LORO-X

www.loro.de

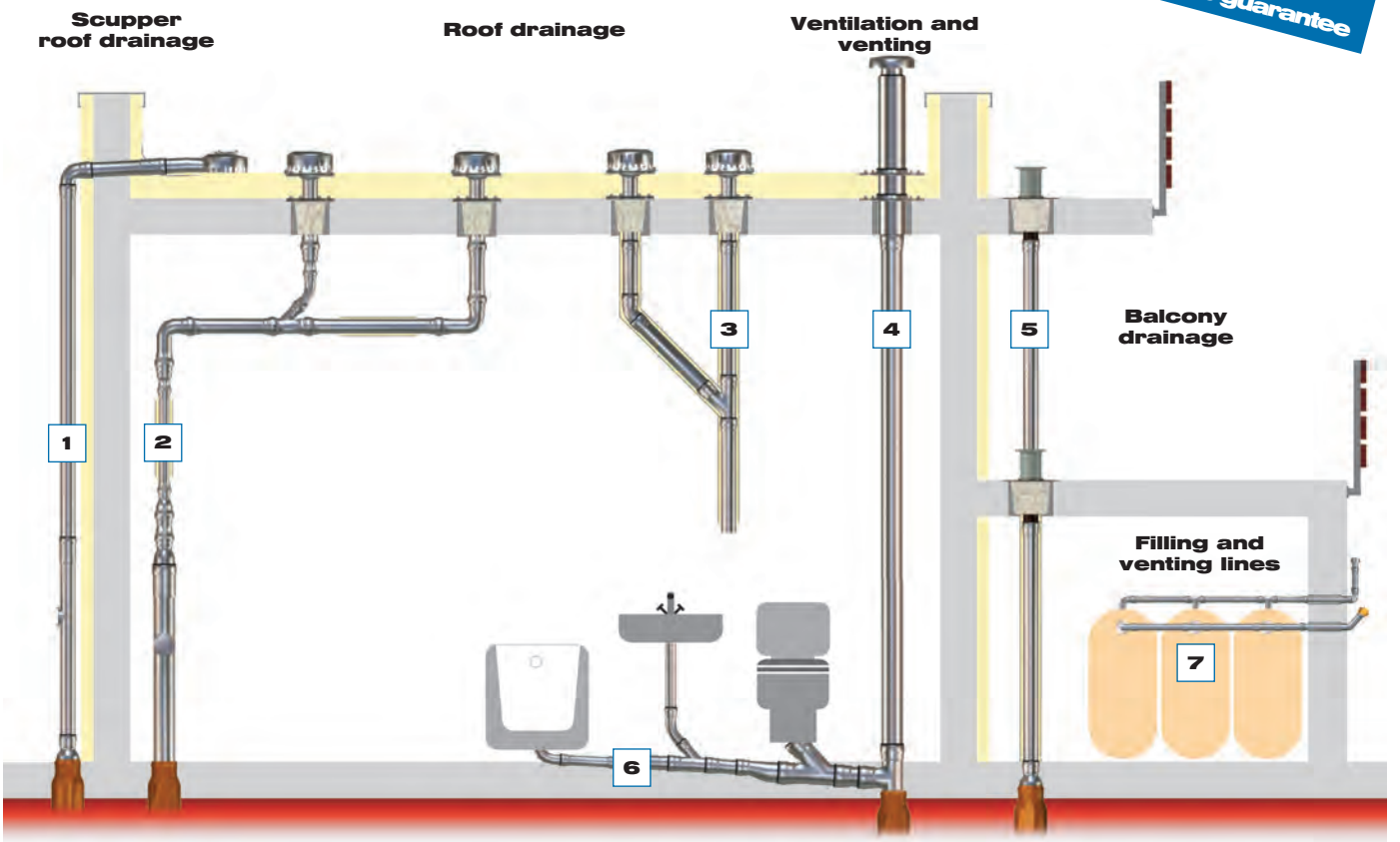
# LORO-X
# Roof drainage systems

- **for scupper and flat roof drainage**

| Main drainage | Emergency drainage |
|---|---|
| Gravity flow | Pressure flow |


# LORO-X steel pipe systems with LORO-X push-fit socket

**5 year** manufacturer's guarantee




**1 Exterior scupper roof drainage**
consisting of LORO-X steel discharge pipe with backflow-safe LORO-X socket joint for pressure flow or reducing plug-in connection for gravity drainage

**2 Interior roof drainage**
consisting of LORO-X steel discharge pipe with backflow-safe LORO-X socket joint for gravity flow or pressure flow for space-saving installation without fall.
Also available as a tested F90 fire protection system

**3 LORO-X compound pipes**
against water condensation with interior roof drainage - in SILENT version with increased sound protection if desired

**4 LORO-X venting lines**
consisting of LORO-X steel discharge pipe according to DIN 1986-100:2008, with LOROFLEX roof penetration and LORO-X ventilation pipe.

**5 LORO-X balcony drainage systems**
Single or direct drains for balconies with or with out roof sealing sheets, or for sealing with liquid plastics.

**6 LORO-X steel discharge pipes**
for domestic drains or LORO-XCL stainless steel pipes in areas with aggressive media for industry, commerce, hospitals, commercial kitchens etc.

**7 LORO-X filling and venting lines**
consisting of LORO-X steel discharge pipe, for filling and venting heating oil tanks or pellet stores.

made in Germany

MPA NRW DIN EN 1123 DIN EN 1124

LGA DIN EN 1123 DIN EN 1124

Member of the trade association: Gütesicherung Entwässerungstechnik GET

TÜV CERT DIN EN ISO 9001:2008

CE

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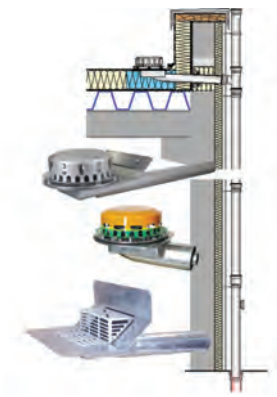
# Contents







Parapet Gravity flow



Parapet Pressure flow



Roof Gravity flow



Roof Pressure flow

# LORO-X
# Online product database and tendering

A large number of useful programs are available to you online at **www.loro.de.** They allow you to perform complete roof drainage planning all the way to the full tendering in a few minutes directly in your web browser.


**Download system information**

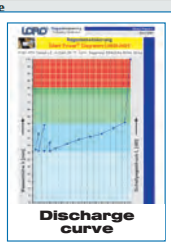
**Order your system**

## Online Product database



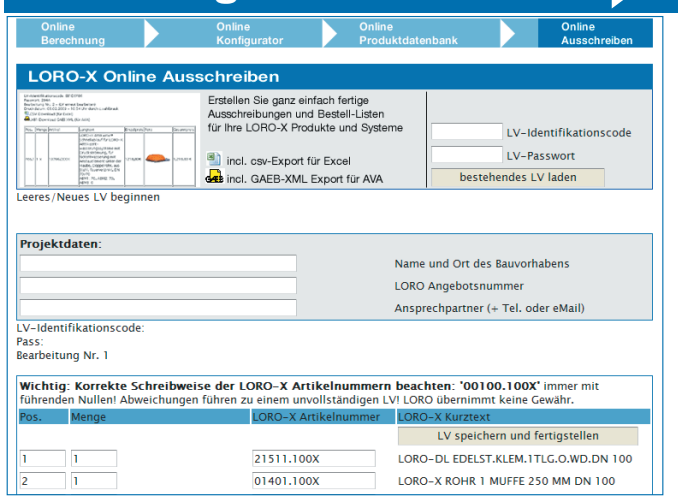
**2D-CAD system**

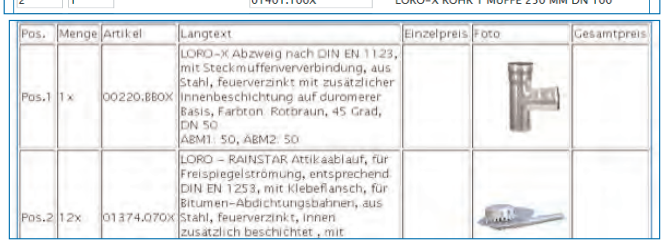

**3D-CAD system**


**Discharge curve**


**Data sheet**

## Online Tendering




**Tender/offer**

## LORO-X online product database for downloading product data

In the LORO-X online product database you will find for every item (of which there are about 2500), as well as for the complete LX standard systems, and all the **multimedia information** you need to continue. This includes, e.g.:

- LX data sheet with LORO-X proof of performance
- 2D and 3D original CAD files (.dwg)
- Dimensional drawings as PDF document
- Tender texts
- Item number, photograph, weight, nominal diameter, EAN code, customs tariff number
- Where available: Installation instructions and application examples

You can enter the number of items or systems here, and with a click on "Online tender", include it in your online tender

## LORO-X online tender

The LORO-X online tendering system **generates a prepared offer or tender** from a list of items. You can either enter them directly, using the item number, or add them from the product database.
Every newly prepared offer is assigned a unique **identification number** and password, with which you can open the prepared offer again at any time and continue working on it.
A number of formats are available for this work:

- **Screen output** (print as PDF, for instance using the free PDFCreator)
- .csv file for download (can be imported into **Excel** or similar programs)
- .X81 file for download (can be imported into many common tendering, awarding and invoicing programs with **GAEB-XML** support)


# Irresistible arguments for LORO-X roof drainage systems

with a steel discharge pipe and LORO-X push-fit socket


## ...everything from one source

As a system supplier for roof and balcony drainage, LORO, with its wide range of pipes, pipe fittings and drains, can supply **complete drainage systems** systems with proof of performance in the form of data sheets.


## ...fast, easy assembly

One hundred million LORO-X push-fit sockets have been made – it offers builders, planners and workers **crucial advantages at installation.**
Screwing, gluing, soldering and welding are not needed - the socket joint is created very quickly, simply by insertion.


## ...pressure-resistant even with backflow

As the pressure rises inside the pipe, the pressure on the sealing lips of the sealing element rises, ensuring that the socket joint does not leak even when the wastewater pipe is overloaded or blocked, up to a pressure of 0.5 bar. The new **LORO-XP range** (test pressure 48 bar) means that the use of LORO-X pipes is now entering the field of pressurised pipes.


## ...Break-proof and impact resistant

In areas where mechanical damage is a possibility, the strength of LORO-X pipes offers **optimum resistance to breakage.**
Expensive protective constructions such as buffer grilles can be omitted. Thanks to their elasticity, LORO-X steel discharge pipes largely retain their function even when deformed.


## ...Not susceptible to heat or cold

LORO-X products, not being susceptible to **heat or frost**, are well suited to application in exterior drainage.
Since the coefficient of linear expansion of steel is fairly similar to that of concrete, LORO-X steel discharge pipes can be installed without difficulty over long distances.


## ...Fire protection

**Steel is not combustible.** LORO-X steel drainage systems are the problem solution for increased fire protection. According to DIN 4102 they are to be assigned to building material class A1, non-combustible, and are classified as non-combustible by DIN 1986, Part 4.
In the flat roof drainage field, LORO fire protection drains, in combination with LORO compound pipes, are certified as an R90 system solution.


## ...Architecture

Modern architecture is characterised by steel, glass and concrete. LORO-X products harmonise perfectly with this. They can remain discreetly in the background or can be integrated into the architecture as a design feature, perhaps in stainless steel versions. LORO X products can be modified to provide special solutions for architectural requirements without complex changes to casting or injection moulds.


## ...Recycling

Steel is a semi-natural, renewable material. It is made from iron oxide and can, unlike some other materials, be recycled in an almost limitless closed cycle.
Steel saves energy, and protects the resources of our planet.

# LORO flat roof drainage systems

- **LORO flat roof drains of steel, O series**
  DN 70
- **LORO flat roof drains of aluminium, O series**
  DN 100 and DN 125
- **LORO-DRAINLET®/DRAINJET® flat roof drains of stainless steel**
  DN 70, DN 100, DN 125 and DN 150
- **LORO-RAINSTAR® scupper drains**
  DN 50, DN 70 and DN 100
- **LORO-X scupper drains of steel, hot-dip galvanised**
  DN 70 and DN 100
- **LORO-X main-emergency scupper drain combination**
  DN 100 (main) DN 50 (emergency)
- **LORO-X scupper direct drains of steel, hot-dip galvanised**
  DN 70 and DN 100
- **LORO-DRAINJET® siphonic scupper drains**
  DN 50 and DN 70
- **LORO-ATTIKASTAR® siphonic scupper drains**
  DN 100

The versatile drain range with problem solutions for a variety of drainage problems on flat roofs.

## ... reliable, optimum drainage!

### Particular advantages:

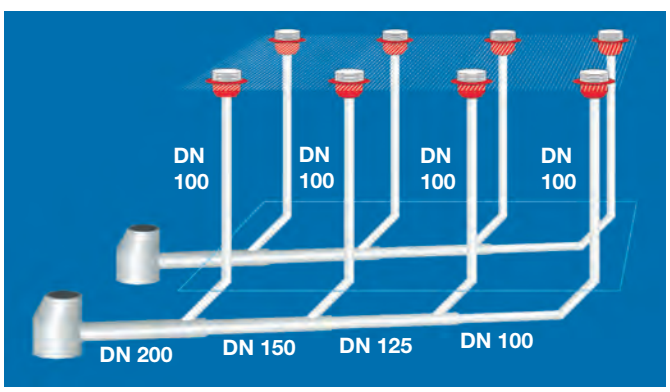
- High strength
- High discharge capacity
- Easy fitting
- Increased corrosion protection
- UV-resistant
- Small cut-outs
- Low weight
- Drainage possible during the building phase
- LORO-DRAINLET®/DRAINJET® main and emergency drains at one level

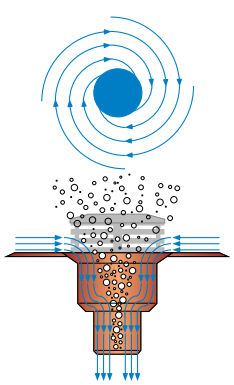
# Roof drainage flow types

Two principles can be used for draining large-area roofs: gravity drainage and pressure drainage systems.
With gravity drainage according to DIN 1986-100 a maximum filling ratio of 0.7 (h/d = 0.7) is required for the necessary ventilation and venting of the rain drainage system.
Pressure drainage, on the other hand, aims at a filling ratio of 1.0. This requirement is achieved through the use of specially developed roof and gutter drains, which prevent the intake of air by means of a closed hood.
The drains satisfy EN 12056-3 "Drains for Buildings".

The pressure drainage system must be optimised through a hydraulic calculation according to EN 12056-3, in such a way that heavy rainfall will result in the pipes being completely filled, as intended. The full difference in the height between the roof drain and the backflow level is used to dimension the pipe.

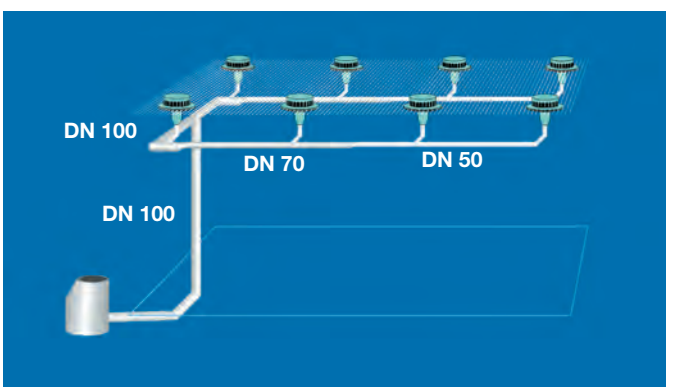
## Gravity drainage

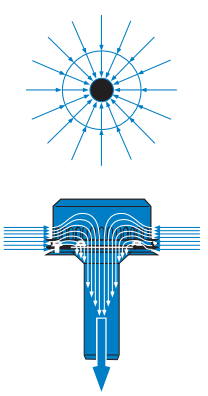


Gravity drainage

## Pressure drainage



Pressure drainage

**The advantages of pressure drainage over conventional drainage:**

- **Higher discharge capacity**
  Closed flow permits smaller dimensions.
- **Space saving**
  Pipes can be installed under the roof without fall.
- **Reduced usage of materials**
  Use of smaller pipe dimensions and shorter pipe lengths.
- **Less building work**
  Fewer downpipes, foundation connections and openings, shafts and underground pipes.
- **Hohe Selbstreinigungskraft**
  High flow rates mean that the system cleans itself effectively.

# Product number directory

IMPORTANT: Please quote the nominal diameter (DN) as well as the product number!

# Main drainage

At each low point on the roof it is the job of the LORO-X main drainage to pass the rainwater reliably and quickly from the roof into the sewer system. In order not to threaten the static strength of the building, it is important that the discharge capacity of the system is reached reliably even when the level of water on the roof is low.

- **Drainage into the underground pipe**
- **Gravity flow:**
  **max. 35 mm water level**
- **Pressure flow:**
  **max. 55 mm water level**
- **No weir**

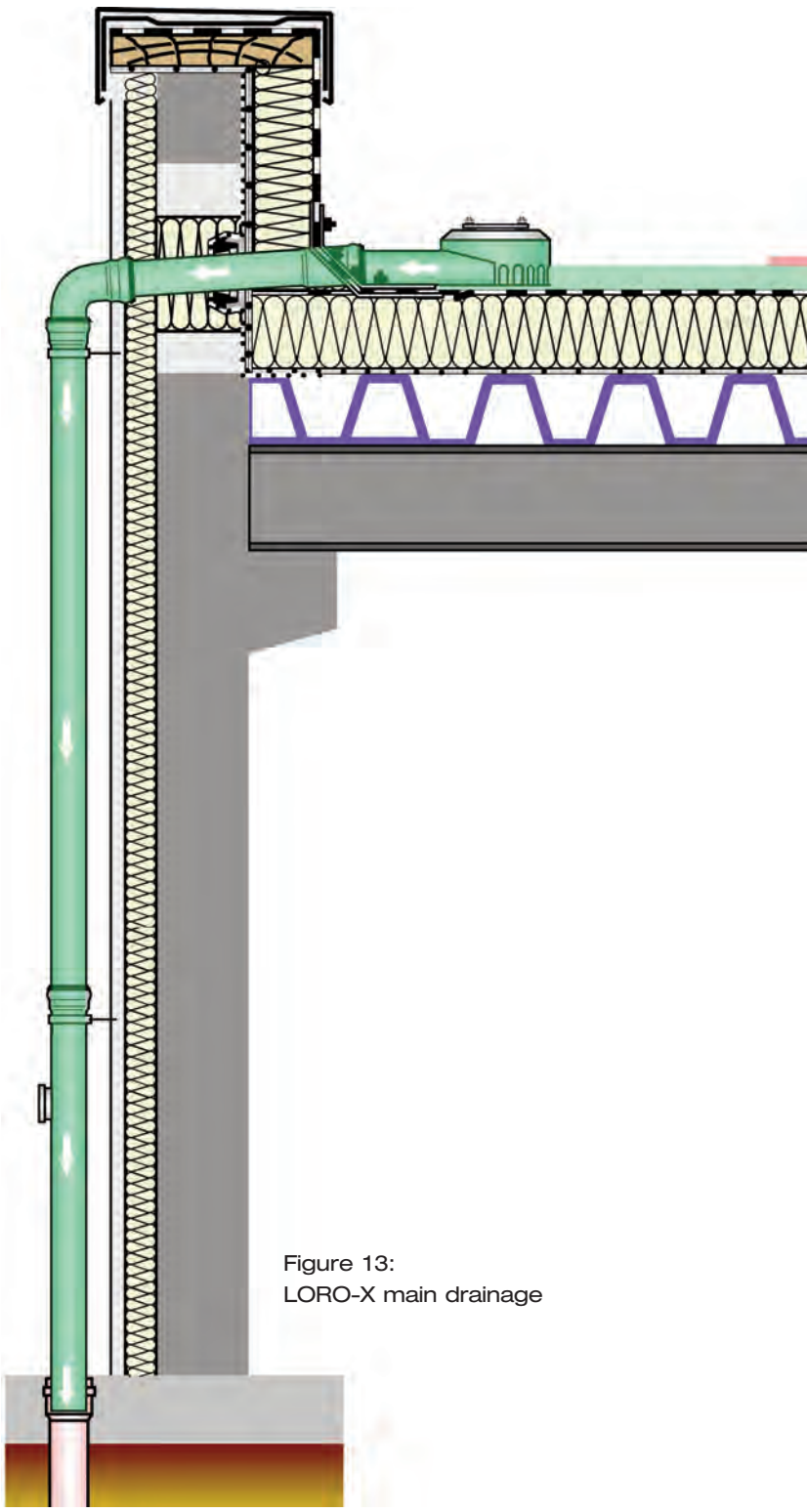
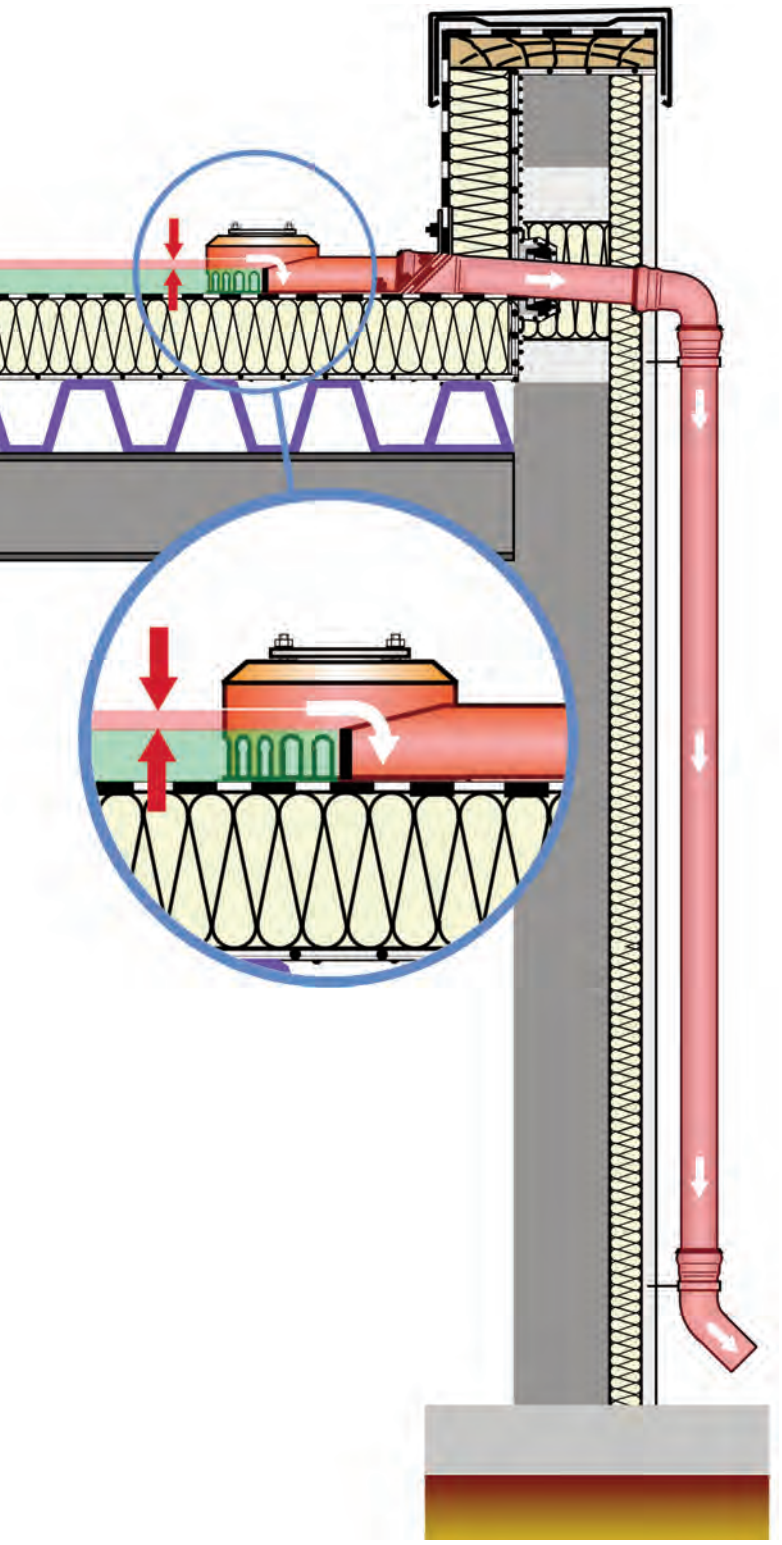


Figure 13:
LORO-X main drainage

**Drainage:** **into the underground pipe**

# Emergency drainage



**Drainage:** **into the open**

In accordance with DIN 1986-100 the LORO-X emergency drainage is to be included in the design in addition to the main drainage at every low point. It is the purpose of the emergency drainage to pass the rainwater to an area that can be flooded freely, and it must not be connected to the outflow route of the main drainage. The emergency drainage system only operates in the event of a so-called once-in-a-hundred-year rain, or when the main drain – for instance due to overload of the underground pipe – is no longer able to operate, with the result that the water backs up onto the roof.

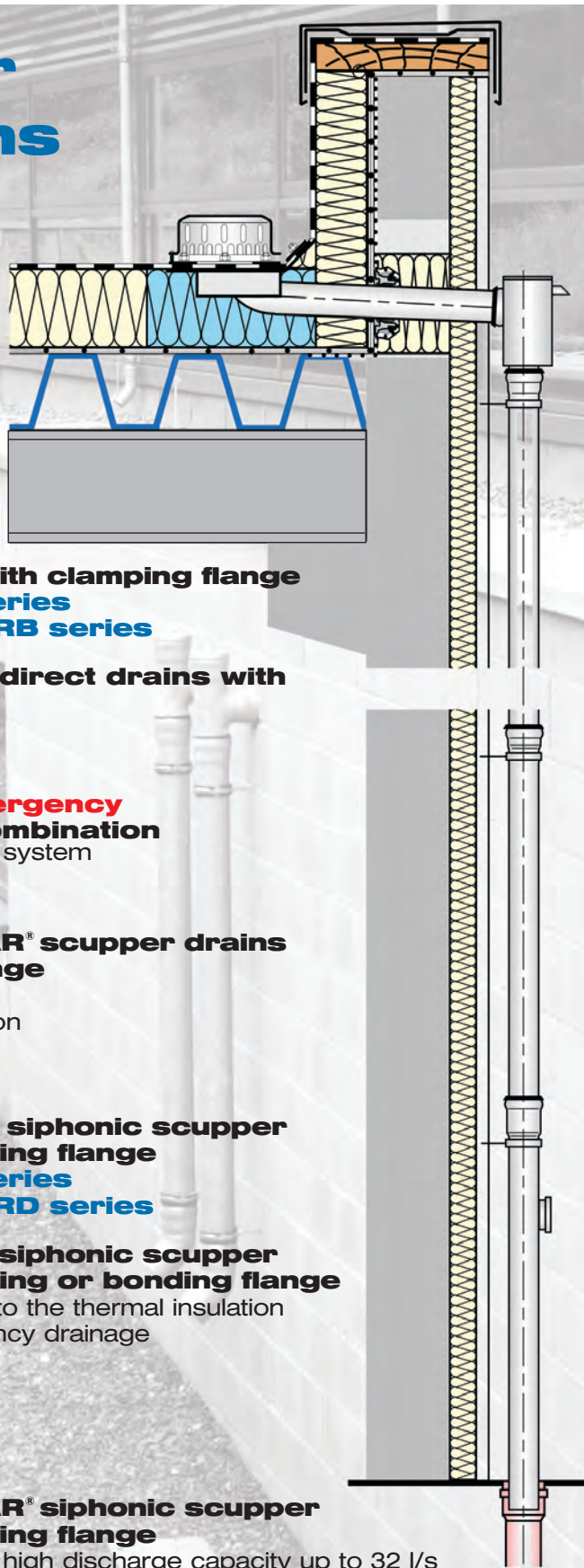
The rainwater is held back by the weir in the LORO-X emergency drain so that the emergency drainage does not normally operate. Only when the level of water on the roof is higher than the weir does safe drainage into the open commence.

- **Drainage into the open**
- **max. 75 mm water level**
- **Weir heights between 35 mm and 60 mm**

# LORO-X scupper drainage systems

## Complete systems with drains and pipes

**“The drainage that stays outside!”**



For gravity flow:

**LORO-RAINSTAR® scupper drains with clamping flange**
- as main drain, **RA series**
- as emergency drain, **RB series**

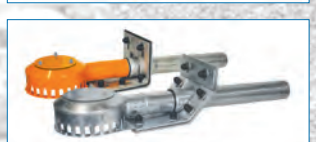
**LORO-X scupper direct drains with bonding flange**

**LORO-X main-emergency scupper drain combination**
- patented pipe-in-pipe system

**LORO-ATTIKASTAR® scupper drains with clamping flange**
- as emergency drain
- as 9.1 l/s spout solution

For pressure flow:

**LORO-RAINSTAR® siphonic scupper drains with clamping flange**
- as main drain, **RC series**
- as emergency drain, **RD series**



**LORO-DRAINJET® siphonic scupper drains with clamping or bonding flange**
- without penetration into the thermal insulation
- for main and emergency drainage
- ideal for renovation

**LORO-ATTIKASTAR® siphonic scupper drains with clamping flange**
- Double pipe drain for high discharge capacity up to 32 l/s
- for main and emergency drainage

# LORO-RAINSTAR® scupper drains with clamping flange or with bonding flange, stainless steel, DN 50, DN 70 and DN 100

- as main drain, RA series
- as emergency drain, RB series

**Roof drains for roofs with roof edge upstand, for bituminous and plastic sealing sheets**



## Technical product data

### Material:

**Drain pot:**
Stainless steel 1.4301 (AISI 304)

**Drainlet strainer:**
Stainless steel 1.4301

**Loose flange:**
G Al Si 10 Mg

**Sealing elements:**
SB (SBR) styrene-butadiene copolymer, trade name e.g. BUNA, DN 50 - DN 100, silicone-free.

**Compression seal:**
Perbunan P 599 (can be omitted from bituminous sealing sheets).

### Fire resistance:

LORO-DRAINLET® flat roof drains are assigned in accordance with DIN 4102 to building material class A1, non-combustible.

### External supervision:

LORO-DRAINLET® siphonic drains meet EN 1253. External supervision is carried out by the Materials Inspection Institute at Würzburg, operated by the Bavarian State Trade Agency (Landesgewerbeanstalt).

