System solutions for
Flat roofs - Syphonic drainage
Syphonic drainage

Gravity drainage

Parking deck drainage

Balcony and terrace drainage

Facade drainage

Pipe systems
Syphonic drainage
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 0.3–0.4 m 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:
- Diagram of the pipe systems
- Hydraulic calculations
- Material listing

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**
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
anwendungstechnik@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

\[ r_{0,5} \text{ in l/s hectare} \quad r_{0,100} \text{ in l/s hectare} \]

Flow coefficient \( C/\Psi \) __________

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

Sealing membrane manufacturer / type
- GM-X steel pipe
- GM-X compound pipe

Connection situation of the roof drain

Bitte angeben
\[ \Delta h_A \quad \text{cm} \quad \text{(Approach section minimum: 30–40 cm)} \]
\[ \Delta h \quad \text{cm} \]
\[ \Delta h \text{ available} \quad \text{cm} \]
\[ \Delta h \text{ available max} \quad \text{cm} \]
\[ b \quad \text{cm} \]

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 syphonic 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

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Material of drain body</th>
<th>Outlet inclination</th>
<th>required outflow value according to DIN</th>
<th>actual outflow value according to DIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 40</td>
<td>stainless steel</td>
<td>0°</td>
<td>3 l/s DIN</td>
<td>5.2 l/s DIN</td>
</tr>
<tr>
<td>DN 50</td>
<td>stainless steel</td>
<td>0°</td>
<td>6 l/s DIN</td>
<td>8.5 l/s DIN</td>
</tr>
<tr>
<td>DN 70</td>
<td>stainless steel</td>
<td>0°</td>
<td>12 l/s DIN</td>
<td>16 l/s DIN</td>
</tr>
<tr>
<td>DN 70</td>
<td>stainless steel</td>
<td>90°</td>
<td>12 l/s DIN</td>
<td>15 l/s DIN</td>
</tr>
<tr>
<td>DN 100</td>
<td>stainless steel</td>
<td>90°</td>
<td>–</td>
<td>39 l/s DIN</td>
</tr>
<tr>
<td>DN 50</td>
<td>cast iron</td>
<td>90°</td>
<td>5 l/s DIN</td>
<td>9 l/s DIN</td>
</tr>
<tr>
<td>DN 80</td>
<td>cast iron</td>
<td>90°</td>
<td>–</td>
<td>17 l/s DIN</td>
</tr>
</tbody>
</table>
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

Gravel layer
Sealing membrane
Ceiling (thickness pursuant to structural engineering specifications)

The gravel basket (75 mm height) can be raised in 65 mm steps using a height adapter. Please see page 76.

<table>
<thead>
<tr>
<th>DN 50</th>
<th>DN 80</th>
</tr>
</thead>
<tbody>
<tr>
<td>195</td>
<td>246</td>
</tr>
<tr>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

The outlet socket of the drain body must not be shortened on site

Extension heights in mm
Installation example reversed roof

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

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

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 76.

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

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

<table>
<thead>
<tr>
<th>DN 70</th>
<th>DN 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-250</td>
<td>25-300</td>
</tr>
<tr>
<td>88</td>
<td>98</td>
</tr>
<tr>
<td>370</td>
<td>370</td>
</tr>
</tbody>
</table>

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
   Length: 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

- Top frame with grating
- Gravel basket
- Loose flange
- Height adapter
- Impoundment pipe
- Top ring
- Upper part
- Sealing ring
- Insulating ring
- Levelling element
- Function part
- Drain body
- Flat roof heating
- Insulating body
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

### Core borehole dimensions

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Ø a [mm]</th>
<th>Ø c [mm]</th>
<th>b [mm]</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 50</td>
<td>300</td>
<td>150</td>
<td>30</td>
<td>7037.10.10</td>
</tr>
<tr>
<td>DN 80</td>
<td>380</td>
<td>200</td>
<td>35</td>
<td>7038.10.10</td>
</tr>
</tbody>
</table>

