuant to DIN EN 1253
- Stainless steel, material 1.4301, surface pickled
- For sealing with liquid polymer, thickness: 2 mm
- For annulus sieve/sieve cap
- Outflow capacities:
  DN 50: 5,4 l/s
  DN 70: 7,5 l/s
  DN 100: 9,0 l/s

Scale drawing	Nominal width	d1	d2	d3	l1	l2	Article No.
	DN 50	53	98	190	300	312	**0174.42.73**
	DN 70	73	117	190	300	312	**0174.42.74**
	DN 100	102	140	245	300	312	**0174.42.75**

ACO Speed drain body with supporting flange, stainless steel

DN 50 – DN 70

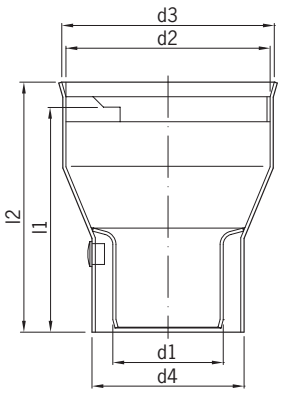
- Drain body DN 50 – DN 70 pursuant to DIN EN 1253
- Stainless steel, material 1.4301, surface pickled
- For sealing with liquid polymer

Scale drawing	Nominal width	d1	l1	Weight	Article No.
	DN 50	53	320	0,7 kg	**0174.42.77**
	DN 70	73	310	1,2 kg	**0174.42.78**

ACO direct drain with bell, stainless steel

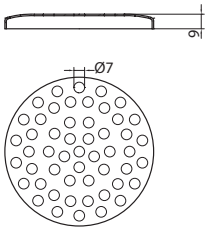
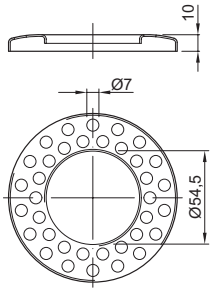
DN 50 – DN 100

- Drain body DN 50 – DN 100 pursuant to DIN EN 1253
- Stainless steel, material 1.4301, surface pickled
- For poured concrete or pre-fabricated concrete components, balcony slab thicknesses: 120, 140, 160, 180 and 200 mm
- For annulus sieve/sieve cap

Scale drawing	Nominal width	d1	d2	d3	d4	l2	Article No.
	DN 50	53	98	102	73	110	**0174.52.63**
						130	**0174.52.66**
						150	**0174.52.69**
						170	**0174.52.75**
						190	**0174.52.78**
	DN 70	73	117	121	102	108	**0174.52.64**
						128	**0174.52.67**
						148	**0174.52.70**
						168	**0174.52.76**
						188	**0174.52.79**
	DN 100	102	140	145	133	112	**0174.52.65**
						132	**0174.52.68**
						152	**0174.52.71**
						172	**0174.52.77**
						190	**0174.52.80**

Additional components

ACO direct drain DN 50 – DN 100

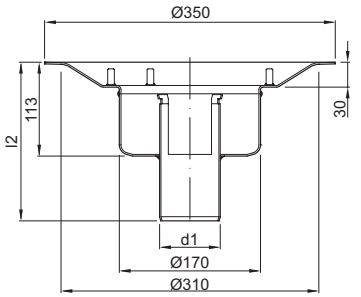
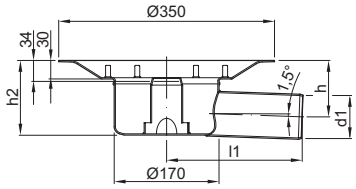
	Scale drawing	Product description	Model	Article No.
		**Sieve** stainless steel 1.4301	DN 50 DN 70 DN 100	**0174.52.47** **0174.52.48** **0174.52.49**
		**Annulus sieve** stainless steel, 1.4301 for media pipes with diameters of 54 mm	DN 50 DN 70 DN 100	**0174.52.51** **0174.52.56** **0174.52.57**

ACO direct balcony drains made of stainless steel

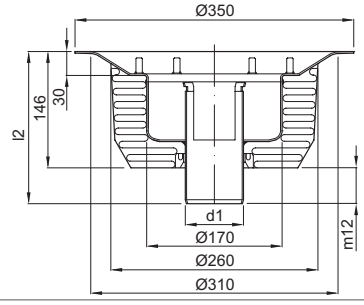
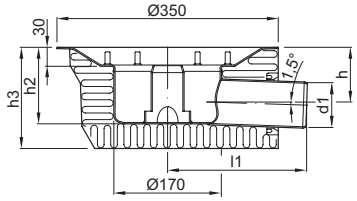
DN 70 – DN 100

- Drain body DN 70 – DN 100 pursuant to DIN EN 1253
- Stainless steel, material 1.4301
- Surface pickled
- With fixed flange
- Optional loose flange for installing a sealing membrane
- Optional thermal insulation
- Outflow capacities
  DN 70, 90°: 5,1 l/s
  DN 100, 90°: 7,5 l/s
  DN 70, 1,5°: 5,5 l/s
  DN 100, 1,5°: 9,0 l/s

Uninsulated

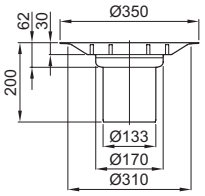
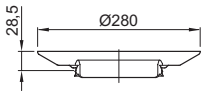
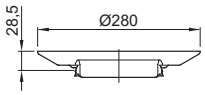
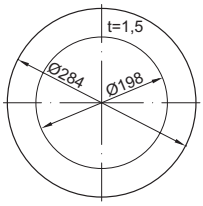
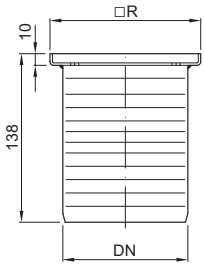
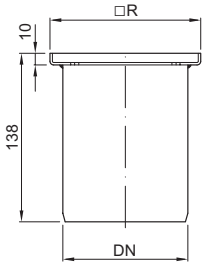
Scale drawing	Nominal width	d1	h	h2	l1	l2	Article No.
	DN 70	73	—	—	—	191	**0174.44.35**
	DN 100	102	—	—	—	206	**0174.44.36**
	DN 70	73	90	121	220	—	**0174.44.58**
	DN 100	102	104	150	230	—	**0174.44.59**

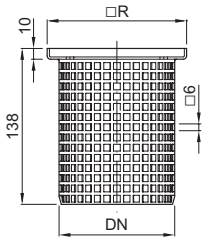
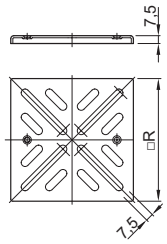
Insulated

Scale drawing	Nominal width	d1	l1	l2	h	h3	m12	Article No.
	DN 70	73	—	191	—	—	45	**0174.44.40**
	DN 100	102	—	206	—	—	60	**0174.44.41**
	DN 70	73	160	—	90	121	220	**0174.44.60**
	DN 100	102	185	—	104	150	230	**0174.44.61**

Additional components

ACO direct drains DN 70 – DN 100

	Scale drawing	Product description	Model	Article No.
		**Extension unit** stainless steel, 1.4301, with fixed flange		**0174.48.64**
		**Loose flange** stainless steel, 1.4301, without seepage openings, including sealing element DN 100		**0174.44.37**
		**Loose flange** stainless steel, 1.4301 with seepage openings, including sealing element	DN 70 DN 100	**0174.44.38** **0174.44.39**
		**Flange seal** EPDM thickness: 1.5 mm		**0174.48.59**
		**Grating holder** plastic DN 70: 123 x 123 mm DN 100: 148 x 148 mm	DN 70 DN 100	**0174.43.20** **0174.43.21**
		**Grating holder** stainless steel with additional polymer coating inside DN 70: □ 123 mm DN 100: □ 148 mm	DN 70 DN 100	**0174.43.22** **0174.43.23**

	Scale drawing	Product description	Model	Article No.
		**Grating holder** stainless steel with sieve holes DN 70: ☐ 123 mm DN 100: ☐ 148 mm	DN 70 DN 100	**0174.43.24** **0174.43.26**
		**Stainless steel grating for grating holders** grating area 30.6 cm². DN 70: ☐ 117 mm DN 100: ☐ 142 mm	DN 70 DN 100	**0174.52.58** **0174.52.59**

Facade drainage

ACO facade channels

for balconies, terraces and roof gardens

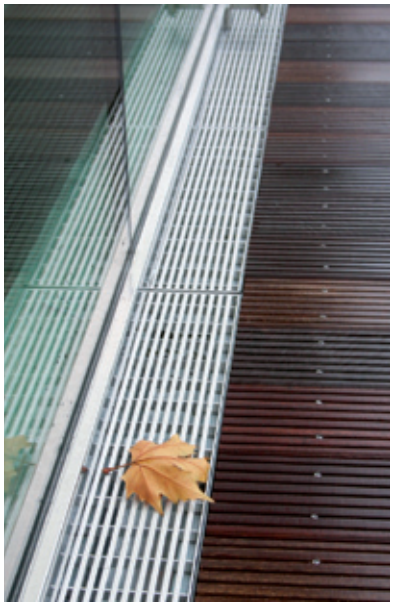
ACO facade and terrace channels provide perfect solutions for every situation. It is very important that moisture should never be able to get into a building from outside around those tricky areas in front of doors and facades. ACO products guarantee this protection as well as boasting the following benefits:

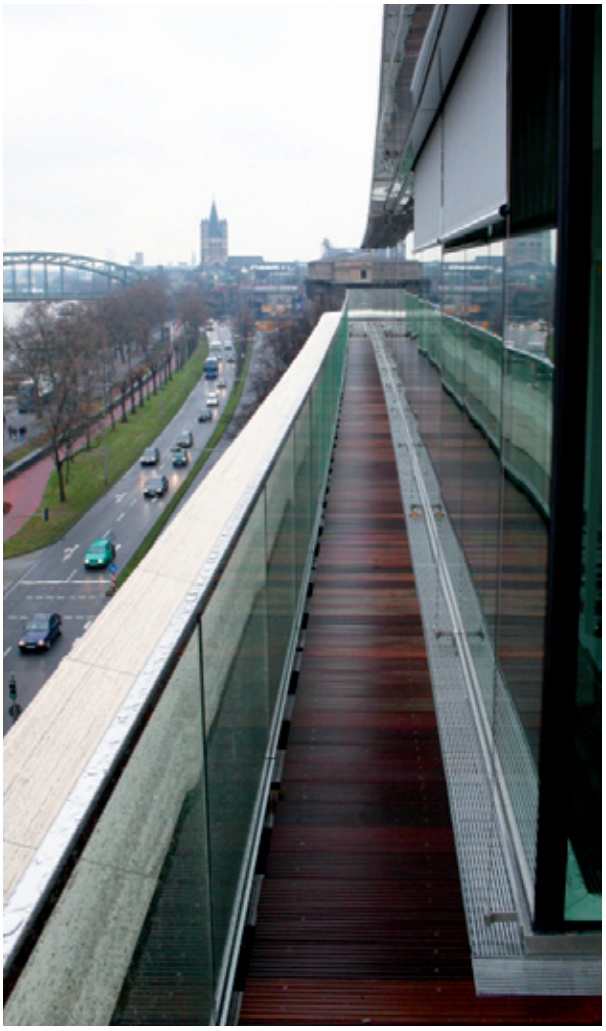
- Safe and fast drainage of even large quantities of rain
- Additional backflow reserve for periods of sudden very heavy rainfall
- Preventing the formation of puddles around facades
- Protecting indoor areas from penetrating moisture
- Preventing water from splashing up during very heavy rainfall
- Use as a walk-on grating for maintenance and cleaning work

ACO facade and terrace channels comply with all the relevant regulations.
They cannot be forced up under the pressure of wind, and they avoid the pooling of water in particularly problematic areas. Another problem that has to be tackled in this context is the presence of snow drifts, slush and ice: increased heat radiation makes snow and ice thaw faster around doors. The unthawed snow or slush around the puddle of melt water can prevent the water from flowing away properly. Drainage channels must therefore be capable of coping with such conditions. The height of the channel must match the actual volumes of water expected. Hydraulic verification of this kind can be prepared at any time by ACO Applications Technology.

The stainless steel and galvanised steel models in the system satisfy all architectural specifications. The different gratings can be matched to a wide range of designs.

Barrier-free thresholds – ACO facade channels are perfectly integrated within their surroundings. The variable height adjustment allows them to be adjusted with mm-accuracy to the height of the floor. ACO therefore not only satisfies the modern demand for barrier-free buildings, but also the high quality standards of architects and planners.





Standards
The following standards amongst others have to be observed when planning and building drainage systems for balconies, loggias and terraces:
– DIN 1986-100
– DIN 18195-5
– Flat roof regulations
The most important aspects are as follows:

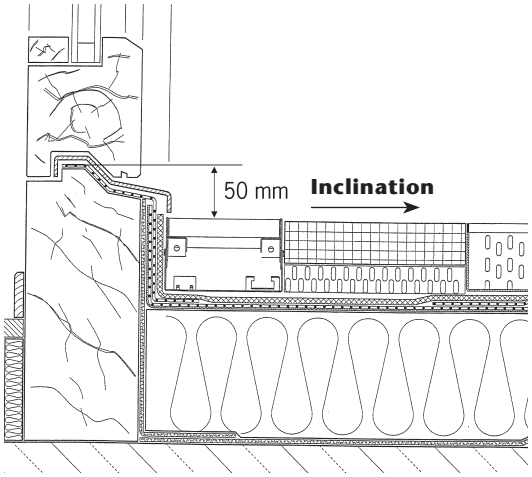
Channels for balconies and loggias
DIN 1986-100, Chapter 5.10 specifies that balconies, loggias and terraces must have a drain or a channel fixed at the periphery.

Emergency drainage
Balconies and loggias with closed balustrades must have a drain as well as an emergency drain with a width of at least 40 mm in the balustrade (DIN 1986-100, Chapter 5.10).

Positioning the channels

A drainage channel can only become fully effective in reducing the moisture risk around door thresholds when it extends at least the whole width of the door and is located close enough to the threshold.

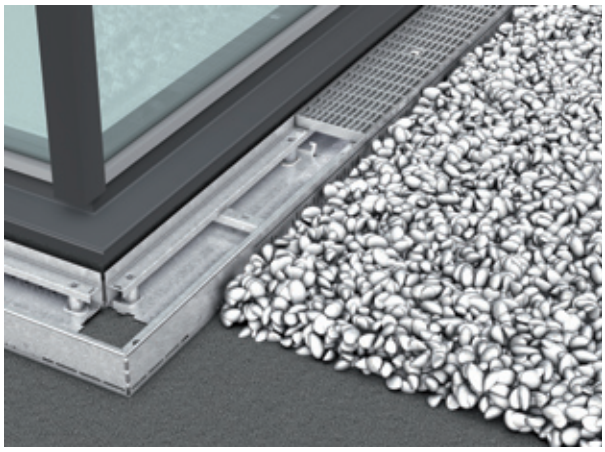
The connection height of 150 mm for building seals specified in DIN 18195-5 can be reduced to 55 mm pursuant to the flat roof regulations when using ACO line drainage systems.



Gravel layer for facade and terrace channels

The safe drainage of rainwater and suspended materials in a terrace drainage system is achieved via the lateral drainage slots in the side channels which feed into the drains in the space below paving slab coverings with paving supports/mortar bags or in the drainage layer.

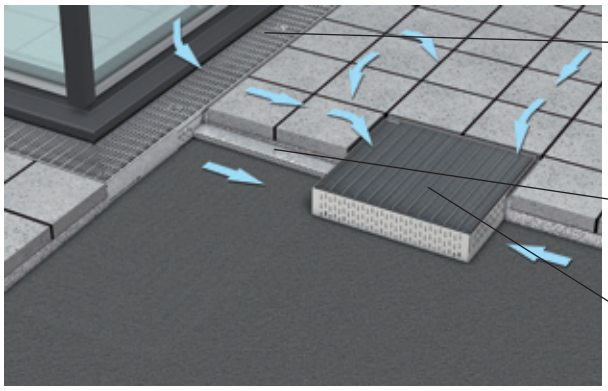
The drainage slots should not be smaller than 4 mm to prevent fusion. Using chippings smaller than 4 mm is unproblematic because experience shows that these jam up in front of the slot and therefore only a few chippings enter the channel itself.

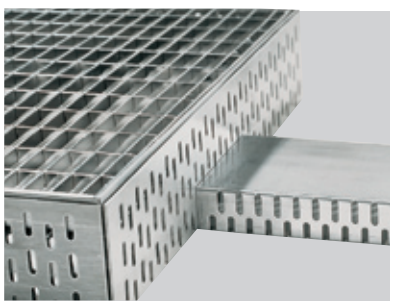


Side channels and top sections

The ACO Profiline channel system accessories include side channels and top sections in various sizes acting as roof drains and maintenance shafts. The side channel is a 30 mm high and 100 mm wide hollow duct with 4 mm lateral drainage slots. The ends are placed flush to the drainage slots of the channel body and the top section of the roof drains, and are positioned within the drainage layer. They therefore link the channel body to the top section to form a drainage channel for direct connection between the channel and the drain.

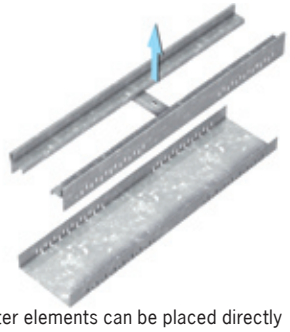
The top sections for the roof drains in the terrace surfaces must be positioned above the roof drains – where they also act as inspection shafts. Lattice gratings permanently incorporated in the terrace surface covering must not be simultaneously fastened to the roof drain.