### Thermal insulation block:

of polystyrene SE WLG 0.35, CFC-free:
Coefficient of thermal conductivity: 0.035 W/m x K
Resistance to water vapour diffusion: $\mu = 40/100$
Water absorption: 0.5 - 1.5 vol. %
Building material class B2

of foam glass, non-combustible:
Coefficient of thermal conductivity: 0.045 W/m x K
Resistance to water vapour diffusion: $\mu = \infty$, practically diffusion-proof
Building material class A1

**LORO-RAINSTAR®
scupper drain,
RA series,
DN 50 - DN 100**

**LORO-RAINSTAR®
emergency scupper drain,
RB series,
DN 50 - DN 100**

## System overview:

# LORO scupper drainage systems for gravity flow

**Main drainage**

**Gravity flow**

### Silent

#### Series 43 scupper direct

**Fitted directly into the parapet**

**without penetration into the roof** (without basin)

1 — 01316X

**with basin**

2 — 01330X

as double pipe drain:

3 — 01320X

**with basin and lowered pipe**

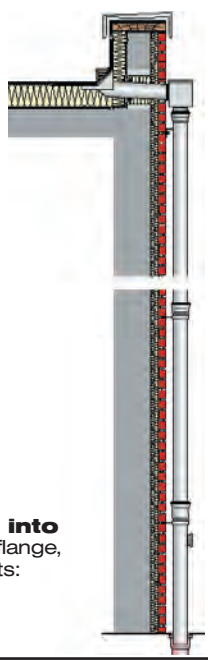
4 — 01350X

as double pipe drain:

5 — 01324X

**without penetrating into the roof** with clamping flange, only for PVC roofing sheets:

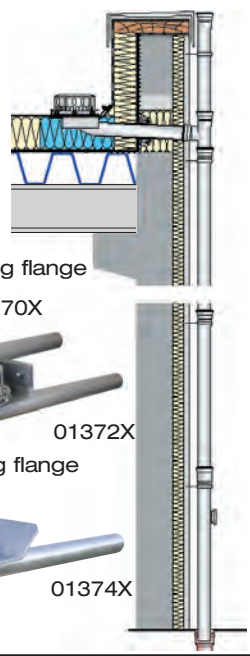
6 — 01333X



### Silent Power

#### Series 79 RAINSTAR®

**Drain through lowered pipe conforms with standard**



with clamping flange

01370X

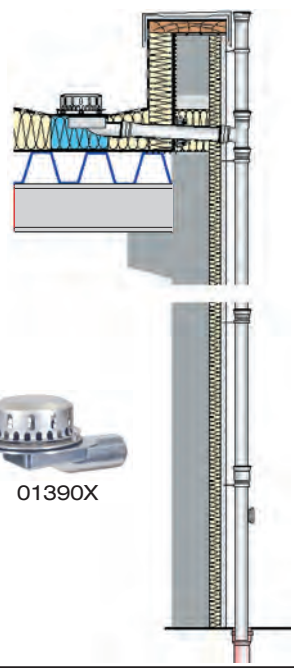
01372X

with bonding flange

01374X

#### Series 88 DISTANT

**without upstand**



01390X

| DN | 70 | | 100 | | | | | | 50 | | 70 | | 100 | 50 | | 70 | | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⬇ | 0 mm | 52 mm | 0 mm | 52 mm | 52 mm | 103 mm | 103 mm | 0 mm | 82 mm | | 92 mm | | 106 mm | 82 mm | | 92 mm | | 106 mm |
| LX no. | LX 620 | LX 650 | LX 621 | LX 647 | LX 653 | LX 694 | LX 727 | LX 1110 | LX490 | LX489 | LX460 | LX467 | LX479 | LX490 | LX489 | LX460 | LX467 | LX479 |
| 11 | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | 5 | | | | | | | | | | | |
| 8 | | | | | | | 8.0 l/s*** | | | | | | | | | | | |
| 7 | 1 | 2 | 1 | 2 | 3 | 4 | | 6 | | | | | | | | | | |
| 6 | | | | | 4.5 l/s* | 4.5 l/s* | | | 5.1 l/s* | as spout | 5.2 l/s* | as spout | 5.4 l/s* | 5.1 l/s* | as spout | 5.2 l/s* | as spout | 5.4 l/s* |
| 5 | | | | | | | | | | | | | | | | | | |
| 4 | | | | 3.0 l/s* | | | | | | | | 3.6 l/s** | | | | | 3.6 l/s** | |
| 3 | 2.3 l/s* | | | | | | 4.0 l/s* | | | | | | | | | | | |
| 2 | | | 1.2 l/s* | | | | | 1.7 l/s* | | 2.2 l/s** | | | | | 2.2 l/s** | | | |
| 1 | | | | | | | | | | | | | | | | | | |
| 0 | 0.8 l/s* | | | | | | | | | | | | | | | | | |

⬇ = penetration depth into the roof

* Discharge capacity measured in test assembly according to EN 1253, downpipe length 4.2 m
** LORO measurement with fully ventilated downpipe, corresponds to spout capacity
*** Discharge capacity as main-emergency combination system with emergency overflow into collector

**System overview:**

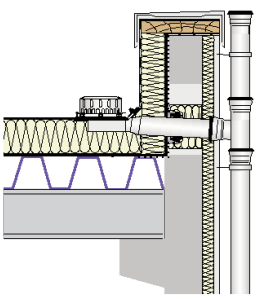
# LORO-X
# Scupper drainage systems for gravity flow



| Main drainage | Main-emergency combination |
|---|---|
| Gravity flow | |
| Silent | Silent / Silent Power |

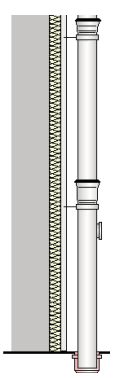
## Series 89 RAINSTAR®

**Low penetration depth**



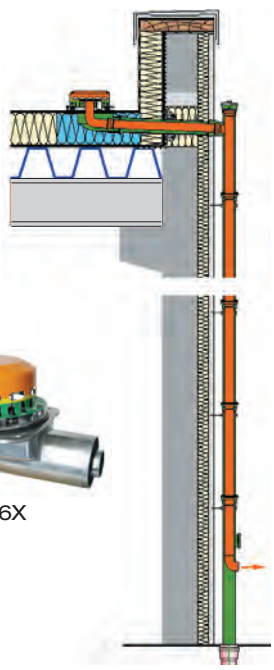
01360X

01362X



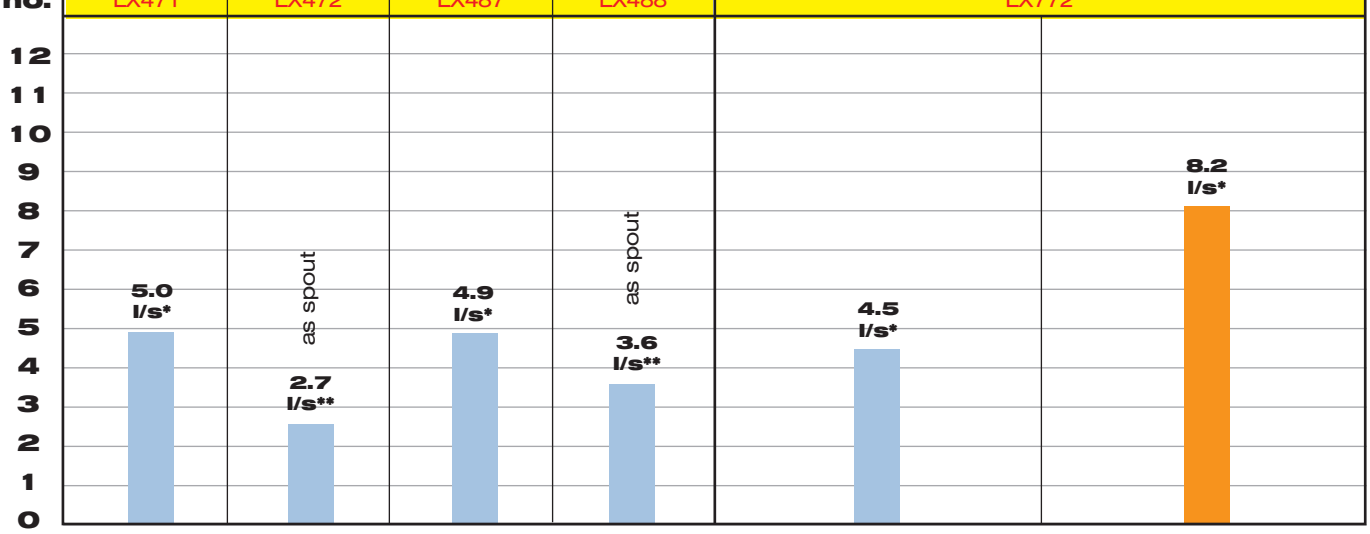
## Series 101 HNK

**Main and emergency drain in one system**



13506X

| DN | 70 | | 100 | | 100 (main) | 50 (emergency) |
|---|---|---|---|---|---|---|
| ⬇ | 55 mm | | 55 mm | | 106 mm | |
| LX no. | LX471 | LX472 | LX487 | LX488 | LX772 | |




⬇ = penetration depth into the roof

* Discharge capacity measured in test assembly according to EN 1253, downpipe length 4.2 m
** LORO measurement with fully ventilated downpipe, corresponds to spout capacity

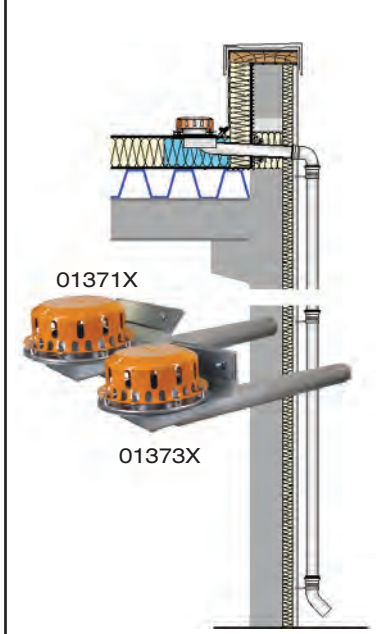
## System overview:

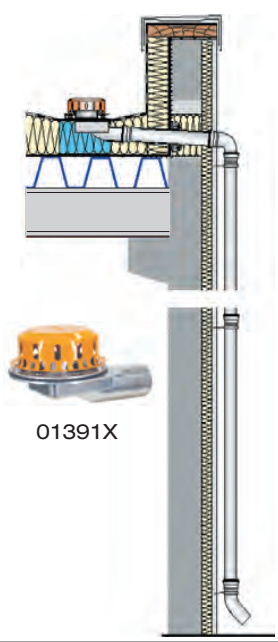
# LORO scupper drainage systems for gravity flow

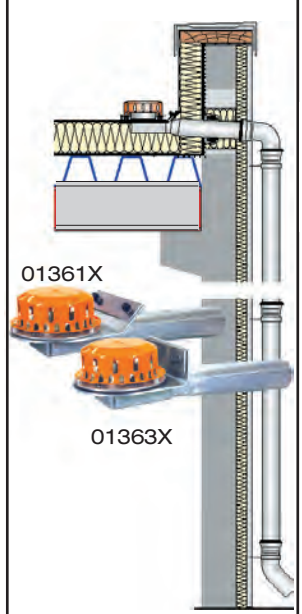
**Emergency drainage**

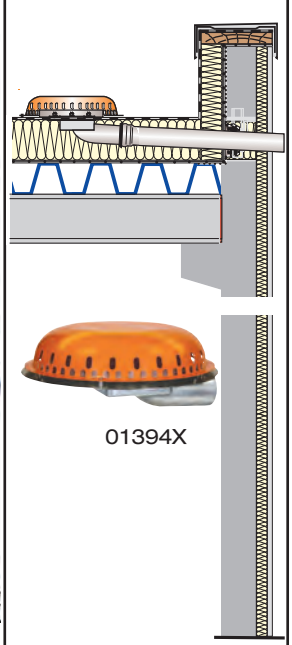
**Gravity flow**

| Silent Power | | | Silent |
|---|---|---|---|
| **Series 79 RAINSTAR®** | **Series 88 DISTANT** | **Series 89 RAINSTAR®** | **Series 93 ATTIKASTAR®** |
| High discharge capacity through lowered pipe | Without upstand | Low penetration depth | Spout emergency drain solution |



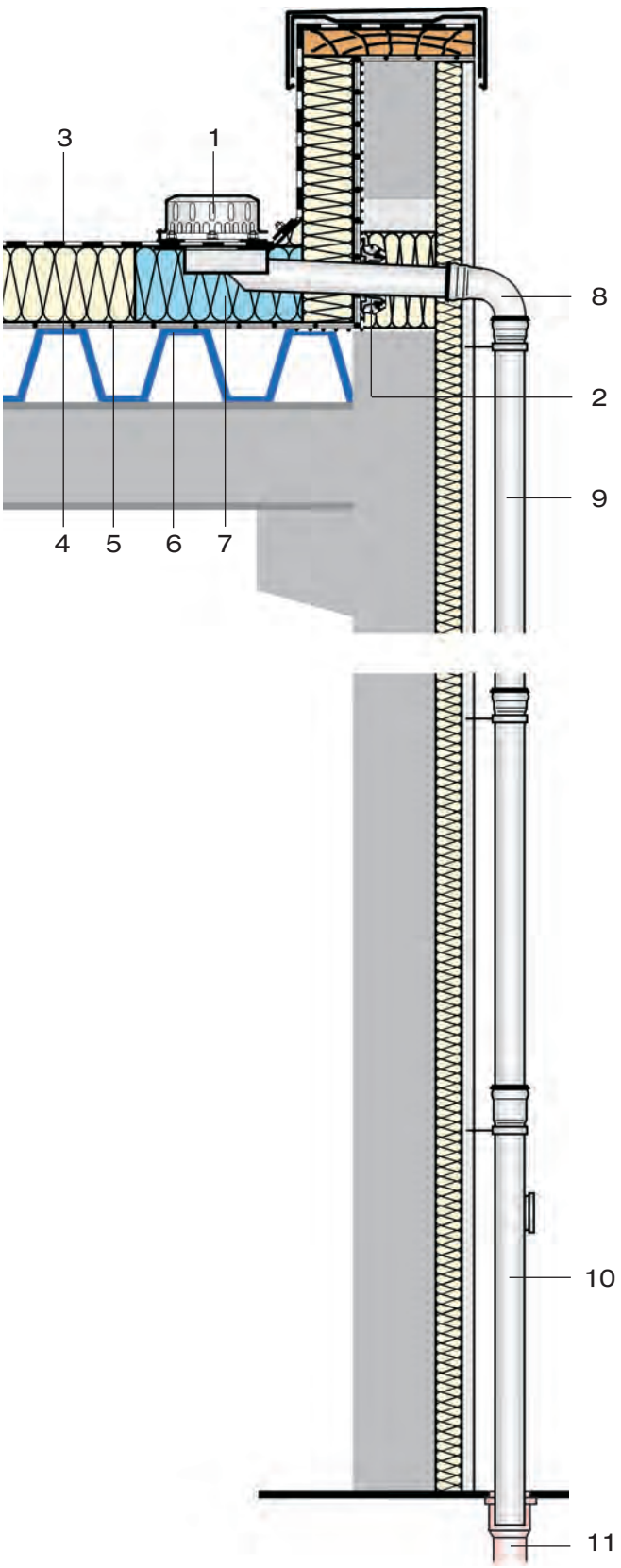

| DN | 50 | 70 | 100 | 50 | 70 | 100 | 70 | 100 | 100 |
|---|---|---|---|---|---|---|---|---|---|
| ⬇ | 82 mm | 92 mm | 106 mm | 82 mm | 92 mm | 106 mm | 55 mm | 55 mm | 106 mm |
| LX no. | LX494 / LX493 | LX465 / LX469 | LX481 / LX485 | LX494 / LX493 | LX465 / LX469 | LX481 / LX485 | LX475 / LX476 | LX668 / LX667 | LX859 |
| | 7.6 l/s* | 10.0 l/s* | 9.0 l/s* | 7.6 l/s* | 10.0 l/s* | 9.0 l/s* | 8.2 l/s* | 8.0 l/s* | as spout |
| | as spout | as spout | as spout | as spout | as spout | as spout | as spout | as spout | 9.1 l/s** |
| | 2.6 l/s** | 4.2 l/s** | 6.8 l/s** | 2.6 l/s** | 4.2 l/s** | 6.8 l/s** | 3.5 l/s** | 4.6 l/s** | |

12 11 10 9 8 7 6 5 4 3 2 1 0

⬇ = penetration depth into the roof

* Discharge capacity measured in test assembly according to EN 1253, downpipe length 4.2 m

** LORO measurement with fully ventilated downpipe, corresponds to spout capacity




## Example applications

### LORO-RAINSTAR® scupper drains, DN 50 / DN 70 / DN 100, RA series, with clamping flange, according to EN 1253

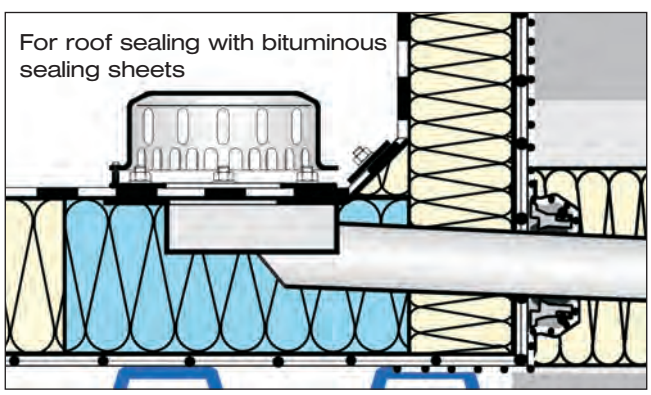
**Discharge capacity according to data sheet:**

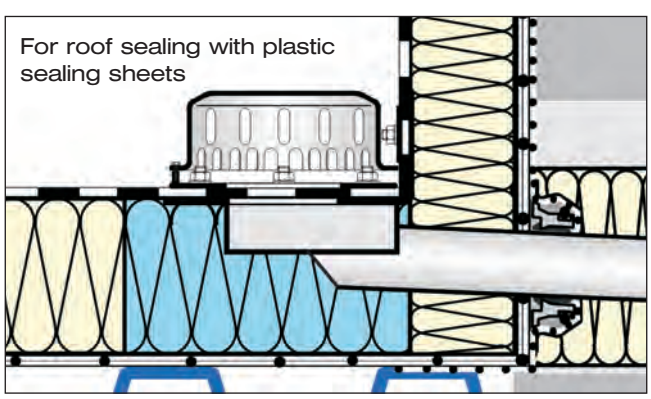
| | | | |
|---|---|---|---|
| LX 490 | DN | 50: | 5.1 l/s* |
| LX 460 | DN | 70: | 5.2 l/s* |
| LX 479 | DN | 100: | 5.4 l/s* |

**as spout**

| | | | |
|---|---|---|---|
| LX 489 | DN | 50: | 2.2 l/s* |
| LX 467 | DN | 70: | 3.6 l/s* |

**For bituminous and plastic sealing sheets**




1 LORO-RAINSTAR® scupper roof drain
2 LORO sliding flange
(for bonding the vapour barrier)
3 Bituminous sealing sheets
4 Thermal insulation
5 Vapour barrier
6 Industrial trapezoidal sheet metal roof or concrete roof
7 LORO thermal insulation block
(Mounting aid for bonding the scupper drain into the thermal insulation)
8 LORO-X bend, 87°
9 LORO-X rainwater downpipe
10 LORO-X rain standpipe
11 Underground pipe

* According to the test assembly of EN 1253

# Example applications

## LORO-RAINSTAR® emergency scupper drains, DN 50 / DN 70 / DN 100, RB series, with clamping flange, according to EN 1253

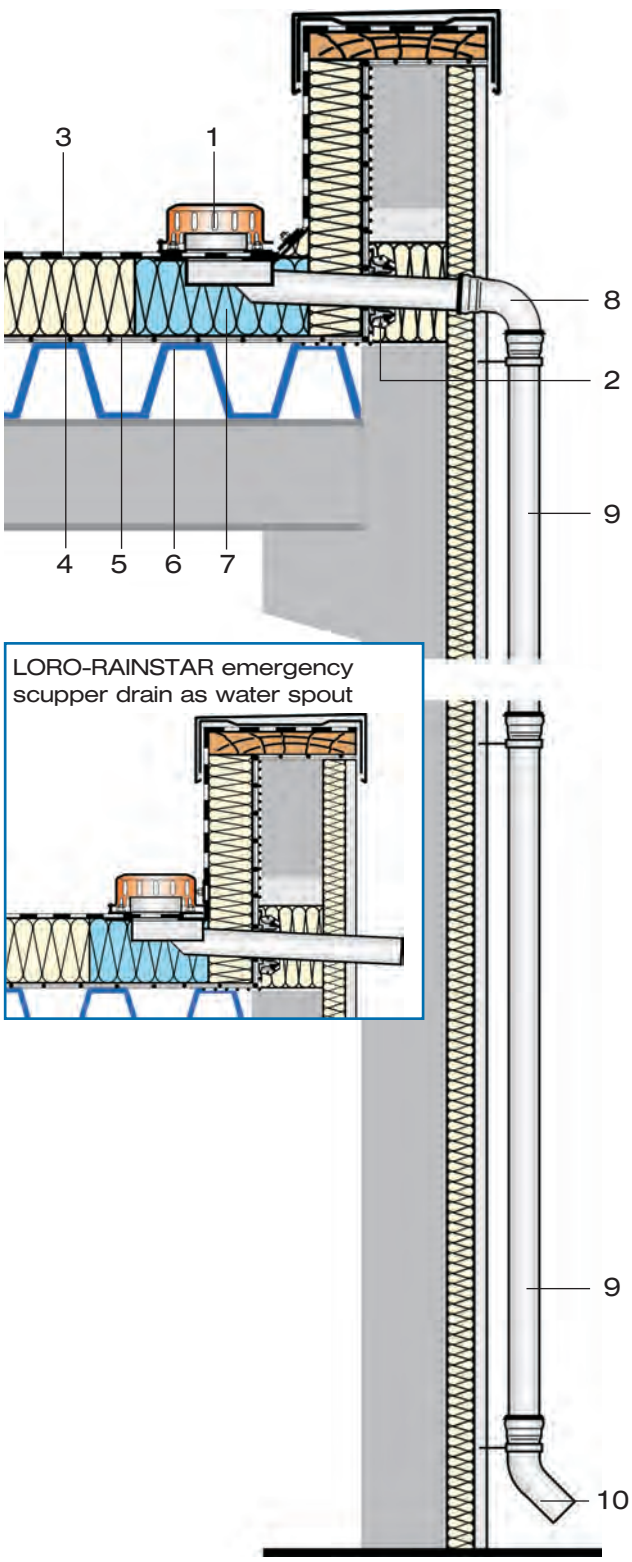
**Discharge capacity according to data sheet:**

| | | | |
|---|---|---|---|
| LX 494 | DN | 50: | 7.6 l/s* |
| LX 465 | DN | 70: | 10.0 l/s* |
| LX 481 | DN | 100: | 9.0 l/s* |

**as spout**

| | | | |
|---|---|---|---|
| LX 493 | DN | 50: | 2.6 l/s |
| LX 469 | DN | 70: | 4.2 l/s |
| LX 485 | DN | 100: | 6.8 l/s |

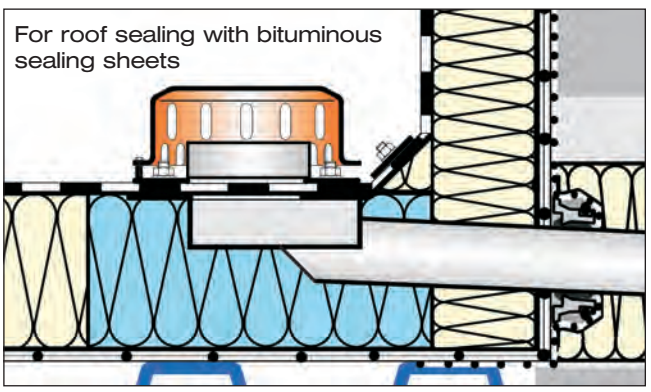
**For bituminous and plastic sealing sheets**



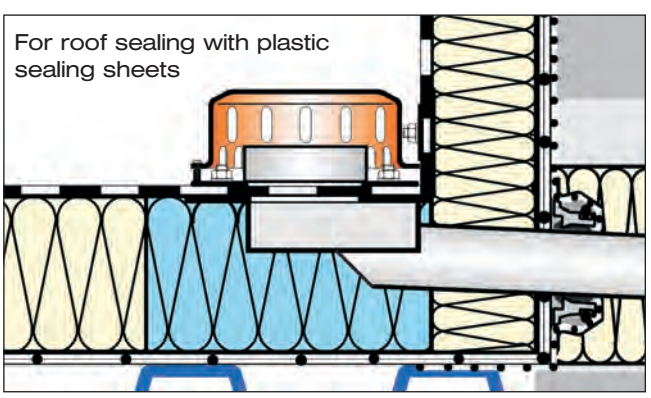

LORO-RAINSTAR emergency scupper drain as water spout



For roof sealing with bituminous sealing sheets

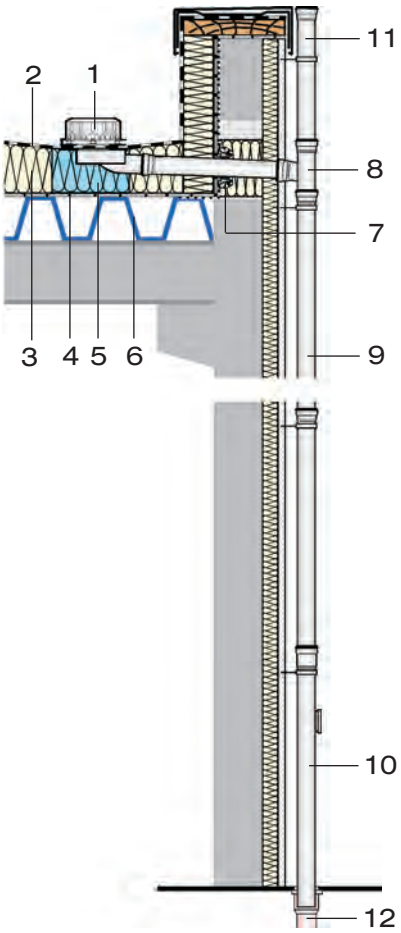


For roof sealing with plastic sealing sheets



1 LORO-RAINSTAR® scupper roof drain as emergency drain
2 LORO sliding flange (for bonding the vapour barrier)
3 Bituminous sealing sheets
4 Thermal insulation
5 Vapour barrier
6 Industrial trapezoidal sheet metal roof or concrete roof
7 LORO thermal insulation block (Mounting aid for bonding the scupper drain into the thermal insulation)
8 LORO-X bend, 87°
9 LORO-X rainwater downpipe
10 LORO-X bend, 45°

* According to the test assembly of EN 1253

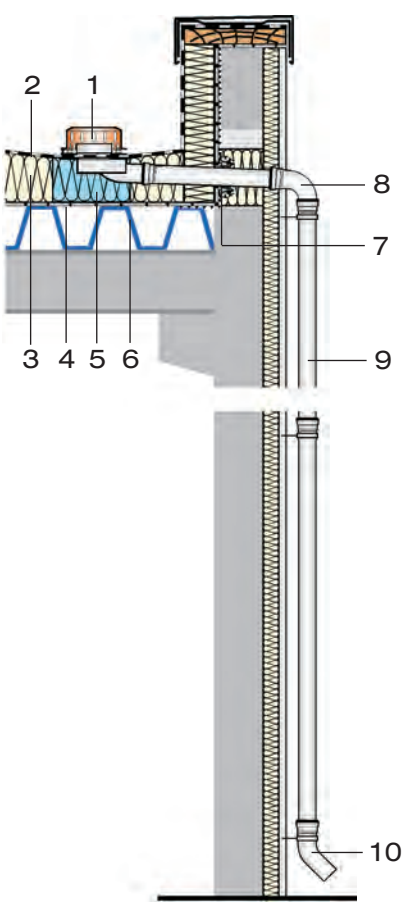



## Example applications

### LORO-RAINSTAR® scupper drains, DN 50, DN 70 and DN 100, Series 88, without upstand, with clamping flange, as special fabrication, according to EN 1253

**For bituminous and plastic sealing sheets**

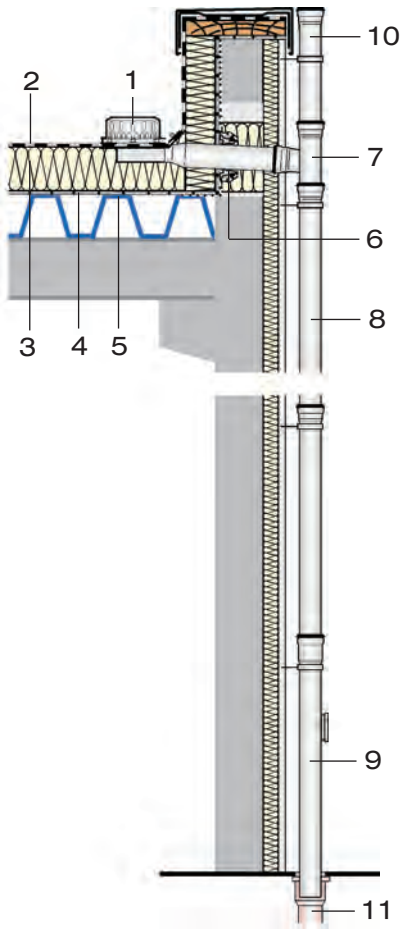
1 LORO-RAINSTAR® scupper roof drain
2 Sealing sheets
3 Thermal insulation
4 Vapour barrier
5 LORO thermal insulation block
6 Industrial trapezoidal sheet metal roof
7 LORO sliding flange
(for bonding the vapour barrier)
8 LORO-X branch, 87°
9 LORO-X rainwater downpipe
10 LORO-X rain standpipe
11 LORO-X pipe
12 Underground pipe




### LORO-RAINSTAR® scupper drains, as emergency drains, DN 50, DN 70 and DN 100, Series 88, without upstand, with clamping flange, as special fabrication, according to EN 1253

**For bituminous and plastic sealing sheets**

1 LORO-RAINSTAR® scupper roof drain, as emergency drain
2 Sealing sheets
3 Thermal insulation
4 Vapour barrier
5 LORO thermal insulation block
6 Industrial trapezoidal sheet metal roof
7 LORO sliding flange
(for bonding the vapour barrier)
8 LORO-X bend, 87°
9 LORO-X rainwater downpipe
10 LORO-X bend, 45°

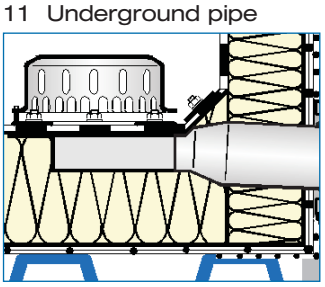



## Example applications

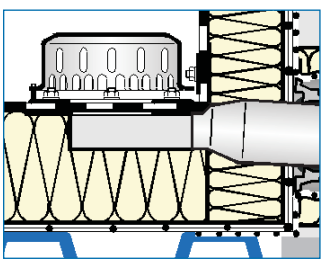
### LORO-RAINSTAR® scupper drains, DN 70 and DN 100, Series 89 with clamping flange, with penetration depth of 55 mm, as special fabrication, according to EN 1253

**For bituminous and plastic sealing sheets**

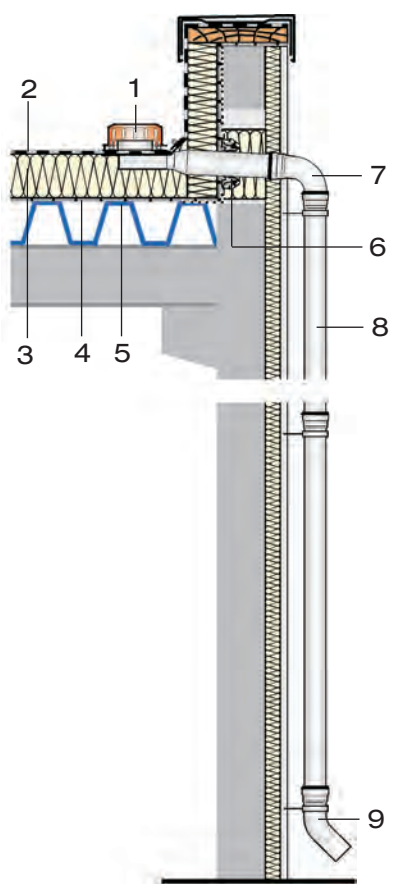
1 LORO-RAINSTAR® scupper roof drain
2 Bituminous sealing sheets
3 Thermal insulation
4 Vapour barrier
5 Industrial trapezoidal sheet metal roof
6 LORO sliding flange
(for bonding the vapour barrier)
7 LORO-X branch, 87°
8 LORO-X rainwater downpipe
9 LORO-X rain standpipe
10 LORO-X pipe
11 Underground pipe