For drain body without insulating body

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Ø a [mm]</th>
<th>Ø c [mm]</th>
<th>b [mm]</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 50</td>
<td>315</td>
<td>220</td>
<td>45</td>
<td>7037.10.10</td>
</tr>
<tr>
<td>DN 80</td>
<td>430</td>
<td>270</td>
<td>65</td>
<td>7038.10.10</td>
</tr>
</tbody>
</table>

For drain body with insulating body

### Recess dimensions

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Type</th>
<th>Outlet inclination</th>
<th>Recess dimensions drain body without insulating body</th>
<th>Recess dimensions drain body with insulating body</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 50</td>
<td>Jet</td>
<td>90°</td>
<td>230 x 320 mm</td>
<td>320 x 320 mm</td>
</tr>
<tr>
<td>DN 80</td>
<td>Jet</td>
<td>90°</td>
<td>290 x 410 mm</td>
<td>450 x 450 mm</td>
</tr>
</tbody>
</table>
Additional components
For ACO Jet flat roof drains made of cast iron

<table>
<thead>
<tr>
<th>Scale drawing</th>
<th>Product description</th>
<th>Model</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Upper part" /></td>
<td><strong>Upper part</strong> 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.</td>
<td>DN 50</td>
<td>7047.10.25</td>
</tr>
<tr>
<td><img src="image2" alt="Insulating body" /></td>
<td><strong>Insulating body</strong> for flat roof drain with vertical outlet socket, foam glass</td>
<td>DN 50</td>
<td>7040.22.00</td>
</tr>
<tr>
<td><img src="image3" alt="Insulating ring" /></td>
<td><strong>Insulating ring</strong> for flat roof drain upper part, foam glass</td>
<td>DN 50</td>
<td>7040.12.00</td>
</tr>
<tr>
<td><img src="image4" alt="Gravel basket" /></td>
<td><strong>Gravel basket</strong> fits Jet flat roof drains made of cast iron, basket made of stainless steel with two fastening screws</td>
<td>DN 50</td>
<td>7040.02.00</td>
</tr>
<tr>
<td><img src="image5" alt="Upper part" /></td>
<td><strong>Upper part</strong> 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.</td>
<td>DN 80</td>
<td>7044.10.25</td>
</tr>
<tr>
<td><img src="image6" alt="Insulating body" /></td>
<td><strong>Insulating body</strong> for flat roof drain with vertical outlet socket, foam glass</td>
<td>DN 80</td>
<td>7040.21.00</td>
</tr>
<tr>
<td>Scale drawing</td>
<td>Product description</td>
<td>Model</td>
<td>Article No.</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------------------------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td><img src="image1" alt="Insulating ring" /></td>
<td>Insulating ring for flat roof drain upper part, foam glass</td>
<td>DN 80</td>
<td>7040.11.00</td>
</tr>
<tr>
<td><img src="image2" alt="Levelling element" /></td>
<td>Levelling element for flat roof drain upper part DN 50, DN 80, foam glass</td>
<td>DN 80</td>
<td>7040.01.00</td>
</tr>
<tr>
<td><img src="image3" alt="Impoundment pipe" /></td>
<td>Impoundment pipe 55 mm high, for converting a Jet flat roof drain to an emergency drain, including sealing ring</td>
<td>DN 50, one-piece and two-piece</td>
<td>7047.10.55</td>
</tr>
<tr>
<td><img src="image4" alt="Levelling element" /></td>
<td>Levelling element for flat roof drain upper part DN 50, DN 80, foam glass</td>
<td>DN 50, DN 80</td>
<td>7048.10.50</td>
</tr>
<tr>
<td><img src="image5" alt="Levelling element" /></td>
<td>Levelling element for flat roof drain upper part DN 50, DN 80, foam glass</td>
<td>DN 50, DN 80</td>
<td>7048.20.50</td>
</tr>
<tr>
<td><img src="image6" alt="Flat roof heating" /></td>
<td>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</td>
<td></td>
<td>7000.85.00</td>
</tr>
<tr>
<td><img src="image7" alt="Levelling element" /></td>
<td>Levelling element for flat roof drain upper part DN 50, DN 80, foam glass</td>
<td>DN 50, DN 80</td>
<td>7000.02.00</td>
</tr>
<tr>
<td><img src="image8" alt="Height adapter" /></td>
<td>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.</td>
<td>DN 50/DN 80</td>
<td>7000.11.00</td>
</tr>
<tr>
<td><img src="image9" alt="Top frame with grating" /></td>
<td>Top frame with grating Cast iron</td>
<td>DN 50, Class L15</td>
<td>7000.43.00</td>
</tr>
<tr>
<td><img src="image10" alt="Top frame with grating" /></td>
<td>Top frame with grating Cast iron</td>
<td>DN 80, Class M125</td>
<td>7000.46.00</td>
</tr>
</tbody>
</table>
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
- Sarnafil TG 66-15
  - for loose placement
  - for greened, gravelled roofs with foot and vehicle traffic
  - for roofs with additional loads
- Sikaplan 15 G
  - for loose placement with mechanical fixing
  - up to a roof gradient of maximum 20%
  - for roofs without additional loads