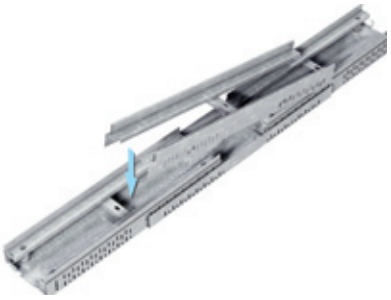
Side channel

Assembly/integration of several channel elements



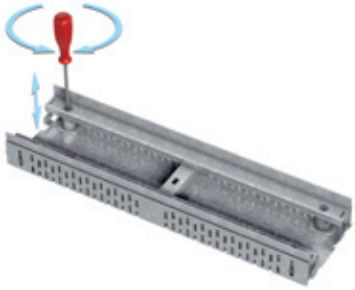
Adapter elements can be placed directly within channel elements. They are not fastened in place.

Several channel elements can be directly linked up. No fastenings are used.

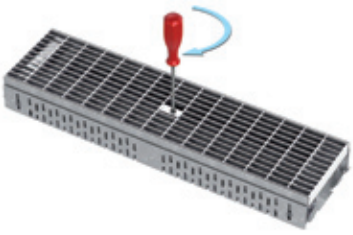


Two channel elements with a centrally positioned adapter element.

Adjusting the height of channel elements and grating locks

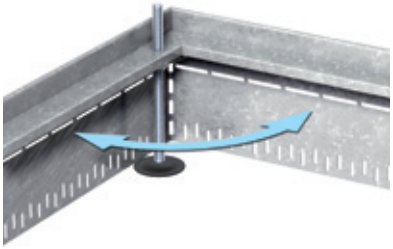


The height is adjusted with a screwdriver. Adjustment can also be carried out when the channel has been installed. The degree of height adjustment depends on the type of channel element.

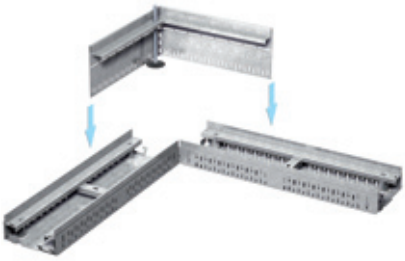


When the grating has been positioned in the channel, it can be locked with a screwdriver.

Using the variable corner element



The corner element can be adjusted on site to any angle between 0 – 90°.

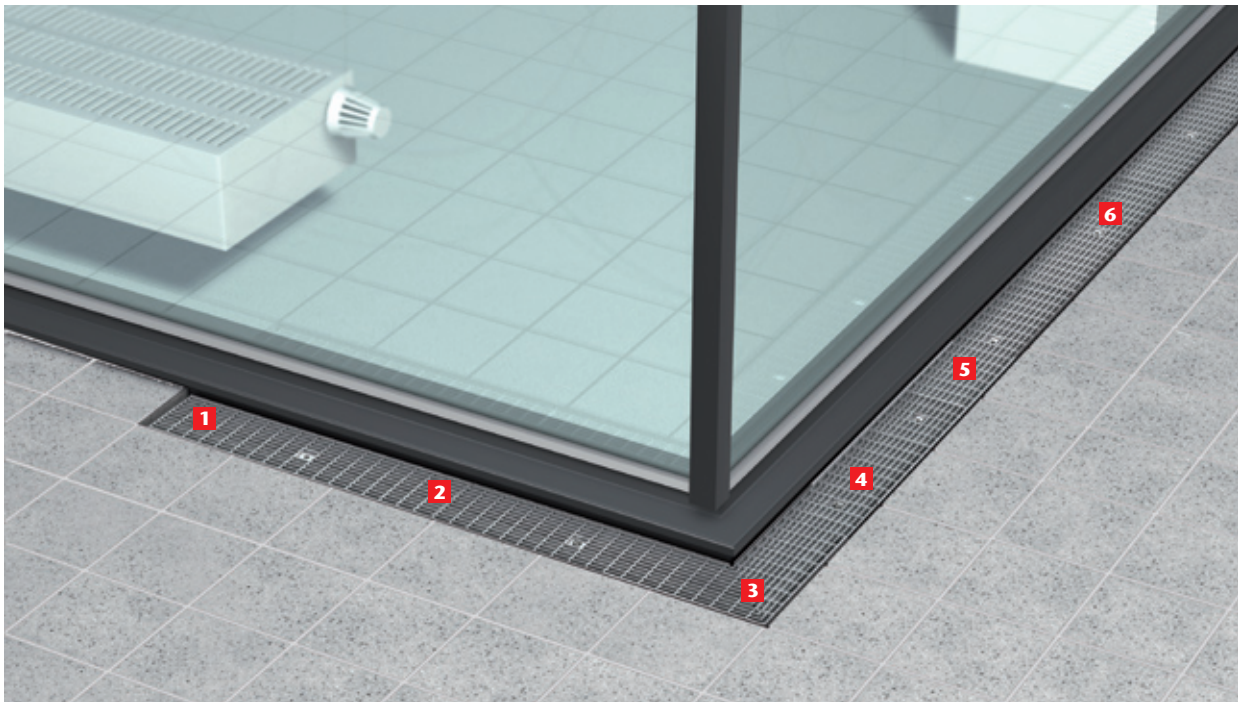


Channel elements are laid from the corner element. The frame of the corner element is used to position the walls of the channels.

Adapter elements cannot be placed directly against a corner element. They always have to be connected to a channel element.

Installation recommendation

ACO facade channel



1 Adapter element (end)
2 Channel element
3 Corner element
4 Channel element
5 Adapter element (middle)
6 Channel element

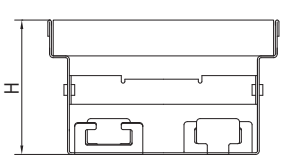
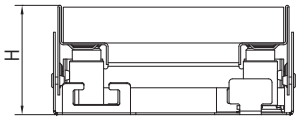
Proper arrangement of the components

Adapter element (end)	Channel element	Corner element	Channel element	Adapter element (middle)	Channel element

Corner elements cannot be connected to adapter elements: they must always be directly connected to channel elements.

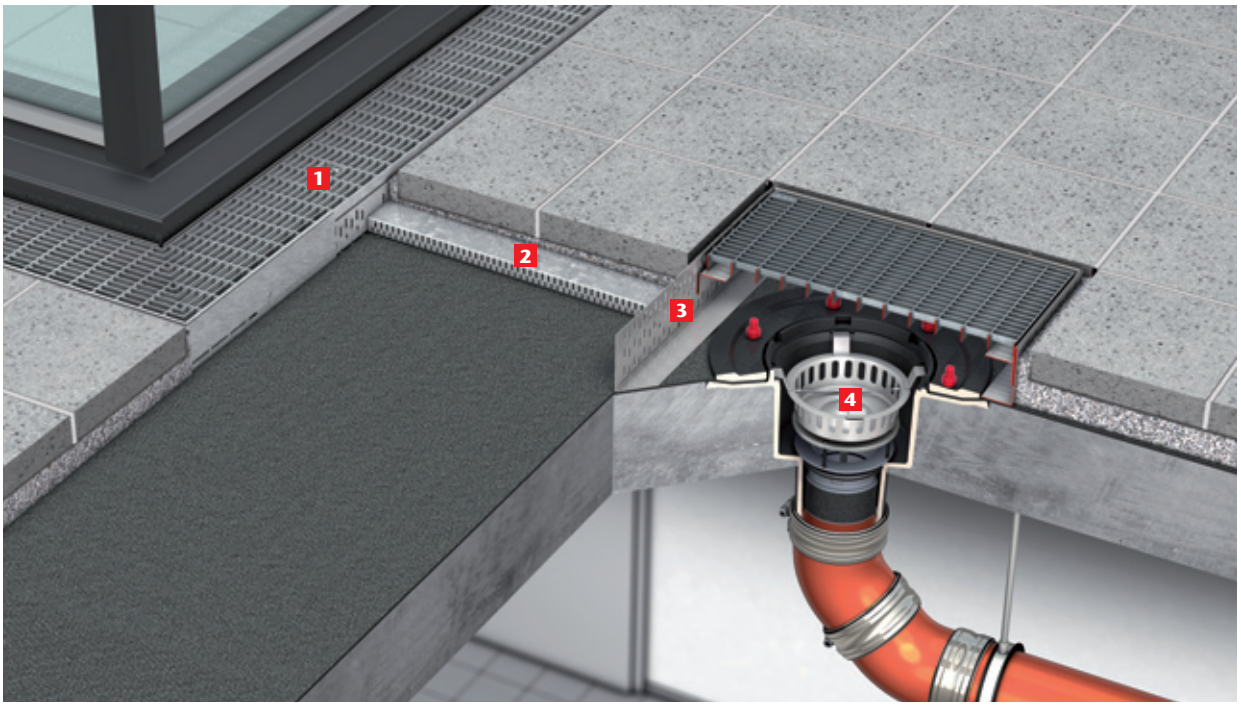
Heights

All channel elements are available in one fixed version and three height-adjustable versions. No adapter elements and corner elements are available for channel elements with a fixed height.

			
H = 50 or 75 mm (fixed)	H = 55–78 mm (infinitely height-adjustable)	(H = 78–108 mm (infinitely height-adjustable)	(H = 108–168 mm (infinitely height-adjustable)
No adapter element or corner elements available	**Adapter element and corner element available**	**Adapter element and corner element available**	**Adapter element and corner element available**

Installation recommendation

ACO facade channel with side channel and top section

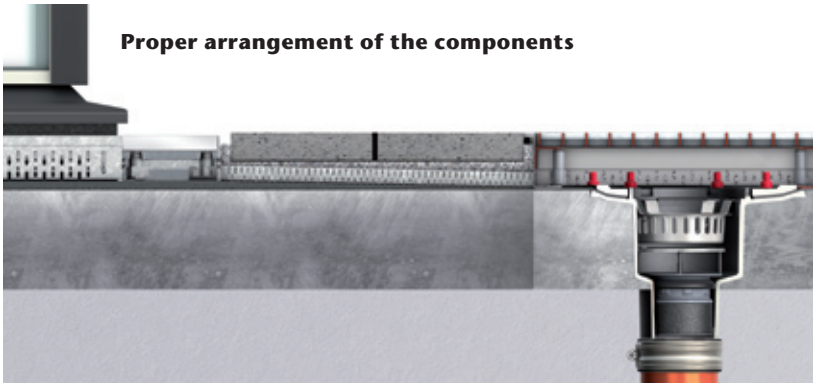


1 Channel or adapter element

2 Side channel

3 Top section with grating

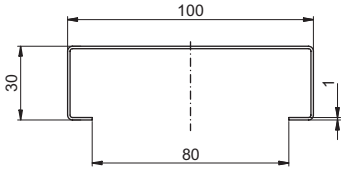
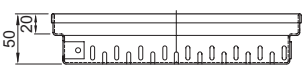
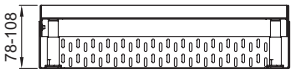
4 Roof drain



Proper arrangement of the components

The side channel is positioned without fastening against the top section and the channel, and held in place within the gravel layer by the whole system. The side channel can be shortened on site. The top section should be used above roof drains and terraces. Gratings must be removable.

Heights

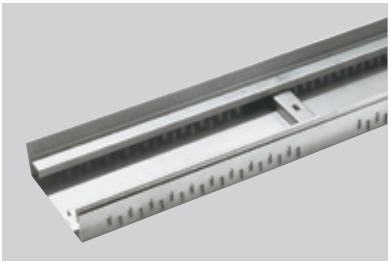
Side channel	Top section	
		
The side channel can be laid on either concrete or a gravel layer.	The height-adjustable top sections can be raised again by heights of 30, 60 or 120 mm using the extension elements. Several extension elements can be stacked on top of one another.	

ACO Profiline facade and terrace channel height-adjustable

- ACO Profiline facade and terrace channel, available as either:
  – channel element
  – adapter element (middle)
  – adapter element (end)
  – corner element
- Infinitely height adjustable from above, adjustment ranges from:
  – 55-78 mm
  – 78–108 mm
  – 108–168 mm
  – or fixed height of 50 or 75 mm
- Integrated gravel strip on both sides to prevent water accumulating against the facade, 4 mm drain slots, closed channel floor, factory pre-assembled grating lock and channel connection system, for interior gratings, tough enough to resist the weight of pedestrians and wheel-chairs.

Material: either galvanised steel or stainless steel, material 1.4301
Width: either 100, 130 or 250 mm
Length: 500 mm or 1000 mm (channel elements)
600 mm (adapter element)

ACO Profiline channel element
The pre-assembled channel elements have no loose separate components. The channel elements are joined to one another using a simple push-fit system.
The completely closed channel floor guarantees very high levels of stability and load distribution. The adapter elements can be used to create channels of any length.

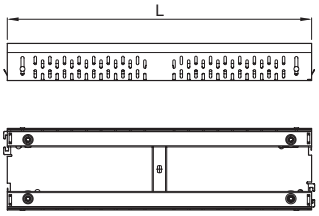
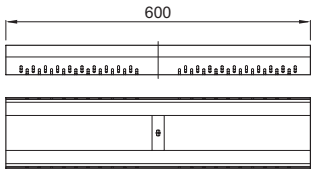
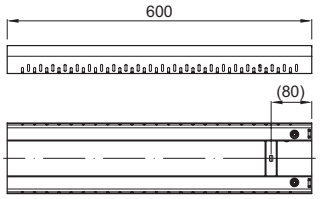


ACO Profiline adapter element (middle)
The adapter element middle is used to adjust the length of a line drainage system. It is simply positioned between two channel bodies and can be used for an infinitely adjustable join with lengths from 50 to 500 mm between at least two channel elements.
e.g. 1350 mm:
2 x 500 mm channel elements
1 x adapter element middle

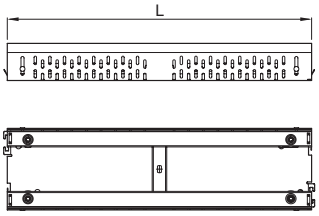
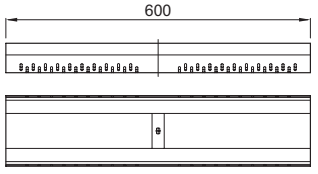
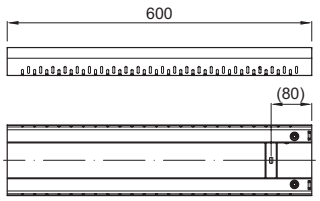
ACO Profiline variable corner element
The variable corner element enables any angle to be created from 0 to 90° without having to cut the channel bodies.
It is used to join up channel elements and forms a very stable framework for the gratings. (Cannot be connected to an adapter element!)

ACO Profiline adapter element (end)
The adapter element end can also be used for infinitely adjusting the length of a line of channels, in the range 100 – 550 mm, at the end or in front of a channel element.
e.g. 890 mm:
1 x 500 mm channel element
1 x adapter element end

ACO facade channel elements, height-adjustable. Galvanised steel

	Width (W)	Length (L)	Article No. H = 55-78 mm	Article No. H = 78-108 mm	Article No. H = 108-168 mm
Channel element					
	100	1000	**38594**	**38600**	**38606**
		500	**38595**	**38601**	**38607**
	130	1000	**39642**	**36788**	**36806**
		500	**39640**	**36789**	**36807**
	250	1000	**36776**	**36794**	**36812**
		500	**36777**	**36795**	**36813**
Adapter element middle					
	100	600	**38596**	**38602**	**38608**
	130	600	**36948**	**36790**	**36808**
	250	600	**36778**	**36796**	**36814**
Adapter element end					
	100	600	**38597**	**38603**	**38609**
	130	600	**36956**	**36791**	**36809**
	250	600	**36778**	**36797**	**36815**

ACO facade channel element, height-adjustable, stainless steel, material 1.4301

	Width (W)	Length (L)	Article No. H = 55-78 mm	Article No. H = 78-108 mm	Article No. H = 108-168 mm
Channel element					
	100	1000	**38612**	**38618**	**38624**
		500	**38613**	**38619**	**38625**
	130	1000	**38942**	**36836**	**36854**
		500	**36943**	**36837**	**36855**
	250	1000	**36824**	**36842**	**36860**
		500	**36825**	**36843**	**36861**
Adapter element middle					
	100	600	**38614**	**38620**	**38626**
	130	600	**36949**	**36838**	**36856**
	250	600	**36826**	**36844**	**36862**
Adapter element end					
	100	600	**38615**	**38621**	**38627**
	130	600	**36958**	**36839**	**36857**
	250	600	**36827**	**36845**	**36863**

Accessories and additional components

ACO Profiline terrace channel, height-adjustable

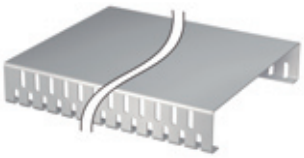
Front wall, galvanised steel, or stainless steel

	Width (W)	Material	Article No.		
			H = 55–78 mm	H = 78–108 mm	H = 108–168 mm
	100	Galvanised steel	**38599**	**38605**	**38611**
	130		**36950**	**36793**	**36811**
	250		**36783**	**36799**	**36817**
	100	Stainless steel, 1.4301	**38617**	**38623**	**38629**
	130		**36951**	**36841**	**36859**
	250		**36829**	**36847**	**36865**

Corner element, galvanised steel or stainless steel

	Description	Material	Article No.
	**ACO Profiline corner element** – for forming corners with angles of 0 – 90 degrees – fits heights between 55 – 168 mm and all widths	Galvanised steel	**38634**
		Stainless steel, 1.4301	**38643**

Side channel, galvanised steel or stainless steel

	Description	Material	Article No.
	**ACO Profiline side channel** – integrated gravel strip on both sides, 4 mm drain slots – material: galvanised steel – width: 100 mm – height: 30 mm – length: 2000 mm	Galvanised steel	**00328**
		Stainless steel, 1.4301	**00307**

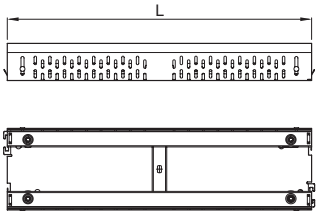
ACO Profiline facade and terrace channels

Fixed heights

- ACO Profiline facade and terrace channel, as channel element, available in two fixed heights
  – 50 mm
  – 75 mm
- Integrated gravel strip on both sides to prevent water accumulating against the facade, 4 mm drain slots, closed channel floor, factory pre-assembled grating lock and channel connection system, for interior gratings, tough enough to resist the weight of pedestrians and wheel-chairs.