For roof sealing with bituminous sealing sheets



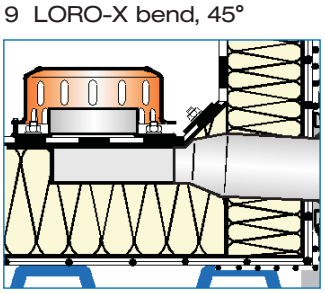
For roof sealing with plastic sealing sheets



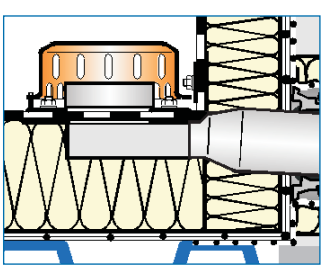

### LORO-RAINSTAR® scupper drains, as emergency drains, DN 70 and DN 100, Series 89 with clamping flange, with penetration depth of 55 mm, as special fabrication, according to EN 1253

**For bituminous and plastic sealing sheets**

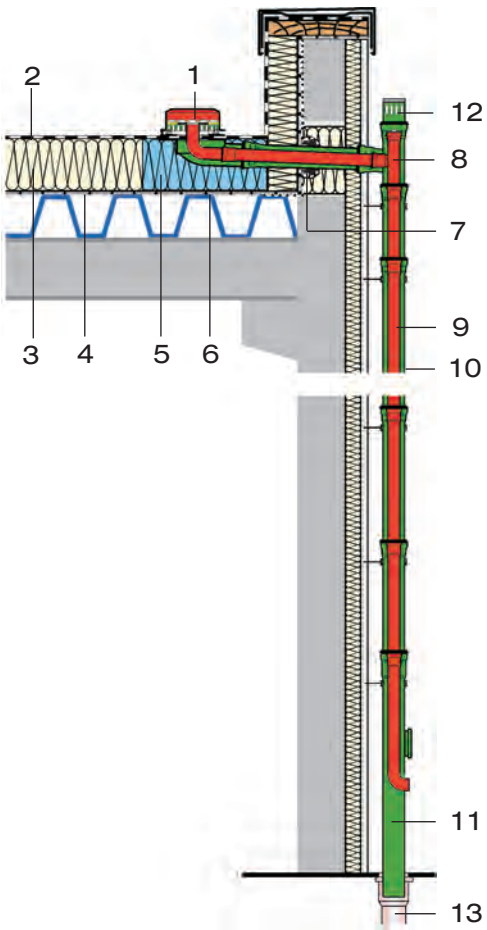
1 LORO-RAINSTAR® scupper roof drain, as emergency drain
2 Bituminous sealing sheets
3 Thermal insulation
4 Vapour barrier
5 Industrial trapezoidal sheet metal roof
6 LORO sliding flange
(for bonding the vapour barrier)
7 LORO-X bend, 87°
8 LORO-X rainwater downpipe
9 LORO-X bend, 45°



For roof sealing with bituminous sealing sheets



For roof sealing with plastic sealing sheets



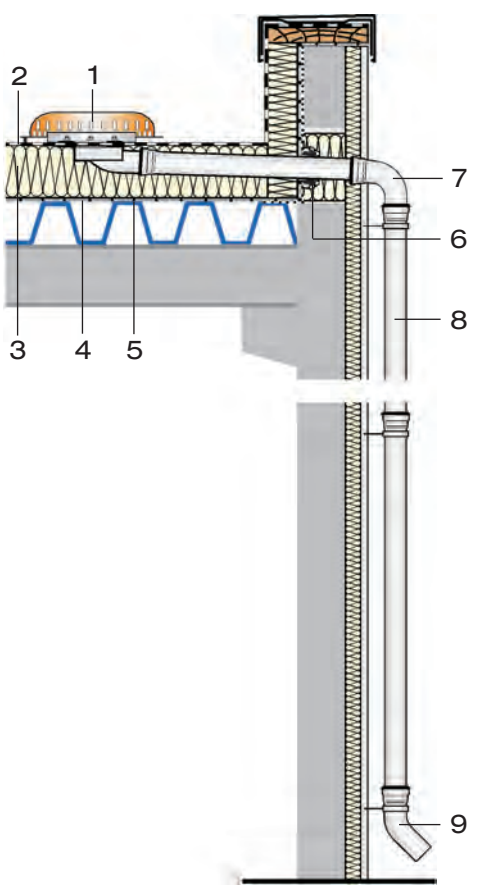

## Example applications

### LORO-X main-emergency combination scupper drains, DN 100/50, Series 101 with clamping flange, as special fabrication, according to EN 1253

**For bituminous and plastic sealing sheets**

1 LORO-X main-emergency combination scupper drain
2 Sealing sheets
3 Thermal insulation
4 Vapour barrier
5 LORO thermal insulation block
6 Industrial trapezoidal sheet metal roof
7 LORO sliding flange
(for bonding the vapour barrier)
8 LORO branch – pipe-in-pipe –
9 Internal pipe, DN 50
10 External pipe, DN 100
11 LORO rain standpipe – pipe-in-pipe –
12 LORO ventilation piece
13 Underground pipe

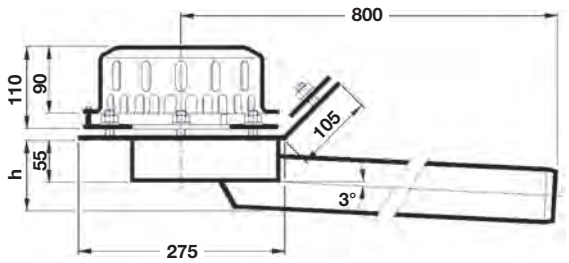


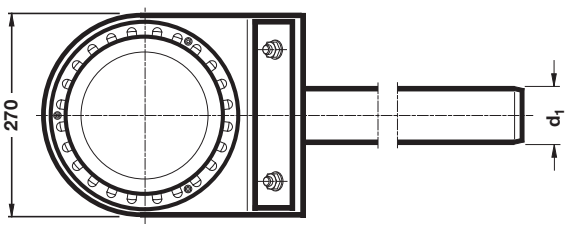



### LORO-ATTIKASTAR® scupper drains, as emergency drains, Series 93 DN 100, with clamping flange, as special fabrication, according to EN 1253

**For bituminous and plastic sealing sheets**

1 LORO-ATTIKASTAR® scupper roof drain, as emergency drain
2 Sealing sheets
3 Thermal insulation
4 Vapour barrier
5 Industrial trapezoidal sheet metal roof
6 LORO sliding flange
(for bonding the vapour barrier)
7 LORO-X bend, 87°
8 LORO-X rainwater downpipe
9 LORO-X bend, 45°




# Dimensions and weights

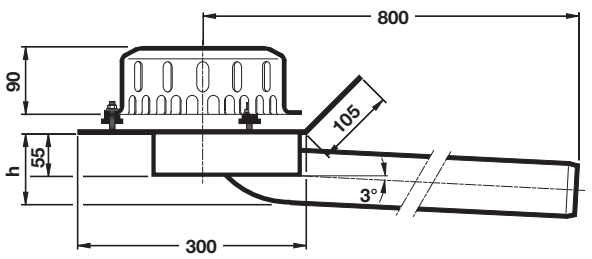
## LORO-RAINSTAR® scupper drains, DN 50 / DN 70 / DN 100, RA series, with clamping flange, for bituminous sealing sheets

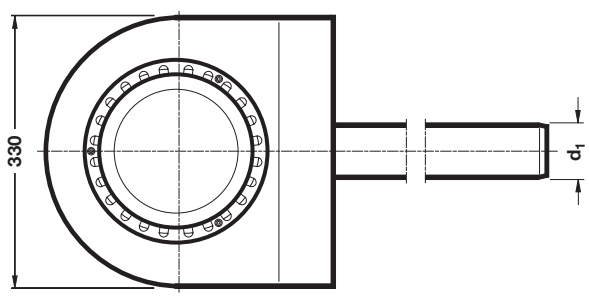
consisting of:
Strainer, loose flanges, drain body

**Discharge capacity according to Data sheet:**

**LX 490 DN 50 = 5.1 l/s***
**LX 489 as spout: 2.2 l/s**
**LX 460 DN 70 = 5.2 l/s***
**LX 467 as spout: 3.6 l/s**
**LX 479 DN 100 = 5.4 l/s***

DN 50: Item no. 01370.050X Weight: 8.1 kg
DN 70: Item no. 01370.070X Weight: 9.4 kg
DN 100: Item no. 01370.100X Weight: 11.3 kg



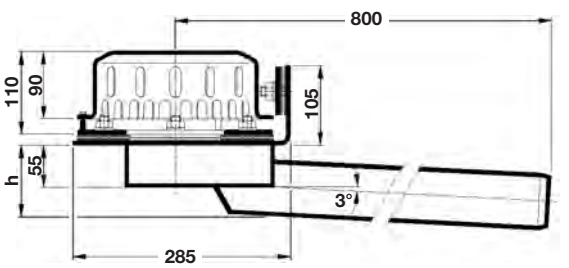

## LORO-RAINSTAR® scupper drains, DN 70 / DN 100, RA series, with bonding flange, for bituminous sealing sheets

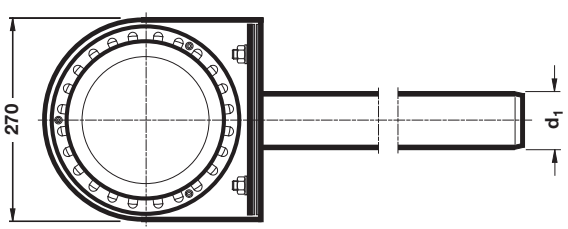
Steel, hot-dip galvanised, with additional coating,
Strainer of stainless steel
consisting of:
Strainer, drain body

**Discharge capacity according to data sheet:**

**LX 460 DN 70 = 5.2 l/s***
**LX 479 DN 100 = 5.4 l/s***

DN 70: Item no. 01374.070X Weight: 9.4 kg
DN 100: Item no. 01374.100X Weight: 11.3 kg




## LORO-RAINSTAR® scupper drains, DN 50 / DN 70 / DN 100, RA series, with clamping flange, for plastic sealing sheets

consisting of:
Strainer, loose flanges, compression seals,
Drain body

**Discharge capacity according to data sheet:**

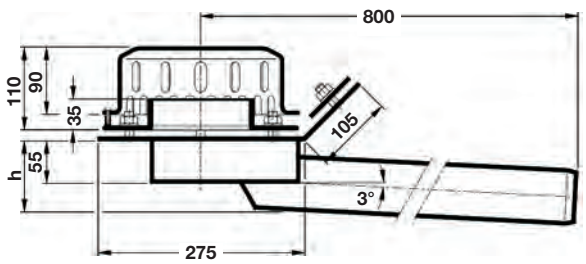
**LX 490 DN 50 = 5.1 l/s***
**LX 489 as spout: 2.2 l/s**
**LX 460 DN 70 = 5.2 l/s***
**LX 467 as spout: 3.6 l/s**
**LX 479 DN 100 = 5.4 l/s***

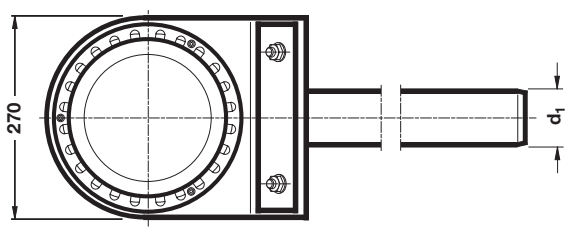
DN 50: Item no. 01372.050X Weight: 8.1 kg
DN 70: Item no. 01372.070X Weight: 9.4 kg
DN 100: Item no. 01372.100X Weight: 11.3 kg

| DN | $d_1$ | h |
|---|---|---|
| 50 | 53 | 82 |
| 70 | 73 | 92 |
| 100 | 102 | 106 |

* According to the test assembly of EN 1253

# Dimensions and weights



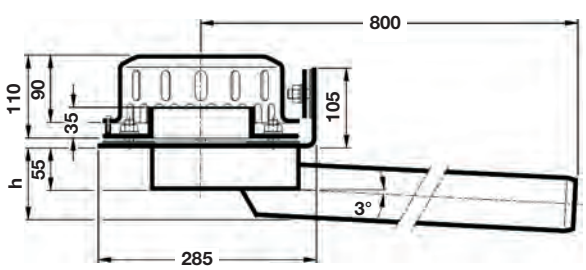

## LORO-RAINSTAR® emergency scupper drains, DN 50 / DN 70 / DN 100, RB series, with clamping flange, for bituminous sealing sheets

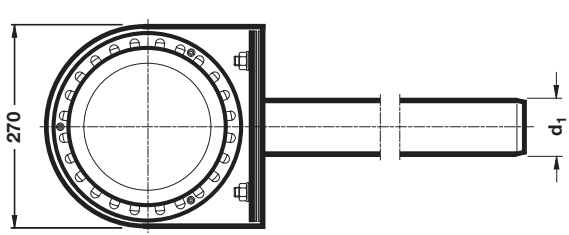
consisting of:
Strainer, loose flange with weir element, drain body, l oose flange for drain body

**Discharge capacity according to data sheet:**

| | | |
|---|---|---|
| LX 494 | DN 50: | 7.6 l/s* |
| LX 493 | as spout: | 2.6 l/s |
| LX 465 | DN 70: | 10.0 l/s* |
| LX 469 | as spout: | 4.2 l/s |
| LX 481 | DN 100: | 9.0 l/s* |
| LX 485 | as spout: | 6.8 l/s |

DN 50: Item no. 01371.050X Weight: 8.2 kg
DN 70: Item no. 01371.070X Weight: 9.8 kg
DN 100: Item no. 01371.100X Weight: 11.7 kg




## LORO-RAINSTAR® emergency scupper drains, DN 50 / DN 70 / DN 100, RB series, with clamping flange, for plastic sealing sheets

consisting of:
Strainer, loose flange with weir element, compression seals, drain body, loose flange for drain body

**Discharge capacity according to data sheet:**

| | | |
|---|---|---|
| LX 494 | DN 50: | 7.6 l/s* |
| LX 493 | as spout: | 2.6 l/s |
| LX 465 | DN 70: | 10.0 l/s* |
| LX 469 | as spout: | 4.2 l/s |
| LX 481 | DN 100: | 9.0 l/s* |
| LX 485 | as spout: | 6.8 l/s |

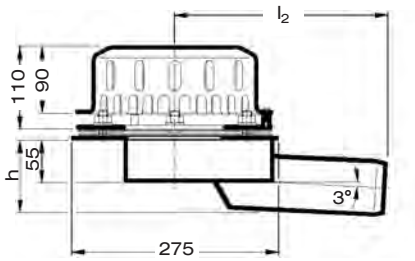
DN 50: Item no. 01373.050X Weight: 8.2 kg
DN 70: Item no. 01373.070X Weight: 9.8 kg
DN 100: Item no. 01373.100X Weight: 11.7 kg

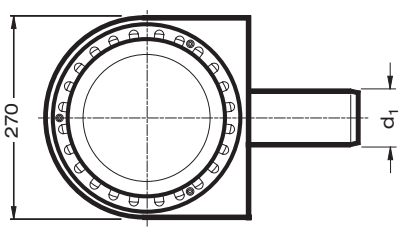
| DN | $d_1$ | h |
|---|---|---|
| 50 | 53 | 82 |
| 70 | 73 | 92 |
| 100 | 102 | 106 |

* According to the test assembly of EN 1253

Parapet
Gravity flow

# Dimensions and weights




## LORO-RAINSTAR® scupper drains, DN 50 / DN 70 / DN 100, Series 88, with clamping flange, without upstand, For bituminous and plastic sealing sheets

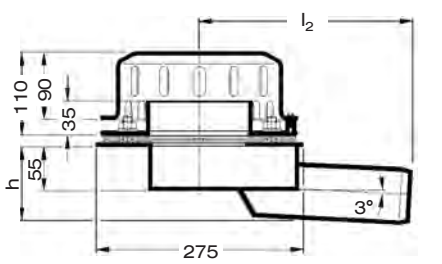
consisting of:
Strainer, loose flange, compression seal**,
Drain body

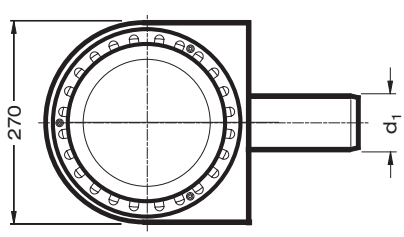
**Discharge capacity according to data sheet:**

| | |
|---|---|
| LX 490 | DN 50: 5.1 l/s* |
| LX 489 | as spout: 2.2 l/s |
| LX 460 | DN 70: 5.2 l/s* |
| LX 467 | as spout: 3.6 l/s |
| LX 479 | |

**DN 100: 5.4 l/s***

DN 70: Item no. 01390.070X Weight: 7.4 kg
DN 100: Item no. 01390.100X Weight: 8.3 kg




## LORO-RAINSTAR® emergency scupper drains, DN 50 / DN 70 / DN 100, Series 88, with clamping flange, without upstand, For bituminous and plastic sealing sheets

consisting of:
Strainer, loose flange, compression seal**,
Drain body

**Discharge capacity according to data sheet:**

| | |
|---|---|
| LX 494 | DN 50: 7.6 l/s* |
| LX 493 | as spout: 2.6 l/s |
| LX 465 | DN 70: 10.0 l/s* |
| LX 469 | as spout: 4.2 l/s |
| LX 481 | DN 100: 9.0 l/s* |
| LX 485 | as spout: 6.8 l/s |

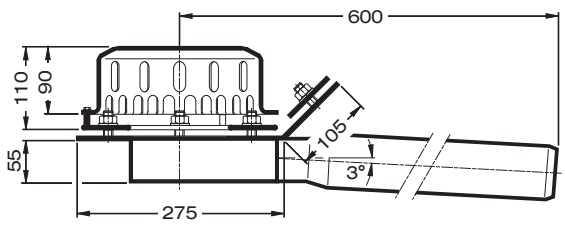
DN 50: Item no. 01391.050X Weight: 6.9 kg
DN 70: Item no. 01391.070X Weight: 7.8 kg
DN 100: Item no. 01391.100X Weight: 8.7 kg

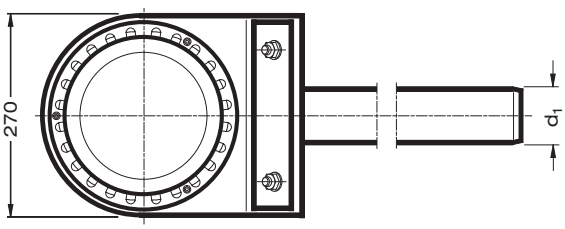
| DN | $d_1$ | h | $l_2$ |
|---|---|---|---|
| 50 | 53 | 82 | 260 |
| 70 | 73 | 92 | 260 |
| 100 | 102 | 106 | 290 |

** Can be omitted with bituminous sealing sheets.

* According to the test assembly of EN 1253

# Dimensions and weights




## LORO-RAINSTAR® scupper drains, DN 70 / DN 100, with clamping flange, with penetration depth of 55 mm, Series 89 for bituminous sealing sheets

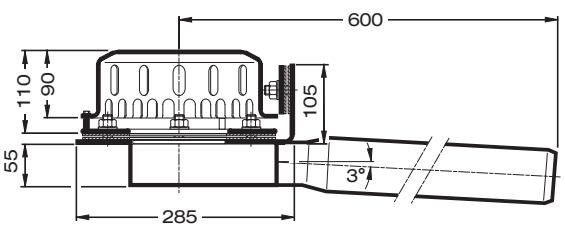
Steel, hot-dip galvanised, with additional coating,
Strainer of stainless steel

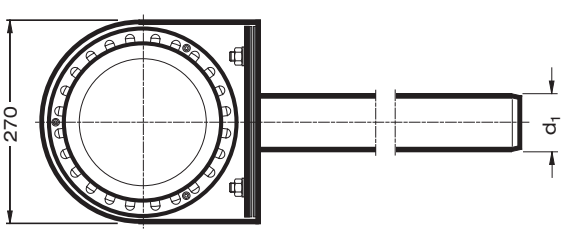
consisting of:
Strainer, loose flanges, drain body

**Discharge capacity according to data sheet:**

**LX 471 DN 70: 5.0 l/s***
**LX 472 as spout: 2.7 l/s**
**LX 487 DN 100: 4.9 l/s***
**LX 488 as spout: 3.6 l/s**

DN 70: Item no. 01360.070X Weight: 8.6 kg
DN 100: Item no. 01360.100X Weight: 10.5 kg




## LORO-RAINSTAR® scupper drains, DN 70 / DN 100, with clamping flange, with penetration depth of 55 mm, Series 89 for plastic sealing sheets

Steel, hot-dip galvanised, with additional coating,
Strainer of stainless steel

consisting of:
Strainer, loose flanges, compression seals,
Drain body

**Discharge capacity according to data sheet:**

**LX 471 DN 70: 5.0 l/s***
**LX 472 as spout: 2.7 l/s**
**LX 487 DN 100: 4.9 l/s***
**LX 488 as spout: 3.6 l/s**

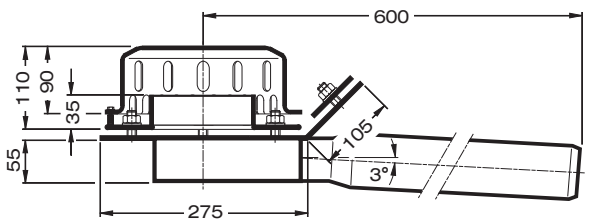
DN 70: Item no. 01362.070X Weight: 8.6 kg
DN 100: Item no. 01362.100X Weight: 10.5 kg

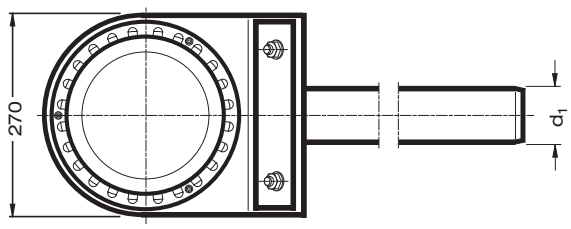
| DN | $d_1$ |
|---|---|
| 70 | 73 |
| 100 | 102 |

* According to the test assembly of EN 1253

Parapet Gravity flow

# Dimensions and weights




## LORO-RAINSTAR® emergency scupper drains, DN 70 / DN 100, with clamping flange, with penetration depth of 55 mm, Series 89 for bituminous sealing sheets

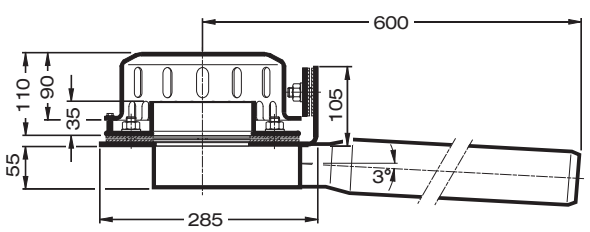
Steel, hot-dip galvanised, with additional coating,
Strainer of stainless steel

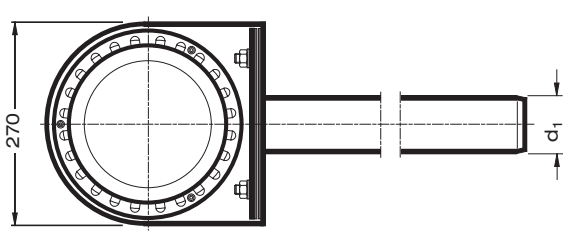
consisting of:
Strainer, loose flange with weir element, drain body,
Loose flange for drain body

**Discharge capacity according to data sheet:**

**LX 475 DN 70: 8.2 l/s***
**LX 476 as spout: 3.5 l/s**
**LX 668 DN 100: 8.0 l/s***
**LX 667 as spout: 4.6 l/s**

DN 70: Item no. 01361.070X Weight: 9.0 kg
DN 100: Item no. 01361.100X Weight: 10.9 kg




## LORO-RAINSTAR® emergency scupper drains, DN 70 / DN 100, with clamping flange, with penetration depth of 55 mm, Series 89 for plastic sealing sheets

Steel, hot-dip galvanised, with additional coating,
Strainer of stainless steel

consisting of:
Strainer, loose flange with weir element, compression seals,
drain body, loose flange for drain body

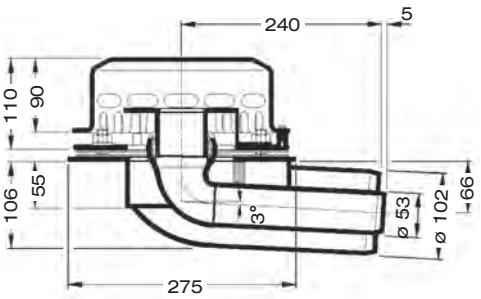
**Discharge capacity according to data sheet:**

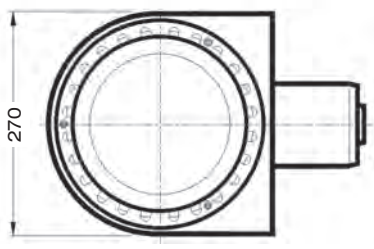
**LX 475 DN 70: 8.2 l/s***
**LX 476 as spout: 3.5 l/s**
**LX 668 DN 100: 8.0 l/s***
**LX 667 as spout: 4.6 l/s**

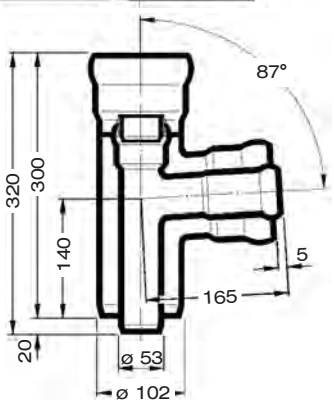
DN 70: Item no. 01363.070X Weight: 8.6 kg
DN 100: Item no. 01363.100X Weight: 10.5 kg

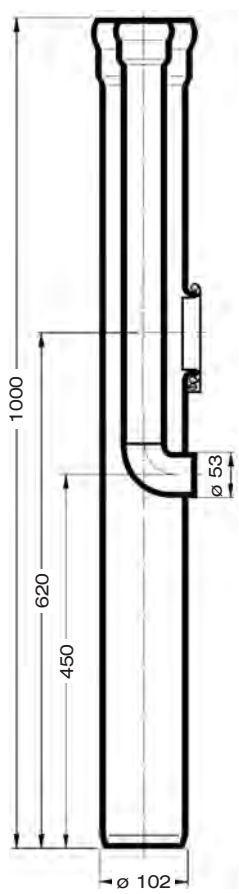
| DN | $d_1$ |
|---|---|
| 70 | 73 |
| 100 | 102 |

* According to the test assembly of EN 1253




# Dimensions and weights

## LORO-X main-emergency combination scupper drain, DN 100/50, with clamping flange, Series 101

**For bituminous and plastic sealing sheets**

Steel, hot-dip galvanised, with additional coating,
Strainer of stainless steel

consisting of:
Strainer, loose flange, compression seal**,
Overflow pipe, drain body

**Discharge capacity according to data sheet LX 772 :**

| | |
|---|---|
| **Main:** | **4.5 l/s*** |
| **Emergency:** | **8.2 l/s*** |
| **Combination:** | **12.7 l/s*** |

DN 100: Item no. 13506.100X Weight: 7.2 kg

## LORO branch – pipe-in-pipe – DN 100/50

Steel, hot-dip galvanised, with additional coating,
including closing plug and sealing element

DN 100/50: Item no. 13513.DD0X Weight: 3.1 kg

## LORO rain standpipe – pipe-in-pipe – DN 100/50

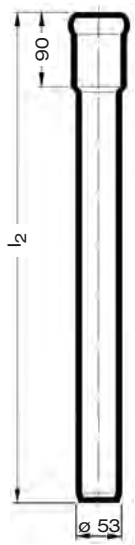
Steel, hot-dip galvanised, with additional coating

DN 100/50: Item no. 13510.100X Weight: 6.7 kg

**Trace heating**
We recommend that the customer fits our main-emergency combination scupper drains and the downpipes that lead from them with trace heating.