### Table: Core borehole dimensions

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Ø a</th>
<th>Ø c</th>
<th>b [mm]</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>For drain bodies without insulating bodies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN 70</td>
<td>340</td>
<td>90</td>
<td>10</td>
<td>1279.10.00</td>
</tr>
<tr>
<td>For drain bodies with insulating bodies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN 70</td>
<td>340</td>
<td>290</td>
<td>10</td>
<td>1279.15.00</td>
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<td></td>
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<td></td>
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<td>1279.17.00</td>
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<td>1279.15.40</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1279.17.40</td>
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</table>

### Table: Recess dimensions

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Type</th>
<th>Inclination</th>
<th>Recess dimensions drain body without insulating body</th>
<th>Recess dimensions drain body with insulating body</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 70</td>
<td>Jet</td>
<td>90°</td>
<td>120 x 260 mm</td>
<td>230 x 360 mm</td>
</tr>
</tbody>
</table>
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
- Sarnafil TG 66-15
- For loose placement
- For greened, gravelled roofs with foot and vehicle traffic
- For roofs with additional loads
- Sikaplan 15 G
- For loose placement with mechanical fixing
- Up to a roof gradient of maximum 20%
- For roofs without additional loads

### Core borehole dimensions

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<tbody>
<tr>
<td>DN 70</td>
<td>340</td>
<td>90</td>
<td>10</td>
<td>1279.20.00</td>
</tr>
</tbody>
</table>

For drain bodies without insulating bodies

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Type</th>
<th>Inclination</th>
<th>Recess dimensions drain body without insulating body</th>
<th>Recess dimensions drain body with insulating body</th>
</tr>
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<tbody>
<tr>
<td>DN 70</td>
<td>Jet</td>
<td>90°</td>
<td>120 x 260 mm</td>
<td>230 x 360 mm</td>
</tr>
</tbody>
</table>
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
- Sarnafil TG 66-15
  - for loose placement
  - for greened, gravelled roofs with foot and vehicle traffic
  - for roofs with additional loads
- Sikaplan 15 G
  - for loose placement with mechanical fixing
  - up to a roof gradient of maximum 20%
  - for roofs without additional loads

### Core borehole dimensions

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<th>Ø c [mm]</th>
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<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 100</td>
<td>340</td>
<td>110</td>
<td>10</td>
<td>1219.10.60</td>
</tr>
</tbody>
</table>

### Recess dimensions

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Type</th>
<th>Inclination</th>
<th>Recess dimensions drain body without insulating body</th>
<th>Recess dimensions drain body with insulating body</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 100</td>
<td>Jet</td>
<td>90°</td>
<td>150 x 290 mm</td>
<td>230 x 360 mm</td>
</tr>
</tbody>
</table>
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
- Sarnafil TG 66-15
  - for loose placement
  - for greened, gravelled roofs with foot and vehicle traffic
  - for roofs with additional loads
- Sikaplan 15 G
  - for loose placement with mechanical fixing
  - up to a roof gradient of maximum 20%
  - for roofs without additional loads