Material: Either galvanised steel or stainless steel, material 1.4301
Width: Either 130 mm (galvanised steel) or stainless steel, or 250 mm (galvanised steel)
Length: ..... mm

ACO Profiline facade channel elements, fixed height, galvanised steel

	Width (W)	Length (L)	Article No. H = 50 mm	Article No. H = 75 mm	Article No. H = 50 mm	Article No. H = 75 mm
Channel element 	100	2000	**38145**	**36980**	**38220**	**36985**
		1000	**38146**	**36981**	**38221**	**36986**
	130	500	**38147**	**36982**	**38222**	**36987**
		2000	**38792**	–		
	250	1000	**38793**	–		
		500	**38794**	–		

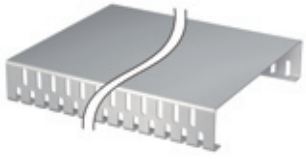
Accessories and additional components

ACO Profiline terrace channel, fixed height

end wall, galvanised steel or stainless steel

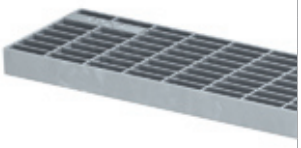
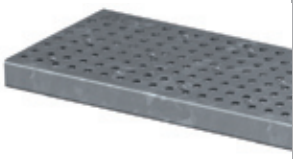
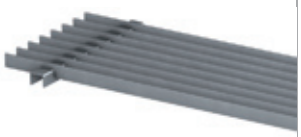
	Width (W)	Material	Article No. H = 50 mm	Article No. H = 75 mm
	130	Galvanised steel	**38148**	**36983**
		Stainless steel	**38223**	**36988**
	250	Galvanised steel	**38795**	–

Side channel, galvanised steel or stainless steel

	Description	Material	Article No.
	**ACO Profiline side channel** – integrated gravel strip on both sides, 4 mm drain slots – material: galvanised steel – width: 100 mm – height: 30 mm – length: 2000 mm	Galvanised steel	**00328**
		Stainless steel, 1.4301	**00307**

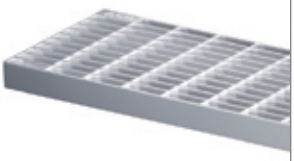
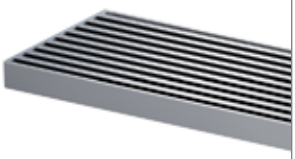
Gratings for ACO facade channels

Galvanised steel

	Product	Width	Length	Lattice width	Article No.
	**ACO Profiline bar grating** complete with bolts, withstands pedestrians and wheelchairs material: galvanised steel	130	1000 500	— —	**00276** **00277**
	**ACO Profiline lattice grating** complete with bolts, withstands pedestrians and wheelchairs material: galvanised steel	100	1000	30 x 10	**38431**
			500	30 x 10	**38430**
		130	1000	30 x 10	**38433**
			500	30 x 10	**38432**
			1000	30 x 14	**26953**
			500	30 x 14	**36952**
		250	1000	30 x 10	**38435**
			500	30 x 10	**38434**
			1000	30 x 14	**38964**
			500	30 x 14	**38965**
	**ACO Profiline perforated grating** complete with bolts, withstands pedestrians and wheelchairs material: galvanised steel	100	1000 500	— —	**38524** **38525**
		130	1000 500	— —	**38968** **36969**
	**ACO Profiline baton grating** without bolts withstands pedestrians and wheelchairs material: galvanised steel	130	1000 500	— —	**38551** **38552**
	**ACO Profiline longitudinal baton grating** 3 x 15 mm batons without bolts, withstands pedestrians and wheelchairs Material: galvanised steel	130	1000 500		**38811** **38810**

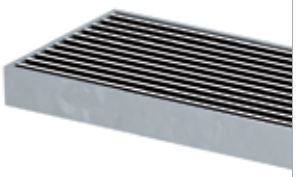
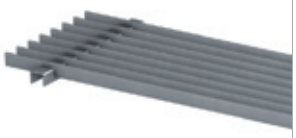
Gratings for ACO facade channels

Stainless steel, material 1.4301

	Product	Width	Length	Lattice width	Model	Article No.
	**ACO Profiline bar grating** complete with bolts, withstands pedestrians and wheelchairs material, stainless steel 1.4301	130	1000	—	Pickled	**00272**
			500	—	Pickled	**00273**
	**ACO Profiline lattice grating** complete with bolts withstands pedestrians and wheelchairs material, stainless steel 1.4301	100	1000	30 x 10	Pickled	**38439**
			500	30 x 10	Pickled	**38438**
		130	1000	30 x 10	Pickled	**38441**
			500	30 x 10	Pickled	**38440**
			1000	30 x 14	Pickled	**36955**
			500	30 x 14	Pickled	**36954**
		250	1000	30 x 10	Pickled	**38443**
			500	30 x 10	Pickled	**38442**
			1000	30 x 14	Pickled	**36970**
			500	30 x 14	Pickled	**36971**
	**ACO Profiline perforated grating** complete with bolts, withstands pedestrians and wheelchairs material, stainless steel 1.4301	100	1000	—	Pickled	**38527**
			500	—	Pickled	**38528**
		130	1000	—	Pickled	**38975**
			500	—	Pickled	**36974**
	**ACO Profiline Heelsafe (longitudinal baton grating),** coarse without bolts, withstands pedestrians and wheelchairs material, stainless steel 1.4301	100	1000	—	Coarsely brushed	**38563**
			500	—	brushed	**38564**
		130	1000	—	Coarsely brushed	**37491**
			500	—	brushed	**37492**

Gratings for ACO facade channels

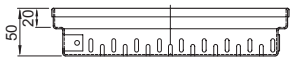
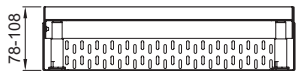
Stainless steel, material 1.4301

	Product	Width	Length	Model	Article No.
	**ACO Profiline Heelguard (longitudinal baton grating, fine)** without locking bolts, withstands pedestrians and wheelchairs material, stainless steel 1.4301	100	1000	Finely brushed	**38566**
			500	Finely brushed	**38567**
		130	1000	Finely brushed	**38548**
			500	Finely brushed	**38549**
	**ACO Profiline baton grating** without locking bolts, withstands pedestrians and wheelchairs material, stainless steel 1.4301	130	1000	Sand blasted	**37498**
			500	Sand blasted	**37499**
	**ACO Profiline slotted grating** without locking bolts, withstands pedestrians and wheelchairs material, stainless steel 1.4301	130	1000	Pickled	**38553**
			500	Pickled	**38554**
	**ACO Profiline longitudinal slotted channel** without locking bolts, withstands pedestrians and wheelchairs material, stainless steel 1.4301	130	1000	Pickled	**38555**
			500	Pickled	**38556**
	**ACO Profiline longitudinal baton grating** 3 x 15 mm batons without locking bolts, withstands pedestrians and wheelchairs material, stainless steel 1.4301	130	1000	Pickled	**38813**
			500	Pickled	**38812**

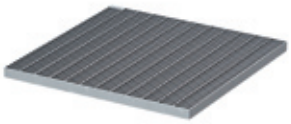
Top sections for ACO roof drains

- ACO Profiline top section for roof drains, integrated gravel strip on both sides, 4 mm drain slots
- Open channel floor for maintenance purposes, for internal grating, withstands pedestrians and wheelchairs.

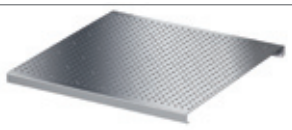
Material: galvanised steel or stainless steel, 1.4301
Frame dimensions: either 400 x 400 mm or 500 x 500 mm
Height: either 50 mm or height adjustable 78 – 108 mm

	Frame dimensions	Article No.	
		Galvanised steel	Stainless steel, 1.4031
Fixed height: 50 mm 	400 x 400	**38150**	**38156**
	500 x 500	**38630**	**38632**
Height adjustable 78 – 108 mm 	400 x 400	**38801**	**38803**
	500 x 500	**38631**	**38633**

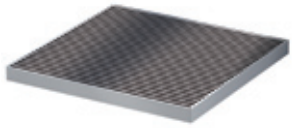
Lattice gratings for top sections

	Product	Frame dimensions	Lattice width	Model	Article No.
	**ACO Profiline lattice grating** withstands pedestrians and wheelchairs	400 x 400	30 x 10	Galvanised steel	**38570**
		400 x 400	30 x 14	Galvanised steel	**36754**
		400 x 400	10 x 30	Steel pickled	**38573**
		400 x 400	14 x 30	Steel pickled	**36760**
		500 x 500	30 x 10	Galvanised steel	**38571**
		500 x 500	10 x 30	Stainless steel pickled	**38574**

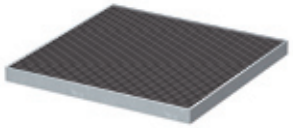
Perforated grating for top sections

	Product	Frame dimensions	Model	Article No.
	**ACO Profiline perforated grating** withstands pedestrians and wheelchairs	400 x 400	Stainless steel pickled	**38583**
		500 x 500	Stainless steel pickled	**38584**

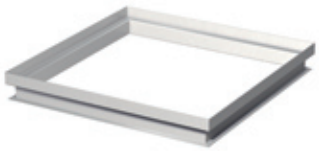
Perforated gratings for top sections

	Product	Frame dimensions	Model	Article No.
	**ACO Profiline Heelsafe (longitudinal baton grating, 7 – 12.5)** withstands pedestrians and wheelchairs	400 x 400	Brushed stainless steel Grating type: coarse	**38589**
		500 x 500	Brushed stainless steel Grating type: coarse	**38590**

Perforated gratings for top sections

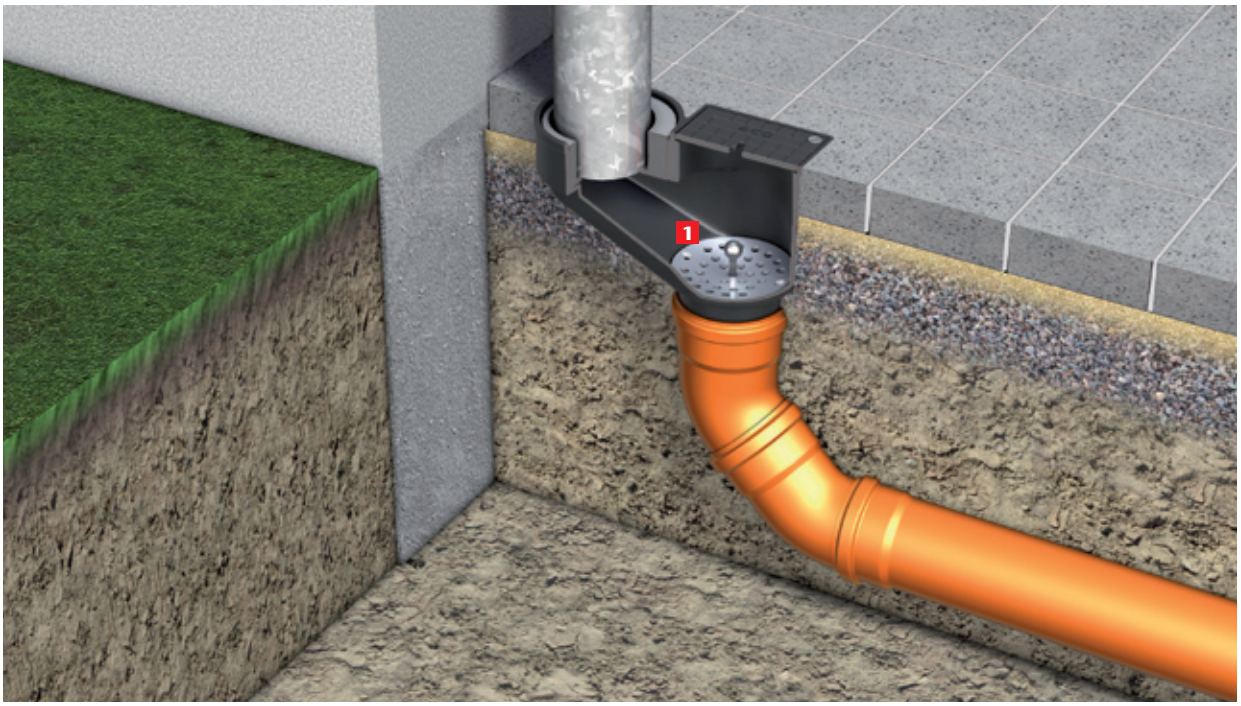
	Product	Frame dimensions	Model	Article No.
	**ACO Profiline Heelguard (longitudinal baton grating, 3-8)** withstands pedestrians and wheelchairs	400 x 400	Brushed stainless steel Grating type: fine	**38592**
		500 x 500	Brushed stainless steel Grating type: fine	**38593**

Extension units for top sections

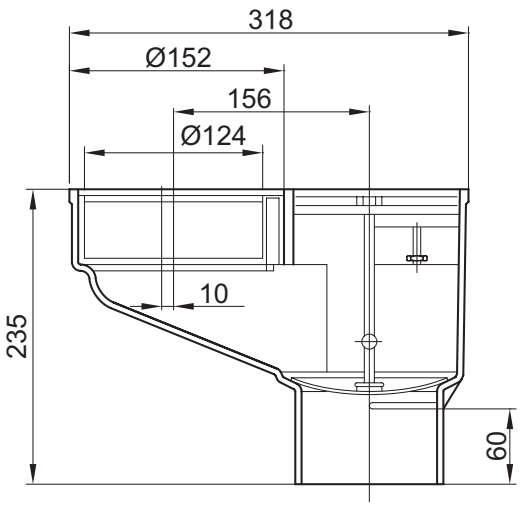
	Product	Frame dimensions	Model	Article No.	Artikel-Nr.
	**ACO Profiline extension units for top sections**	400 x 400	Galvanised steel	30	**38685**
				60	**38587**
				120	**38689**
			Stainless steel 1.4301	30	**38686**
				60	**38688**
				120	**38690**
		500 x 500	Galvanised steel	30	**38691**
				60	**38693**
				120	**38695**
			Stainless steel 1.4301	30	**38695**
				60	**38694**
				120	**38696**

Installation recommendation

Rain pipe drain made of cast iron without an odour seal



1 **Rain pipe drain, cast iron DN 100 without odour seal with PVC dirt sieve Article No. 5217.90.00**

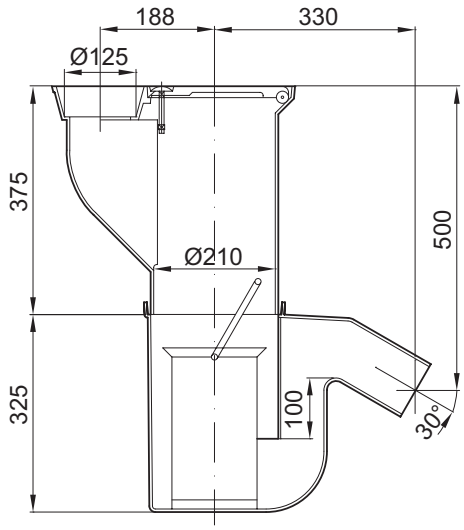
DN 100

Rainwater downpipes with a maximum external diameter of 110 mm can be used.

Extension heights in mm.

Installation recommendation

Rain pipe drain, cast iron with odour seal

1 **Rain pipe drain, cast iron, DN 100 with odour seal Article No. 5222.00.00**

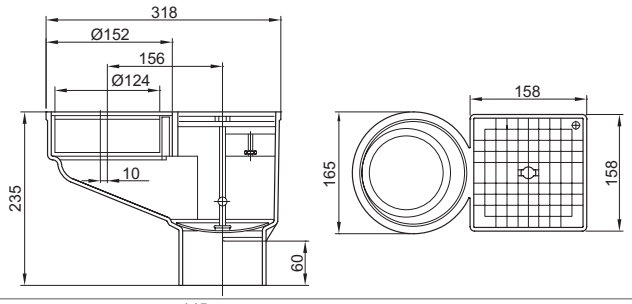
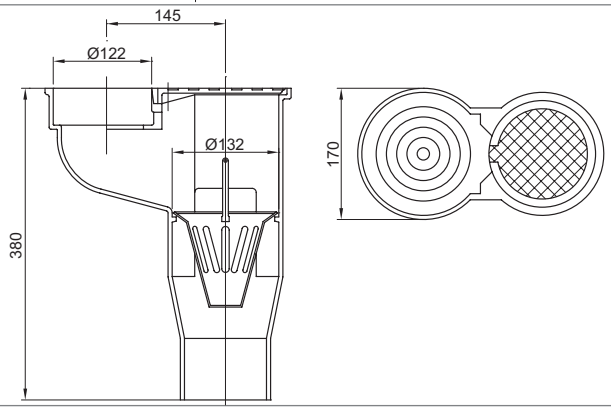
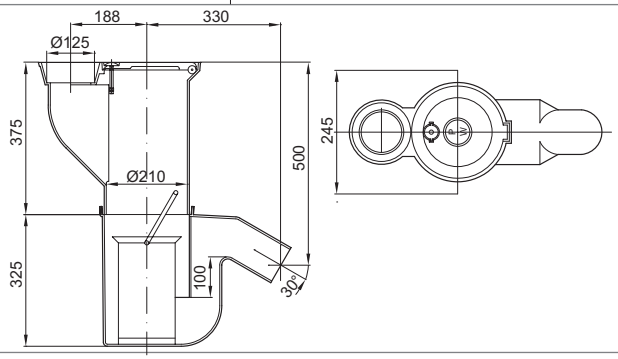
DN 100

Rainwater downpipes with a maximum external diameter of 110 mm can be used.