** Can be omitted with bituminous sealing sheets.

* According to the test assembly of EN 1253

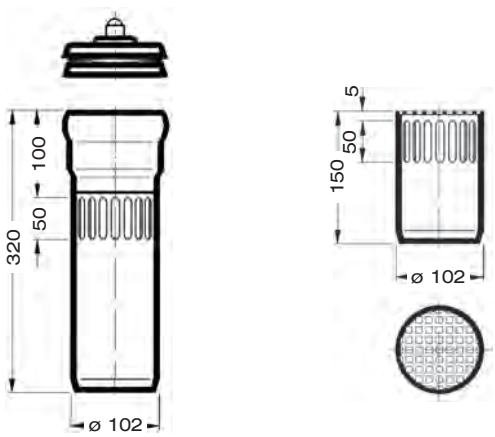



## Dimensions and weights

### LORO-X pipe with long socket, DN 50

Steel, hot-dip galvanised, with additional coating

DN 50, $l_2$ = 590 mm: Item no. 01302.050X Weight: 1.1 kg
DN 50, $l_2$ = 1090 mm: Item no. 01203.050X Weight: 2.2 kg
DN 50, $l_2$ = 2090 mm: Item no. 01108.050X Weight: 4.4 kg




### LORO-X ventilation piece with closing plugs, DN 100

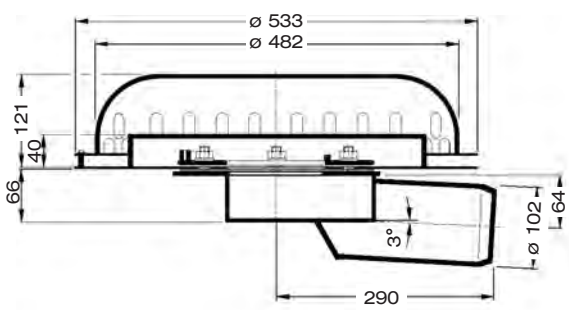
Steel, hot-dip galvanised, with additional coating

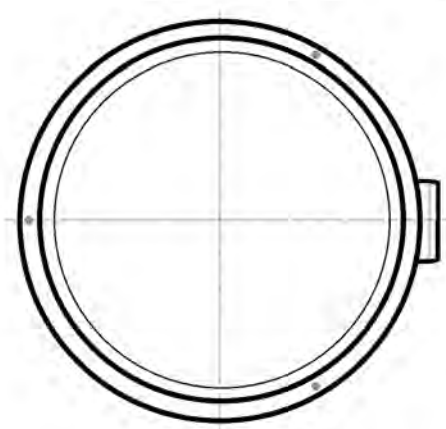
DN 100: Item no. 13216.100X Weight: 2.1 kg

### LORO-X ventilation piece with perforated sheet, DN 100

Steel, hot-dip galvanised, with additional coating

DN 100: Item no. 13217.100X Weight: 0.7 kg



### LORO-ATTIKASTAR® emergency scupper drains, DN 100, with clamping flange, Series 93

**For bituminous and plastic sealing sheets**

consisting of:
Strainer cover, loose flange, compression seal**,
Weir basin, baseplate, drain body

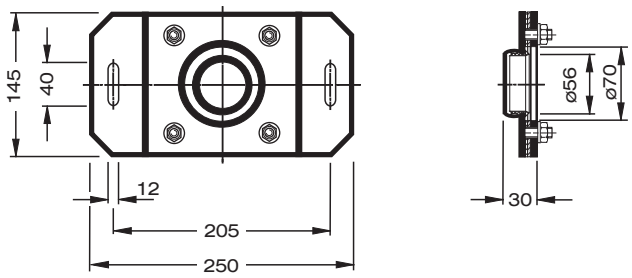
**Discharge capacity according to data sheet LX 859 : DN 100: 9.1 l/s***

DN 100: Item no. 01394.100X Weight: 13.0 kg

** Can be omitted with bituminous sealing sheets.

* According to the test assembly of EN 1253

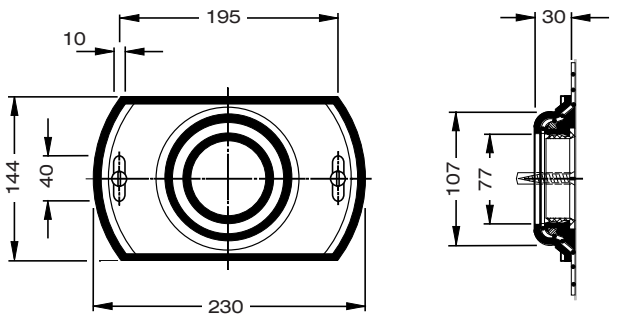
# Dimensions and weights




## LORO sliding flange, DN 50

**with clamping flange,**
**for bonding the vapour barrier**

of stainless steel
Item no. 13232.050X  Weight: 1.4 kg



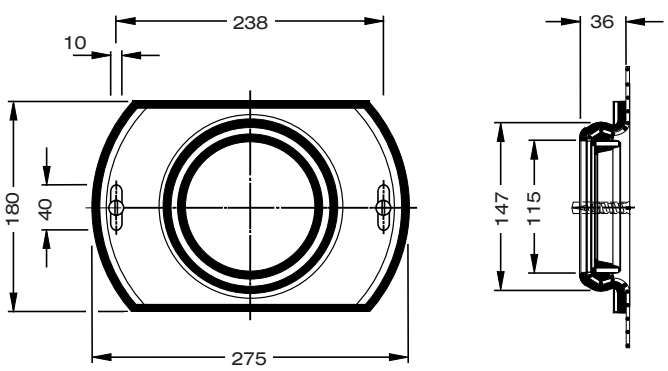

## LORO sliding flange, DN 70

**with connecting sleeve,**
**for bonding the vapour barrier**

steel, hot-dip galvanised

for vapour barrier of bituminous sealing sheets
Item no. 13235.070X  Weight: 1.4 kg

for vapour barrier of plastic sealing sheets
Item no. 13236.070X  Weight: 1.4 kg



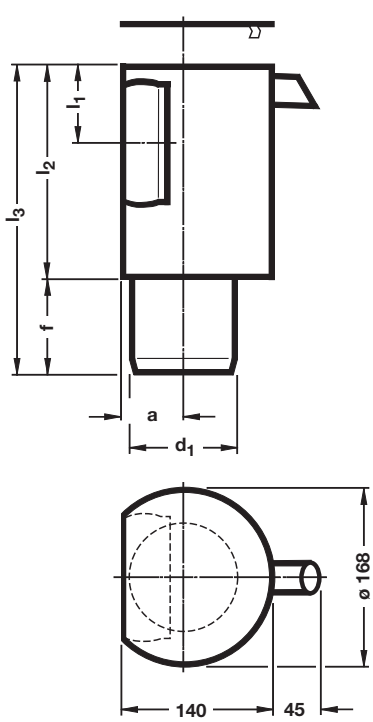

## LORO sliding flange, DN 100

**with connecting sleeve,**
**for bonding the vapour barrier**

steel, hot-dip galvanised

for vapour barrier of bituminous sealing sheets
Item no. 13235.100X  Weight: 1,7 kg

for vapour barrier of plastic sealing sheets
Item no. 13236.100X  Weight: 1,7 kg




## LORO collector

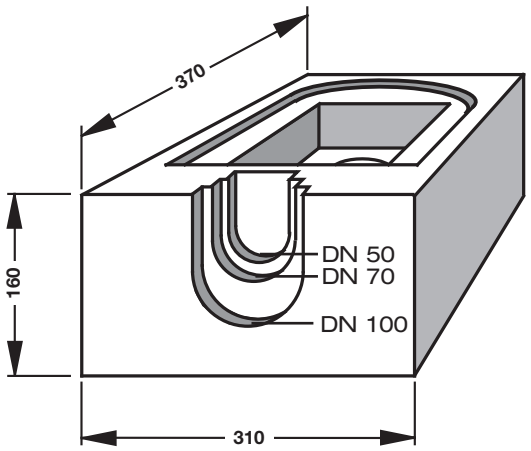
for roof drains with parapet opening,

made of steel, hot-dip galvanised,
with additional internal coating

DN 70: Item no. 04379.070X  Weight: 2.6 kg
DN 100: Item no. 04379.100X  Weight: 2.7 kg

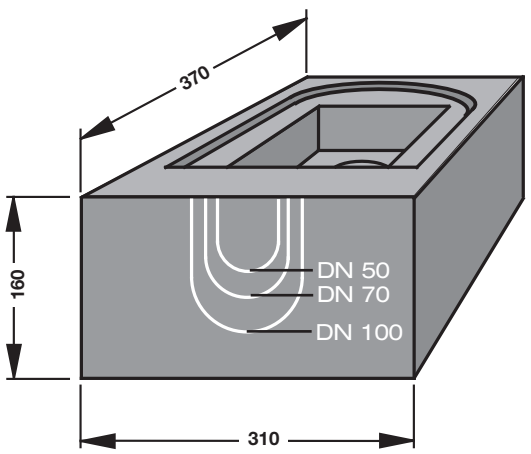
| DN | a | f | $d_1$ | $l_1$ | $l_2$ | $l_3$ |
|---|---|---|---|---|---|---|
| 70 | 50 | 70 | 73 | 55 | 205 | 275 |
| 100 | 60 | 85 | 102 | 70 | 205 | 290 |

# Dimensions and weights




## LORO thermal insulation block

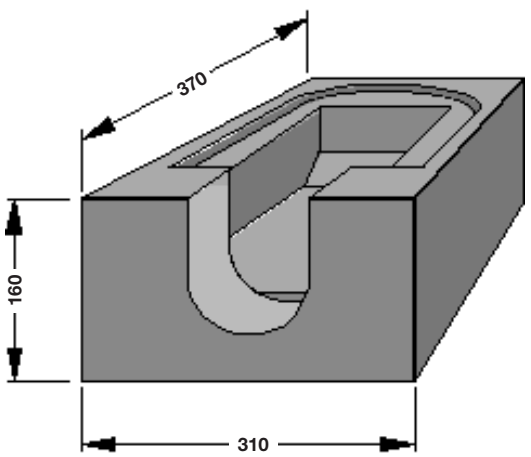
universally applicable for LORO-RAINSTAR scupper drains DN 50 - DN 100
and LORO scupper balcony drain DM 50
Item no. 01384.000X Weight: 0.6 kg




## LORO thermal insulation block, of foam glass, non-combustible

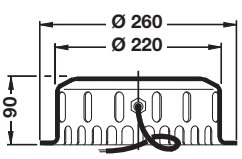
universally applicable for LORO-RAINSTAR scupper drains DN 50 - DN 100
and LORO scupper balcony drain DM 50
Item no. 13845.000X Weight: 0.6 kg

Make the cut-out on site for the nominal diameter that will be used.



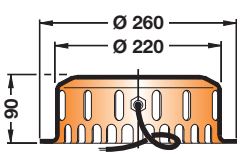

## LORO thermal insulation block, of foam glass, non-combustible

for LORO-X main-emergency combination scupper drain DN 100
Item no. 13855.000X Weight: 0.6 kg




## LORO strainer with heating

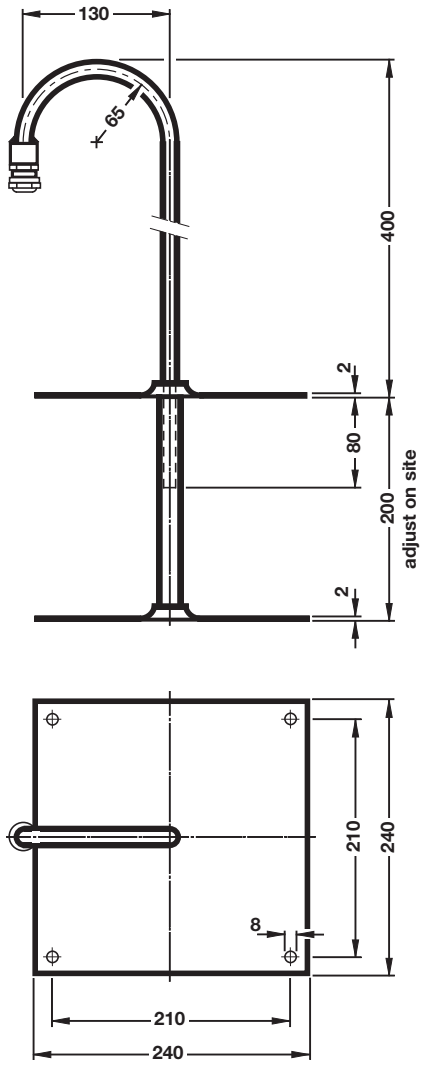
Item no. 21014.000X Weight: 0.5 kg




## LORO strainer emergency drain with heating

Item no. 21017.000X Weight: 0.5 kg

# Dimensions and weights



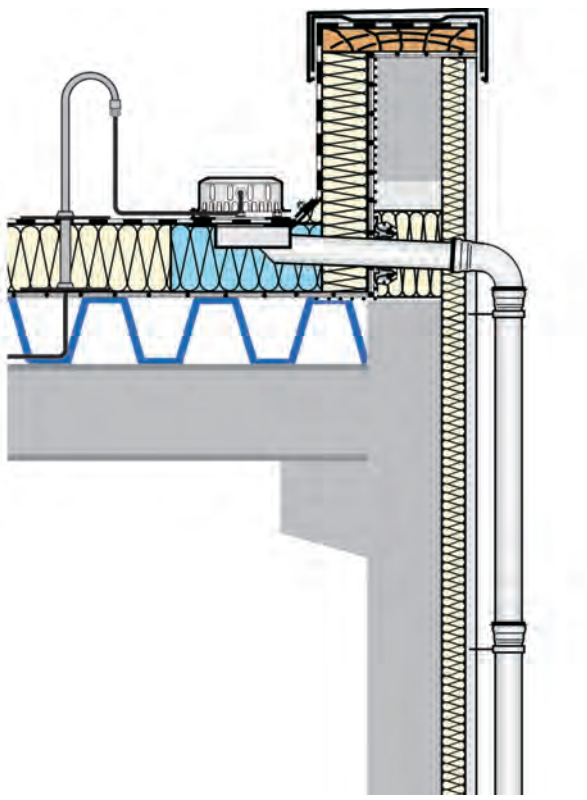

## LORO cable feed-through for heating cable,

for heated strainer drains

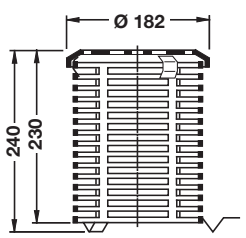
of stainless steel

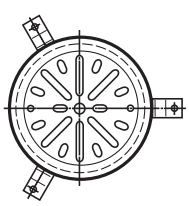
Item no. 18230.000X

Weight: 2.0 kg







## LORO-RAINSTAR® strainer unit for inverted roof

made of steel, hot-dip galvanised, with additional plastic coating, consisting of: Strainer and strainer cover

Item no. 19494.000X

Weight: 2.5 kg

# LORO-X scupper direct drains with bonding flange, with and without basin, made of steel, Series 43 DN 70 and DN 100

## Roof drains for roofs with roof edge upstand, for bituminous sealing sheets

### Technical product data

**Material:**

**Drain pot:**
steel, hot-dip galvanised

**Strainer cover:**
Steel, hot-dip galvanised, with additional coating

**Sealing elements:**
SB (SBR) styrene-butadiene copolymer, trade name e.g. BUNA, DN 70 - DN 100, silicone-free.

**Fire resistance:**
LORO scupper direct drains are assigned in accordance with DIN 4102 to building material class A1, non-combustible.

**External supervision:**
LORO scupper direct drains meet EN 1253. External supervision is carried out by the Materials Inspection Institute at Würzburg, operated by the Bavarian State Trade Agency (Landesgewerbeanstalt).

**LORO-X scupper direct drain with bonding flange, without basin, for smaller roof areas, DN 70 and DN 100**

**LORO-X scupper direct drain with bonding flange and basin, DN 70 and DN 100**

**LORO-X double pipe scupper direct drain, with bonding flange and basin, DN 100**

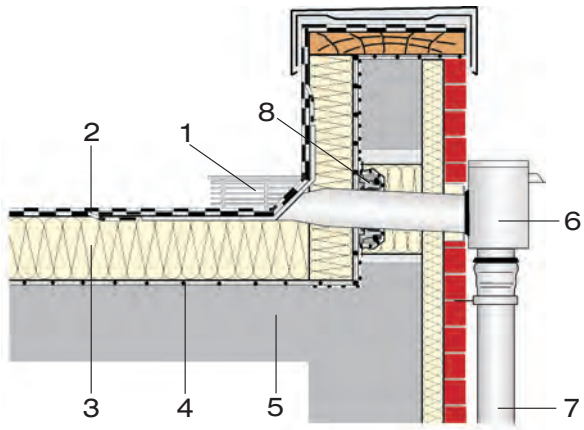
**LORO-X scupper direct drain with bonding flange, basin and lowered pipe, DN 100**

**LORO-X double pipe scupper direct drain, with bonding flange, basin and lowered pipe, DN 100**

**LORO-X main-emergency combination double pipe scupper direct drain, with bonding flange, basin and lowered pipe, DN 100**

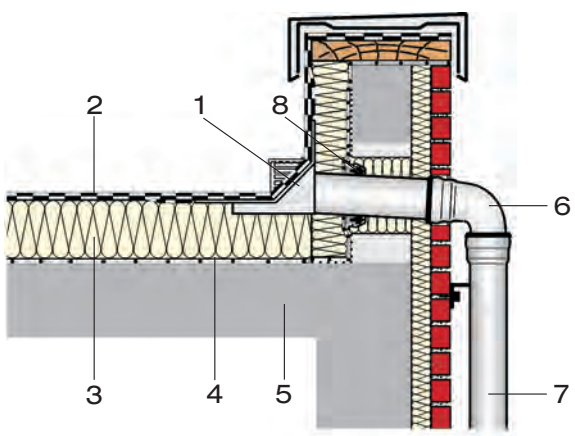
**LORO-X scupper direct drain with clamping flange, without penetration into the roof, DN 100, for plastic sealing sheets**

# Example applications



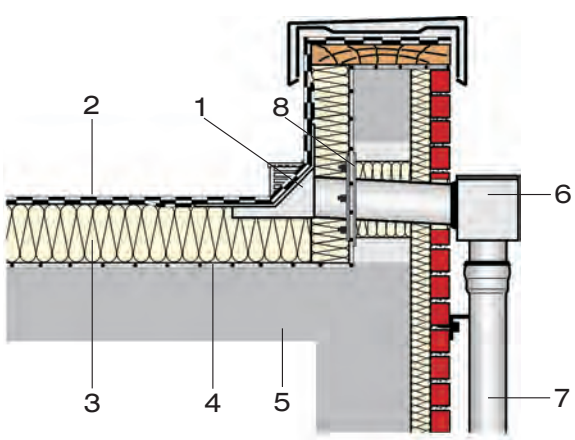

**LORO-X scupper drains with bonding flange, for bituminous sealing sheets**

1 LORO scupper roof drain with bonding flange for parapet
2 Bituminous sealing sheet
3 Thermal insulation
4 Vapour barrier
5 Concrete slab
6 LORO drain collector
7 LORO rainwater downpipe with welded bracket (Special fabrication)
8 LORO sliding flange for bonding the vapour barrier




**LORO-X scupper direct drain with bonding flange and basin, for bituminous sealing sheets**

1 LORO scupper direct drain with bonding flange
2 Bituminous sealing sheet
3 Thermal insulation
4 Vapour barrier
5 Concrete slab
6 LORO-X bend, 87°
7 LORO-X rainwater downpipe with welded bracket (Special fabrication)
8 LORO sliding flange for bonding the vapour barrier on site

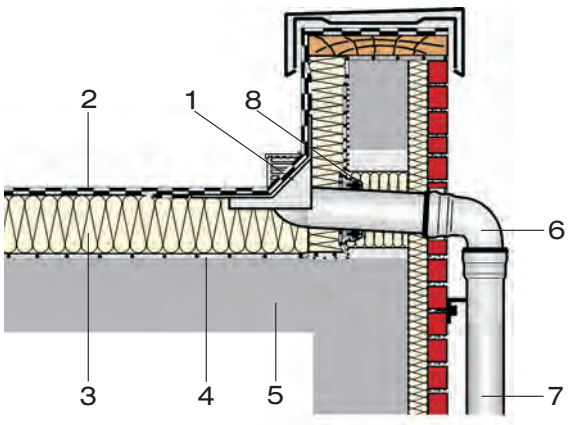



**LORO-X double pipe scupper direct drain with bonding flange and basin, for bituminous sealing sheets**

1 LORO scupper direct drain with bonding flange
2 Bituminous sealing sheet
3 Thermal insulation
4 Vapour barrier
5 Concrete slab
6 LORO scupper drain collector for double pipe drains
7 LORO-X rainwater downpipe with welded bracket (Special fabrication)
8 LORO sliding flange for bonding the vapour barrier on site

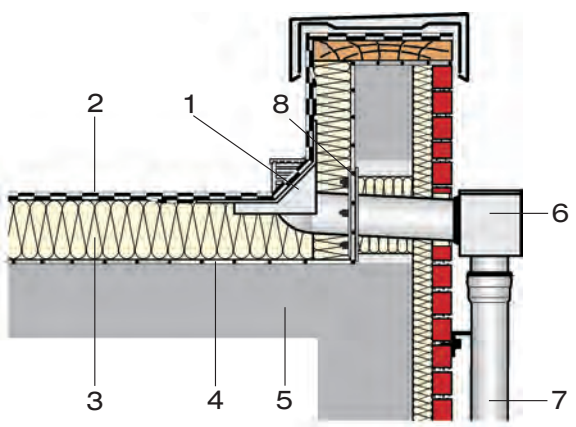
* According to the test assembly of EN 1253

# Example applications



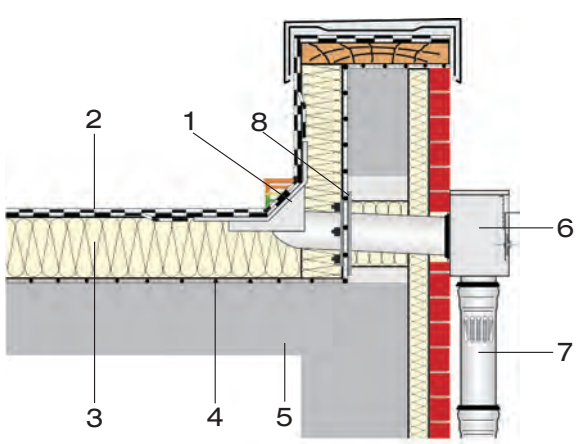

**LORO-X scupper direct drain with bonding flange, basin and lowered pipe, for bituminous sealing sheets**

1 LORO scupper direct drain with bonding flange
2 Bituminous sealing sheet
3 Thermal insulation
4 Vapour barrier
5 Concrete slab
6 LORO-X bend 87°
7 LORO-X rainwater downpipe with welded bracket (Special fabrication)
8 LORO sliding flange for bonding the vapour barrier on site




**LORO-X double pipe scupper direct drain with bonding flange, basin and lowered pipe, for bituminous sealing sheets**

1 LORO scupper direct drain with bonding flange
2 Bituminous sealing sheet
3 Thermal insulation
4 Vapour barrier
5 Concrete slab
6 LORO scupper drain collector for double pipe drains
7 LORO-X rainwater downpipe with welded bracket (Special fabrication)
8 LORO sliding flange for bonding the vapour barrier on site

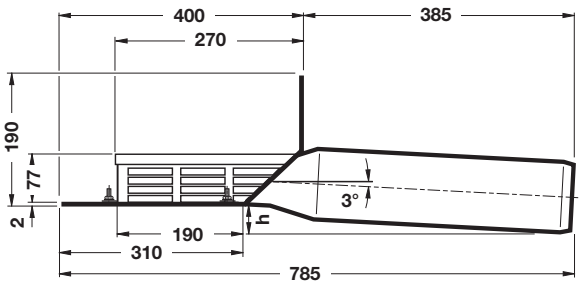


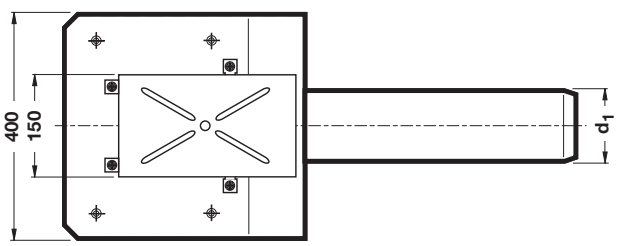

**LORO-X main-emergency emergency combination double pipe scupper direct drain, with bonding flange and basin, for bituminous sealing sheets**

1 LORO scupper direct drain with bonding flange
2 Bituminous sealing sheet
3 Thermal insulation
4 Vapour barrier
5 Concrete slab
6 LORO scupper drain collector for double pipe drains
7 Ventilation piece
8 LORO sliding flange for bonding the vapour barrier on site

* According to the test assembly of EN 1253

# Dimensions and weights




## LORO-X scupper direct drains, DN 70 / DN 100, with bonding flange, without basin for bituminous sealing sheets

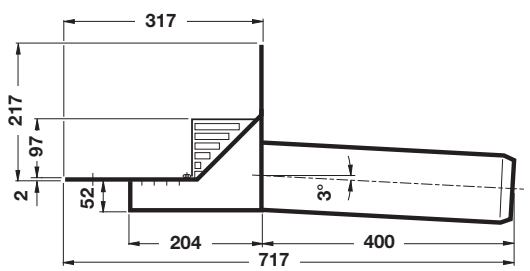
steel, hot-dip galvanised

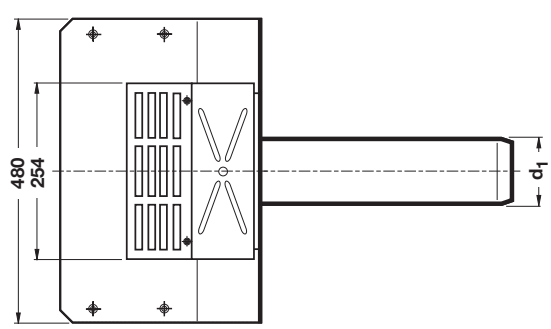
consisting of:
Strainer cover, strainer, drain body

**Discharge capacity according to data sheet:**
**LX 620 DN 70 = 0.8 l/s***
**LX 621 DN 100 = 1.2 l/s***

DN 70: Item no. 01316.070X Weight: 4.7 kg
DN 100: Item no. 01316.100X Weight: 5.4 kg

| DN | $d_1$ | h |
|---|---|---|
| 70 | 73 | 20 |
| 100 | 102 | 35 |




## LORO-X scupper direct drains, DN 70 / DN 100, with bonding flange and basin, for bituminous sealing sheets

Steel, hot-dip galvanised, with additional internal coating,
Plastic-coated strainer

consisting of:
Strainer, drain body

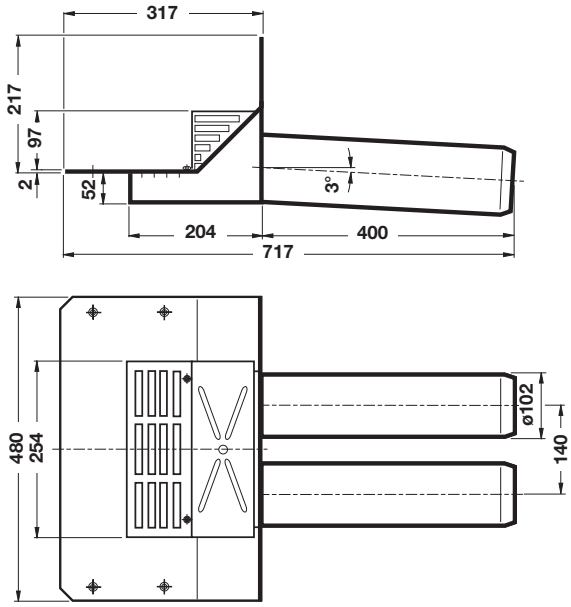
**Discharge capacity according to data sheet:**
**LX 650 DN 70 = 2.3 l/s***
**LX 647 DN 100 = 3.0 l/s***

DN 70: Item no. 01330.070X Weight: 7.4 kg
DN 100: Item no. 01330.100X Weight: 8.2 kg

| DN | $d_1$ |
|---|---|
| 70 | 73 |
| 100 | 102 |

* According to the test assembly of EN 1253

# Dimensions and weights




## LORO-X double pipe scupper direct drain, DN 100, with bonding flange and basin, for bituminous sealing sheets

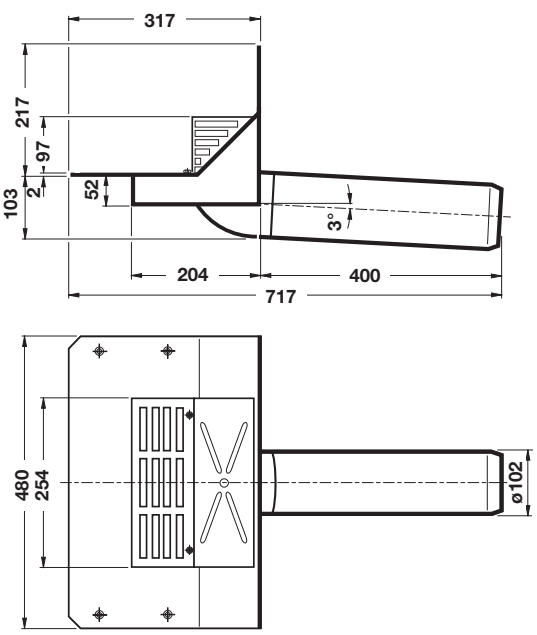
Steel, hot-dip galvanised, with additional internal coating,
Plastic-coated strainer

consisting of:
Strainer, drain body

**Discharge capacity according to data sheet LX 653 :**

**DN 100 = 4.5 l/s***

DN 100: Item no. 01320.100X Weight: 9.8 kg




## LORO-X scupper direct drain, DN 100, with bonding flange, basin and lowered pipe, for bituminous sealing sheets

Steel, hot-dip galvanised, with additional internal coating,
Plastic-coated strainer

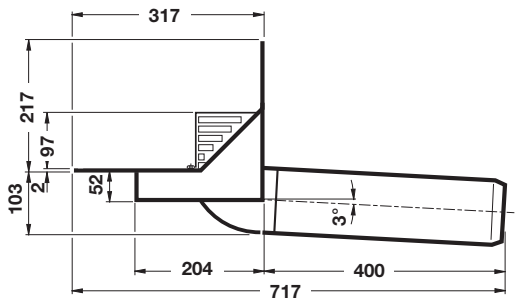
consisting of:
Strainer, drain body

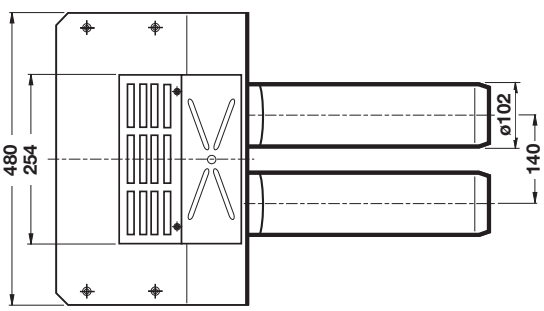
**Discharge capacity according to data sheet LX 694 : DN 100 = 4.5 l/s***

DN 100: Item no. 01350.100X Weight: 8.6 kg

* According to the test assembly of EN 1253

# Dimensions and weights



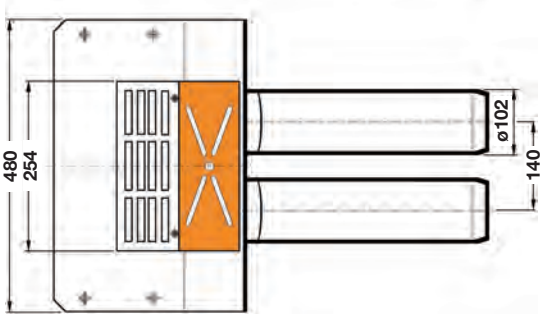

## LORO-X double pipe scupper direct drain, DN 100, with bonding flange, basin and lowered pipe, for bituminous sealing sheets

Steel, hot-dip galvanised, with additional internal coating,
Plastic-coated strainer

consisting of:
Strainer, drain body

**Discharge capacity according to data sheet**
**LX 727 : DN 100 = 4.0 l/s***

DN 100: Item no. 01323.100X Weight: 10.2 kg

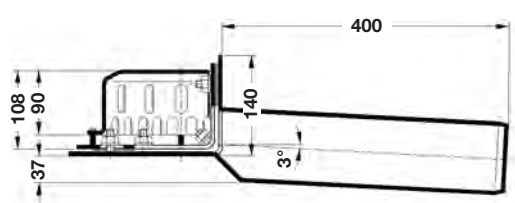

## LORO-X main-emergency combination double pipe scupper direct drain, DN 100, with bonding flange, basin and lowered pipe, for bituminous sealing sheets

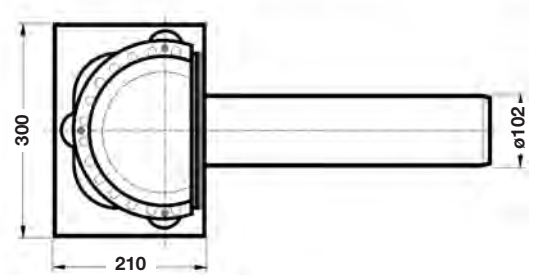
Steel, hot-dip galvanised, with additional internal coating,
Plastic-coated strainer

consisting of:
Strainer, drain body

**Discharge capacity according to data sheet**
**LX 727 : Main: 4.0 l/s***
**Emergency: 8.0 l/s***
**Combination: 2.0 l/s***

DN 100: Item no. 01324.100X Weight: 10.2 kg




## LORO-X scupper direct drain, DN 100, with clamping flange, without penetration into the roof, for plastic sealing sheets

of stainless steel

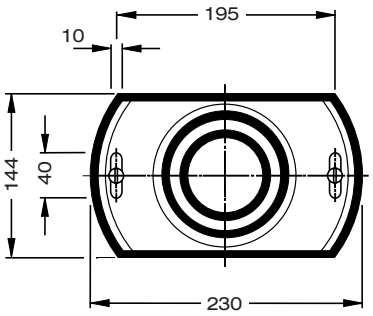
consisting of:
strainer, compression seal, drain body

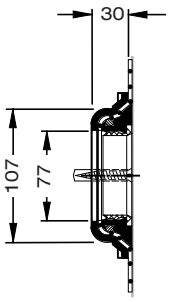
**Discharge capacity according to data sheet**
**LX 1110 : DN 100 = 1.7 l/s***

DN 100: Item no. 01333.100X Weight: 5.7 kg

* According to the test assembly of EN 1253

# Dimensions and weights



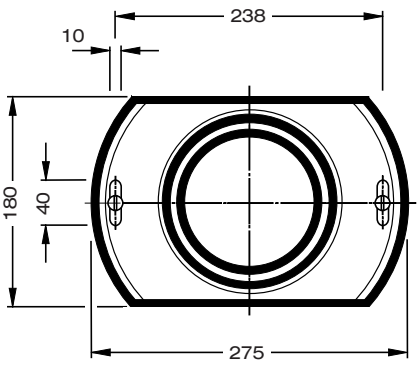



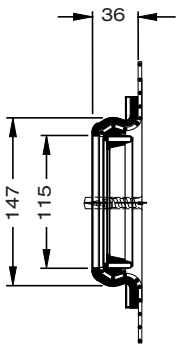

## LORO sliding flange, DN 70
**with connecting sleeve,**
**for bonding the vapour barrier**

steel, hot-dip galvanised

for vapour barrier of bituminous sealing sheets
Item no. 13235.070X Weight: 1.6 kg

for vapour barrier of plastic sealing sheets
Item no. 13236.070X Weight: 1.6 kg



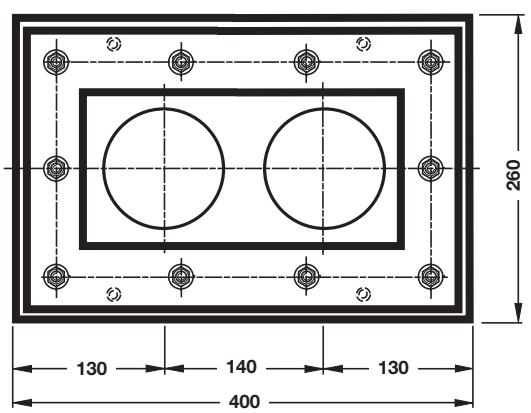




## LORO sliding flange, DN 100
**with connecting sleeve,**
**for bonding the vapour barrier**

steel, hot-dip galvanised

for vapour barrier of bituminous sealing sheets
Item no. 13235.100X Weight: 1.7 kg