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 100 uninsulated</td>
<td>stainless steel</td>
<td>103</td>
<td>7.9</td>
<td>230</td>
<td>1219.20.60</td>
<td>1219.20.65</td>
<td>1219.20.69</td>
<td></td>
</tr>
<tr>
<td>DN 100 insulated (polystyrene)</td>
<td>stainless steel</td>
<td>103</td>
<td>7.9</td>
<td>230</td>
<td>1219.25.60</td>
<td>1219.25.65</td>
<td>1219.25.69</td>
<td></td>
</tr>
<tr>
<td>DN 100 insulated (rock wool)</td>
<td>stainless steel</td>
<td>103</td>
<td>7.9</td>
<td>230</td>
<td>1219.27.60</td>
<td>1219.27.65</td>
<td>1219.27.69</td>
<td></td>
</tr>
<tr>
<td>DN 100 uninsulated, heatable</td>
<td>stainless steel</td>
<td>103</td>
<td>8.1</td>
<td>230</td>
<td>1219.20.90</td>
<td>1219.20.95</td>
<td>1219.20.99</td>
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<tr>
<td>DN 100 insulated (polystyrene) heatable</td>
<td>stainless steel</td>
<td>103</td>
<td>8.1</td>
<td>230</td>
<td>1219.25.90</td>
<td>1219.25.95</td>
<td>1219.27.99</td>
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<tr>
<td>DN 100 insulated (rock wool) heatable</td>
<td>stainless steel</td>
<td>103</td>
<td>8.1</td>
<td>230</td>
<td>1219.27.90</td>
<td>1219.27.95</td>
<td>1219.27.99</td>
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</table>

Core borehole dimensions

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Øa</th>
<th>Øc</th>
<th>b [mm]</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>For drain bodies without insulating bodies</td>
<td>340</td>
<td>110</td>
<td>10</td>
<td>1219.20.60</td>
</tr>
<tr>
<td>For drain bodies with insulating bodies</td>
<td>340</td>
<td>290</td>
<td>10</td>
<td>1219.25.60</td>
</tr>
</tbody>
</table>

Recess dimensions

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Type</th>
<th>Inclination</th>
<th>Recess dimensions drain body without insulating body</th>
<th>Recess dimensions drain body with insulating body</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 100</td>
<td>Jet</td>
<td>90°</td>
<td>150 x 290 mm</td>
<td>230 x 360 mm</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<tbody>
<tr>
<td>40</td>
<td>uninsulated</td>
<td>without</td>
<td>63</td>
<td>5.2</td>
<td>1245.10.00</td>
<td>1245.10.02</td>
<td>1245.10.07</td>
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<tr>
<td></td>
<td>insulated (polystyrene)</td>
<td>without</td>
<td>63</td>
<td>5.2</td>
<td>1245.10.40</td>
<td>1245.10.42</td>
<td>1245.10.47</td>
</tr>
<tr>
<td>50</td>
<td>insulated (rock wool)</td>
<td>without</td>
<td>72</td>
<td>8.5</td>
<td>1255.10.00</td>
<td>1255.10.02</td>
<td>1255.10.07</td>
</tr>
<tr>
<td></td>
<td>uninsulated, heatable</td>
<td>without</td>
<td>72</td>
<td>8.7</td>
<td>1255.10.40</td>
<td>1255.10.42</td>
<td>1255.10.47</td>
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<td>70</td>
<td>insulated (polystyrene) heatable</td>
<td>without</td>
<td>95</td>
<td>16.1</td>
<td>1275.10.00</td>
<td>1275.10.02</td>
<td>1275.10.07</td>
</tr>
<tr>
<td></td>
<td>insulated (rock wool)   heatable</td>
<td>without</td>
<td>95</td>
<td>16.3</td>
<td>1275.10.40</td>
<td>1275.10.42</td>
<td>1275.10.47</td>
</tr>
</tbody>
</table>