Extension heights in mm.

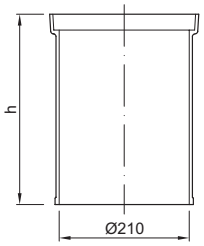
Rain pipe drains, cast iron

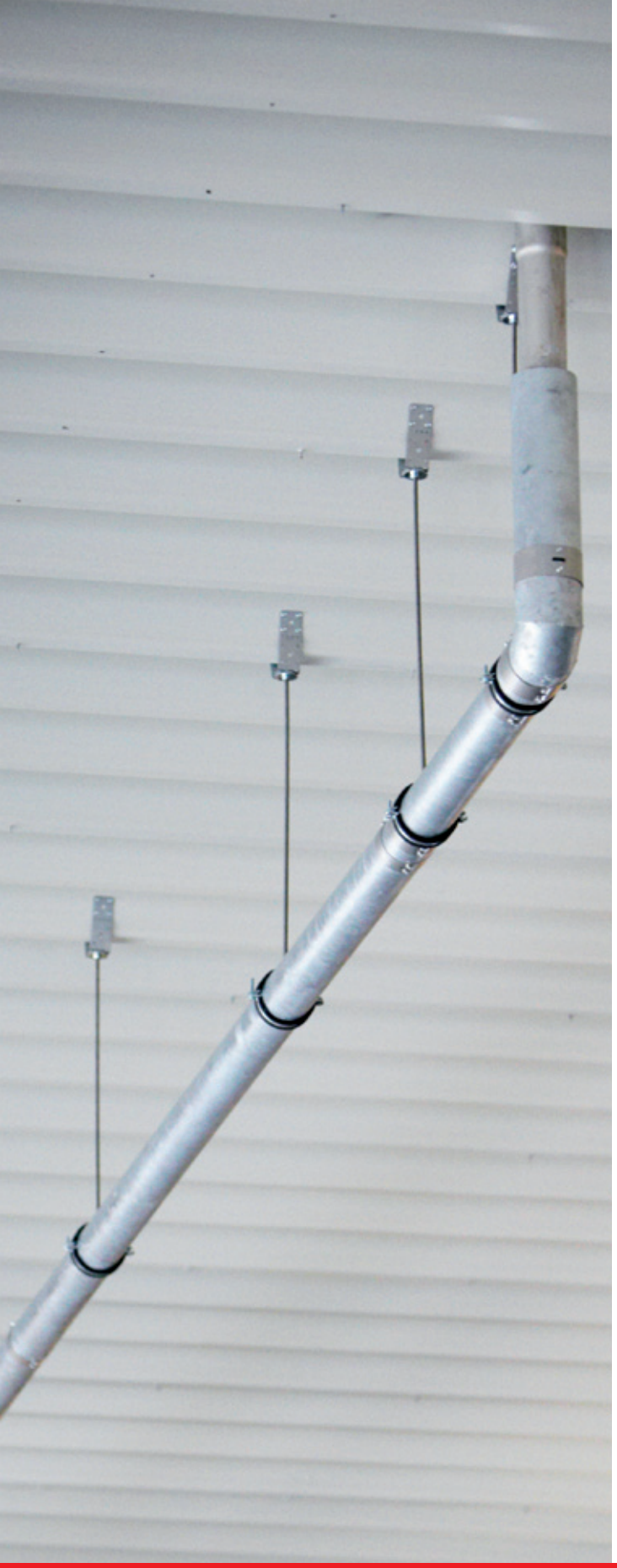
DN 100

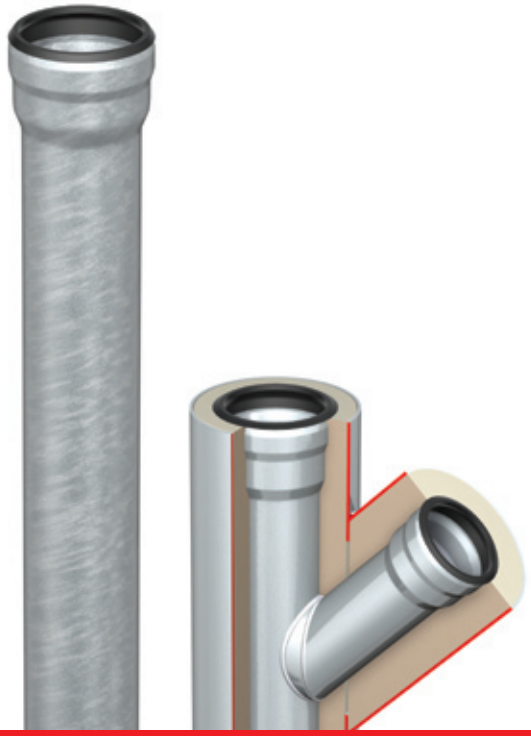
- ACO rain pipe drain DN 100, cast iron, with coating
- Socket outlet inclination depends on model, 90° or 30°
- With/without odour seal depending on model
- With cast iron lid for load class L3 or L15 depending on model

Diagram	Product description	Article No.
	**ACO rain pipe drain DN 100, cast iron,** with coating, outlet socket inclination 90°, without odour seal with PVC dirt sieve with cast iron lid, class K3, weight 10.3 kg, outflow capacity 2.8 l/s	**5217.90.00**
	**ACO rain pipe drain DN 100, cast iron,** with coating, outlet socket inclination 90°, without odour seal, with hard PE bucket, with cast iron lid, class L15, weight 9.6 kg, outflow capacity 8.0 l/s	**5217.10.00**
	**ACO rain pipe drain DN 100, cast iron,** coated, outlet socket inclination 30° with odour seal, with hard PE bucket, with cast iron lid class L15, weight 31.9 kg outflow capacity 9.5 l/s	**5222.00.00**

Accessories

Diagram	Product description	Suitable for	Model	Article No.
	**Adapter piece, cast iron**	Drainpipe drain, **Article No. 5222.00.00**	Height: 300 mm Height: 200 mm	**5222.13.00** **5222.12.00**





Pipe systems

ACO pipe systems –

pipes and compound pipes made of galvanised steel

The collection and drainage of waste water is one of the most important aspects of building services today. Using pipe systems made of rugged materials is the essential basis for safe drainage in all areas of private and industrial roof drainage. ACO solves this problem with a professional product line of steel pipes and fittings (DN 40 – 300).

ACO GM-X drain pipes made of welded precision steel pipe are also successfully used in the drainage of flat roofs. The extremely low thermal expansion of steel means that none of the usual expansion compensation materials are required. This also applies to steel pipes which are concreted in or bricked in. The thermal expansion of steel pipes carrying hot waste water can therefore be completely ignored.

Steel pipe is also produced as compound pipe to meet functional safety specifications, as well as to provide additional frost protection and thermal insulation. ACO GM-X compound pipes guarantee the highest possible degrees of insulation and isolation thanks to the pipe-in-pipe system. The industrial prefabrication of these pipes also means that on site insulation and cladding is no longer required. Moreover, the invisible push-fit pipe connection creates almost jointless and therefore optically attractive stretches of pipe.

Creating special architectural features with exposed pipe systems

ACO GM-X system –

Simple and safe

The comprehensive range of fittings creates fast and economic solutions for every type of connection. Thanks to the sophisticated coupling socket technology, the pipes and fittings can be easily joined together using the push-fit connections or simply rotating the parts.
The pipe systems are manufactured pursuant to DIN EN 1123.

The sealing values specified in DIN EN 1123 Part 1 are completely satisfied by the push-fit connections. All pipes and fittings including their connections are tight, with an inner and outer overpressure of 0 – 0.5 bar. The steel pipes and fittings are easy to handle, shock proof, impact resistant, and withstand rough handling on building sites.

Product benefits:

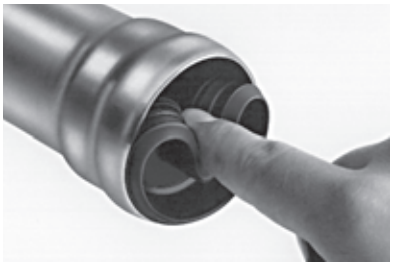
- Non flammable
- Good noise insulation properties
- Non-deformable and fracture resistant
- Heat and frost resistance
- Rugged connections which cannot be bent out of shape

Sealing specifications

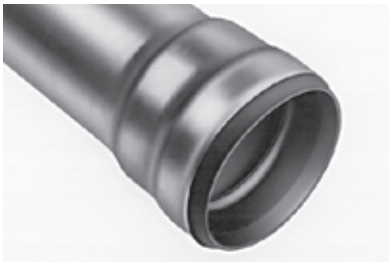
With GM-X safety clamps:
DN 150 – 4 bar
DN 200 – 2 bar
DN 250 – 1 bar
DN 300 – 1 bar
With GM-X coupling sockets with safety shackles:
DN 40 – 15 bar – glued-in sealing element
DN 50 – 15 bar – glued-in sealing element
DN 70 – 5 bar
DN 80 – 5 bar
DN 100 – 5 bar
DN 125 – 4 bar

ACO GM-X pipe

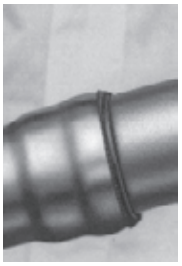
Making up the push-fit connection



The sealing ring is placed at an angle in the outer section of the coupling socket. Use a finger to compress the sealing ring and slide it into the coupling socket…



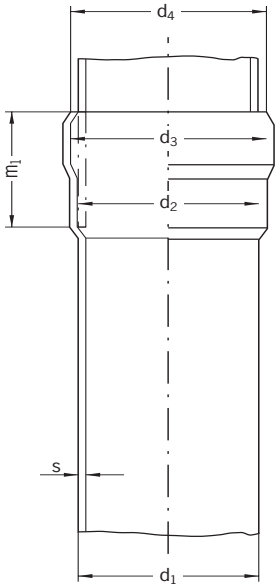
… the sealing ring then springs into place.



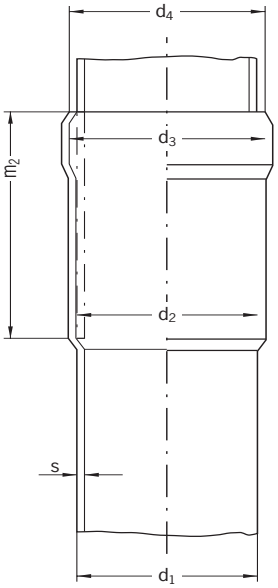
GM-X lubricant is smeared on the inside of the sealing ring. Push the spigot into the socket by rotating gently until it sits firmly on the lower end of the coupling socket.

The GM-X coupling socket pursuant to DIN EN 1123

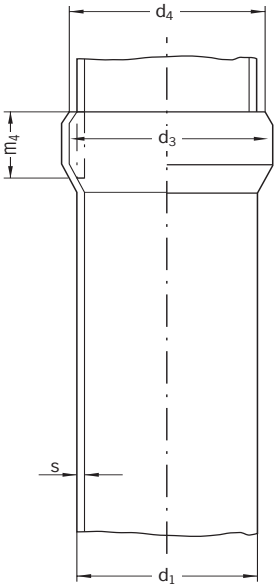
Coupling socket dimensions



Normal coupling socket 1A



Normal coupling socket 2A



Normal coupling socket 4A

Pipes and fittings which have two coupling sockets, always have two coupling sockets of the same type.

DN	d_1	d_2	d_3	d_4	s	m_1	m_2	m_4
40	42	45	48	45	1,5	30	70	16
50	53	56	60	56	1,5	38	90	19
70	73	76	81	76	1,6	55	120	27
80	89	92	99	92	1,8	60	130	32
100	102	106	114	107	2	70	150	38
125	133	138	147	140	2,5	75	160	41
150	159	164	176	168	2,5	80	170	56
200	219	224	241	228	3,2	120	250	76

ACO GM-X compound pipe – sophisticated and functional

The GM-X compound piping consists of an inner and an outer pipe. The annulus created by the gap between the inner and outer pipes is filled with CFC-free hard polyurethane foam (PU). The compound pipe is therefore supplied directly from the factory with built-in thermal insulation, condensation water resistance and frost protection. The industrial pre-fabrication of the insulation and the cladding saves a great deal of installation time because this work is no longer required at the building site.

Self-regulating auxiliary heating can also be supplied upon request.

The GM-X compound pipe also uses the successfully tried-and-tested GM-X push-fit coupling socket.

Product benefits:

- Thermal insulation, condensation water resistance and frost protection in one pipe system
- Outer sleeve provides enhanced functional security
- Protection against condensation water prevents the formation of mould.

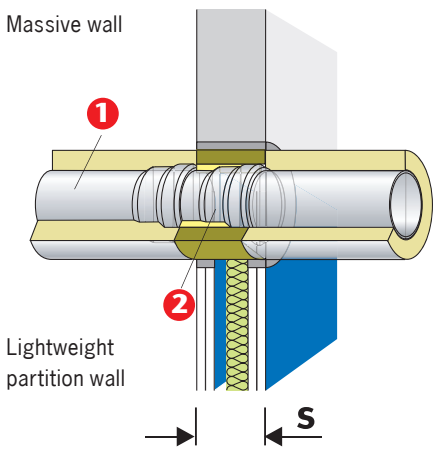
ACO GM-X compound pipe

Making up the coupling sockets

Fire protection solutions for pipe systems

By using an RS 800 insulating sleeve for F30 ceilings and walls, ACO GM-X steel drain pipes can be properly sealed off against fire pursuant to DIN EN 1123 to form fire barriers satisfying fire resistant classes R 30 – R 90. A combination of RS 800 insulating sleeves and Conlit sleeves are required for F60 and F90 walls and ceilings.

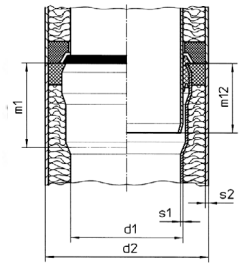
ACO GM-X compound pipes combined with ACO GM-X fire protection mouldings in massive ceilings, massive walls and light partition walls form fire barriers satisfying the specifications of fire resistance classes F30 to F90.



1 ACO GM-X compound pipe
2 ACO GM-X fire protection moulding

ACO compound pipe GM-X

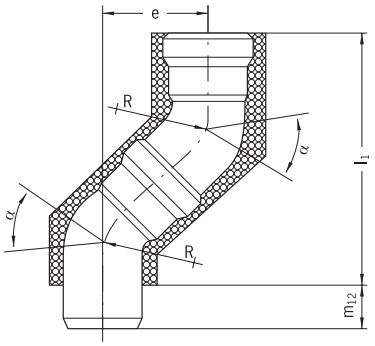
General dimensions GM-X compound pipes



d_2	d_3	d_4	s	m_1	m_2	m_4
45	48	45	1,5	30	70	16
56	60	56	1,5	38	90	19
76	81	76	1,6	55	120	27
92	99	92	1,8	60	130	32
106	114	107	2	70	150	38
138	147	140	2,5	75	160	41
164	176	168	2,5	80	170	56
224	241	228	3,2	120	250	76

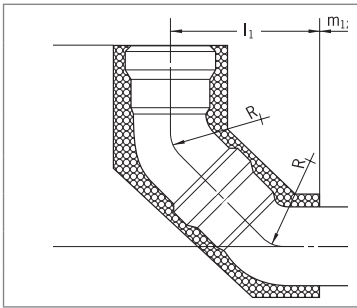
Bend installation

Floor installation dimensions when using 2 bends with the same angle α



DN	R	α = 15°			α = 30°			α = 44°			α = 70°			α = 88°		
		e	l	kg	e	l	kg	e	l	kg	e	l	kg	e	l	kg
40	28	20	155	1,0	43	160	1,0	61	151	1,2	98	140	1,4	138	143	1,6
50	35,5	24	179	1,2	51	188	1,4	77	191	1,6	124	177	1,8	151	156	2,0
70	50	27	202	2,0	59	218	2,2	92	227	2,4	150	215	3,2	186	193	3,6
80	82,5	37	183	4,6	82	306	4,8	129	320	5,4	222	317	6,4	280	290	7,4
100	70	38	291	5,2	84	313	5,4	131	323	6,0	214	306	7,0	262	271	8,0
125	90	40	305	7,0	90	334	7,8	142	352	8,6	242	345	10,0	303	314	11,0
150	150	47	354	8,6	110	410	11,2	183	454	13,6	329	470	17,2	430	445	20,0
200	305	–	–	–	–	–	–	308	768	40,0	–	–	–	780	807	65,6

Floor installation dimensions when using 2 bends with the same angle α = 44°



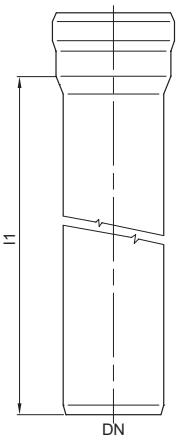
DN	R	α = 44°		
		e	l	kg
40	28	114	100	1,2
50	35,5	144	126	1,6
70	50	183	138	2,4
80	82,5	254	197	5,5
100	70	261	195	6,0
125	90	285	212	8,6
150	150	360	280	13,6
200	305	607	470	40,0