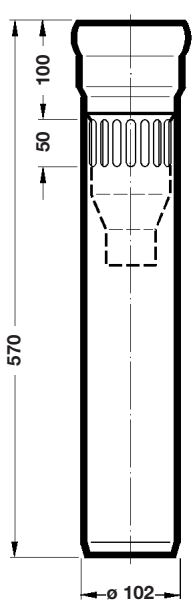
for vapour barrier of plastic sealing sheets
Item no. 13236.100X Weight: 1.7 kg




## LORO sliding flange, DN 100
**for LORO-X double pipe scupper direct drains,**
**for bonding the vapour barrier**

steel, hot-dip galvanised
Item no. 13228.100X Weight: 5.1 kg

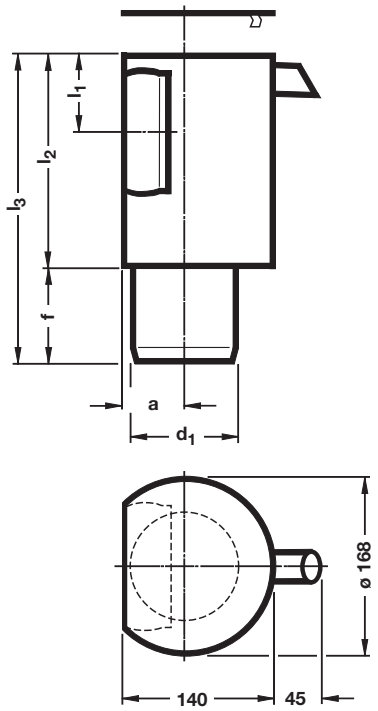
including sealing elements




## LORO-X ventilation pipe, DN 100
**for LORO-X main-emergency combination**
**double pipe scupper direct drain**

steel, hot-dip galvanised
Item no. 13218.100X Weight: 2.9 kg

# Dimensions and weights



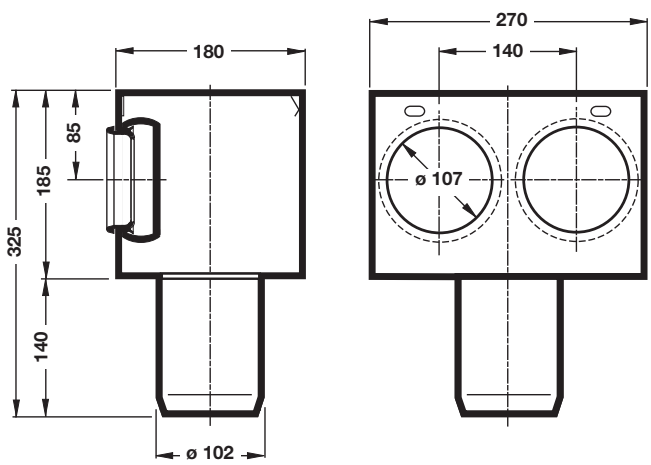

## LORO collector

for LORO-RAINSTAR® scupper drains and
LORO-X scupper direct drains

made of steel, hot-dip galvanised,
with additional internal coating

DN 70: Item no. 04379.070X Weight: 2.6 kg
DN 100: Item no. 04379.100X Weight: 2.7 kg

| DN | a | f | $d_1$ | $l_1$ | $l_2$ | $l_3$ |
|---|---|---|---|---|---|---|
| 70 | 50 | 70 | 73 | 55 | 205 | 275 |
| 100 | 60 | 85 | 102 | 70 | 205 | 290 |

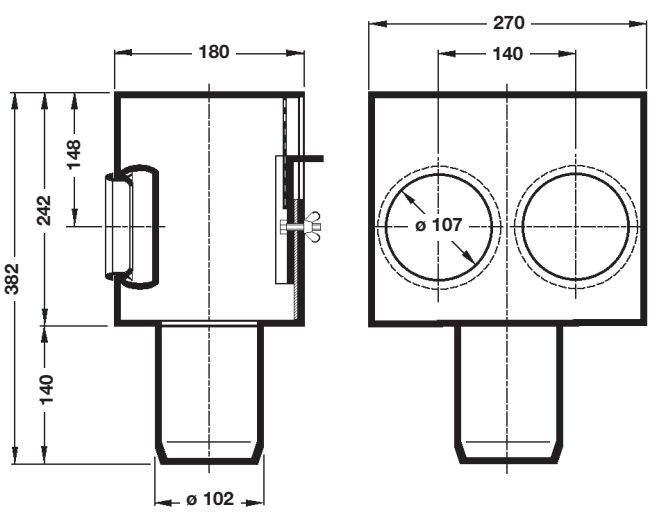



## LORO collector

for LORO-X double pipe scupper direct drains

made of steel, hot-dip galvanised,
with additional internal coating

DN 100: Item no. 00440.100X Weight: 5.4 kg




## LORO collector

for LORO-X main-emergency combination double pipe scupper direct drains,
with adjustable-height weir

made of steel, hot-dip galvanised,
with additional internal coating

DN 100: Item no. 00445.100X Weight: 6.9 kg

# LORO-RAINSTAR®

## siphonic scupper drains, DN 50, DN 70 and DN 100

- as main drain, RC series
- as emergency drain, RD series

### Roof drains for roofs with roof edge upstand, with clamping flange, for bituminous and plastic sealing sheets

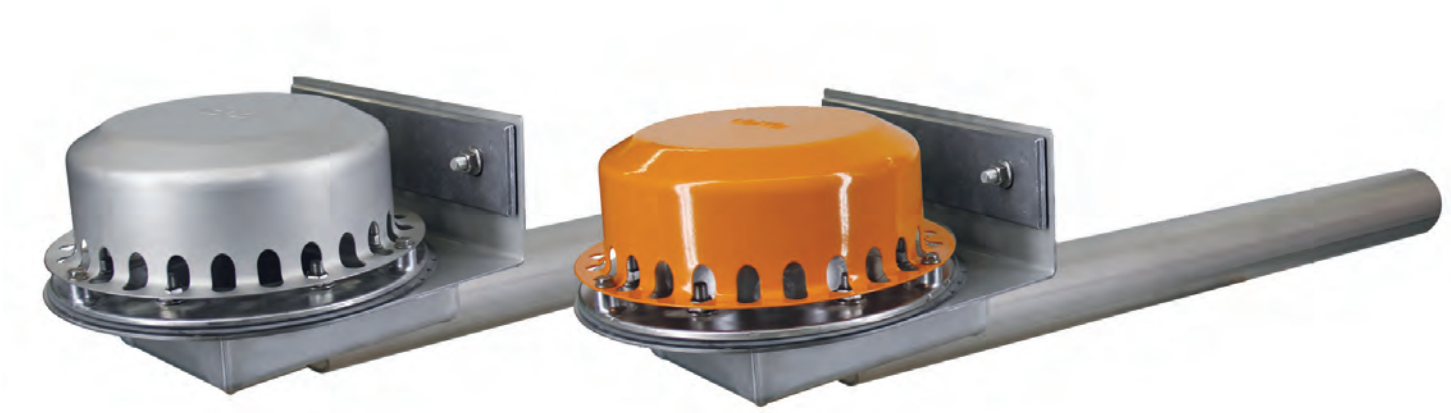
LORO-RAINSTAR scupper roof drains are a further development of the LORO-DRAINJET® scupper drains.
The design of the new drains has been engineered to improve the flow characteristics, allowing a significant improvement in the discharge capacity.

The patented scupper drains are made of stainless steel. They satisfy EN 1253

LORO-RAINSTAR® scupper drains are supplied as a complete drainage system, together with LORO rainwater downpipes and pipe fittings.

**Particular advantages:**

- **High discharge capacity**
- **LORO-RAINSTAR® emergency scupper drains are fitted at the same level as the main drainage systems**



**LORO-RAINSTAR®**
**siphonic scupper drain, RC series, DN 50 - DN 100**

**LORO-RAINSTAR®**
**siphonic scupper drain as emergency drain, RD series, DN 50 - DN 100**

**System overview:**

# LORO-
# scupper drainage systems for pressure flow

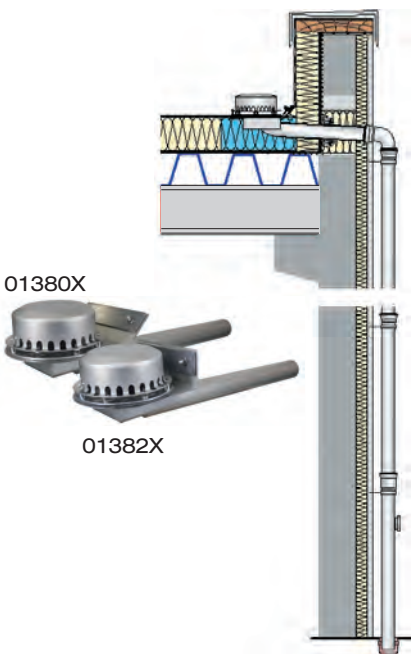
**Main drainage**

**Pressure flow**

**Silent Power**

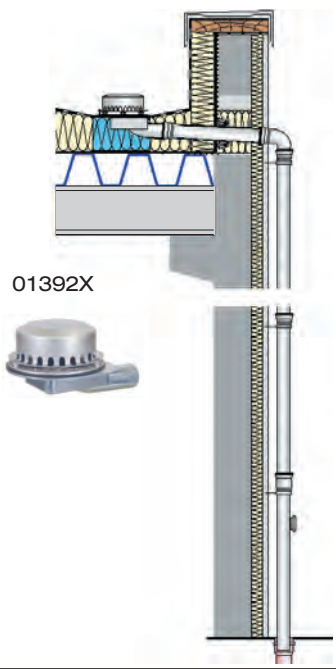
## Series 79 RAINSTAR®

**High discharge capacity through lowered pipe**



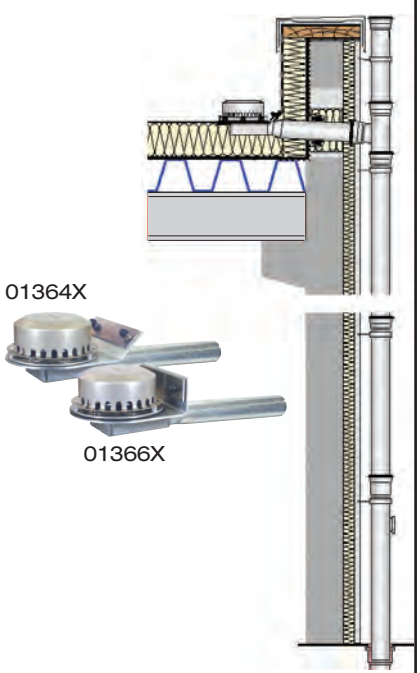

## Series 88 DISTANT

**Without upstand**

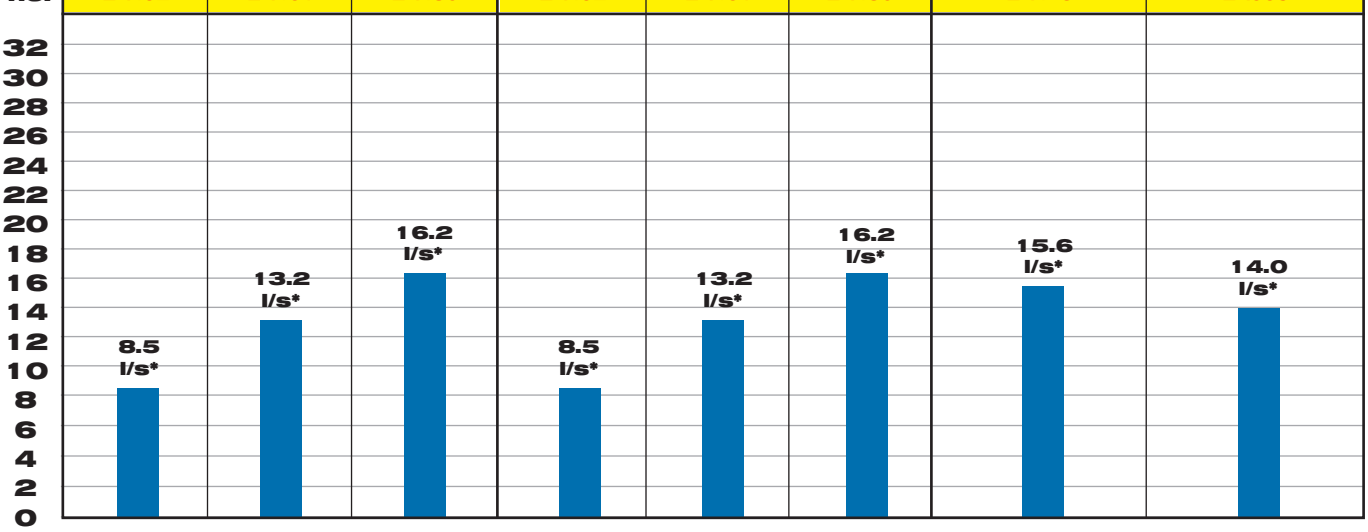



## 89 series

**Low penetration depth**




| DN | 50 | 70 | 100 | 50 | 70 | 100 | 70 | 100 |
|---|---|---|---|---|---|---|---|---|
| ⬇ | 82 mm | 92 mm | 106 mm | 82 mm | 92 mm | 106 mm | 55 mm | 55 mm |
| LX no. | LX492 | LX461 | LX480 | LX492 | LX461 | LX480 | LX473 | LX665 |

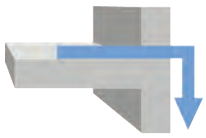



⬇ = penetration depth into the roof

* Discharge capacity measured in test assembly according to EN 1253, downpipe length 4.2 m

Parapet Pressure flow

**System overview:**



# LORO scupper drainage systems for pressure flow

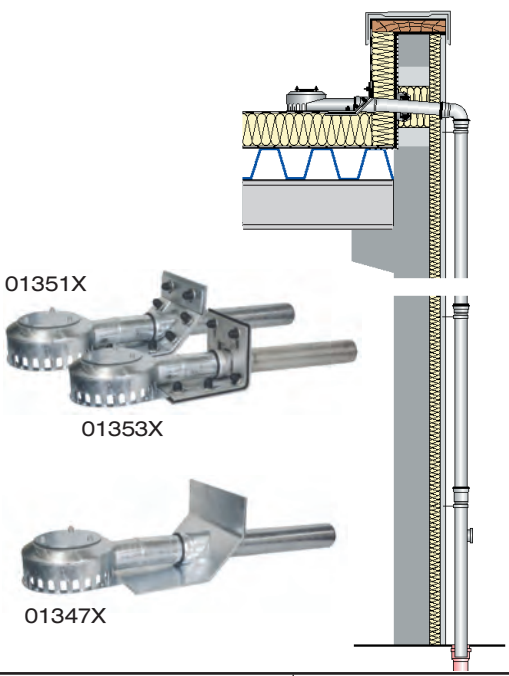
**Main drainage**

**Pressure flow**

**Silent Power**

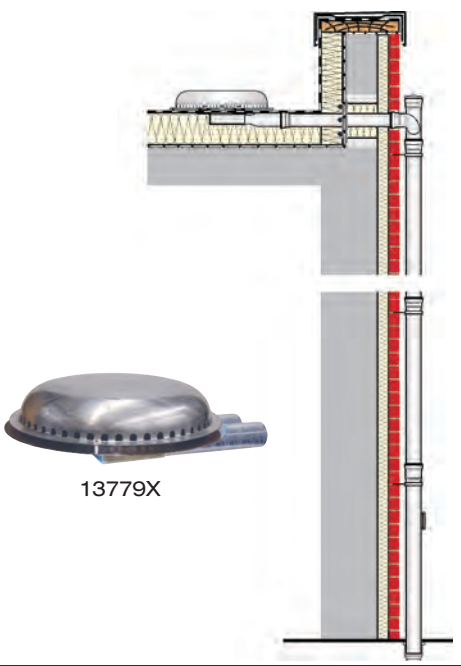
## Series 62 DRAINJET®

**Without penetration into the roof**

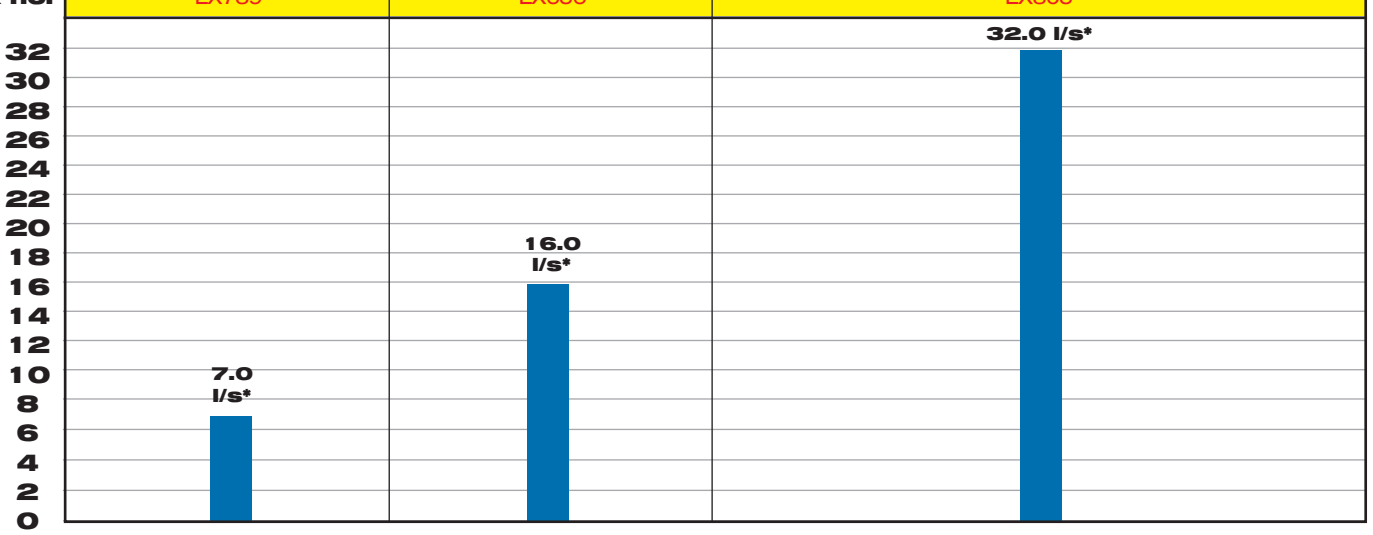



## Series 93 ATTIKASTAR®

**High-performance roof drainage**




| DN | 50 | 70 | 100 |
|---|---|---|---|
| ↓ | 0 mm | 0 mm | 55 mm |
| LX no. | LX789 | LX636 | LX803 |




↓ = penetration depth into the roof

* Discharge capacity measured in test assembly according to EN 1253, downpipe length 4.2 m

**System overview:**

# LORO scupper drainage systems for pressure flow

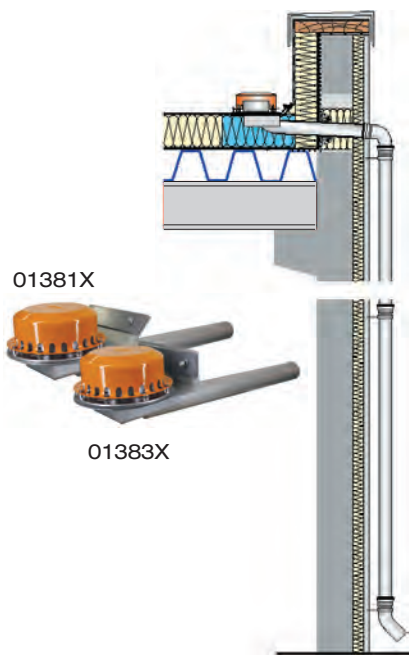
**Emergency drainage**

**Pressure flow**

**Silent Power**

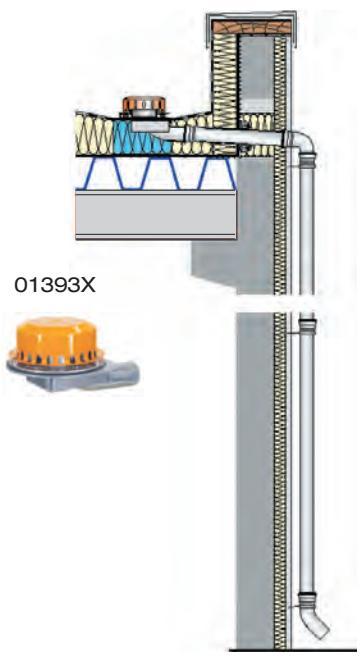
## Series 79 RAINSTAR®

**High discharge capacity through lowered pipe**



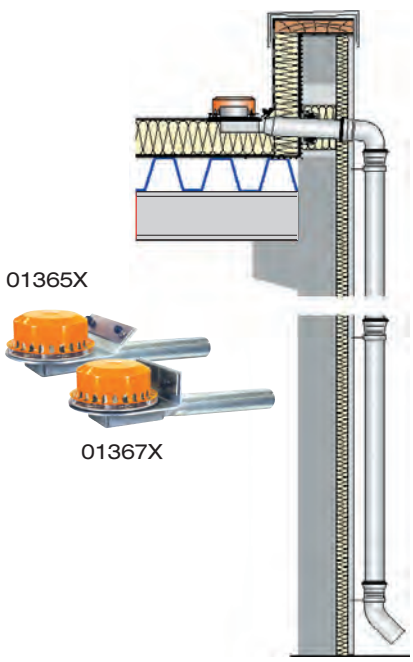

## Series 88 DISTANT

**Without upstand**

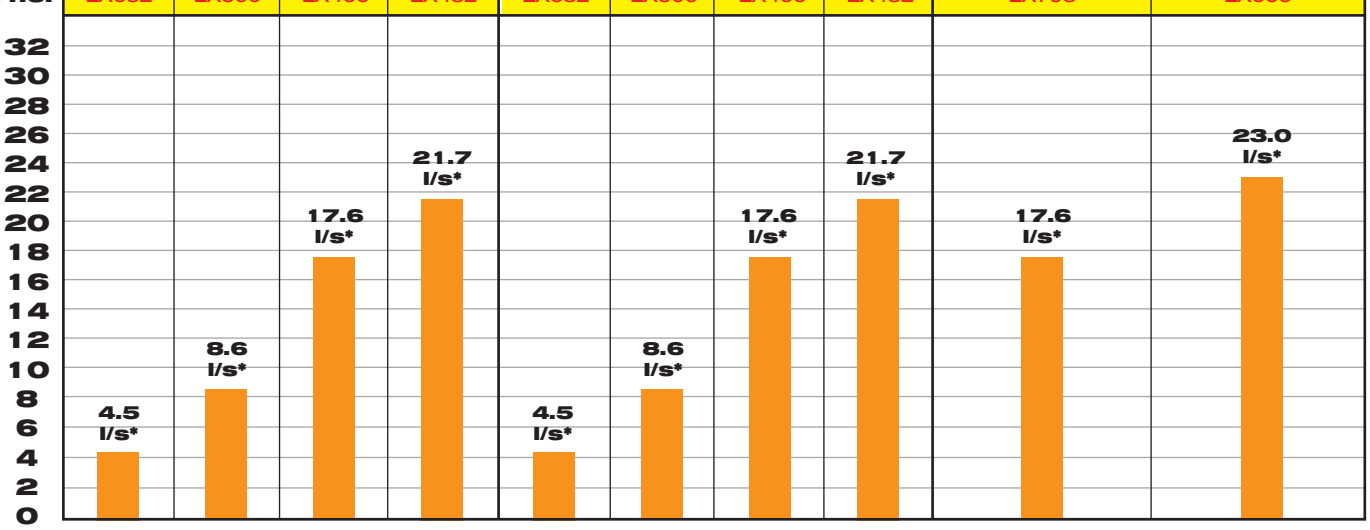



## Series 89 RAINSTAR®

**Low penetration depth**




| DN | 40 | 50 | 70 | 100 | 40 | 50 | 70 | 100 | 70 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| ⬇ | 76 mm | 82 mm | 92 mm | 106 mm | 76 mm | 82 mm | 92 mm | 106 mm | 55 mm | 55 mm |
| LX no. | LX682 | LX500 | LX466 | LX482 | LX682 | LX500 | LX466 | LX482 | LX798 | LX666 |




⬇ = penetration depth into the roof

* Discharge capacity measured in test assembly according to EN 1253, downpipe length 4.2 m

Parapet Pressure flow

## System overview:

# LORO scupper drainage systems for pressure flow

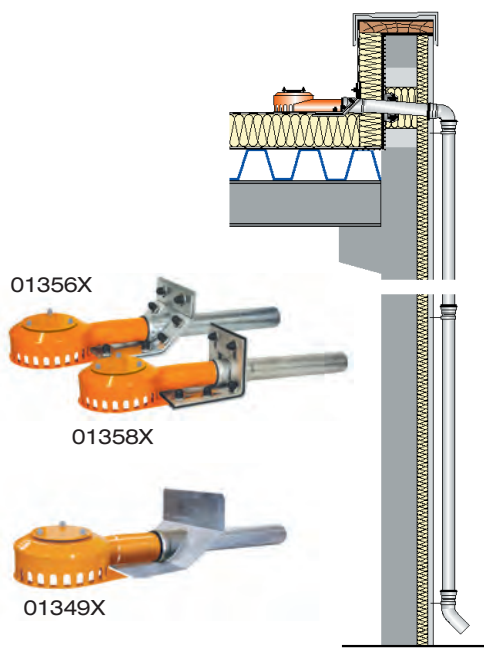
**Emergency drainage**

**Pressure flow**

**Silent Power**

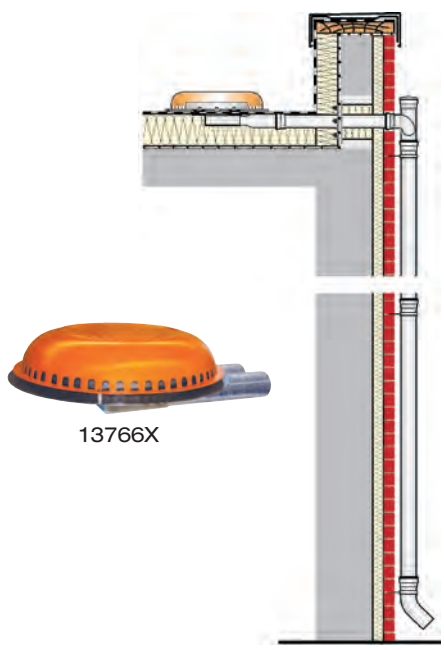
### Series 62 DRAINJET®

**Without penetration into the roof**

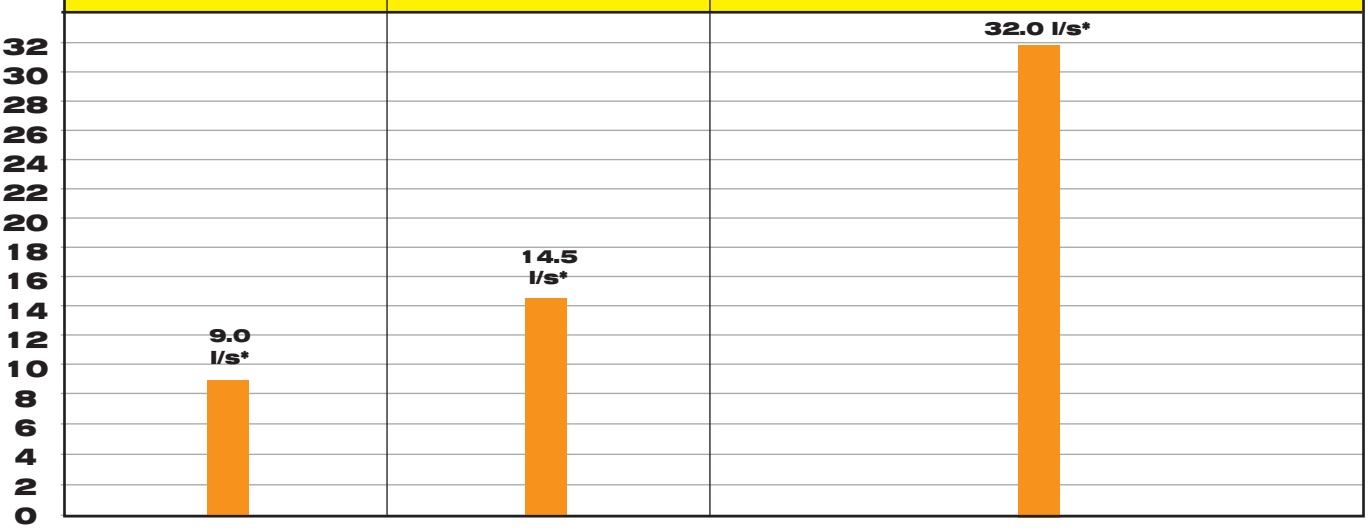



### Series 93 ATTIKASTAR®

**High-performance roof drainage**



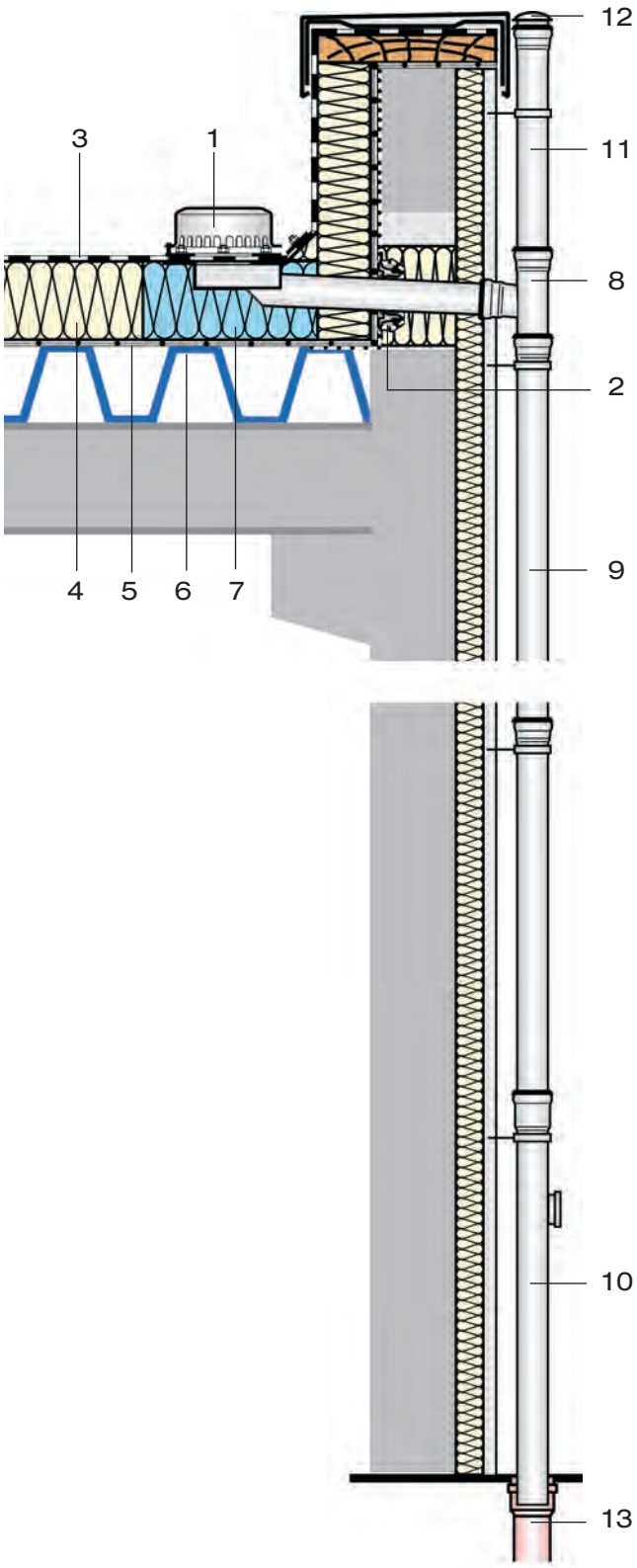

| DN | 50 | 70 | 100 |
|---|---|---|---|
| ⬇ | 0 mm | 0 mm | 55 mm |
| LX no. | LX790 | LX637 | LX766 |