- Sarnafil TG 66-15
  - for loose placement
  - for greened, gravelled roofs with foot and vehicle traffic
  - for roofs with additional loads
- Sikaplan 15 G
  - for loose placement with mechanical fixing
  - up to a roof gradient of maximum 20%
  - for roofs without additional loads
## Additional components

### ACO Spin flat roof drains made of stainless steel

<table>
<thead>
<tr>
<th>Scale drawing</th>
<th>Product description</th>
<th>Model</th>
<th>Article No.</th>
</tr>
</thead>
</table>
| ![Syphonic drainage](image1) | **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](image2) | **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](image3) | **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](image4) | **Air lock**  
  polypropylene  
  DN 70  
  DN 100                                                                                                                                                    |                        | 0174.46.74  
  0174.75.50 |
<table>
<thead>
<tr>
<th>Maßezeichnung</th>
<th>Produktbeschreibung</th>
<th>Ausführung</th>
<th>Artikel-Nr.</th>
</tr>
</thead>
</table>
| ![Impoundment ring](image) | **Impoundment ring**  
stainless steel, material 1.4301 |            | 0174.46.75  |
| ![Gravel basket for reversed roof](image) | **Gravel basket for reversed roof**  
stainless steel, material 1.4301, load class H 1.5 |            | 0153.60.01  |
| ![Control shaft](image) | **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](image) | **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  
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 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 |
<table>
<thead>
<tr>
<th>Scale drawing</th>
<th>Product description</th>
<th>Model</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Polystyrene insulation, PS 30" /></td>
<td>Polystyrene insulation, PS 30 for all Jet vertical flat roof drains DN 100</td>
<td>0174.47.19</td>
<td></td>
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<tr>
<td><img src="image2.png" alt="Rock wool insulation, construction material class A1" /></td>
<td>Rock wool insulation, construction material class A1 for all Jet vertical flat roof drains DN 70</td>
<td>0174.46.57</td>
<td></td>
</tr>
<tr>
<td><img src="image3.png" alt="Insulation for inlet cone, rock wool, construction material class A1" /></td>
<td>Insulation for inlet cone, rock wool, construction material class A1 for all Jet vertical flat roof drains DN 70 drain bodies</td>
<td>0174.81.22</td>
<td></td>
</tr>
<tr>
<td><img src="image4.png" alt="Rock wool insulation, construction material class A1" /></td>
<td>Rock wool insulation, construction material class A1 for all Jet vertical flat roof drains DN 100</td>
<td>0174.47.21</td>
<td></td>
</tr>
<tr>
<td><img src="image5.png" alt="Mounting sheet for trapezoidal sheet metal roofs steel, galvanised" /></td>
<td>Mounting sheet for trapezoidal sheet metal roofs steel, galvanised</td>
<td>0174.46.61</td>
<td></td>
</tr>
</tbody>
</table>
ACO fire protection drains Jet – Syphonic drainage

Complete 1-part/inclination: 90 °

- With factory inserted sealing membrane
- Unit checked for leaks
- Flat roof gullies tested to DIN EN 1253
- Made from stainless steel, material grade 304
- With fire protection insert
- Incl. sealing membrane
- With clamping flange for sealing with 1 sealing membrane
- Usable for 1 sealing plane
- Socket inclination: 90°
- Insulation
- Foam glass
- uninsulated
- Insulated with Styrofoam with/without heating
- Sarnafil TG 66-15
  - for loose placement
  - for greened, gravelled roofs with foot and vehicle traffic
  - for roofs with additional loads
- Sikaplan 15 G
  - for loose placement with mechanical fixing
  - up to a roof gradient of maximum 20%
  - for roofs without additional loads

Nominal width: DN 100/Diameter: 103 mm

<table>
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<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>73</td>
<td>stainless steel</td>
<td>uninsulated</td>
<td>150 x 290</td>
<td>5.1</td>
<td>1311.10.60</td>
<td>1311.10.62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>uninsulated, heated</td>
<td>150 x 290</td>
<td>5.3</td>
<td>1311.10.90</td>
<td>1311.10.92</td>
</tr>
<tr>
<td></td>
<td></td>
<td>foam glass</td>
<td>230 x 360</td>
<td>6.0</td>
<td>1311.18.60</td>
<td>1311.18.62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>foam glass, heated</td>
<td>230 x 360</td>
<td>6.2</td>
<td>1311.18.90</td>
<td>1311.18.92</td>
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</table>