ACO GM-X pipe

Product information

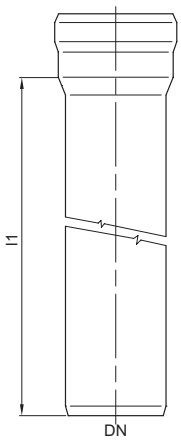
- Pursuant to DIN EN 1123
- Galvanised steel
- With additional alkyd melamine resin based internal coating

ACO GM-X pipe with 1A push-fit connection



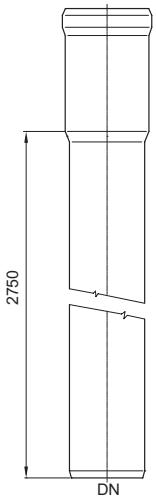
Nominal width	Weight [kg]	Article No.
Length (l1): 250 mm		
DN 40	0,46	**0174.10.52**
DN 50	0,60	**0174.10.53**
DN 70	0,93	**0174.10.54**
DN 80	1,00	**0174.10.55**
DN 100	1,70	**0174.10.56**
DN 125	2,79	**0174.10.57**
DN 150	3,39	**0174.10.58**
DN 200	6,61	**0174.10.59**
Length (l1): 500 mm		
DN 40	0,86	**0174.10.60**
DN 50	1,10	**0174.10.61**
DN 70	1,68	**0174.10.62**
DN 80	1,80	**0174.10.63**
DN 100	3,00	**0174.10.64**
DN 125	4,88	**0174.10.65**
DN 150	5,90	**0174.10.66**
DN 200	11,01	**0174.10.67**
DN 250	16,40	**0174.10.68**
Length (l1): 750 mm		
DN 40	1,26	**0174.10.70**
DN 50	1,61	**0174.10.71**
DN 70	2,42	**0174.10.72**
DN 80	2,80	**0174.10.73**
DN 100	4,29	**0174.10.74**
DN 125	6,98	**0174.10.75**
DN 150	8,42	**0174.10.76**
DN 200	15,40	**0174.10.77**
Length (l1): 1000 mm		
DN 40	1,66	**0174.10.78**
DN 50	2,12	**0174.10.79**
DN 70	3,18	**0174.10.80**
DN 80	3,80	**0174.10.81**
DN 100	5,59	**0174.10.82**
DN 125	9,07	**0174.10.83**
DN 150	10,93	**0174.10.84**
DN 200	19,80	**0174.10.85**
Length (l1): 1500 mm		
DN 40	2,46	**0174.10.88**
DN 50	3,14	**0174.10.89**
DN 70	4,67	**0174.10.90**
DN 80	5,30	**0174.10.91**
DN 100	8,18	**0174.10.92**
DN 125	13,26	**0174.10.93**
DN 150	15,95	**0174.10.94**
DN 200	28,59	**0174.10.95**

ACO GM-X pipe with 1A push-fit connection



Nominal width	Weight [kg]	Article No.
Length (l1): 2000 mm		
DN 40	3,26	**0174.10.97**
DN 50	4,16	**0174.10.98**
DN 70	6,17	**0174.10.99**
DN 80	7,40	**0174.11.00**
DN 100	10,77	**0174.11.01**
DN 125	17,44	**0174.11.02**
DN 150	20,97	**0174.11.03**
DN 200	37,38	**0174.11.04**
Length (l1): 2500 mm		
DN 40	4,20	**0174.11.09**
DN 50	5,17	**0174.11.10**
DN 70	7,67	**0174.11.11**
DN 80	8,40	**0174.11.12**
DN 100	13,36	**0174.11.13**
DN 125	21,63	**0174.11.14**
DN 150	25,99	**0174.11.15**
DN 200	46,06	**0174.11.16**
Length (l1): 2750 mm		
DN 50	5,70	**0174.11.18**
DN 70	8,42	**0174.11.19**
DN 100	14,66	**0174.11.20**
Length (l1): 3000 mm		
DN 40	4,86	**0174.11.21**
DN 50	6,17	**0174.11.22**
DN 70	9,17	**0174.11.23**
DN 80	10,10	**0174.11.24**
DN 100	15,96	**0174.11.25**
DN 125	25,82	**0174.11.26**
DN 150	31,01	**0174.11.27**
DN 200	54,96	**0174.11.28**

ACO GM-X pipe with 2A long coupling socket



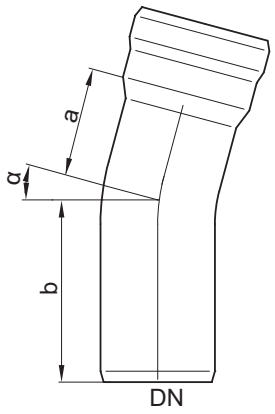
Nominal width	Weight [kg]	Article No.
Length: 2750 mm		
DN 50	6,10	**0174.11.43**
DN 70	8,63	**0174.11.44**
DN 100	15,09	**0174.11.45**

ACO GM-X bends

Product information

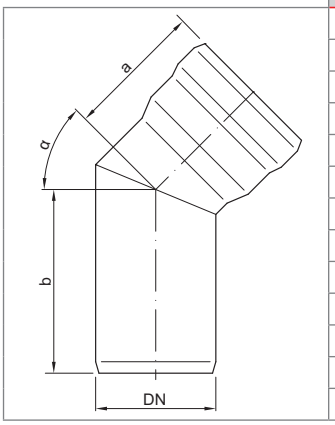
- Pursuant to DIN EN 1123
- Galvanised steel
- Additional alkyd melamine resin based internal polymer coating

ACO GM-X bends with 1A push-fit connections



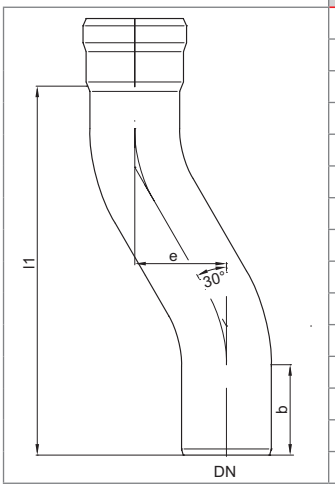
Nominal width	Dimensions a [mm]	Dimensions b [mm]	Weight [kg]	Article No.
Angle α: 15°				
DN 40	37	67	0,22	**0174.11.46**
DN 50	53	81	0,35	**0174.11.47**
DN 70	50	89	0,60	**0174.11.48**
DN 80	25	85	0,65	**0174.11.49**
DN 100	34	104	1,04	**0174.11.50**
DN 125	35	110	1,90	**0174.11.51**
DN 150	45	125	2,61	**0174.11.52**
DN 200	45	165	6,44	**0174.11.53**
Angle α: 30°				
DN 40	46	76	0,25	**0174.11.54**
DN 50	64	92	0,40	**0174.11.55**
DN 70	66	105	0,68	**0174.11.56**
DN 80	56	116	0,70	**0174.11.57**
DN 100	44	114	1,27	**0174.11.58**
DN 125	47	122	2,05	**0174.11.59**
DN 150	65	145	3,61	**0174.11.60**
DN 200	45	165	6,44	**0174.11.61**
Angle α: 45°				
DN 40	56	86	0,28	**0174.11.62**
DN 50	76	104	0,45	**0174.11.63**
DN 70	83	122	0,77	**0174.11.64**
DN 80	72,5	132,5	1,00	**0174.11.65**
DN 100	54	124	1,25	**0174.11.66**
DN 125	58	133	2,15	**0174.11.67**
DN 150	87	167	4,38	**0174.11.68**
DN 200	166	270	13,46	**0174.11.69**
DN 250	209	339	27,80	**0174.11.70**
Angle α: 70°				
DN 40	75	105	0,26	**0174.11.72**
DN 50	100	128	0,46	**0174.11.73**
DN 70	118	157	0,89	**0174.11.74**
DN 80	105	165	1,20	**0174.11.75**
DN 100	74	144	1,30	**0174.11.76**
DN 125	84	159	2,40	**0174.11.77**
DN 150	130	210	5,45	**0174.11.78**
DN 200	254	360	17,59	**0174.11.79**
Angle α: 87°				
DN 40	92	122	0,30	**0174.11.80**
DN 50	120	148	0,53	**0174.11.81**
DN 70	146	185	1,05	**0174.11.82**
DN 80	134	194	1,20	**0174.11.83**
DN 100	91	161	1,67	**0174.11.84**
DN 125	107	182	2,60	**0174.11.86**
DN 150	167	247	6,38	**0174.11.87**
DN 200	330	435	22,85	**0174.11.88**

With 1A push-fit connections and tight radius



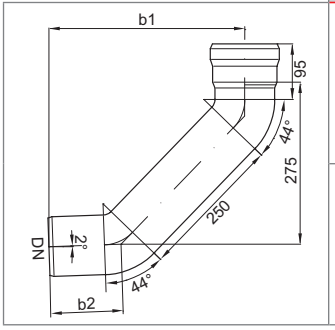
Nominal width	Dimensions a [mm]	Dimensions b [mm]	Weight [kg]	Article No.
Angle α: 15°				
DN 40	19	64	0,19	**0174.11.99**
DN 50	24	79	0,32	**0174.12.00**
DN 70	32	91	0,54	**0174.12.01**
DN 80	59	119	1,15	**0174.12.02**
Angle α: 70°				
DN 50	34,5	89,5	0,35	**0174.12.03**
DN 70	47,5	105	0,61	**0174.12.04**
Angle α: 87°				
DN 40	34	79	0,22	**0174.12.06**
DN 50	43,5	98,5	0,37	**0174.12.07**
DN 70	59	118	0,65	**0174.12.08**
DN 80	103	163	1,55	**0174.12.09**

ACO Offset pipe with 1A push-fit connections



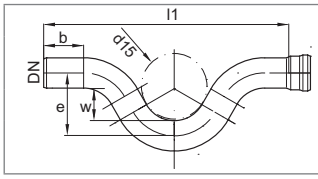
Nominal width	Dimensions a [mm]	Dimensions b [mm]	Weight [kg]	Article No.
Offset (e): 75 mm				
DN 70	73	300	1,15	**0174.12.10**
DN 80	85	280	1,40	**0174.12.11**
DN 100	95	250	1,85	**0174.12.12**
DN 125	100	274	2,90	**0174.12.13**
Offset (e): 130 mm				
DN 70	73	335	1,30	**0174.12.14**
DN 80	85	335	1,75	**0174.12.15**
DN 100	95	300	2,25	**0174.12.16**
DN 125	100	325	3,60	**0174.12.17**
Offset (e): 200 mm				
DN 70	73	359	1,53	**0174.12.18**
DN 80	85	405	2,80	**0174.12.19**
DN 100	95	370	2,75	**0174.12.20**
DN 125	100	395	4,45	**0174.12.21**

ACO stabilisation pipes for transitions in horizontal pipes with 1A push-fit connections



Nominal width	Dimensions b1 [mm]	Dimensions b2 [mm]	Dimensions a1 [mm]	Dimensions a2 [mm]	Weight [kg]	Article No.
DN 100	340	123	272	48	2,93	**0174.11.97**
DN 125	355	134	290	60	4,75	**0174.11.98**

ACO pipe bridges for transitions in horizontal pipes with 1A push-fit connections



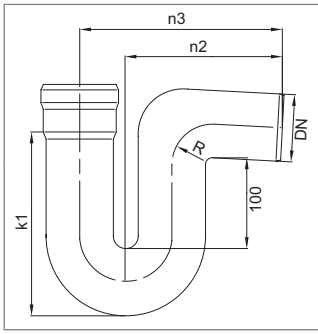
Nominal width	Dimensions b [mm]	d15 [mm]	l1 [mm]	w [mm]	Weight [kg]	Article No.
Offset (e): 110 mm						
DN 50	70	115	430	60	1,11	**0174.12.22**
Offset (e): 170 mm						
DN 70	73	170	576	100	2,30	**0174.12.23**

ACO GM-X odour seals

Product information

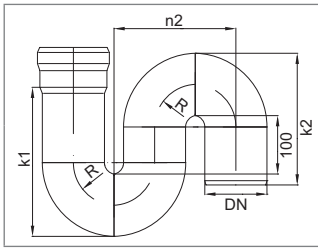
- 1A push-fit connection
- Pursuant to DIN EN 1123
- Galvanised steel
- With additional alkyd melamine resin based internal coating

ACO P odour seals for transitions to horizontal pipes



Nominal width	Dimensions k1 [mm]	n2 [mm]	n3 [mm]	Weight [kg]	Article No.
DN 70	192	173	223	1,80	**0174.12.26**
DN 100	240	234	304	3,75	**0174.12.27**

ACO S odour traps for transitions to vertical pipes



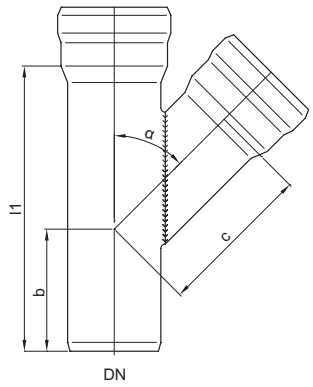
Nominal width	Dimensions k1 [mm]	k2 [mm]	n2 [mm]	Weight [kg]	Article No.
DN 70	190	120	150	2,10	**0174.12.24**
DN 100	240	165	200	4,40	**0174.75.87**

ACO GM-X branches

Product information

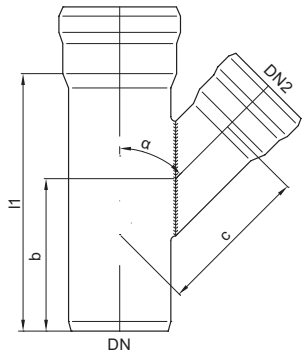
- 1A push-fit connections
- Pursuant to DIN EN 1123
- Galvanised steel
- With additional alkyd melamine resin based internal coating

ACO Single branch GM-X



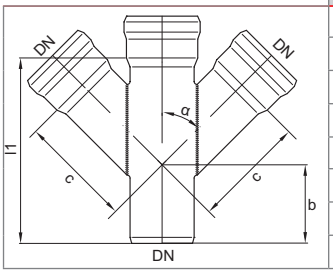
Nominal width	Dimensions b [mm]	c [mm]	l1 [mm]	Weight [kg]	Article No.
Angle α: 45°					
DN 40	55	70	125	0,37	**0174.13.15**
DN 50	65	90	150	0,56	**0174.13.16**
DN 70	85	115	200	1,12	**0174.13.17**
DN 80	96	138	235	1,20	**0174.13.18**
DN 100	110	155	265	2,45	**0174.13.19**
DN 125	130	210	340	4,77	**0174.13.20**
DN 150	140	240	380	6,65	**0174.13.21**
DN 200	190	320	500	16,76	**0174.13.22**
Angle α: 70°					
DN 40	60	50	110	0,34	**0174.13.25**
DN 50	70	60	130	0,50	**0174.13.26**
DN 70	95	75	175	1,04	**0174.13.27**
DN 100	125	110	230	2,14	**0174.13.28**
Angle α: 87°					
DN 40	70	40	110	0,32	**0174.13.29**
DN 50	80	50	130	0,47	**0174.13.30**
DN 70	110	65	175	0,97	**0174.13.31**
DN 80	126	75	200	1,40	**0174.13.32**
DN 100	140	90	230	2,08	**0174.13.33**
DN 125	170	120	285	3,79	**0174.13.34**
DN 150	190	135	320	4,99	**0174.13.35**
DN 200	260	170	420	13,51	**0174.13.36**

ACO reducing single branch



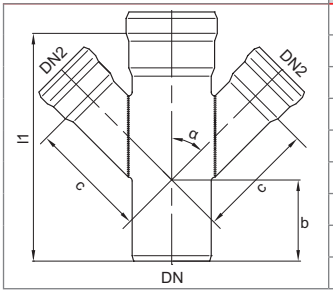
Nominal width DN	Nominal width DN2	Dimensions b [mm]	Dimensions c [mm]	Dimensions l1 [mm]	Weight [kg]	Article No.
Angle α: 45°						
DN 50	DN 40	50	79	130	0,47	**0174.13.37**
DN 70	DN 40	60	95	150	0,74	**0174.13.38**
DN 70	DN 50	75	106	175	0,85	**0174.13.39**
DN 80	DN 50	71,5	117,5	185	1,35	**0174.13.40**
DN 100	DN 40	65	116	180	1,41	**0174.13.45**
DN 100	DN 50	75	127	200	1,54	**0174.13.46**
DN 100	DN70	90	136	230	1,80	**0174.13.50**
DN 100	DN 80	110	147	265	2,00	**0174.13.51**
DN 125	DN 50	75	148	225	2,66	**0174.13.42**
DN 125	DN 70	90	157	255	3,03	**0174.13.43**
DN 125	DN 100	105	176	290	3,65	**0174.13.56**
DN 150	DN 70	80	177	255	3,87	**0174.13.55**
DN 150	DN 100	95	196	290	4,41	**0174.13.57**
DN 150	DN 125	120	230	340	5,74	**0174.13.58**
DN 200	DN 100	100	240	325	9,35	**0174.13.59**
DN 200	DN 125	130	274	380	10,92	**0174.13.60**
DN 200	DN 150	150	284	420	11,50	**0174.13.61**
Angle α: 70°						
DN 70	DN 50	85	72	150	0,77	**0174.13.67**
DN 100	DN 50	95	87	180	1,43	**0174.13.68**
DN 100	DN 70	110	90	200	1,69	**0174.13.69**
Angle α: 87°						
DN 50	DN 40	75	46	120	0,42	**0174.13.70**
DN 70	DN 40	95	57	140	0,68	**0174.13.71**
DN 70	DN 50	100	61	150	0,75	**0174.13.72**
DN 80	DN 50	109	69,5	165	1,10	**0174.13.73**
DN 100	DN 40	115	72	175	1,37	**0174.13.76**
DN 100	DN 50	115	76	180	1,39	**0174.13.77**
DN 100	DN 70	125	80	200	1,65	**0174.13.78**
DN 100	DN 80	135	81	220	1,80	**0174.13.79**
DN 125	DN 50	125	91	200	2,35	**0174.13.74**
DN 125	DN 70	140	95	225	2,67	**0174.13.75**
DN 125	DN 100	155	105	255	3,20	**0174.13.81**
DN 150	DN 70	140	109	225	3,20	**0174.13.80**
DN 150	DN 100	155	119	255	3,85	**0174.13.82**
DN 150	DN 125	175	134	290	4,61	**0174.13.83**