⬇ = penetration depth into the roof

* Discharge capacity measured in test assembly according to EN 1253, downpipe length 4.2 m

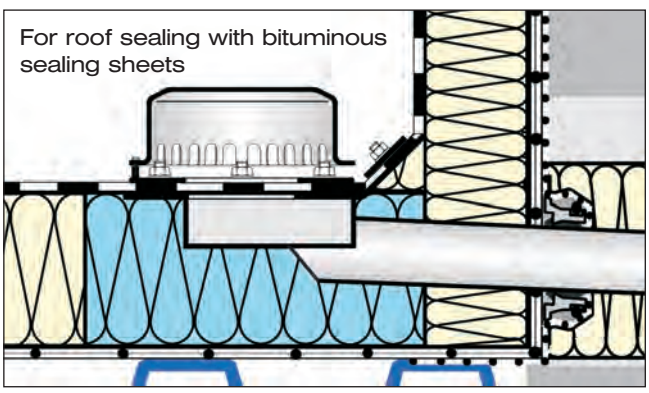
# Example applications



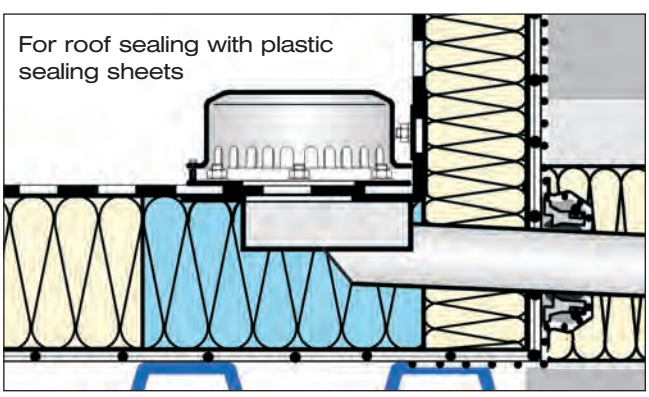

## LORO-RAINSTAR® scupper drains, for pressure flow, DN 50 / DN 70 / DN 100, RC series, with clamping flange, according to EN 1253

**For bituminous and plastic sealing sheets**

For roof sealing with bituminous sealing sheets

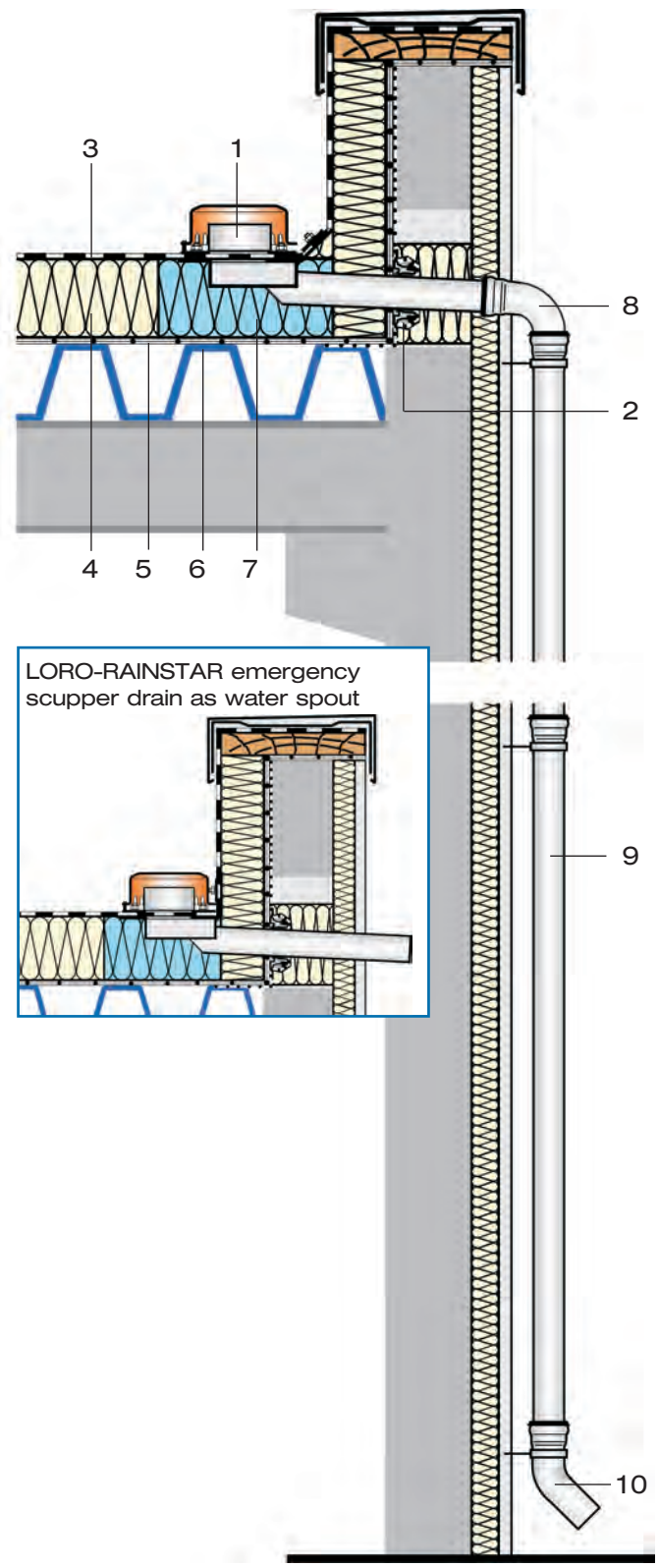


For roof sealing with plastic sealing sheets



1 LORO-RAINSTAR® scupper roof drain
2 LORO sliding flange (for bonding the vapour barrier)
3 Bituminous sealing sheets
4 Thermal insulation
5 Vapour barrier
6 Industrial trapezoidal sheet metal roof or concrete roof
7 LORO thermal insulation block (Mounting aid for bonding the scupper drain into the thermal insulation)
8 LORO-X branch
9 LORO-X rainwater downpipe
10 LORO-X rain standpipe
11 LORO-X pipe
12 LORO-X end cover
13 Underground pipe

# Example applications

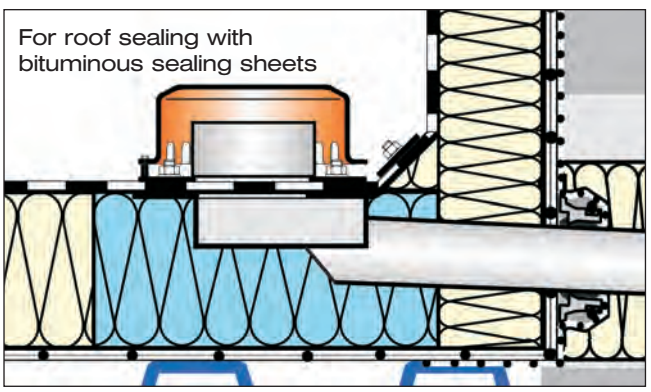



LORO-RAINSTAR emergency scupper drain as water spout

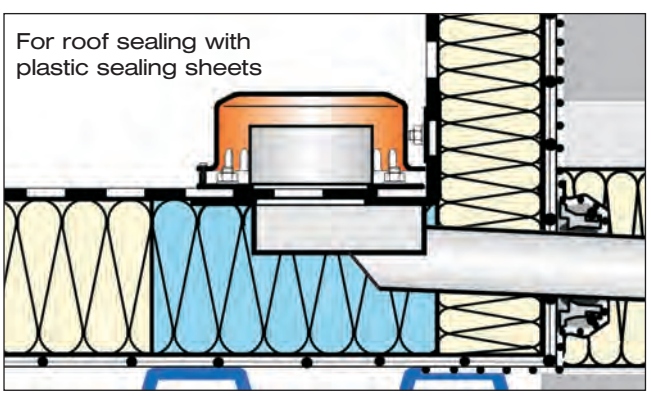
## LORO-RAINSTAR® emergency scupper drains, for pressure flow DN 50 / DN 70 / DN 100, RD series, with clamping flange, according to EN 1253

**For bituminous and plastic sealing sheets**

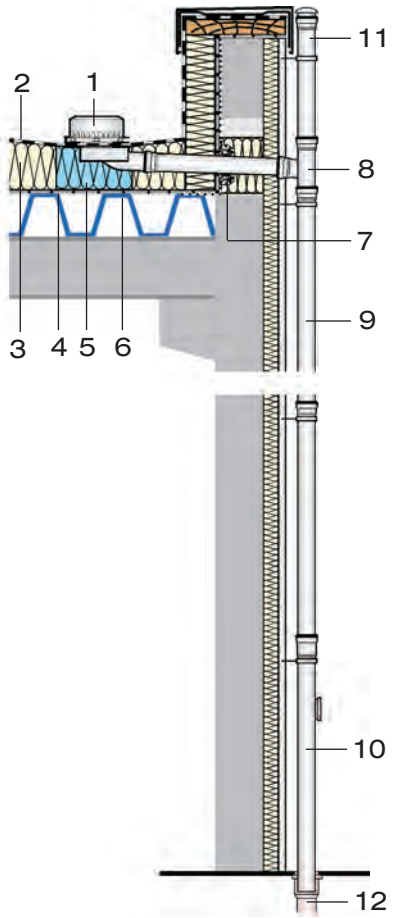
For roof sealing with bituminous sealing sheets



For roof sealing with plastic sealing sheets



1 LORO-RAINSTAR® scupper roof drain as emergency drain
2 LORO sliding flange (for bonding the vapour barrier)
3 Bituminous sealing sheets
4 Thermal insulation
5 Vapour barrier
6 Industrial trapezoidal sheet metal roof or concrete roof
7 LORO thermal insulation block (Mounting aid for bonding the scupper drain into the thermal insulation)
8 LORO-X bend, 87°
9 LORO-X rainwater downpipe
10 LORO-X bend, 45°

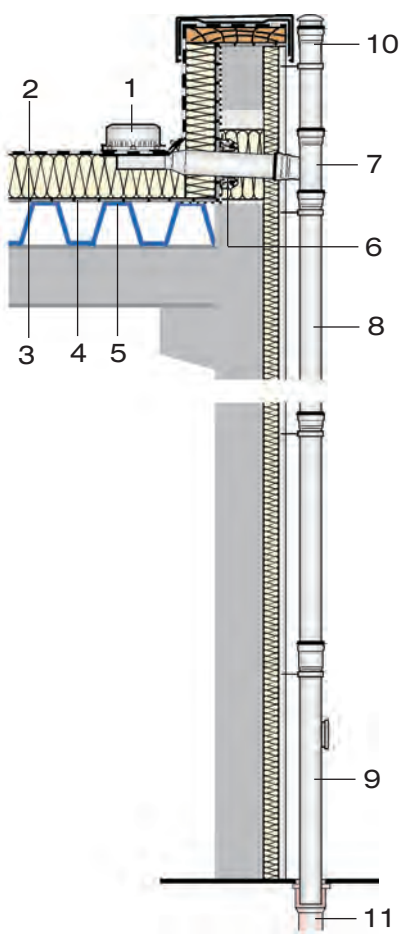



## Example applications

### LORO-RAINSTAR® scupper drains, DN 40, DN 50, DN 70 and DN 100, without upstand, with clamping flange, as special fabrication, Series 88 according to EN 1253

**For bituminous and plastic sealing sheets**

1 LORO-RAINSTAR® scupper roof drain
2 Sealing sheets
3 Thermal insulation
4 Vapour barrier
5 LORO thermal insulation block
6 Industrial trapezoidal sheet metal roof
7 LORO sliding flange
(for bonding the vapour barrier)
8 LORO-X branch, 87°
9 LORO-X rainwater downpipe
10 LORO-X rain standpipe
11 LORO-X pipe
12 Underground pipe




### LORO-RAINSTAR® scupper drains, DN 70 and DN 100, with clamping flange, with penetration depth of 55 mm, as special fabrication, Series 89 according to EN 1253

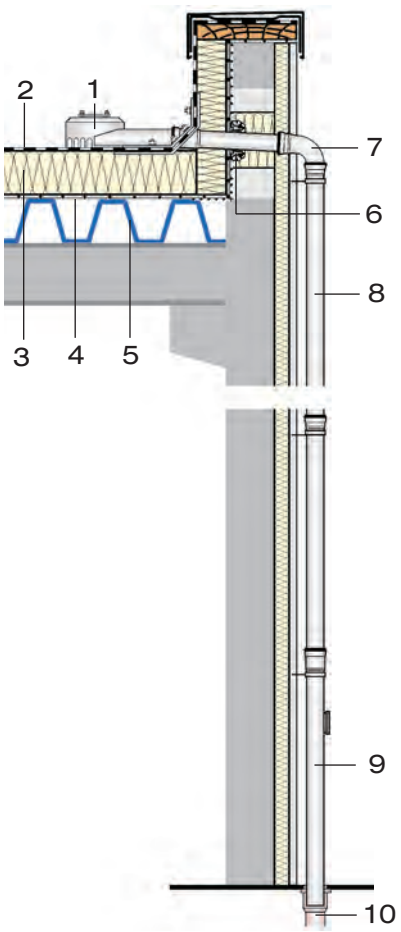
**For bituminous and plastic sealing sheets**

1 LORO-RAINSTAR® scupper roof drain
2 Bituminous sealing sheets
3 Thermal insulation
4 Vapour barrier
5 Industrial trapezoidal sheet metal roof
6 LORO sliding flange
(for bonding the vapour barrier)
7 LORO-X branch, 87°
8 LORO-X rainwater downpipe
9 LORO-X rain standpipe
10 LORO-X pipe
11 Underground pipe

# Example applications

## LORO-DRAINJET® scupper drains, DN 70, with clamping flange, Series 62 as special fabrication, according to EN 1253

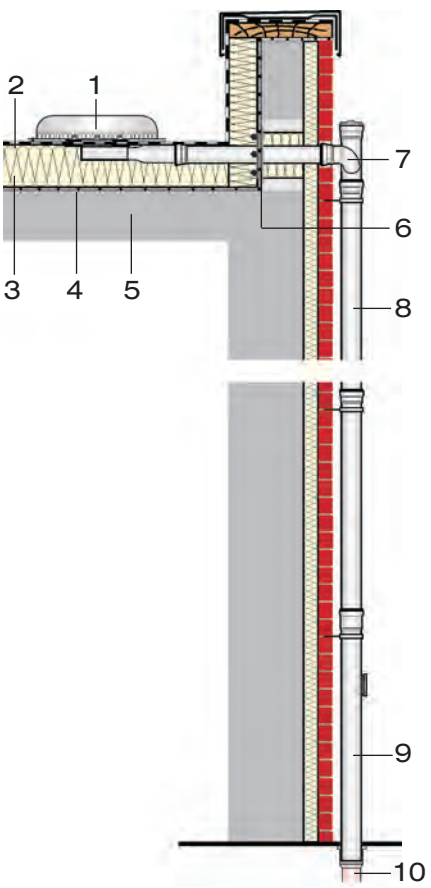
**For bituminous and plastic sealing sheets**




1 LORO-DRAINJET® scupper roof drain
2 Sealing sheets
3 Thermal insulation
4 Vapour barrier
5 Industrial trapezoidal sheet metal roof
6 LORO sliding flange
(for bonding the vapour barrier)
7 LORO-X bend, 87°
8 LORO-X rainwater downpipe
9 LORO-X rain standpipe
10 Underground pipe

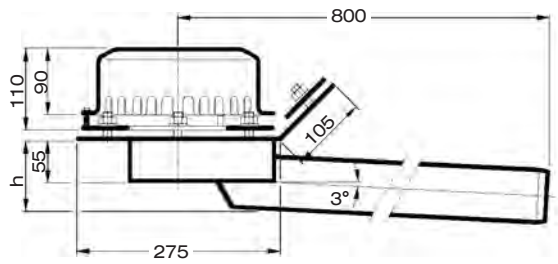
## LORO-ATTIKASTAR® scupper drains, DN 70, with clamping flange, Series 93 as special fabrication, according to EN 1253

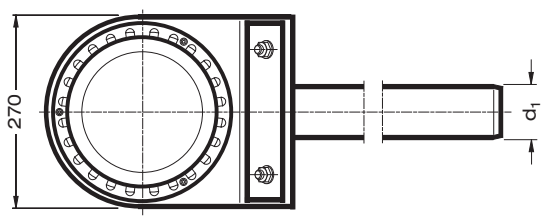
**For bituminous and plastic sealing sheets**




1 LORO-ATTIKASTAR® scupper roof drain
2 Sealing sheets
3 Thermal insulation
4 Vapour barrier
5 Concrete slab
6 LORO sliding flange
(for bonding the vapour barrier)
7 Y-tee with closing plugs
8 LORO-X rainwater downpipe
9 LORO-X rain standpipe
10 Underground pipe

# Dimensions and weights




## LORO-RAINSTAR® scupper drains for pressure flow DN 50 / DN 70 / DN 100, RC series, with clamping flange, for bituminous sealing sheets

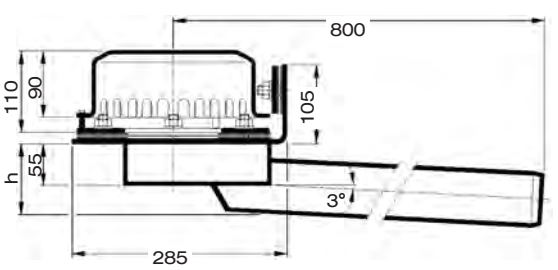
consisting of:
Drainjet cover, loose flange, drain body

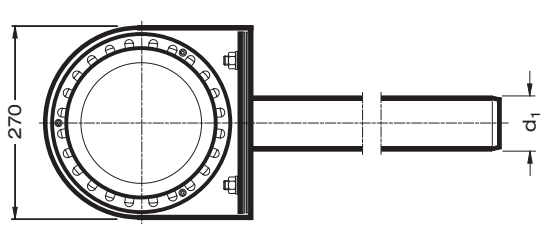
**Discharge capacity according to data sheet:**

**LX 492 DN 50: 8.5 l/s***
**LX 461 DN 70: 13.2 l/s***
**LX 480 DN 100: 16.2 l/s***

DN 50: Item no. 01380.050X Weight: 8.8 kg
DN 70: Item no. 01380.070X Weight: 9.4 kg
DN 100: Item no. 01380.100X Weight: 11.3 kg

| DN | $d_1$ | h |
|---|---|---|
| 50 | 53 | 82 |
| 70 | 73 | 92 |
| 100 | 102 | 106 |




## LORO-RAINSTAR® scupper drains for pressure flow DN 50 / DN 70 / DN 100, RC series, with clamping flange, for plastic sealing sheets

consisting of:
Drainjet cover, loose flanges, compression seals,
Drain body

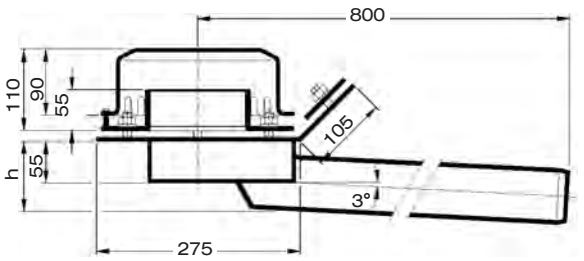
**Discharge capacity according to data sheet:**

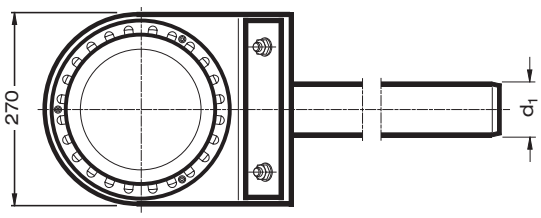
**LX 492 DN 50: 8.5 l/s***
**LX 461 DN 70: 13.2 l/s***
**LX 480 DN 100: 16.2 l/s***

DN 50: Item no. 01382.050X Weight: 8.8 kg
DN 70: Item no. 01382.070X Weight: 9.4 kg
DN 100: Item no. 01382.100X Weight: 11.3 kg

* According to the test assembly of EN 1253

# Dimensions and weights




## LORO-RAINSTAR® emergency scupper drains, for pressure flow, DN 50 / DN 70 / DN 100, RD series, with clamping flange, for bituminous sealing sheets

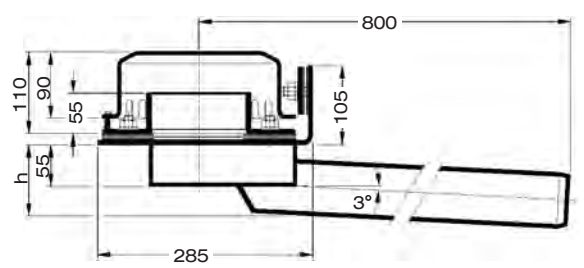
consisting of:
Drainjet cover, loose flange with weir element, drain body,
Loose flange for drain body

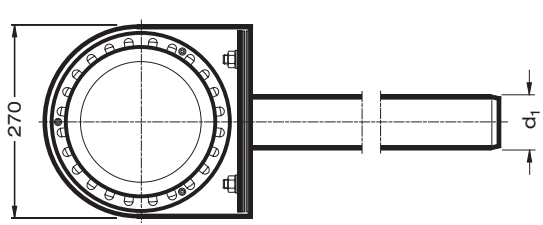
**Discharge capacity according to data sheet:**

**LX 500 DN 50: 8.6 l/s***
**LX 466 DN 70: 17.6 l/s***
**LX 482 DN 100: 21.7 l/s***

DN 50: Item no. 01381.050X Weight: 9.2 kg
DN 70: Item no. 01381.070X Weight: 9.8 kg
DN 100: Item no. 01381.100X Weight: 11.7 kg

| DN | $d_1$ | h |
|---|---|---|
| 50 | 53 | 82 |
| 70 | 73 | 92 |
| 100 | 102 | 106 |




## LORO-RAINSTAR® emergency scupper drains, for pressure flow, DN 50 / DN 70 / DN 100, RD series, with clamping flange, for plastic sealing sheets

consisting of:
Drainjet cover, loose flange with weir element,
compression seals, drain body, loose flange
for drain body

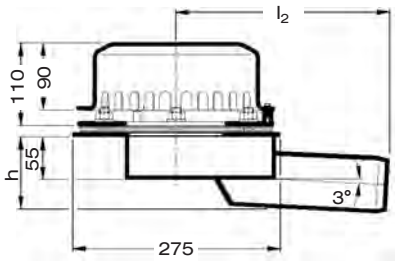
**Discharge capacity according to data sheet:**

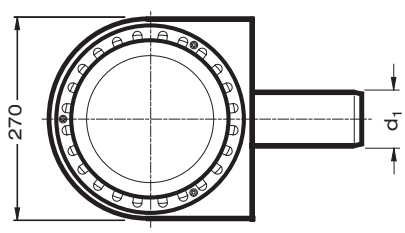
**LX 500 DN 50: 8.6 l/s***
**LX 466 DN 70: 17.6 l/s***
**LX 482 DN 100: 21.7 l/s***

DN 50: Item no. 01383.050X Weight: 9.2 kg
DN 70: Item no. 01383.070X Weight: 9.8 kg
DN 100: Item no. 01383.100X Weight: 11.7 kg

* According to the test assembly of EN 1253

# Dimensions and weights



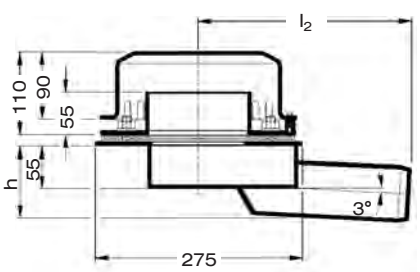

## LORO-RAINSTAR® scupper drains, Series 88 DN 40, DN 50, DN 70 and DN 100, with clamping flange, without upstand, For bituminous and plastic sealing sheets

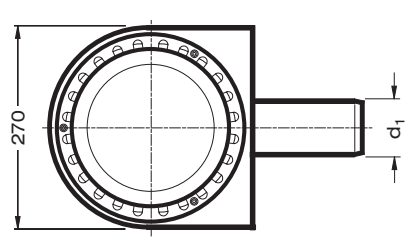
consisting of:
Strainer, loose flange, compression seal**,
Drain body

**Discharge capacity according to data sheet:**

| | | | |
|---|---|---|---|
| LX 677 | DN | 40: | 4.4 l/s* |
| LX 492 | DN | 50: | 8.5 l/s* |
| LX 461 | DN | 70: | 13.2 l/s* |
| LX 480 | DN | 100: | 16.2 l/s* |

| | | |
|---|---|---|
| DN 40: | Item no. 01392.040X | Weight: 6.0 kg |
| DN 50: | Item no. 01392.050X | Weight: 6.5 kg |
| DN 70: | Item no. 01392.070X | Weight: 7.4 kg |
| DN 100: | Item no. 01392.100X | Weight: 8.3 kg |




## LORO-RAINSTAR® emergency scupper drains, DN 40, DN 50, DN 70 and DN 100, with clamping flange, without upstand, For bituminous and plastic sealing sheets

consisting of:
Strainer, loose flange, compression seal**,
Drain body

**Discharge capacity according to data sheet:**

| | | | |
|---|---|---|---|
| LX 682 | DN | 40: | 4.5 l/s* |
| LX 500 | DN | 50: | 8.6 l/s* |
| LX 466 | DN | 70: | 17.6 l/s* |
| LX 482 | DN | 100: | 21.7 l/s* |

| | | |
|---|---|---|
| DN 40: | Item no. 01393.040X | Weight: 6.4 kg |
| DN 50: | Item no. 01393.050X | Weight: 6.9 kg |
| DN 70: | Item no. 01393.070X | Weight: 7.8 kg |
| DN 100: | Item no. 01393.100X | Weight: 8.7 kg |

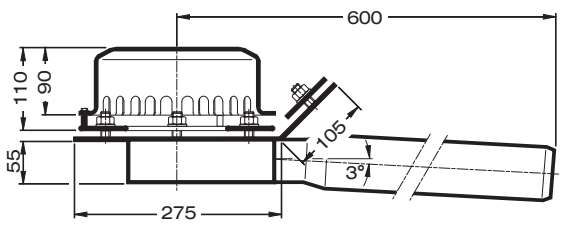
| DN | $d_1$ | h | $l_2$ |
|---|---|---|---|
| 40 | 42 | 76 | 260 |
| 50 | 53 | 82 | 260 |
| 70 | 73 | 92 | 260 |
| 100 | 102 | 106 | 290 |

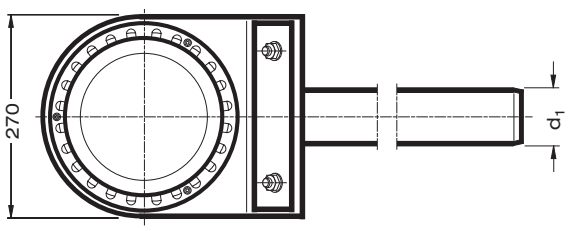
** Can be omitted with bituminous sealing sheets.