Core borehole dimensions

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Ø a [mm]</th>
<th>Ø c [mm]</th>
<th>b [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 100</td>
<td>340</td>
<td>130</td>
<td>10</td>
</tr>
<tr>
<td>DN 100</td>
<td>340</td>
<td>290</td>
<td>10</td>
</tr>
</tbody>
</table>
ACO fire protection drains Jet – Syphonic drainage

Complete 2-part/inclination: 90 °

- With factory inserted sealing membrane
- unit checked for leaks
- Flat roof gullies tested to DIN EN 1253
- Made from stainless steel, material grade 304
- With fire protection insert
- Incl. sealing membrane
- With clamping flange for sealing with 1 sealing membrane
- Usable for 2 sealing plane
- Incl. vapour seal
- Socket inclination: 90°
- Insulation
- Foam glass
- uninsulated
- insulated with Styrofoam with/without heating
- Sarnafil TG 66-15
  - for loose placement
  - for greened, gravelled roofs with foot and vehicle traffic
  - for roofs with additional loads
- Sikaplan 15 G
  - for loose placement with mechanical fixing
  - up to a roof gradient of maximum 20%
  - for roofs without additional loads

Nominal width: DN 100/Diameter: 103 mm

<table>
<thead>
<tr>
<th>Nominal width</th>
<th>Gravel basket</th>
<th>Insulation</th>
<th>Recess dimensions</th>
<th>Weight [kg]</th>
<th>Article No. Sarnafil TG 66-15</th>
<th>Article No. Sikaplan 15 G</th>
</tr>
</thead>
<tbody>
<tr>
<td>73</td>
<td>without</td>
<td>foam glass</td>
<td>230 x 360</td>
<td>7.0</td>
<td>1372.28.00</td>
<td>1372.28.05</td>
</tr>
<tr>
<td></td>
<td>without</td>
<td>foam glass, heated</td>
<td>230 x 360</td>
<td>7.2</td>
<td>1372.28.40</td>
<td>1372.28.45</td>
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<tr>
<td>For drain bodies without insulating bodies</td>
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<td>340</td>
<td>130</td>
</tr>
<tr>
<td>For drain bodies with insulating bodies</td>
<td>DN 100</td>
<td>340</td>
<td>290</td>
</tr>
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</table>
## Accessories

### ACO Jet flat roof drains with fire protection

<table>
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<tr>
<th>Scale drawing</th>
<th>Product description</th>
<th>Model</th>
<th>Article No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Scale drawing" /></td>
<td><strong>Air lock with fire protection sealant</strong> for jet drain body DN 70</td>
<td></td>
<td>0174.77.03</td>
</tr>
<tr>
<td><img src="image2" alt="Scale drawing" /></td>
<td><strong>Heat shield</strong> stainless steel, for Jet flat roof drains DN 70, with impact dowel M 8, and hexagonal bolts M 8 x 16</td>
<td></td>
<td>0174.77.97</td>
</tr>
<tr>
<td><img src="image3" alt="Scale drawing" /></td>
<td><strong>Insulating body</strong> foam glass, for Jet vertical flat roof drain lower parts DN 70</td>
<td></td>
<td>0150.12.69</td>
</tr>
<tr>
<td><img src="image4" alt="Scale drawing" /></td>
<td><strong>Insulating body</strong> foam glass, for Jet vertical drain bodies DN 70</td>
<td></td>
<td>0150.12.70</td>
</tr>
<tr>
<td><img src="image5" alt="Scale drawing" /></td>
<td><strong>Insulating sleeve</strong> foam glass, for Jet vertical drain bodies and lower parts for length adjustment DN 70, height: 100 mm</td>
<td></td>
<td>0174.77.93</td>
</tr>
</tbody>
</table>