ACO GM-X double branch



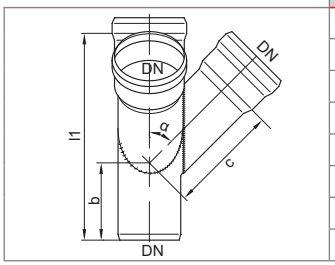
Nominal width	b [mm]	Dimensions c [mm]	l1 [mm]	Weight [kg]	Article No.
Angle α: 45°					
DN 50	65	90	150	0,75	**0174.13.89**
DN 70	85	115	200	1,44	**0174.13.91**
DN 100	100	155	265	3,18	**0174.13.84**
Angle α: 87°					
DN 50	80	50	130	0,59	**0174.13.97**
DN 70	110	65	175	1,19	**0174.13.99**
DN 100	140	90	230	2,66	**0174.13.93**

ACO GM-X reducing double branch



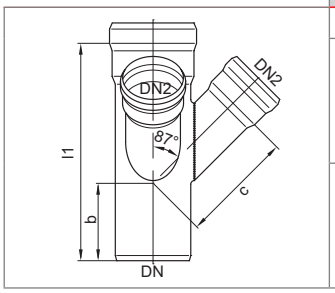
Nominal width DN	Nominal width DN2	b [mm]	Dimensions c [mm]	l1 [mm]	Weight [kg]	Article No.
Angle α: 45°						
DN 70	DN 50	75	106	175	1,18	**0174.13.90**
DN 100	DN 70	90	136	230	2,47	**0174.13.85**
DN 125	DN 100	105	176	290	4,38	**0174.13.86**
DN 150	DN 100	95	196	290	5,12	**0174.13.87**
Angle α: 87°						
DN 70	DN 50	100	61	150	1,00	**0174.13.98**
DN 100	DN 70	125	80	200	1,89	**0174.13.94**
DN 125	DN 100	155	105	255	3,67	**0174.13.95**

ACO GM-X double corner branch



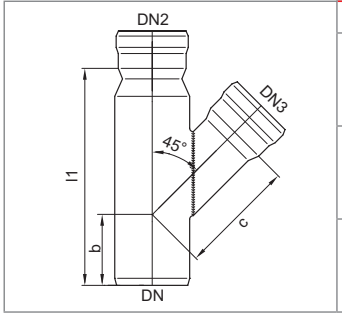
Nominal width	Dimensions b [mm]	Dimensions c [mm]	Dimensions l1 [mm]	Weight [kg]	Article No.
Angle α: 45°					
DN 50	65	90	150	0,75	**0174.14.01**
Angle α: 70°					
DN 50	70	60	130	0,61	**0174.14.02**
Angle α: 87°					
DN 50	80	50	130	0,59	**0174.14.06**
DN 70	110	65	175	1,19	**0174.14.08**
DN 100	140	90	230	2,66	**0174.14.03**

ACO GM-X reducing double corner branch



Nominal width DN	Nominal width DN2	Dimensions b [mm]	Dimensions c [mm]	Dimensions l1 [mm]	Weight [kg]	Article No.
Angle α: 87°						
DN 70	DN 50	100	61	150	1,00	**0174.14.07**
DN 100	DN 70	125	80	200	1,89	**0174.14.04**

ACO GM-X transition branch



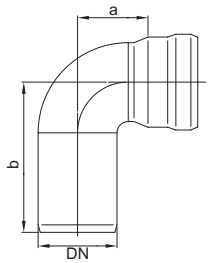
Nominal width DN	Nominal width DN2	Nominal width DN3	Dimensions b [mm]	Dimensions c [mm]	Dimensions l1 [mm]	Weight [kg]	Article No.
Angle α: 45°							
DN 50	DN 40	DN 40	50	79	150	0,48	**0174.14.09**
DN 50	DN 40	DN 40	65	90	170	0,58	**0174.14.10**
DN 70	DN 50	DN 50	75	106	200	0,85	**0174.14.11**

ACO GM-X angle bends

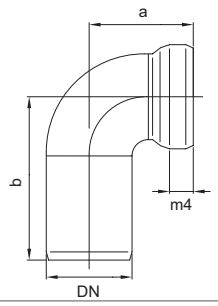
Product information

- Pursuant to DIN EN 1123
- Galvanised steel
- With additional alkyd melamine resin based internal coating

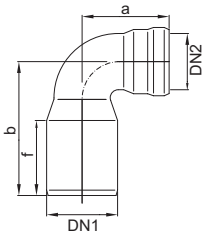
ACO GM-X angle bend with 1A push-fit connection

	Nominal width	Dimensions a [mm]	Dimensions b [mm]	Weight [kg]	Article No.
	DN 40	35	80	0,22	**0174.12.30**
	DN 50	45	100	0,35	**0174.12.31**
	DN 70	60	120	0,71	**0174.12.32**
	DN 80	70	130	1,12	**0174.12.33**
	DN 100	91	161	1,63	**0174.12.34**

ACO GM-X angle bend with 4A short socket

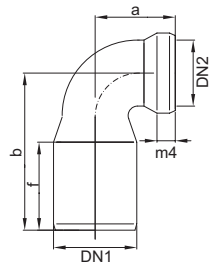
	Nominal width	Dimensions a [mm]	Dimensions b [mm]	Dimensions m4 [mm]	Weight [kg]	Article No.
	DN 40	35	80	16	0,22	**0174.12.35**
	DN 50	45	100	19	0,32	**0174.12.36**

ACO GM-X reducing angle bend with 1A push-fit connection

	Nominal width DN	Nominal width DN2	Dimensions a [mm]	Dimensions b [mm]	Dimensions f [mm]	Weight [kg]	Article No.
	DN 50	DN 40	35	100	55	0,28	**0174.12.37**
	DN 70	DN 50	45	140	70	0,55	**0174.12.38**

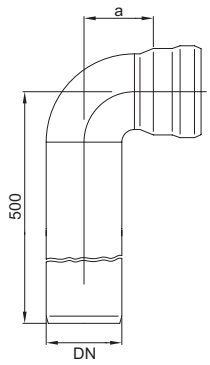
ACO GM-X reducing angle bend with 4A short socket

Nominal width DN	Nominal width DN2	Dimensions a [mm]	Dimensions b [mm]	Dimensions f [mm]	Dimensions m4 [mm]	Weight [kg]	Article No.
DN 50	DN 40	35	100	55	16	0,26	**0174.12.39**



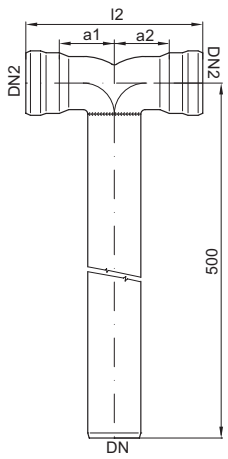
ACO GM-X basin connection with 1A push-fit connection

Nominal width	Dimensions a [mm]	Weight [kg]	Article No.
DN 40	35	0,89	**0174.15.01**
DN 50	45	1,16	**0174.15.02**



ACO GM-X Y-branch T-piece with 1A push-fit connection

Nominal width DN	Nominal width DN2	Nominal width DN3	Dimensions a1 [mm]	Dimensions a2 [mm]	Weight [kg]	Article No.
DN 40	DN 40	DN 40	40	40	0,98	**0174.15.03**
DN 50	DN 40	DN 40	40	40	1,18	**0174.15.04**
DN 50	DN 50	DN 50	42	42	1,30	**0174.15.05**

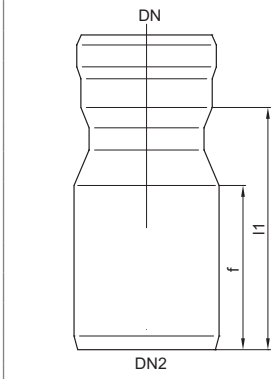


ACO GM-X transition fittings

Product information

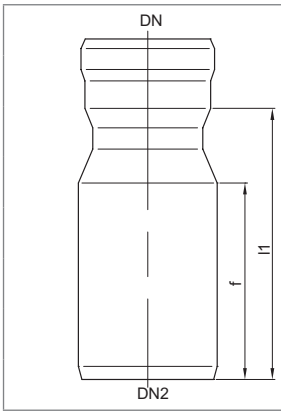
- With 1A push-fit connections
- Pursuant to DIN EN 1123
- Galvanised steel
- With additional alkyd melamine resin based internal coating

ACO GM-X transition fitting, concentric



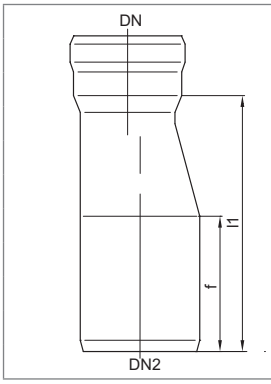
Nominal width DN	Nominal width DN2	Dimensions f [mm]	Dimensions l1[mm]	Weight [kg]	Article No.
DN 40	DN 50	60	85	0,21	**0174.12.41**
DN 40	DN 70	70	120	0,40	**0174.12.42**
DN 50	DN 70	70	110	0,36	**0174.12.44**
DN 50	DN 100	100	160	0,83	**0174.12.43**
DN 70	DN 80	80	110	0,50	**0174.12.46**
DN 70	DN 100	100	140	0,88	**0174.12.47**
DN 70	DN 125	100	160	1,33	**0174.12.49**
DN 80	DN 100	100	140	1,30	**0174.12.48**
DN 100	DN 125	100	160	1,58	**0174.12.50**
DN 100	DN 150	110	170	2,02	**0174.12.51**
DN 100	DN 200	140	250	2,05	**0174.75.51**
DN 125	DN 150	100	150	2,12	**0174.12.52**
DN 125	DN 200	150	255	3,96	**0174.12.53**
DN 150	DN 200	150	235	4,27	**0174.12.54**
DN 200	DN 200	160	280	8,20	**0174.12.56**

ACO GM-X transition fitting, concentric with elongated pointed end



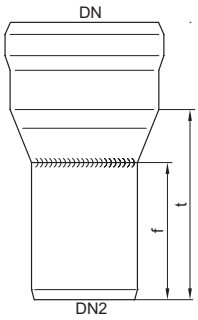
Nominal width DN	Nominal width DN2	Dimensions f [mm]	Dimensions l1[mm]	Weight [kg]	Article No.
DN 40	DN 50	75	100	0,35	**0174.13.06**
DN 50	DN 70	90	130	0,50	**0174.13.08**
DN 70	DN 80	105	135	1,00	**0174.13.09**
DN 70	DN 100	115	155	1,05	**0174.13.10**
DN 80	DN 100	115	155	1,05	**0174.13.11**
DN 100	DN 125	135	195	2,35	**0174.13.12**
DN 125	DN 150	120	170	2,50	**0174.13.13**
DN 150	DN 200	170	255	4,50	**0174.13.14**

ACO GM-X transition fitting, eccentric



Nominal width DN	Nominal width DN2	Dimensions f [mm]	Dimensions l1[mm]	Weight [kg]	Article No.
DN 40	DN 50	60	110	0,27	**0174.12.57**
DN 40	DN 70	70	115	0,41	**0174.12.58**
DN 50	DN 70	80	140	0,49	**0174.12.59**
DN 50	DN 100	100	157	0,89	**0174.12.61**
DN 70	DN 80	75	135	0,70	**0174.12.60**
DN 70	DN 100	100	160	1,08	**0174.12.62**
DN 80	DN 100	100	165	1,60	**0174.12.63**
DN 100	DN 125	100	182	1,87	**0174.12.64**
DN 100	DN 150	105	194	2,55	**0174.12.65**
DN 125	DN 150	105	210	2,66	**0174.12.66**
DN 150	DN 200	140	235	5,20	**0174.12.67**

ACO GM-X optimising fitting

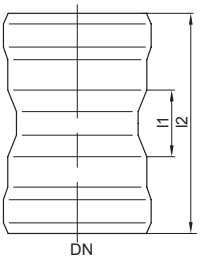
	Nominal width DN	Nominal width DN2	Dimensions f [mm]	Dimensions t [mm]	Weight [kg]	Article No.
	DN 50	DN 40	50	72	0,21	**0174.12.68**
	DN 70	DN 40	55	95	0,40	**0174.12.69**
	DN 70	DN 50	75	105	0,48	**0174.12.70**
	DN 80	DN 50	73	125	0,55	**0174.12.71**
	DN 80	DN 70	90	120	0,65	**0174.12.72**
	DN 100	DN 70	85	130	0,85	**0174.12.73**
	DN 100	DN 80	105	130	0,95	**0174.12.74**
	DN 125	DN 100	110	160	1,60	**0174.12.75**
	DN 150	DN 125	115	220	1,65	**0174.12.76**
	DN 200	DN 150	125	215	1,46	**0174.12.77**

ACO GM-X coupling socket fittings

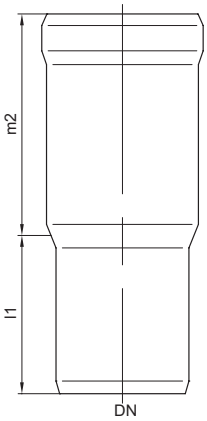
Product information

- Pursuant to DIN EN 1123
- Galvanised steel
- With additional alkyd melamine resin based internal coating

ACO GM-X coupling socket fittings with two 1A push-fit connections

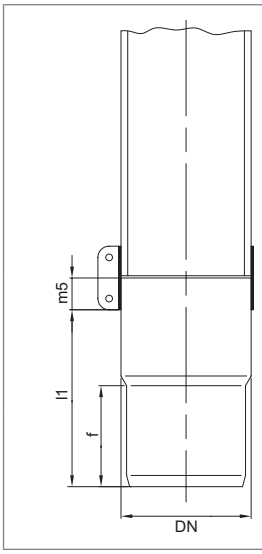
	Nominal width	Dimensions l1 [mm]	Dimensions l2 [mm]	Weight [kg]	Article No.
	DN 40	16	76	0,14	**0174.14.47**
	DN 50	18	94	0,22	**0174.14.48**
	DN 70	25	135	0,45	**0174.14.49**
	DN 80	25	145	0,60	**0174.14.50**
	DN 100	40	180	0,97	**0174.14.51**
	DN 125	40	190	1,61	**0174.14.52**
	DN 150	40	200	2,12	**0174.14.53**
	DN 200	50	290	5,70	**0174.14.54**

ACO GM-X push-in connection with 2A long socket

	Nominal width	Dimensions l1 [mm]	Dimensions l2 [mm]	Weight [kg]	Article No.
	DN 40	50	70	0,20	**0174.14.55**
	DN 50	60	90	0,32	**0174.14.56**
	DN 70	70	120	0,58	**0174.14.57**
	DN 80	75	135	0,80	**0174.14.58**
	DN 100	90	150	1,21	**0174.14.59**
	DN 125	100	160	2,17	**0174.14.60**
	DN 150	115	170	2,86	**0174.14.61**
	DN 200	150	250	7,87	**0174.14.62**

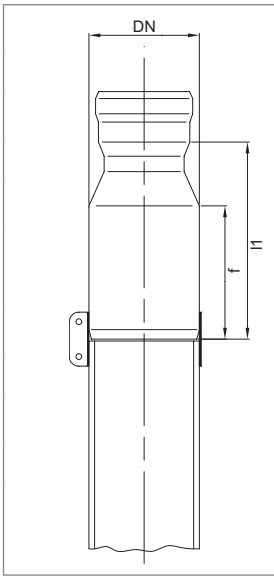
ACO GM-X connecting fittings

ACO GM-X connecting fittings for transitions between cast iron drainage pipes DIN 19522 (spigot) and ACO GM-X drain pipes



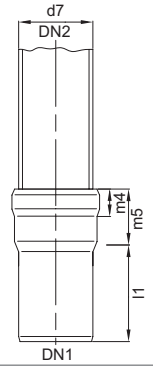
Nominal width To GM-X DN	Nominal width To spigot stoneware DN2	Dimensions f [mm]	Dimensions l1 [mm]	Dimensions m5 [mm]	Weight [kg]	Article No.
DN 50	DN 50	45	70,5	22,5	0,23	**0174.14.25**
DN 70	DN 70	60	85,5	22,5	0,36	**0174.14.26**
DN 100	DN 100	75	107,5	25,5	0,80	**0174.14.27**
DN 200	DN 200	130	163	37	3,40	**0174.14.28**

ACO GM-X connecting fitting for transitions between ACO GM-X drain pipe and cast iron drain pipe DIN 19522 (spigot).