* According to the test assembly of EN 1253

Parapet
Pressure flow

# Dimensions and weights



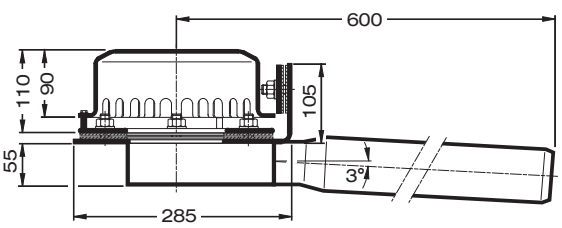

## LORO-RAINSTAR® scupper drains, DN 70 and DN 100, with clamping flange, with penetration depth of 55 mm, Series 89 for bituminous sealing sheets

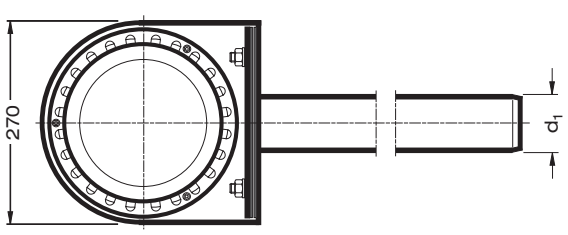
Steel, hot-dip galvanised, with additional coating,
Strainer of stainless steel

consisting of:
Strainer, loose flanges, drain body

**Discharge capacity according to data sheet:**
**LX 473 DN 70: 15.6 l/s***
**LX 665 DN 100: 14.0 l/s***

DN 70: Item no. 01364.070X Weight: 8.6 kg
DN 100: Item no. 01364.100X Weight: 10.5 kg




## LORO-RAINSTAR® scupper drains, DN 70 and DN 100, with clamping flange, with penetration depth of 55 mm, Series 89 for plastic sealing sheets

Steel, hot-dip galvanised, with additional coating,
Strainer of stainless steel

consisting of:
Strainer, loose flanges, compression seals,
Drain body

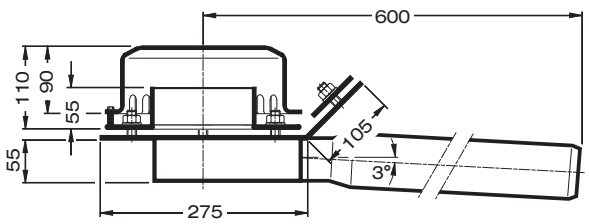
**Discharge capacity according to data sheet:**
**LX 473 DN 70: 15.6 l/s***
**LX 665 DN 100: 14.0 l/s***

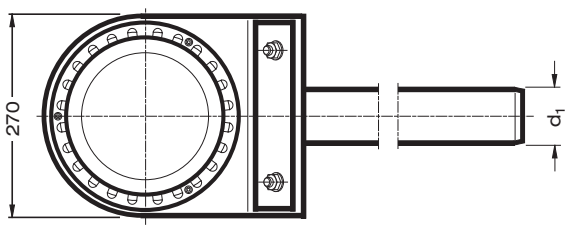
DN 70: Item no. 01366.070X Weight: 8.6 kg
DN 100: Item no. 01366.100X Weight: 10.5 kg

| DN | $d_1$ |
|---|---|
| 70 | 73 |
| 100 | 102 |

* According to the test assembly of EN 1253

# Dimensions and weights



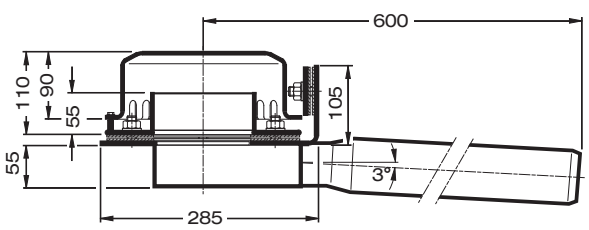

## LORO-RAINSTAR® emergency scupper drains, DN 70 and DN 100, with clamping flange, with penetration depth of 55 mm, Series 89 for bituminous sealing sheets

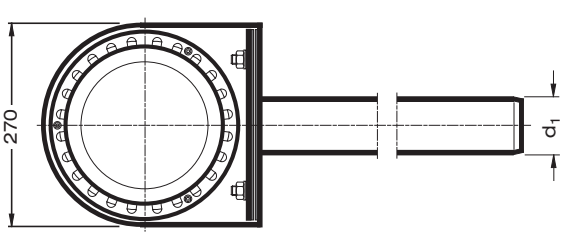
Steel, hot-dip galvanised, with additional coating,
Strainer of stainless steel

consisting of:
Strainer, loose flange with weir element, drain body,
Loose flange for drain body

**Discharge capacity according to data sheet:**
**LX 798 DN 70: 17.6 l/s***
**LX 666 DN 100: 23.0 l/s***

DN 70: Item no. 01365.070X Weight: 9.0 kg
DN 100: Item no. 01365.100X Weight: 10.9 kg




## LORO-RAINSTAR® emergency scupper drains, DN 70 and DN 100, with clamping flange, with penetration depth of 55 mm, Series 89 for plastic sealing sheets

Steel, hot-dip galvanised, with additional coating,
Strainer of stainless steel

consisting of:
Strainer, loose flange with weir element, compression seals,
drain body, loose flange for drain body

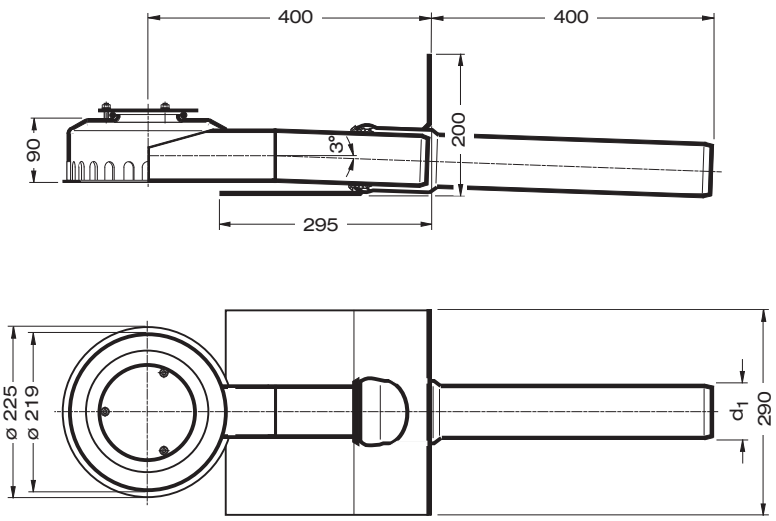
**Discharge capacity according to data sheet:**
**LX 798 DN 70: 17.6 l/s***
**LX 666 DN 100: 23.0 l/s***

DN 70: Item no. 01367.070X Weight: 8.6 kg
DN 100: Item no. 01367.100X Weight: 10.5 kg

| DN | $d_1$ |
|---|---|
| 70 | 73 |
| 100 | 102 |

* According to the test assembly of EN 1253

# Dimensions and weights

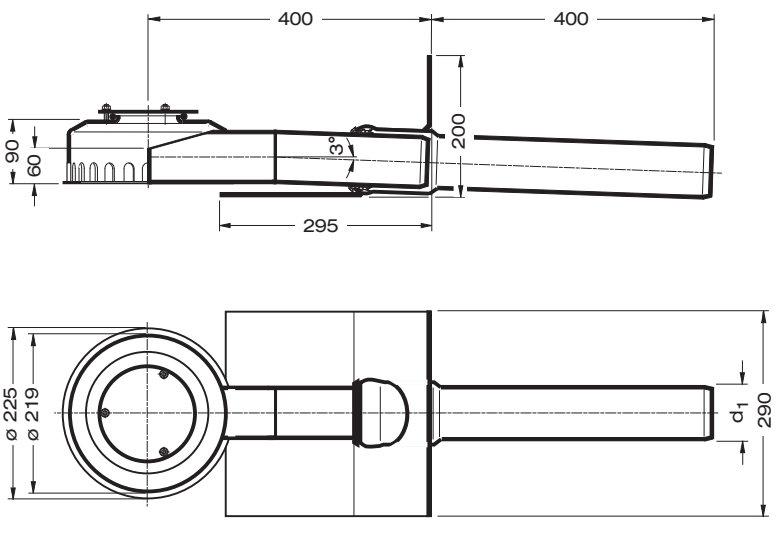



## LORO-DRAINJET®
## siphonic scupper drains, Series 62, DN 50 and DN 70, with bonding flange, for bituminous sealing sheets

Steel, hot-dip galvanised, with additional coating

**Discharge capacity according to data sheet:**
**LX 789 DN 50: 7.0 l/s***
**LX 636 DN 70: 16.0 l/s***

DN 50: Item no. 01347.050X Weight: 10.0 kg
DN 70: Item no. 01347.070X Weight: 11.6 kg

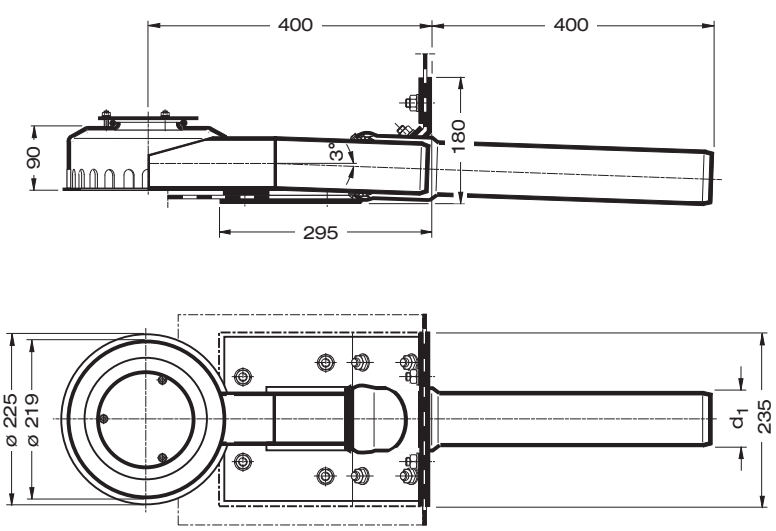



## LORO-DRAINJET®
## emergency scupper drains, Series 62, DN 50 and DN 70, with bonding flange, for bituminous sealing sheets

Steel, hot-dip galvanised, with additional coating

**Discharge capacity according to data sheet:**
**LX 790 DN 50: 9.0 l/s***
**LX 637 DN 70: 14.5 l/s***

DN 50: Item no. 01349.050X Weight: 10.0 kg
DN 70: Item no. 01349.070X Weight: 11.6 kg




## LORO-DRAINJET®
## siphonic scupper drains, Series 62, DN 50 and DN 70, with clamping flange, for bituminous sealing sheets

Steel, hot-dip galvanised, with additional coating

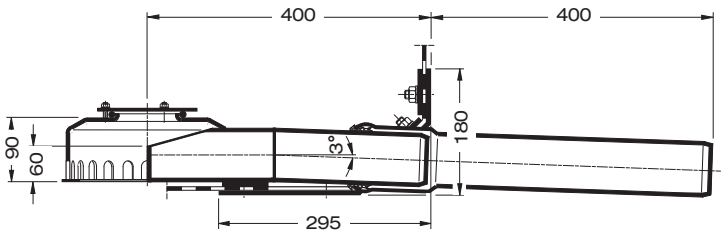
**Discharge capacity according to data sheet:**
**LX 789 DN 50: 7.0 l/s***
**LX 636 DN 70: 16.0 l/s***

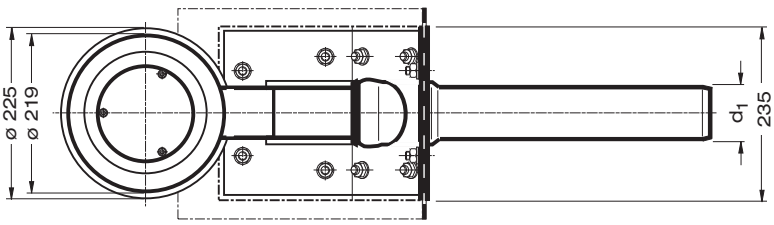
DN 50: Item no. 01351.050X Weight: 11.0 kg
DN 70: Item no. 01351.070X Weight: 12.6 kg

| DN | $d_1$ |
|---|---|
| 50 | 53 |
| 70 | 73 |

* According to the test assembly of EN 1253

# Dimensions and weights



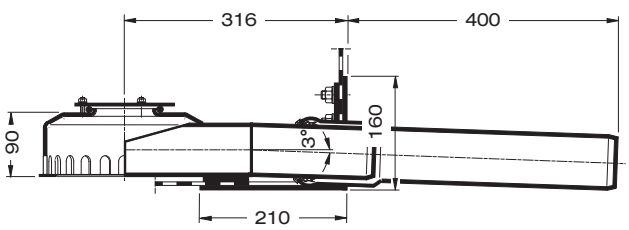



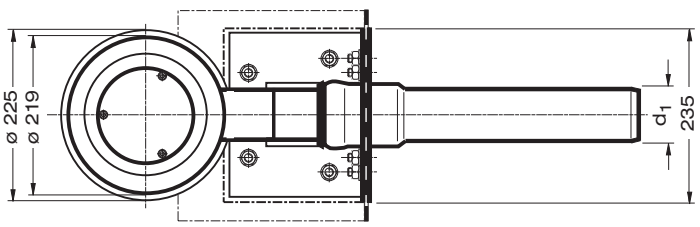

## LORO-DRAINJET®
## emergency scupper drains,
## Series 62,
## DN 50 and DN 70,
## with clamping flange,
## for bituminous sealing sheets

Steel, hot-dip galvanised, with additional coating

**Discharge capacity according to data sheet:**
**LX 790 DN 50: 9.0 l/s***
**LX 637 DN 70: 14.5 l/s***

DN 50: Item no. 01356.050X Weight: 11.0 kg
DN 70: Item no. 01356.070X Weight: 12.6 kg



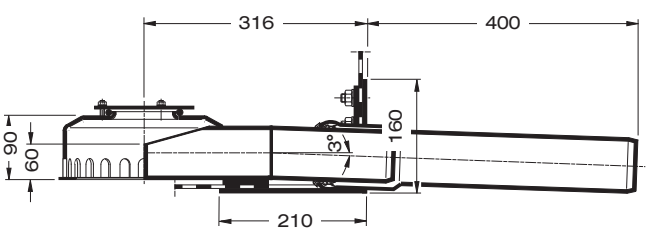



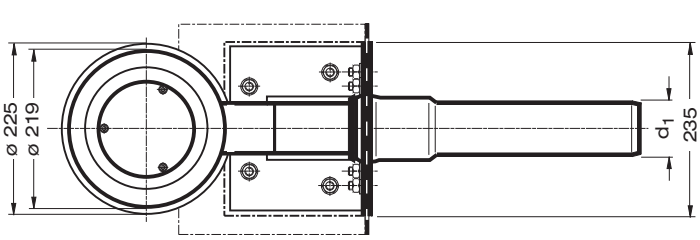

## LORO-DRAINJET®
## siphonic scupper drains,
## Series 62,
## DN 50 and DN 70,
## with clamping flange,
## for plastic sealing sheets

Steel, hot-dip galvanised, with additional coating

**Discharge capacity according to data sheet:**
**LX 789 DN 50: 7.0 l/s***
**LX 636 DN 70: 16.0 l/s***

DN 50: Item no. 01353.050X Weight: 12.0 kg
DN 70: Item no. 01353.070X Weight: 13.5 kg




## LORO-DRAINJET®
## emergency scupper drains,
## Series 62,
## DN 50 and DN 70,
## with clamping flange,
## for plastic sealing sheets

Steel, hot-dip galvanised, with additional coating

**Discharge capacity according to data sheet:**
**LX 790 DN 50: 9.0 l/s***
**LX 637 DN 70: 14.5 l/s***

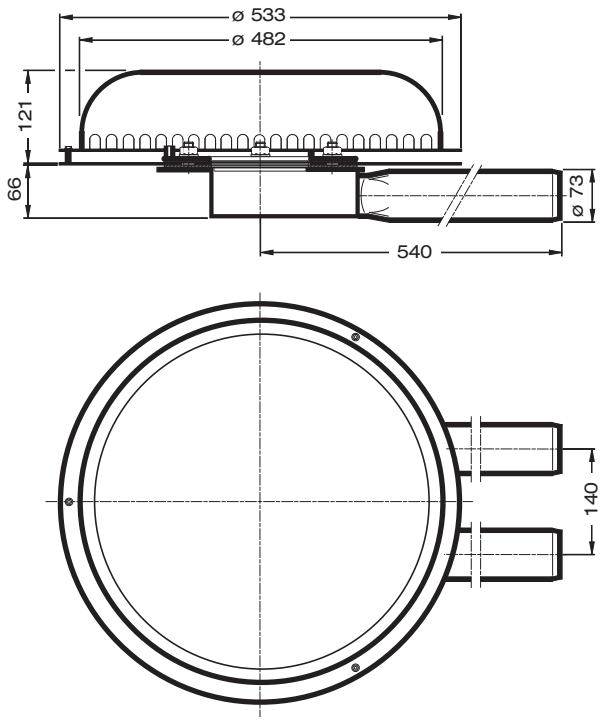
DN 50: Item no. 01358.050X Weight: 12.0 kg
DN 70: Item no. 01358.070X Weight: 13.5 kg

| DN | $d_1$ |
|---|---|
| 50 | 53 |
| 70 | 73 |

* According to the test assembly of EN 1253

Parapet
Pressure flow

# Dimensions and weights

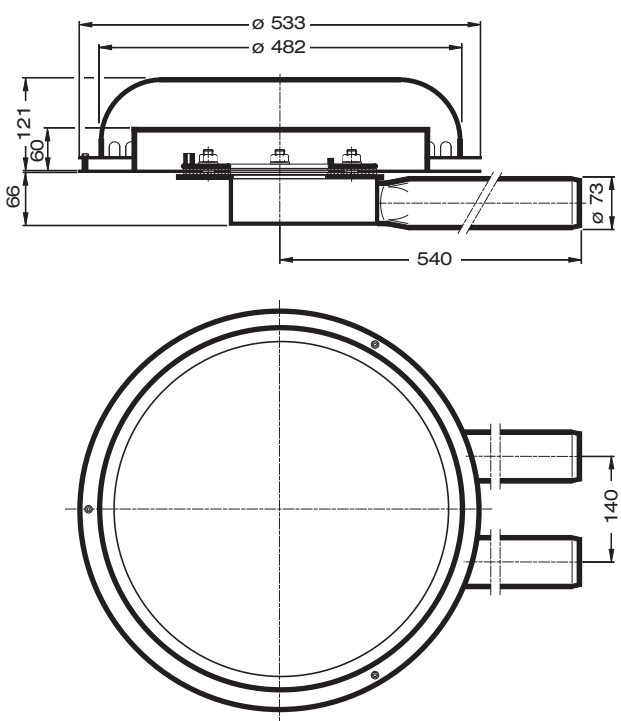



## LORO-ATTIKASTAR® scupper drains, DN 70, with clamping flange, Series 93
**For bituminous and plastic sealing sheets**

consisting of:
Suction cover, loose flange, compression seal**,
Baseplate, drain body

**Discharge capacity according to data sheet:**
**LX 803 DN 70: 32.0 l/s***

DN 70: Item no. 13779.CC0X  Weight: 14.8 kg




## LORO-ATTIKASTAR® emergency scupper drains, DN 70, with clamping flange, Series 93
**For bituminous and plastic sealing sheets**

consisting of:
Suction cover, loose flange, compression seal**,
Weir basin, baseplate, drain body

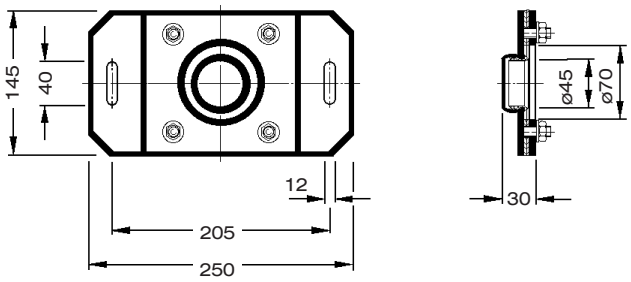
**Discharge capacity according to data sheet:**
**LX 766 DN 70: 32.0 l/s***

DN 70: Item no. 13766.CC0X  Weight: 15.4 kg

** Can be omitted with bituminous sealing sheets.

* According to the test assembly of EN 1253

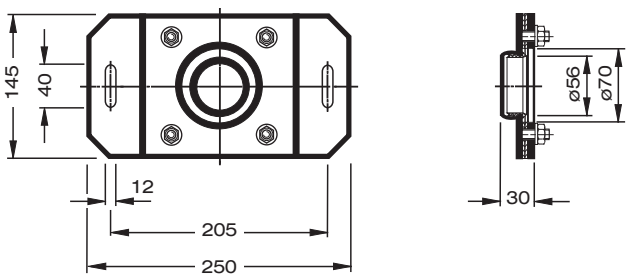
# Dimensions and weights




## LORO sliding flange, DN 40

**with clamping flange,**
**for bonding the vapour barrier**

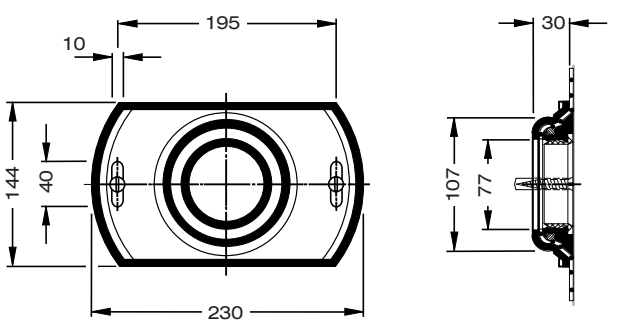
of stainless steel
Item no. 13232.040X Weight: 1.2 kg
including sealing element, item no. 00914.050X




## LORO sliding flange, DN 50

**with clamping flange,**
**for bonding the vapour barrier**

of stainless steel
Item no. 13232.050X Weight: 1.4 kg



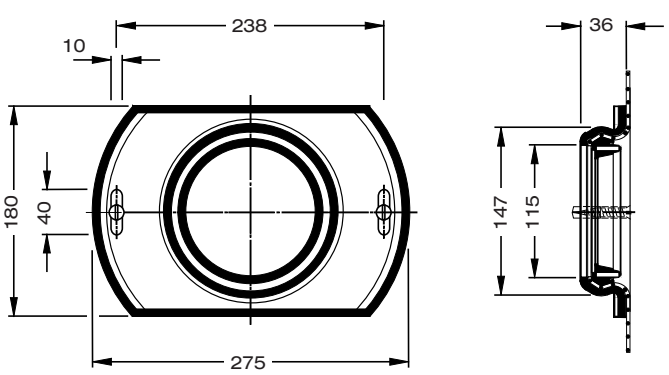

## LORO sliding flange, DN 70

**with connecting sleeve,**
**for bonding the vapour barrier**

steel, hot-dip galvanised

for vapour barrier of bituminous sealing sheets
Item no. 13235.070X Weight: 1.6 kg

for vapour barrier of plastic sealing sheets
Item no. 13236.070X Weight: 1.6 kg



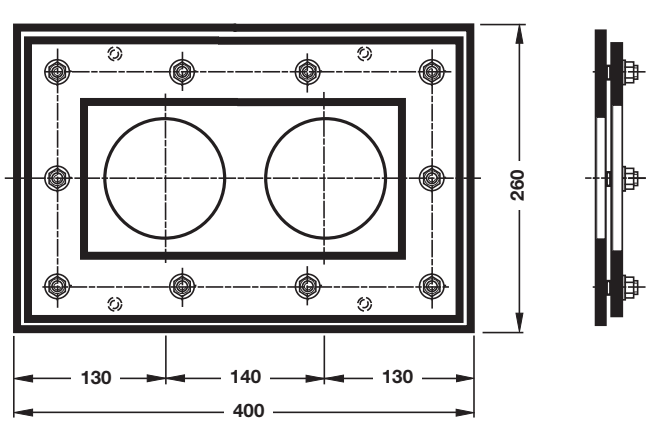

## LORO sliding flange, DN 100

**with connecting sleeve,**
**for bonding the vapour barrier**

steel, hot-dip galvanised

for vapour barrier of bituminous sealing sheets
Item no. 13235.100X Weight: 1.7 kg

for vapour barrier of plastic sealing sheets
Item no. 13236.100X Weight: 1.7 kg




## LORO sliding flange, DN 70

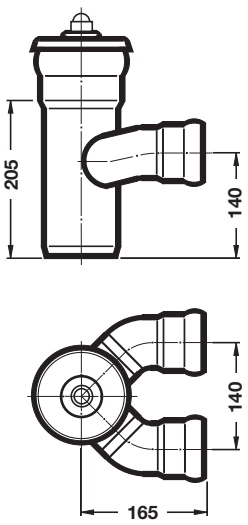
**for LORO-Attikastar® siphonic drains,**
**for bonding the vapour barrier**

steel, hot-dip galvanised
Item no. 13228.070X Weight: 5.1 kg

including sealing elements

Parapet
Pressure flow

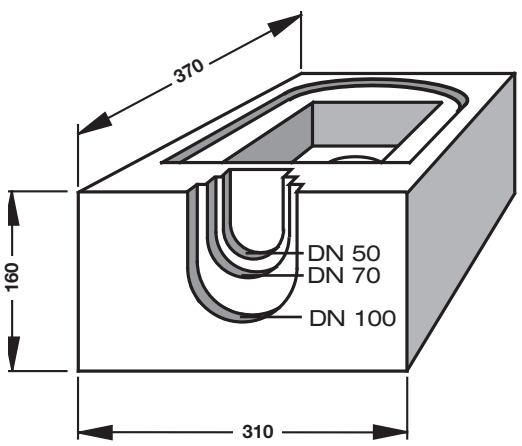
# Dimensions and weights



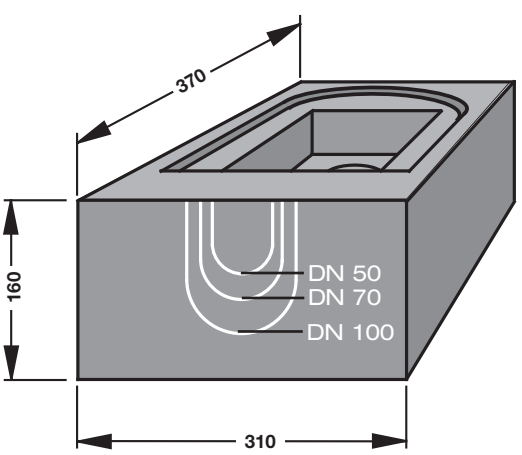

## LORO Y-tee
**with closing plugs,**
**for LORO-Attikastar® siphonic drains**

Steel, hot-dip galvanised, with additional internal coating,

Item no. 13517.DCCX  Weight: 3.2 kg



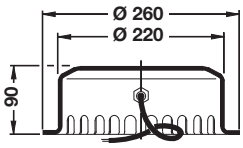

## LORO thermal insulation block
universally applicable for LORO-RAINSTAR scupper drains DN 50 - DN 100
and LORO scupper balcony drain DM 50
Item no. 01384.000X  Weight: 0.6 kg




## LORO thermal insulation block, of foam glass, non-combustible
universally applicable for LORO-RAINSTAR scupper drains DN 50 - DN 100
and LORO scupper balcony drain DM 50
Item no. 13845.000X  Weight: 0.6 kg

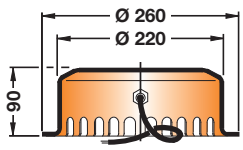
Make the cut-out on site for the nominal diameter that will be used.

# Dimensions and weights



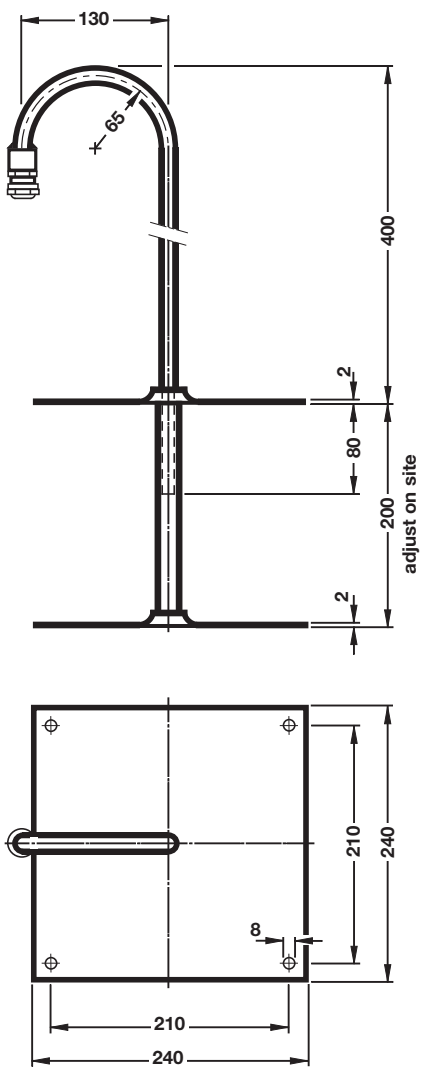

## LORO drain hood with heating

Item no. 21010.000X Weight: 0.5 kg




## LORO drain hood emergency drain with heating

Item no. 21019.000X Weight: 0.5 kg

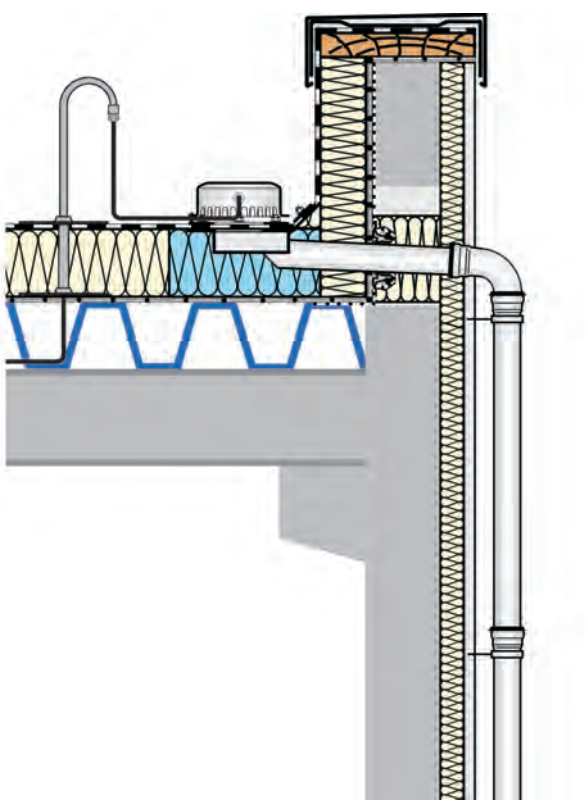



## LORO cable feed-through for heating cable,

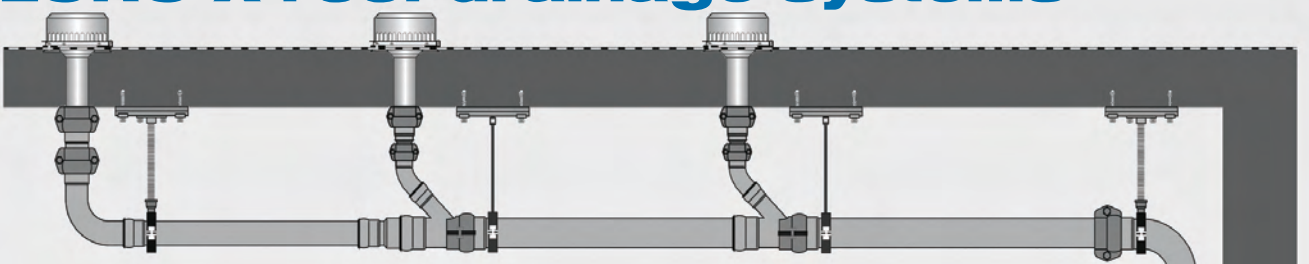
for heated strainer drains

of stainless steel

Item no. 18230.000X Weight: 2.0 kg



# LORO-X roof drainage systems



# LORO flat roof drainage systems

## - Complete systems with drains and pipes -

For gravity flow:
**LORO flat roof drains with connecting sleeve**
- made of steel, hot-dip galvanised, additionally coated, DN 70, **O series**
- made of aluminium, plastic-coated, DN 100 - DN 125, **O series**

For gravity flow:
**LORO-DRAINLET® roof drains with clamping flange**
made of stainless steel, **DL series**,
DN 70, DN 100, DN 125 and DN 150
- as main drain
- as emergency drain

For pressure flow:
**LORO-DRAINJET® siphonic drains with clamping flange**
made of stainless steel, **DJ series**,
DN 70, DN 100, DN 125 and DN 150
- as main drain
- as emergency drain

**LORO-X fire protection systems R 90**

**LORO-DRAINLET® roof drains**
DN 70, for gravity flow
**LORO-DRAINJET® siphonic drains**
DN 70 and DN 100, for pressure flow


For pressure flow:

**LORO-X 100 litres per second High-capacity roof drain with clamping flange**
DN 150
- as main drain

## System overview:

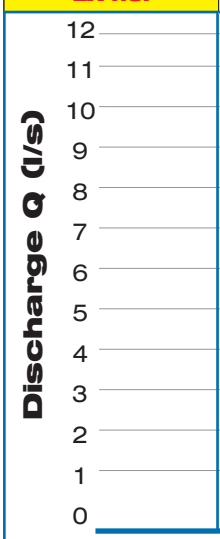
# LORO-X roof drainage systems for gravity flow

**Main drainage** — Gravity flow | **Emergency drainage** — Gravity flow

**Silent Power**

| Series | O series with connecting sleeve | DL series with clamping flange | DL series with clamping flange |
|---|---|---|---|
| Uninsulated roof | one-piece | one-piece | one-piece |
| | **Vertical drain**<br>Vers. a:<br>DN 70: 15275X<br>DN 100/DN125: 17110A<br>Vers. b:<br>DN 70: 15375X<br>DN 100/DN125:17141A<br>Vers. c:<br>DN 100/DN125: 17143A<br>**Side drain**<br>Vers. a:<br>DN 70: 15475X<br>DN 100: 17131A<br>Vers. b:<br>DN 70: 15575X<br>DN 100: 17145A<br>Vers. c:<br>DN 100: 17147A | **Vertical drain**<br>Vers. a: 21511X<br>Vers. b: 21512X<br>Vers. c: 21513X<br>**Side drain**<br>Vers. a: 21514X<br>Vers. b: 21515X<br>Vers. c: 21516X | **Vertical drain**<br>Vers. a: 21711X<br>Vers. b: 21712X<br>Vers. c: 21713X<br>**Side drain**<br>Vers. a: 21714X<br>Vers. b: 21715X<br>Vers. c: 21716X |
| Insulated roof | two-piece | two-piece | two-piece |
| | **Vertical drain**<br>Vers. a:<br>DN 70: 15285X<br>DN 100/DN125: 17120A<br>Vers. b:<br>DN 70: 15385X<br>DN 100/DN125:17142A<br>Vers. c:<br>DN 100/DN125: 17144A<br>**Side drain**<br>Vers. a:<br>DN 70: 15485X<br>DN 100: 17132A<br>Vers. b:<br>DN 70: 15585X<br>DN 100: 17146A<br>Vers. c:<br>DN 100: 17148A | **Vertical drain**<br>Vers. a: 21521X<br>Vers. b: 21522X<br>Vers. c: 21523X<br>**Side drain**<br>Vers. a: 21524X<br>Vers. b: 21525X<br>Vers. c: 21526X | **Vertical drain**<br>Vers. a: 21721X<br>Vers. b: 21722X<br>Vers. c: 21723X<br>**Side drain**<br>Vers. a: 21734X<br>Vers. b: 21735X<br>Vers. c: 21736X |

| DN | 70 | | 100 | | 125 | 70 | | 100 | | 125 | | 70 | | 100 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LX no. | LX887 | LX886 | LX884 | LX885 | LX852 | LX846 | LX888 | LX873 | LX855 | LX874 | LX890 | LX848 | LX889 | LX875 | LX854 |
| Discharge Q (l/s) | 4.6 l/s* | 4.2 l/s* | 5.2 l/s* | 4.6 l/s* | 7.7 l/s* | 6.3 l/s* | 5.6 l/s* | 6.5 l/s* | 6.1 l/s* | 9.8 l/s* | 9.2 l/s* | 9.0 l/s* | 10.0 l/s* | 9.0 l/s* | 11.0 l/s* |




* Discharge capacity measured in test assembly according to EN 1253, downpipe length 4.2 m

**Vers. a = without thermal insulation, vers. b = with thermal insulation, vers. c = with thermal insulation and heating**

# LORO flat roof drains with connecting sleeve, made of steel or aluminium, plastic coated, O series, DN 70, DN 100 and DN 125

## Technical product data

### Roof drains DN 70, made of steel

#### Material:
High-quality precision steel pipe meeting EN 10305-3,
Tensile strength: $R_m$ 310 - 410 N/mm²
Elongation at rupture: $A_5$ min. 28%
Linear thermal expansion: 0.0117 mm/m C°

#### Corrosion protection:
Hot-dip galvanising inside and outside, meeting EN 1123, with additional internal coating
Colour: russet.