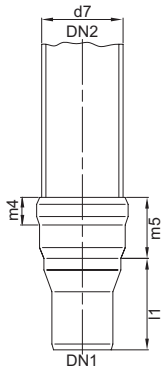


Nominal width To GM-X DN	Nominal width To spigot stoneware DN2	Dimensions f [mm]	Dimensions l1 [mm]	Weight [kg]	Article No.
DN 40	DN 50	70	100	0,25	**0174.12.79**
DN 50	DN 50	70	95	0,30	**0174.12.80**
DN 50	DN 70	75	130	0,46	**0174.12.81**
DN 70	DN 70	75	105	0,52	**0174.12.82**
DN 70	DN 80	75	105	0,70	**0174.76.76**
DN 50	DN 100	75	150	0,83	**0174.12.84**
DN 70	DN 100	80	120	0,88	**0174.12.85**
DN 100	DN 100	80	110	0,97	**0174.12.86**
DN 100	DN 125	100	160	1,58	**0174.12.87**
DN 100	DN 150	90	170	2,02	**0174.12.88**
DN 125	DN 150	100	150	2,17	**0174.12.89**
DN 150	DN 200	120	210	3,10	**0174.12.90**
DN 200	DN 200	140	170	5,18	**0174.12.91**

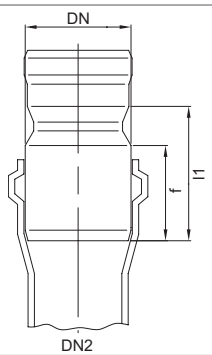
ACO GM-X connecting fitting for transition between polymer pipe pointed ends and ACO GM-X drain pipe

	Nominal width		Dimensions			Weight	Article No.
	To GM-X	To KA-HT/KG					
	DN 1	DN2	d7 [mm]	l1 [mm]	m5 [mm]	[kg]	
	DN 70	DN 70	78	95	55	0,47	**0174.14.29**
	DN 100	DN 100	115	110	70	1,00	**0174.14.30**

ACO GM-X connection fittings for transitions between plastic pipe pointed end pursuant to DIN 19535 (PE < DN70 and ACO GM-X drain pipe)

	Nominal width		Dimensions			Weight	Article No.
	To GM-X	To KA-HT/KG					
	DN 1	DN2	d7 [mm]	l1 [mm]	m5 [mm]	[kg]	
	DN 40	DN 40	56	67	38	0,22	**0174.75.88**
	DN 50	DN 50	58	52	38	0,19	**0174.14.32**

ACO GM-X connection fitting transitions between ACO GM-X drain pipe and plastic pipe pointed end

	Nominal width		Dimensions		Weight	Article No.
	To GM-X	To KA-HT/KG				
	DN 1	DN2	d7 [mm]	m5 [mm]	[kg]	
	DN 40	DN 50	45	60	0,16	**0174.12.92**
	DN 50	DN 50	45	60	0,20	**0174.12.93**
	DN 50	DN 70	60	100	0,36	**0174.12.94**
	DN 70	DN 70	60	95	0,47	**0174.12.95**
	DN 70	DN 100	80	120	0,84	**0174.12.96**
	DN 100	DN 125	85	140	1,20	**0174.12.99**
	DN 125	DN 125	85	130	1,72	**0174.13.00**
	DN 125	DN 150	100	150	2,17	**0174.12.52**
	DN 200	DN 200	110	150	4,73	**0174.13.03**

ACO GM-X connection piece for transitions between ACO GM-X drain pipe and plastic pipe coupling socket pursuant to DIN 19535 (PE) < DN 70

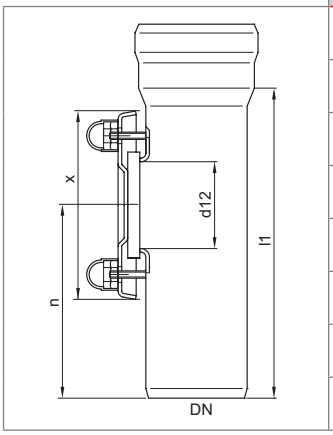
Nominal width		Dimensions		Weight	Article No.
To GM-X	To KA-HT/KG				
		f [mm]	l1 [mm]	[kg]	
DN 40	DN 50	50	90	0,23	**0174.75.89**
DN 50	DN 50	50	62	0,22	**0174.75.90**

ACO GM-X cleaning pipe

Product information

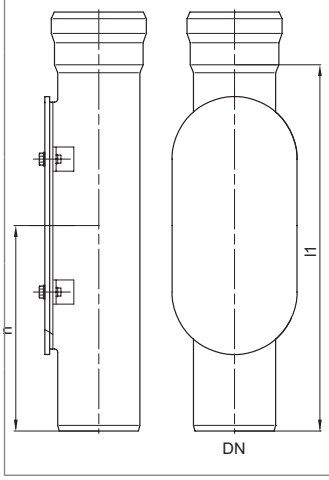
- Pursuant to DIN EN 1123
- Galvanised steel
- With additional alkyd melamine resin based internal coating

ACO GM-X cleaning pipe with a round cleaning opening



Nominal width	Dimensions d12 [mm]	l1 [mm]	n [mm]	x [mm]	Weight [kg]	Article No.
DN 40	36	125	80	78	0,32	**0174.14.33**
DN 50	45	150	95	86	0,46	**0174.14.34**
DN 70	61	200	125	100	0,88	**0174.14.35**
DN 80	76	210	135	124	1,00	**0174.14.36**
DN 100	98	265	165	165	2,09	**0174.14.37**
DN 125	128	290	180	192	3,65	**0174.14.38**
DN 150	128	320	190	192	4,68	**0174.14.39**
DN 200	128	420	260	192	10,16	**0174.14.40**

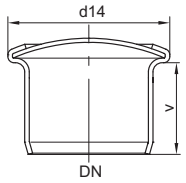
ACO GM-X cleaning pipe with elongated cleaning opening



Nominal width	Dimensions l1 [mm]	n [mm]	Weight [kg]	Article No.
DN 100	450	255	4,43	**0174.14.41**
DN 125	455	260	6,05	**0174.14.42**
DN 150	460	265	7,12	**0174.14.43**
DN 200	500	285	13,40	**0174.14.44**
DN 250	550	340	17,50	**0174.14.45**

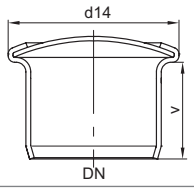
ACO GM-X sealing plugs

ACO GM-X sealing plug, steel



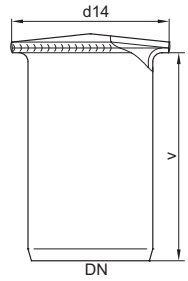
Nominal width	Dimensions d 14 [mm]	Dimensions l1[mm]	Weight [kg]	Article No.
DN 40	53	30	0,11	**0174.44.78**
DN 50	68	38	0,14	**0174.44.79**
DN 70	90	55	0,30	**0174.44.80**
DN 80	110	60	0,45	**0174.44.81**
DN 100	117	65	0,54	**0174.44.82**
DN 125	157	75	1,04	**0174.44.83**
DN 150	190	75	1,43	**0174.44.84**
DN 250	292	130	4,31	**0174.44.85**

ACO GM-X sealing plug, plastic



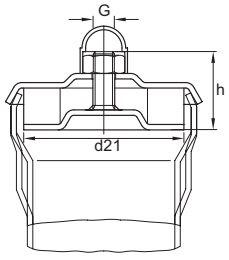
Nominal width	Dimensions d 14 [mm]	Dimensions v [mm]	Weight [kg]	Article No.
DN 40	50	30	0,05	**0174.44.93**
DN 50	70	35	0,05	**0174.44.94**
DN 70	84	52	0,10	**0174.44.95**
DN 100	116	68	0,10	**0174.44.96**

ACO GM-X sealing plug, steel, with pointed end for safety clamps/shackles



Nominal width	Dimensions d 14 [mm]	Dimensions v [mm]	Weight [kg]	Article No.
DN 40	53	70	0,17	**0174.45.32**
DN 50	68	85	0,23	**0174.45.33**
DN 70	90	100	0,43	**0174.45.34**
DN 80	110	105	0,63	**0174.45.35**
DN 100	117	120	0,82	**0174.45.36**
DN 120	157	125	1,47	**0174.45.37**
DN 150	190	125	1,92	**0174.45.38**

ACO GM-X sealing plug with threaded connection

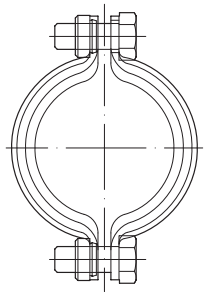


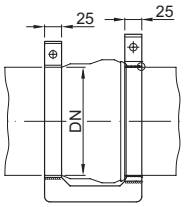
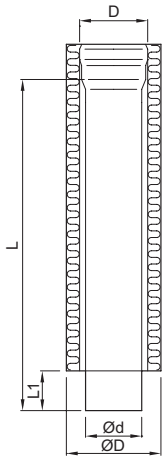
Nominal width	Dimensions d 21 [mm]	Dimensions G	Dimensions h [mm]	Weight [kg]	Article No.
DN 40	54	M 6	24	0,10	**0174.44.86**
DN 50	67	M 6	28	0,15	**0174.44.87**
DN 70	88	M 8	30	0,20	**0174.44.88**
DN 80	108	M 8	33	0,26	**0174.44.89**
DN 100	126	M 12	40	0,50	**0174.44.90**
DN 125	158	M 16	45	0,90	**0174.44.91**
DN 150	190	M 16	50	1,20	**0174.44.92**

ACO GM-X sealing elements

	Article No.							
	DN 40	DN 50	DN 70	DN 80	DN 100	DN 125	DN 150	DN 200
For GM-X pipes	**0174.14.67**	**0174.14.68**	**0174.14.69**	**0174.14.70**	**0174.14.71**	**0174.14.73**	**0174.14.74**	**0174.44.75**
For transition to 32 mm pipe	**0174.14.83**	**0174.14.84**	—	—	—	—	—	—
For transition between 38 mm pipe and 40 mm plastic siphon	**0174.14.85**	**0174.14.86**	—	—	—	—	—	—
For transition between 48 mm pipe and 50 mm plastic siphon	—	**0174.14.87**	—	—	—	—	—	—
For transition between KA coupling socket DN 100 and GM-X pipe DN 100	—	—	—	—	**0174.14.80**	—	—	—
For transition between GM-X coupling socket DN 80 and KA pipe DN 80	—	—	—	**0174.14.82**	—	—	—	—
For transition between GM-X special coupling socket DN 100 and KA pipe 110 mm	—	—	—	—	**0174.14.72**	—	—	—
For transition between GM-X coupling socket DN 125 and KA pipe 125 mm	—	—	—	—	—	**0174.14.81**	—	—

ACO GM-X accessories

	Description	Fits	Description	Article No.
	Safety clamp	■ GM-X drain pipe ■ GM-X filling and venting pipe for heating oil tanks DN 40 DN 50 DN 70 DN 80 DN 100 DN 125	■ Against axial thrust and for suspended pipes	**0174.44.97** **0174.44.98** **0174.44.99** **0174.45.00** **0174.45.01** **0174.45.02**

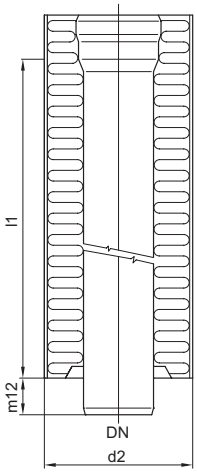
	Description	Fits	Description	Article No.
	Safety clamp	■ GM-X drain pipe DN 40 DN 50 DN 70 DN 80 DN 100 DN 125	■ With recess for connecting pipe/ branch	**0174.45.03** **0174.45.04** **0174.45.05** **0174.45.06** **0174.45.07** **0174.45.08**
	Safety shackle	■ GM-X drain pipe DN 150 DN 200		**0174.45.09** **0174.45.10**
	Pipe clamp	■ GM-X drain pipe and compound pipe DN 40 – M 8 thread DN 50 – M 8 thread DN 70 – M 8 thread DN 80 – M 10 thread DN 100 – M 10 thread DN 125 – M 12 thread DN 150 – M 12 thread DN 200 – M 12 thread	■ For threaded pins or hanger bolts ■ Without noise insulation collar	**0174.45.79** **0174.45.80** **0174.45.81** **0174.45.82** **0174.45.83** **0174.45.84** **0174.45.85** **0174.45.86**
	Pipe clamp	■ GM-X drain pipe and compound pipe DN 40 – M 8 thread DN 50 – M 8 thread DN 70 – M 8 thread DN 80 – M 10 thread DN 100 – M 10 thread DN 125 – M 12 thread DN 150 – M 12 thread DN 200 – M 12 thread	■ For threaded pins or hanger bolts ■ With noise insulation collar	**0174.46.09** **0174.46.10** **0174.46.11** **0174.46.12** **0174.46.13** **0174.46.14** **0174.46.15** **0174.46.16**
	Fire protection moulding	■ GM-X drain pipe and compound pipe	■ Fire resistance class R30-R90 for creating fire proof barriers around pipe ducts ■ Length: 250 mm DN 40 DN 50 DN 70 DN 80 DN 100 DN 125 DN 150	 **0174.77.17** **0174.77.18** **0174.77.19** **0174.77.20** **0174.77.21** **0174.77.22** **0174.77.23**

ACO GM-X compound pipe

Product information:

- Pursuant to DIN EN 1123
- Galvanised steel
- Alkyd melamine resin based internal polymer coating
- Insulating layer (PU hard foam, CFC-free)
- Outer pipe (galvanised steel)

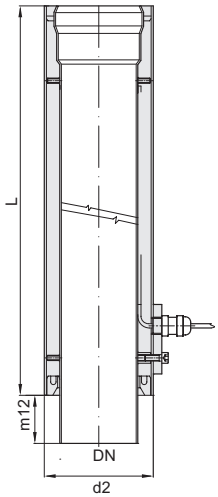
ACO GM-X compound pipe standard version



Nominal width	External diameter d2 [mm]	Weight [kg]	Article No.
Length (l1): 260 mm			
DN 40	89	1,5	**0174.50.30**
DN 50	89	1,7	**0174.50.31**
DN 70	102	2,4	**0174.50.32**
DN 80	134	3,3	**0174.50.33**
DN 100	134	3,6	**0174.50.34**
DN 125	164	4,9	**0174.50.35**
DN 150	204	6,0	**0174.50.36**
DN 200	273	8,0	**0174.50.37**
Length (l1): 510 mm			
DN 40	89	3,0	**0174.50.38**
DN 50	84	3,5	**0174.50.39**
DN 70	102	4,6	**0174.50.40**
DN 80	134	6,4	**0174.50.41**
DN 100	134	7,1	**0174.50.42**
DN 125	164	9,1	**0174.50.43**
DN 150	204	11,5	**0174.50.44**
DN 200	273	18,7	**0174.50.45**
Length (l1): 760 mm			
DN 40	89	4,4	**0174.50.46**
DN 50	89	5,0	**0174.50.47**
DN 70	102	6,8	**0174.50.48**
DN 80	134	9,6	**0174.50.49**
DN 100	134	10,6	**0174.50.50**
DN 125	164	14,0	**0174.50.51**
DN 150	204	17,5	**0174.50.52**
Length (l1): 1010 mm			
DN 40	89	6,1	**0174.50.53**
DN 50	89	6,5	**0174.50.54**
DN 70	102	8,9	**0174.50.55**
DN 80	134	13,2	**0174.50.56**
DN 100	134	12,6	**0174.50.57**
DN 125	164	17,8	**0174.50.58**
DN 150	204	23,0	**0174.50.59**
DN 200	273	38,3	**0174.50.60**
Length (l1): 1510 mm			
DN 40	89	9,1	**0174.50.61**
DN 50	89	9,5	**0174.50.62**
DN 70	102	13,4	**0174.50.63**
DN 80	134	19,2	**0174.50.64**
DN 100	134	19,8	**0174.50.65**
DN 125	164	27,0	**0174.50.66**
DN 150	204	34,6	**0174.50.67**
DN 200	273	56,0	**0174.50.68**

	Nominal width	External diameter d2 [mm]	Weight [kg]	Article No.
	Length (l1): 2010 mm			
	DN 40	89	12,0	**0174.50.69**
	DN 50	89	12,5	**0174.50.70**
	DN 70	102	18,0	**0174.50.71**
	DN 80	134	26,2	**0174.50.72**
	DN 100	134	25,3	**0174.50.73**
	DN 125	164	35,5	**0174.50.74**
	DN 150	204	46,0	**0174.50.75**
	DN 200	273	73,7	**0174.50.76**
	Length (l1): 3010 mm			
	DN 40	89	18,0	**0174.50.86**
	DN 50	89	19,5	**0174.50.87**
	DN 70	102	27,0	**0174.50.88**
	DN 80	134	37,0	**0174.50.89**
	DN 100	134	37,8	**0174.50.90**
	DN 125	164	53,5	**0174.50.91**
	DN 150	204	69,0	**0174.50.92**
	Length (l1): 3510 mm			
	DN 40	89	20,5	**0174.50.93**
	DN 50	89	21,5	**0174.50.94**
	DN 70	102	30,3	**0174.50.95**
	DN 100	134	45,0	**0174.50.96**
	DN 125	164	62,0	**0174.50.97**
	DN 150	204	80,0	**0174.50.98**

ACO GM-X compound pipe with self-regulating auxiliary heating, direct connection, without pre-transformer

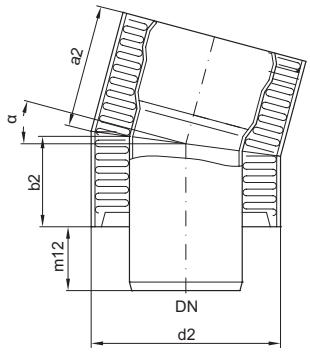
	Nominal width	External diameter d2 [mm]	Weight [kg]	Article No.
	**Length: 1000 mm**			
	DN 70	102	9,3	**0174.46.23**
	DN 100	134	14,2	**0174.46.24**
	DN 125	164	20,1	**0174.46.25**
	Length: 2000 mm			
	DN 100	134	27,9	**0174.46.27**
	DN 125	164	39,2	**0174.46.28**
	Length: 3000 mm			
	DN 70	102	27,3	**0174.46.29**
	DN 100	134	41,8	**0174.46.30**
	DN 125	164	59,0	**0174.46.31**

ACO GM-X compound pipe bends

Product information:

- Pursuant to DIN EN 1123
- Galvanised steel
- Alkyd melamine resin based internal polymer coating
- Insulating layer (PU hard foam, CFC-free)
- Outer pipe (galvanised steel)

ACO GM-X compound pipe bends

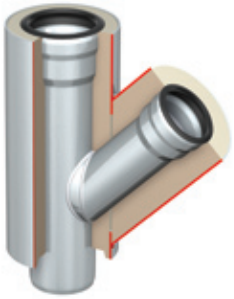


Nominal width	Dimensions a2 [mm]	b2 [mm]	d2 [mm]	Weight [kg]	Article No.
Angle α: 15°					
DN 50	52	30	52	0,6	**0174.51.45**
DN 70	71,5	31,5	71,5	1,0	**0174.51.46**
DN 100	104	44	104	2,6	**0174.51.47**
DN 125	110	45	110	3,5	**0174.51.48**
DN 150	125	55	125	4,3	**0174.51.49**
Angle α: 30°					
DN 40	46	40	46	0,5	**0174.75.52**
DN 50	57	44	57	0,7	**0174.51.50**
DN 70	78,5	38,5	76,5	1,1	**0174.51.51**
DN 100	114	54	114	2,7	**0174.51.52**
DN 125	122	57	122	3,9	**0174.51.53**
DN 150	145	75	145	5,6	**0174.51.54**
Angle α: 45°					
DN 40	49	39	49	0,6	**0174.51.55**
DN 50	62	49	62	0,8	**0174.51.56**
DN 70	86	46	86	1,2	**0174.51.57**
DN 80	118	68	118	2,7	**0174.51.58**
DN 100	124	64	124	3,0	**0174.51.59**
DN 125	135	70	135	4,3	**0174.51.60**
DN 150	167	97	167	6,8	**0174.51.61**
DN 200	282	162	282	20,0	**0174.51.64**
Angle α: 70°					
DN 50	72	60	72	0,9	**0174.51.65**
DN 70	100	60	100	1,6	**0174.51.66**
DN 100	144	84	144	3,5	**0174.51.67**
DN 125	161	96	161	5,0	**0174.51.68**
DN 150	210	140	210	8,6	**0174.51.69**
Angle α: 87°					
DN 40	84	54	84	0,8	**0174.51.71**
DN 50	82	69	82	1,0	**0174.51.72**
DN 70	113	73	113	1,8	**0174.51.73**
DN 80	165	115	165	3,7	**0174.51.74**
DN 100	161	101	161	4,0	**0174.51.75**
DN 125	184	119	184	5,6	**0174.51.77**
DN 150	250	180	250	10,0	**0174.51.78**
DN 200	450	330	450	32,8	**0174.51.79**

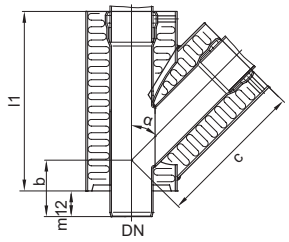
ACO GM-X compound pipe branches

Product information:

- Pursuant to DIN EN 1123
- Galvanised steel
- Alkyd melamine resin based internal polymer coating
- Insulating layer (PU hard foam, CFC-free)
- Outer pipe (galvanised steel)

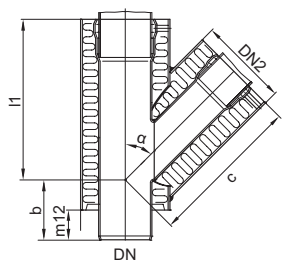


ACO GM-X single branches



Nominal width	Dimensions l1 [mm]	Dimensions b [mm]	Dimensions c [mm]	Weight [kg]	Article No.
Angle α: 45°					
DN 40	175	55	145	1,3	**0174.51.09**
DN 50	158	65	128	1,5	**0174.51.10**
DN 70	210	85	170	3,0	**0174.51.11**
DN 80	245	96	198	4,4	**0174.51.12**
DN 100	275	110	225	6,1	**0174.51.13**
DN 125	350	130	285	9,5	**0174.51.14**
DN 150	390	140	320	13,0	**0174.51.15**
DN 200	510	190	440	28,4	**0174.75.91**
Angle α: 87°					
DN 70	185	110	120	2,3	**0174.51.16**
DN 100	240	140	160	4,9	**0174.51.17**
DN 150	330	190	215	10,2	**0174.51.18**

ACO GM-X reducing single branches



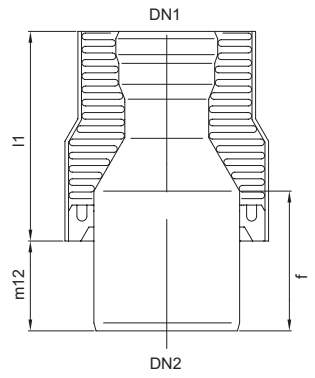
Nominal width DN	Nominal width DN2	Dimensions l1 [mm]	Dimensions b [mm]	Dimensions c [mm]	Weight [kg]	Article No.
Angle α: 45°						
DN 50	DN 40	190	60	153	1,8	**0174.51.20**
DN 70	DN 40	195	75	169	1,9	**0174.51.21**
DN 70	DN 50	185	75	144	2,0	**0174.51.22**
DN 80	DN 50	195	71,5	181,5	3,2	**0174.51.23**
DN 80	DN 70	225	86,5	182	3,7	**0174.51.24**
DN 100	DN 40	210	90	190	3,2	**0174.51.26**
DN 100	DN 50	225	86	182	3,7	**0174.51.27**
DN 100	DN 70	240	90	191	4,5	**0174.51.29**
DN 100	DN 80	275	110	207	5,4	**0174.51.31**
DN 125	DN 100	300	105	246	7,0	**0174.51.33**
DN 150	DN 100	300	95	266	8,5	**0174.51.34**
DN 150	DN 125	350	120	305	11,0	**0174.51.35**
DN 200	DN 100	335	100	310	15,6	**0174.51.36**
DN 200	DN 125	390	130	349	18,2	**0174.75.03**
DN 200	DN 150	430	150	364	19,6	**0174.51.37**
Angle α: 87°						
DN 70	DN 50	160	100	99	1,8	**0174.51.38**
DN 100	DN 70	210	125	135	3,5	**0174.51.39**
DN 125	DN 100	265	155	175	6,0	**0174.51.40**
DN 150	DN 100	265	155	189	7,0	**0174.51.41**
DN 150	DN 125	300	175	209	9,0	**0174.51.42**
DN 200	DN 100	305	195	220	13,5	**0174.51.43**
DN 200	DN 150	365	225	246	17,0	**0174.51.44**

ACO GM-X compound pipe transition fittings

Product information:

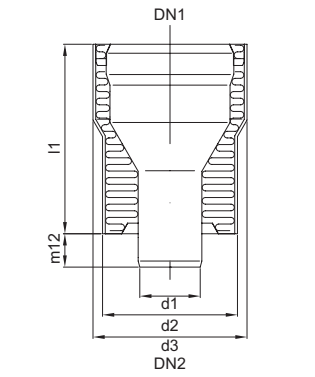
- Pursuant to DIN EN 1123
- Galvanised steel
- Alkyd melamine resin based internal polymer coating
- Insulating layer (PU hard foam, CFC-free)
- Outer pipe (galvanised steel)

ACO GM-X compound pipe transition fittings, concentric



Nominal width DN	Nominal width DN2	Dimensions b [mm]	Weight [kg]	Article No.
DN 40	DN 50	85	0,9	**0174.51.91**
DN 40	DN 70	105	1,0	**0174.51.92**
DN 50	DN 70	118	1,0	**0174.51.93**
DN 50	DN 80	113	1,3	**0174.75.53**
DN 70	DN 80	105	1,4	**0174.51.94**
DN 70	DN 100	150	1,9	**0174.51.96**
DN 80	DN 100	140	2,5	**0174.51.97**
DN 100	DN 125	170	3,2	**0174.51.98**
DN 125	DN 150	160	3,6	**0174.52.00**
DN 150	DN 200	205	7,4	**0174.52.01**

ACO GM-X optimisation fittings



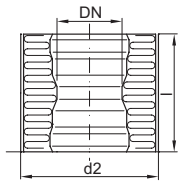
Nominal width DN	Nominal width DN2	Dimensions l1 [mm]	Dimensions d1 [mm]	Dimensions d2 [mm]	Dimensions d3 [mm]	Weight [kg]	Article No.
DN 50	DN 40	85	42	89	89	0,9	**0174.52.02**
DN 70	DN 40	125	42	89	102	1,0	**0174.52.03**
DN 70	DN 50	130	53	89	102	1,1	**0174.52.04**
DN 80	DN 50	185	53	89	134	1,4	**0174.52.05**
DN 80	DN 70	180	73	102	134	1,5	**0174.52.06**
DN 100	DN 70	155	73	102	134	2,0	**0174.52.07**
DN 125	DN 100	170	102	134	164	3,2	**0174.52.09**

ACO GM-X compound pipe coupling fittings and downpipe sockets

Product information:

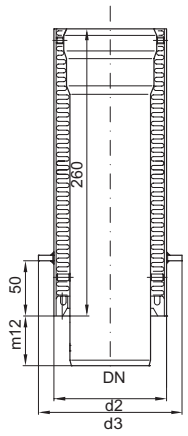
- Pursuant to DIN EN 1123
- Galvanised steel
- Alkyd melamine resin based internal polymer coating
- Insulating layer (PU hard foam, CFC-free)
- Outer pipe (galvanised steel)

ACO GM-X double coupling sockets



Nominal width	Dimensions l [mm]	Dimensions d2 [mm]	Weight [kg]	Article No.
DN 40	76	89	0,8	**0174.51.80**
DN 50	94	89	0,9	**0174.51.81**
DN 70	135	102	1,4	**0174.51.82**
DN 80	145	134	1,8	**0174.84.31**
DN 100	180	134	2,0	**0174.51.83**
DN 125	190	164	2,4	**0174.51.84**
DN 150	200	204	3,0	**0174.51.85**

ACO GM-X downpipe socket



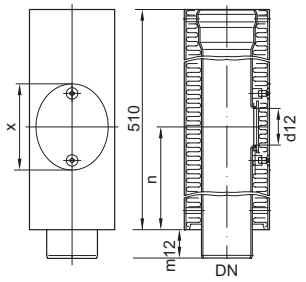
Nominal width	Dimensions d2 [mm]	Dimensions d3 [mm]	Weight [kg]	Article No.
DN 70	102	130	3,0	**0174.51.86**
DN 80	134	165	4,0	**0174.75.54**
DN 100	134	165	5,0	**0174.51.87**
DN 125	164	195	6,9	**0174.51.88**
DN 150	204	235	8,0	**0174.51.89**
DN 200	273	305	14,0	**0174.51.90**

ACO GM-X compound cleaning pipe

Product information:

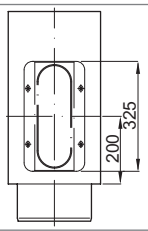
- Pursuant to DIN EN 1123
- Galvanised steel
- Alkyd melamine resin based internal polymer coating
- Insulating layer (PU hard foam, CFC-free)
- Outer pipe (galvanised steel)

ACO GM-X compound cleaning pipe with recessed round cleaning opening



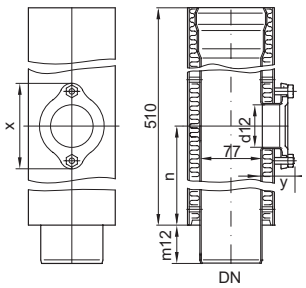
Nominal width	Dimensions d12 [mm]	Dimensions n [mm]	Weight x [mm]	Article No.
DN 50	39	310	90	**0174.46.33**
DN 70	50	295	95	**0174.46.34**
DN 100	50	280	105	**0174.46.35**
DN 125	70	275	130	**0174.46.36**
DN 150	78	270	150	**0174.46.37**

ACO GM-X compound cleaning pipe with elongate cleaning opening



Nominal width	Weight [kg]	Article No.
DN 200	18,5	**0174.46.38**

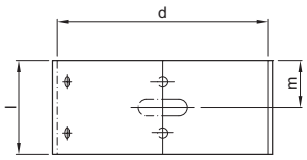
ACO GM-X compound cleaning pipe with protruding cleaning opening



Nominal width	Dimensions d12 [mm]	Dimensions n [mm]	Dimensions x [mm]	y [mm]	Article No.
DN 70	50	295	95	15	**0174.75.55**
DN 100	70	280	124	20	**0174.51.03**
DN 125	70	275	124	20	**0174.51.04**

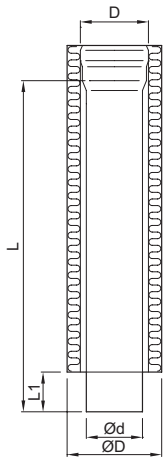
ACO GM-X axial thrust fastenings

ACO GM-X axial thrust fastenings, stainless steel



Nominal width	Dimensions			Number of fixing holes	Weight	Article No.
	l [mm]	d [mm]	m [mm]		[kg]	
DN 40	40	90	20	6	0,2	**0174.45.13**
DN 50	40	90	20	6	0,2	**0174.45.14**
DN 70	50	103	25	6	0,3	**0174.45.15**
DN 80	50	135	25	6	0,3	**0174.45.16**
DN 100	50	135	25	6	0,3	**0174.45.17**
DN 125	85	165	53	6	0,4	**0174.45.18**
DN 150	50	205	25	6	0,5	**0174.45.19**
DN 200	60	274	30	8	0,8	**0174.45.20**

ACO GM-X fire protection moulding

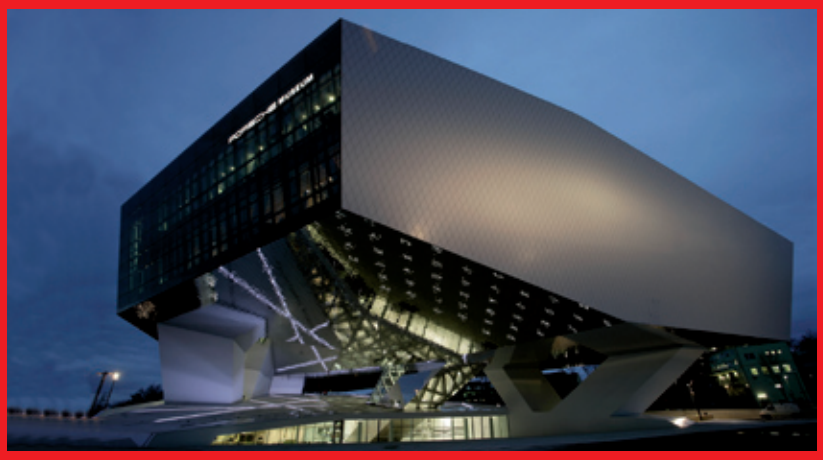


Designation	Fits	Description	Article No.
Fire protection moulding	■ GM-X drain pipe and compound pipe	■ Fire resistance class: R30 – R90 for creating fire proof barriers around pipe ducts ■ Length: 250 mm	
	DN 40		**0174.77.17**
	DN 50		**0174.77.18**
	DN 70		**0174.77.19**
	DN 80		**0174.77.20**
	DN 100		**0174.77.21**
	DN 125		**0174.77.22**
	DN 150		**0174.77.23**

References: ACO flat roof drainage

Airport, Stuttgart
10.000 m² roof
Execution: Müller Haustechnik, Horb
Planning: IB Rentschler & Riedesser, Filderstadt

BMW, Leipzig
85.000 m² roof
Execution: Sell Haustechnik, Helmbrechts
Planning: IB M+M, Böblingen



Porsche Museum, Stuttgart
2.000 m² roof
Execution: S. Zimmermann, Stuttgart
Planning: Interplan, Gerlingen

Rondo shopping centre,
Rendsburg/Büdelsdorf
11.000 m² roof
Execution: Heinrich Krumme
Gesellschaft für Heizungs- und
Sanitärtechnik mbH, Büdelsdorf
Planning: GM-X Projektierungsabteilung
ACO Haustechnik, Stadtlengsfeld

Meilenwerk Düsseldorf
19.000 m² roof
Execution: Zilisch Sanitär- und
Heizungstechnik GmbH + Co. KG,
Ahaus
Planning: Planungsbüro Hühne GmbH
Ingenieurbüro HLS, Pirna

Structured sales and marketing power for a broad spectrum – the ACO Group

ACO drainage systems for the Olympic stadium in Beijing

ACO surface drainage for Potsdamer Platz, Berlin

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ACO also boasts special solutions for sports grounds, gardening & landscaping, special stainless steel engineering, process engineering and foundry technology. ACO's high quality is based on the global expertise of the Group, intensive research and development, and special competence in processing its most important materials:

- Polymer concrete
- Stainless steel
- Cast iron
- Plastic
- Reinforced concrete

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- 31 production sites in 13 countries
- Turnover 2009: Euro 513 million

Events and seminars in the ACO Academy, Rendsburg/Büdelsdorf

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