#### Thermal insulation:
POLYSTYRENE SE WLG 0.35, CFC-free,
Thickness: at least 20 mm on faces directly exposed to water.
Coefficient of thermal conductivity: 0.035 W/m x K.
Resistance to water vapour diffusion: $\mu = 40/100$.
Water absorption: 0.5 - 1.5 vol. %.
Building material class B2.
Thermal insulation fire protection class R 90 by request

#### Thermal insulation for lateral drains:
Polyurethane rigid foam (PUR),
CFC-free,
Foam structure: 90% closed cells,
Thickness: at least 20 mm on faces directly exposed to water.
Coefficient of thermal conductivity: 0.030 W/m x K.
Resistance to water vapour diffusion: $\mu = 60$ - 80.
Water absorption: 2 Vol. %.
Building material class B2.
Thermal insulation fire protection class R 90 by request

#### Heating:
On request.

#### Sealing elements:
SB (SBR) styrene-butadiene copolymer,
trade name e.g. BUNA, DN 70, silicone-free.

#### Connecting sleeve:
Bitumen/EPDM compound for bituminous sheets.
PVC for PVC sheets according to DIN 16730.
ECB for ECB sheets according to DIN 16729.
Other materials by request.

### Roof drains DN 100 and DN 125, made of aluminium

#### Material:
Drawn aluminium, consisting of Al Mn W F10 according to DIN 1746 and 1795 or Al 99.5 W F7 according to DIN 1745

#### Corrosion protection:
Plastic coating inside and outside,
PVC fluidised bed coating
Colour: pebble grey
Coating thickness: > 250 µm

#### Thermal insulation:
POLYSTYRENE SE WLG 0.35, CFC-free,
Thickness: at least 20 mm on faces directly exposed to water.
Coefficient of thermal conductivity: 0.035 W/m x K.
Resistance to water vapour diffusion: $\mu = 40/100$.
Water absorption: 0.5 - 1.5 Vol. %.
Building material class B2.
Thermal insulation fire protection class R 90 by request

#### Thermal insulation with heating:
Polyurethane rigid foam (PUR),
CFC-free,
Foam structure: 90% closed cells,
Thickness: at least 20 mm on faces directly exposed to water.
Coefficient of thermal conductivity: 0.030 W/m x K.
Resistance to water vapour diffusion: $\mu = 60$ - 80.
Water absorption: 2 Vol. %.
Building material class B2.
Thermal insulation fire protection class R 90 by request

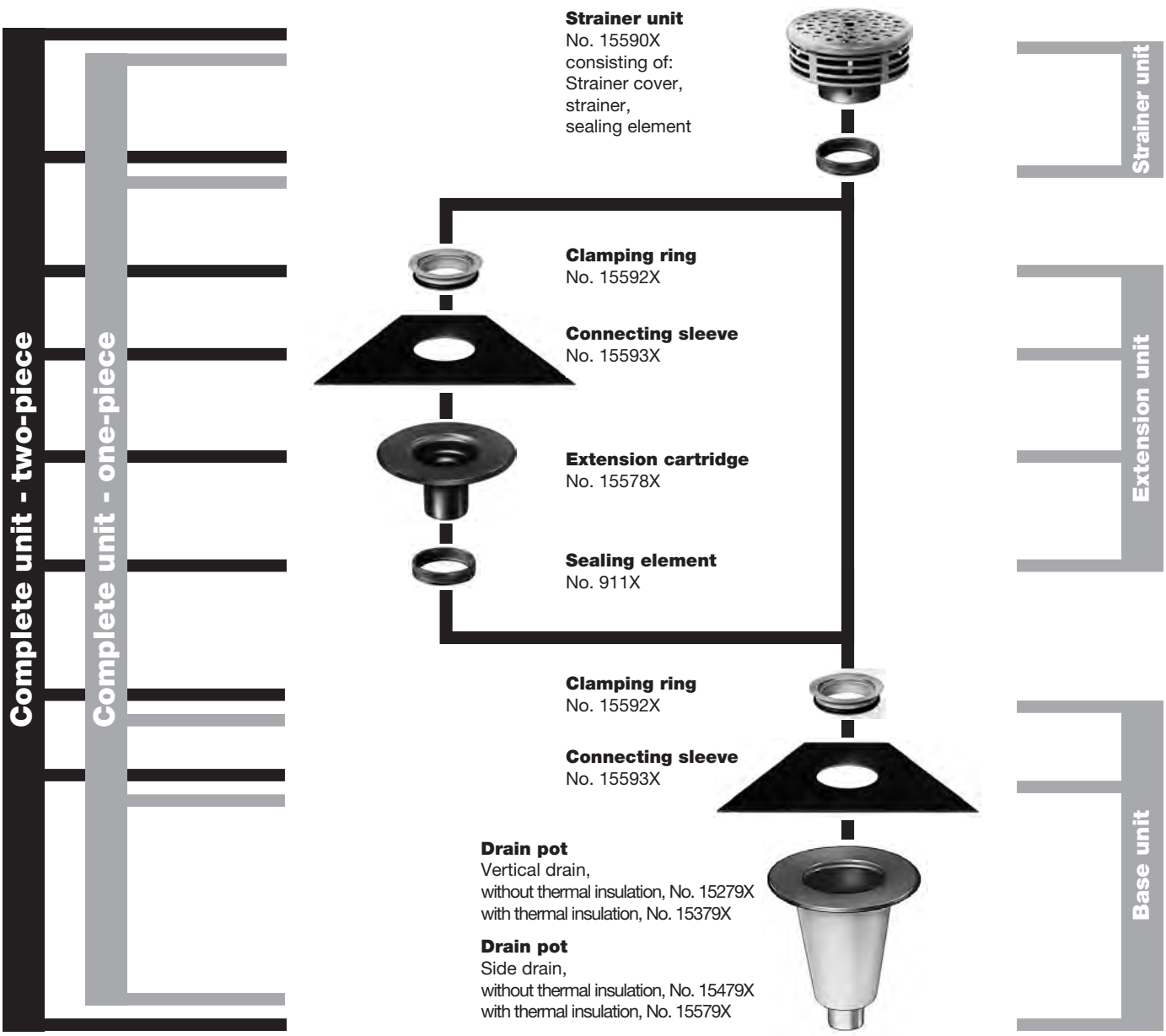
#### Heating:
Self-regulating parallel heating line $T_{max.}$ +80 °C.
Rated voltage: 230 V / 50 Hz.
Rated power consumption: approx. 18 W at 0 °C ambient temperature
Fusing: slow-blow fuses (C-characteristic) with max. 80% loading

#### Sealing elements:
SB (SBR) styrene-butadiene copolymer,
trade name e.g. BUNA, DN 100 - DN 125, silicone-free.

#### Connecting sleeve:
Bitumen/EPDM compound for bituminous sheets.
PVC for PVC sheets according to DIN 16730.
ECB for ECB sheets according to DIN 16729.
Other materials by request.

## Structure scheme/system components

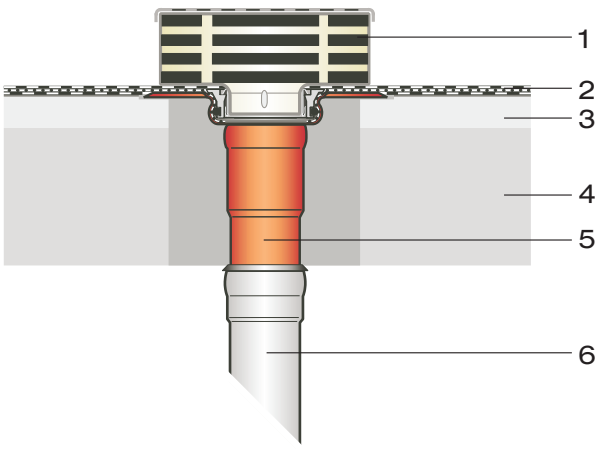
# LORO flat roof drains with connecting sleeve, Series O, made of steel, DN 70




**Connecting sleeves** for flat roof drainage systems available in:

| | | | | | |
|---|---|---|---|---|---|
| No. 15593X | Resitrix | Bitumen/EPDM compound - **Standard** | No. 15009X | Hertalan | EPDM |
| No. 15596X | Rhenofol | PVC | No. 15011X | Trocal S | PVC |
| No. 15517X | Extrubit | ECB | No. 15012X | Alkorplan | PVC |
| No. 15005X | Evalon | EVA | | | |
| No. 15006X | Wolfin IB | PVC-BV | | | |
| No. 15008X | Novotan | EPDM | | | |

Unless otherwise specified by the ordering party, a connecting sleeve of bitumen/EPDM compound will be supplied. If sealing sheet already present on-site (without woven or non-woven fabric inlay) is to be clamped, please discuss the application options beforehand with the LOROWERK factory.



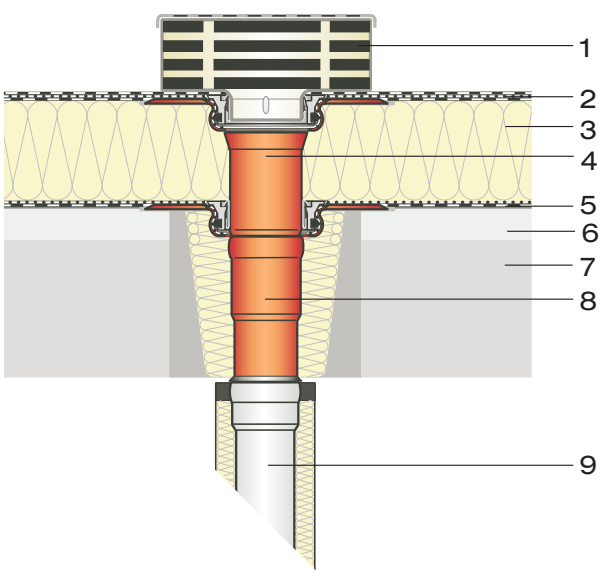

## Example application:

**Flat roof with sealing sheet, without thermal insulation.**

1 Strainer unit
2 Sealing sheet, may be on separating and/or compensating layer
3 Levelling screed
4 Concrete slab
5 Flat roof drain with connecting sleeve and clamping ring (Factory-assembled), vertical drain, made of steel, without thermal insulation
6 LORO-X steel discharge pipe

## LORO problem solution:

Flat roof drain with connecting sleeve, O series, made of steel, Drain vertical or at the side, one-piece, without thermal insulation.




## Example application:

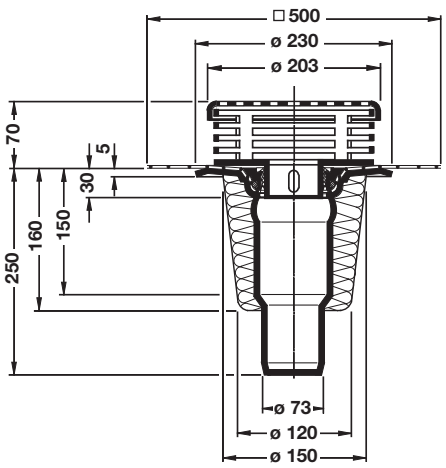
**Flat roof drain with sealing sheet, with thermal insulation.**

1 Strainer unit
2 Sealing sheet, may be on separating and/or compensating layer
3 Thermal insulation
4 Extension cartridge with connecting sleeve and clamping ring (factory-assembled) and sealing element for jointing with flat roof drain
5 Vapour barrier, may be on separating and/or compensating layer
6 Levelling screed
7 Concrete slab
8 Flat roof drain with connecting sleeve and clamping ring (Factory-assembled), vertical drain, made of steel, with thermal insulation
9 LORO compound pipe

## LORO problem solution:

Flat roof drain with connecting sleeve, O series, made of steel, drain vertical or at the side, two-piece, with or without thermal insulation.

# Dimensions and weights



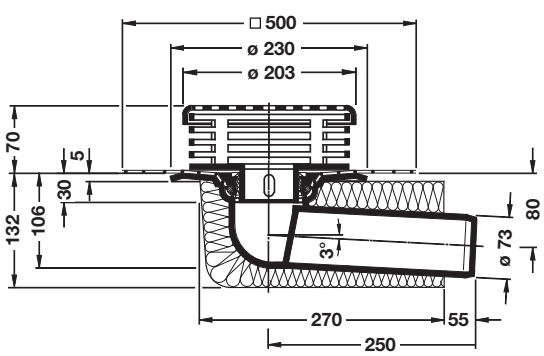

## LORO flat roof drains of steel, O series, DN 70, with connecting sleeve, Discharge capacity according to data sheet:

**LX 887 DN 70 = 4.6 l/s***

## Complete units, one-piece, Vertical drain

**Version a** (without thermal insulation)
DN 70: Item no. 15275.070X Weight: 2.7 kg
consisting of:
Drain pot, connecting sleeve, clamping ring, sealing element, strainer, strainer cover

**Version b** (with thermal insulation)
DN 70: Item no. 15375.070X Weight: 2.9 kg
consisting of:
Drain pot with thermal insulation, connecting sleeve, clamping ring, sealing element, strainer, strainer cover




## LORO flat roof drains of steel, O series, DN 70, with connecting sleeve, Discharge capacity according to data sheet:

**LX 886 DN 70 = 4.2 l/s***

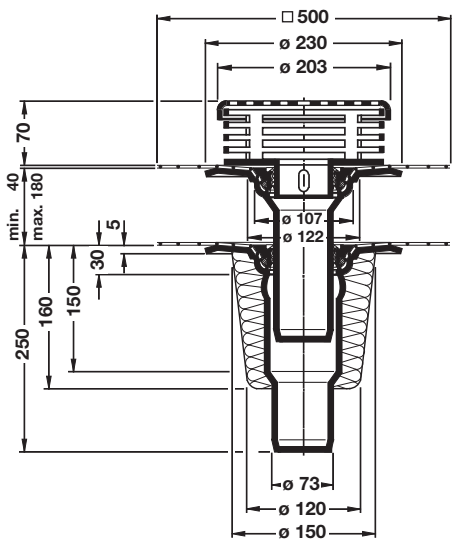
## Complete units, one-piece, Side drain

**Version a** (without thermal insulation)
DN 70: Item no. 15475.070X Weight: 2.6 kg
consisting of:
Drain pot, connecting sleeve, clamping ring, sealing element, strainer, strainer cover

**Version b** (with thermal insulation)
DN 70: Item no. 15575.070X Weight: 2.9 kg
consisting of:
Drain pot with thermal insulation, connecting sleeve, clamping ring, sealing element, strainer, strainer cover

* In accordance with test assembly according to EN 1253 at 35 mm backflow level

# Dimensions and weights



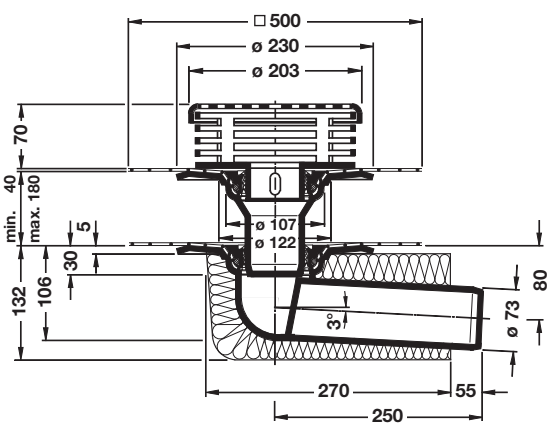

## LORO flat roof drains of steel, O series, DN 70, with connecting sleeve, Discharge capacity according to data sheet:

**LX 887 DN 70 = 4.6 l/s***

## Complete units, two-piece, Vertical drain

**Version a** (without thermal insulation)
DN 70: Item no. 15285.070X Weight: 4.0 kg
consisting of:
Drain pot, connecting sleeve, clamping ring, sealing element, extension cartridge, connecting sleeve, clamping ring, sealing element, strainer, strainer cover

**Version b** (with thermal insulation)
DN 70: Item no. 15385.070X Weight: 4.3 kg
consisting of:
Drain pot with thermal insulation, connecting sleeve, clamping ring, sealing element, extension cartridge, connecting sleeve, clamping ring, sealing element, strainer, strainer cover




## LORO flat roof drains of steel, O series, DN 70, with connecting sleeve, Discharge capacity according to data sheet:

**LX 886 DN 70 = 4.2 l/s***

## Complete units, two-piece, Side drain

**Version a** (without thermal insulation)
DN 70: Item no. 15485.070X Weight: 4.0 kg
consisting of:
Drain pot, connecting sleeve, clamping ring, sealing element, extension cartridge, connecting sleeve, clamping ring, sealing element, strainer, strainer cover

**Version b** (with thermal insulation)
DN 70: Item no. 15585.070X Weight: 4.3 kg
consisting of:
Drain pot with thermal insulation, connecting sleeve, clamping ring, sealing element, extension cartridge, connecting sleeve, clamping ring, sealing element, strainer, strainer cover

* In accordance with test assembly according to EN 1253 at 35 mm backflow level

## Structure scheme/system components

# LORO flat roof drains with connecting sleeve, plastic coated, O series, made of aluminium, DN 100 and DN 125

**Strainer unit wet roof**
No. 17137A
consisting of:
Strainer cover,
strainer,
weir element

**Strainer unit, standard**
No. 17121A
consisting of: Strainer cover, strainer

**Strainer unit**
No. 18620X
consisting of: Strainer ☐
Strainer receptacle

Strainer unit

Complete unit - two-piece

Complete unit - one-piece

**Clamping ring**
No. 17201A

**Connecting sleeve**
No. 17000A

**Extension cartridge**
No. 17117A

Extension unit

**Clamping ring**
No. 17201A

**Connecting sleeve**
No. 17000A

Base unit

**Drain pot**
Vertical drain,
without thermal insulation, No. 17115A
with thermal insulation, No. 17160A
with thermal insulation and heating,
No. 17170A

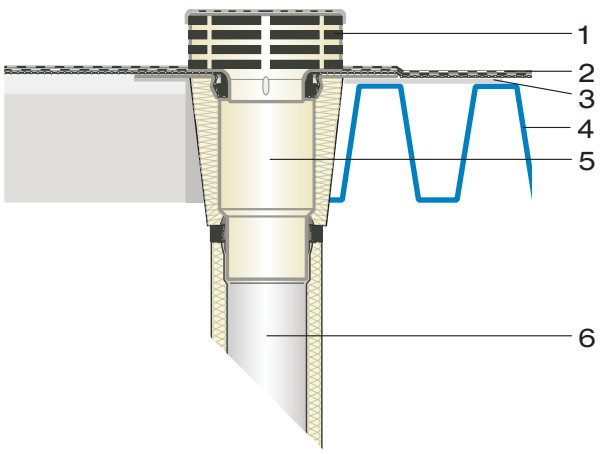
**Drain pot**
Side drain,
without thermal insulation, No. 17135A
with thermal insulation, No. 17180A
with thermal insulation and heating,
No. 17190A

Roof
Gravity flow

**Connecting sleeves** for flat roof drainage systems available in:

| | | | | | |
|---|---|---|---|---|---|
| No. 17000X | Resitrix | Bitumen/EPDM compound - **Standard** | No. 17009X | Hertalan | EPDM |
| No. 17001X | Rhenofol | PVC | No. 17011X | Trocal S | PVC |
| No. 17003X | Extrubit | ECB | No. 17012X | Alkorplan | PVC |
| No. 17005X | Evalon | EVA | No. 17013X | Rhepanol | PIB |
| No. 17006X | Wolfin IB | PVC-BV | | | |
| No. 17008X | Novotan | EPDM | | | |

Unless otherwise specified by the ordering party, a connecting sleeve of bitumen/EPDM compound will be supplied. If sealing sheet already present on-site (without woven or non-woven fabric inlay) is to be clamped, please discuss the application options beforehand with the LOROWERK factory.



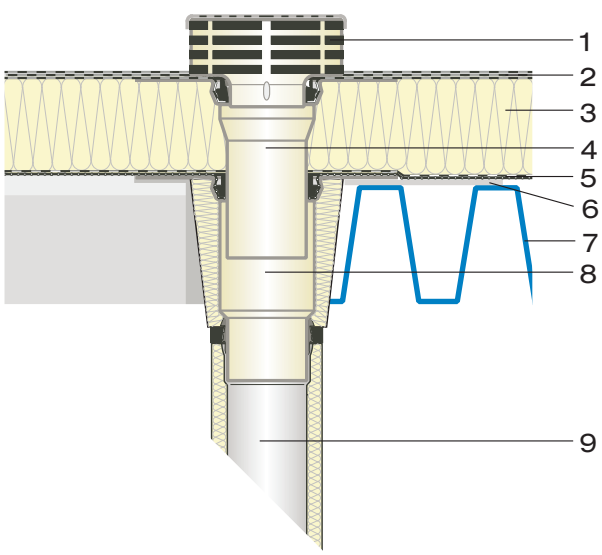

## Example application:

**Flat roof <u>with sealing sheet,</u>
without thermal insulation.**

1 Strainer unit
2 Sealing sheet, may be on separating and/or compensating layer
3 Reinforcing metal sheet
4 Concrete slab or trapezoidal sheet metal roof
5 Flat roof drain with connecting sleeve and clamping ring (factory-fitted), vertical drain, made of aluminium, with thermal insulation
6 LORO compound pipe

## LORO problem solution:

Flat roof drains with connecting sleeve, O series, made of aluminium, drain vertical or to the side, one-piece, with thermal insulation.




## Example application:

**Flat roof drain <u>with sealing sheet,</u>
with thermal insulation.**

1 Strainer unit
2 Sealing sheet, may be on separating and/or compensating layer
3 Thermal insulation
4 Extension cartridge with connecting sleeve and clamping ring (factory-fitted)
5 Vapour barrier, may be on separating and/or compensating layer
6 Reinforcing metal sheet
7 Concrete slab or trapezoidal sheet metal roof
8 Flat roof drain with connecting sleeve and clamping ring (factory-fitted), vertical drain, made of aluminium, with thermal insulation
9 LORO compound pipe

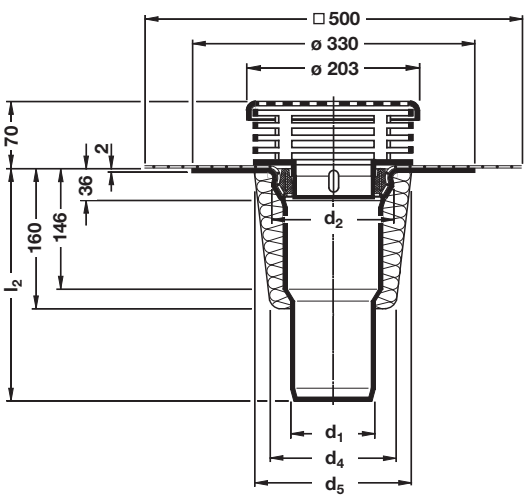
## LORO problem solution:

Flat roof drains with connecting sleeve, O series, made of aluminium, drain vertical or to the side, two-piece, with or without thermal insulation.

# Dimensions and weights

## LORO flat roof drains of aluminium, DN 100 and DN 125, O series, with connecting sleeve

**Discharge capacity according to data sheet:**
**LX 884 DN 100 = 5.2 l/s***
**LX 852 DN 125 = 7.7 l/s***




### Complete units, one-piece, vertical drain

**Version a** (without thermal insulation)
DN 100: Item no. 17110.100A Weight: 2.8 kg
DN 125: Item no. 17110.125A Weight: 3.0 kg
consisting of:
Drain pot, connecting sleeve, clamping ring, strainer, strainer cover

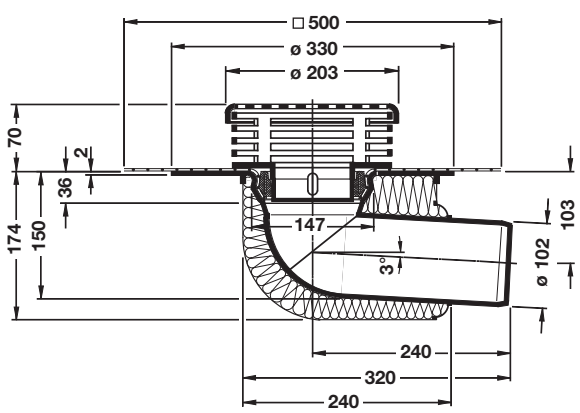
**Version b** (with thermal insulation)
DN 100: Item no. 17141.100A Weight: 3.3 kg
DN 125: Item no. 17141.125A Weight: 3.5 kg
consisting of:
Drain pot with thermal insulation, connecting sleeve, clamping ring, strainer, strainer cover

**Version c** (with thermal insulation and heating)
DN 100: Item no. 17143.100A Weight: 3.4 kg
DN 125: Item no. 17143.125A Weight: 3.6 kg
consisting of:
Drain pot with thermal insulation and heating, connecting sleeve, clamping ring, strainer, strainer cover

| DN | $d_1$ | $d_2$ | $d_4$ | $d_5$ | $l_2$ |
|---|---|---|---|---|---|
| 100 | 102 | 147 | 160 | 190 | 270 |
| 125 | 133 | 178 | 190 | 220 | 280 |

## LORO flat roof drains of aluminium, DN 100, O series, with connecting sleeve

**Discharge capacity according to data sheet:**
**LX 885 DN 100 = 4.6 l/s***




### Complete units, one-piece, side drain

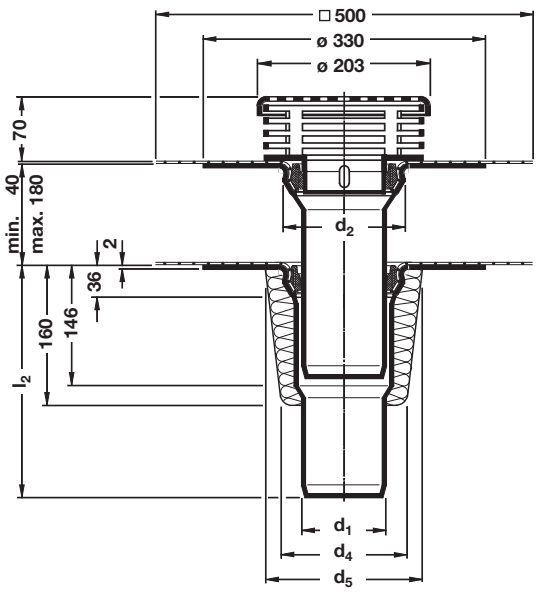
**Version a** (without thermal insulation)
DN 100: Item no. 17131.100A Weight: 2.8 kg
consisting of:
Drain pot, connecting sleeve, clamping ring, strainer, strainer cover

**Version b** (with thermal insulation)
DN 100: Item no. 17145.100A Weight: 3.3 kg
consisting of:
Drain pot with thermal insulation, connecting sleeve, clamping ring, strainer, strainer cover

**Version c** (with thermal insulation and heating)
DN 100: Item no. 17147.100A Weight: 3.4 kg
consisting of:
Drain pot with thermal insulation and heating, connecting sleeve, clamping ring, strainer, strainer cover

* In accordance with test assembly according to EN 1253 at 35 mm backflow level (DN 100) or 45 mm backflow level (DN 125)

# Dimensions and weights




## LORO flat roof drains of aluminium, DN 100 and DN 125, O series with connecting sleeve

**Discharge capacity according to data sheet:**

**LX 884 DN 100 = 5.2 l/s***

**LX 852 DN 125 = 7.7 l/s***

## Complete units, two-piece, vertical drain

**Version a** (without thermal insulation)
DN 100: Item no. 17120.100A Weight: 4.6 kg
DN 125: Item no. 17120.125A Weight: 4.7 kg
consisting of:
Drain pot, connecting sleeve, clamping ring, extension cartridge, connecting sleeve, clamping ring, strainer, strainer cover

**Version b** (with thermal insulation)
DN 100: Item no. 17142.100A Weight: 5.1 kg
DN 125: Item no. 17142.125A Weight: 5..2 kg
consisting of:
Drain pot with thermal insulation, connecting sleeve, clamping ring, extension cartridge, connecting sleeve, clamping ring, strainer, strainer cover

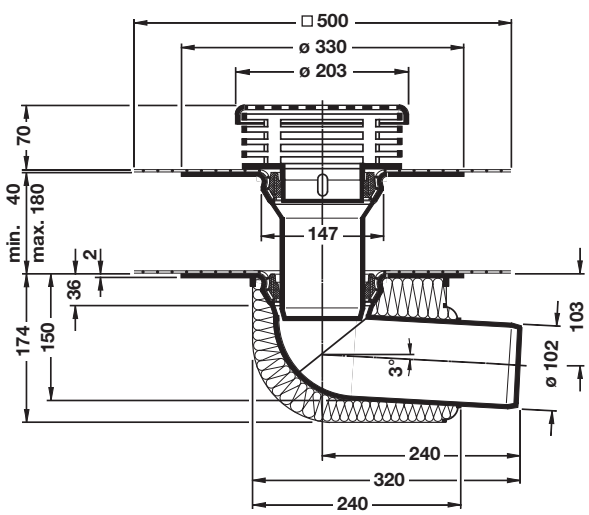
**Version c** (with thermal insulation and heating)
DN 100: Item no. 17144.100A Weight: 5.2 kg
DN 125: Item no. 17144.125A Weight: 5.3 kg
consisting of:
Drain pot with thermal insulation and heating, connecting sleeve, clamping ring, extension cartridge, connecting sleeve, clamping ring, strainer, strainer cover

| DN | $d_1$ | $d_2$ | $d_4$ | $d_5$ | $l_2$ |
|---|---|---|---|---|---|
| 100 | 102 | 147 | 160 | 190 | 270 |
| 125 | 133 | 178 | 190 | 220 | 280 |

## LORO flat roof drains of aluminium, DN 100, O series, with connecting sleeve

**Discharge capacity according to data sheet:**

**LX 885 DN 100 = 4.6 l/s***




## Complete units, two-piece, side drain

**Version a** (without thermal insulation)
DN 100: Item no. 17132.100A Weight: 4.6 kg
consisting of:
Drain pot, connecting sleeve, clamping ring, extension cartridge, connecting sleeve, clamping ring, strainer, strainer cover

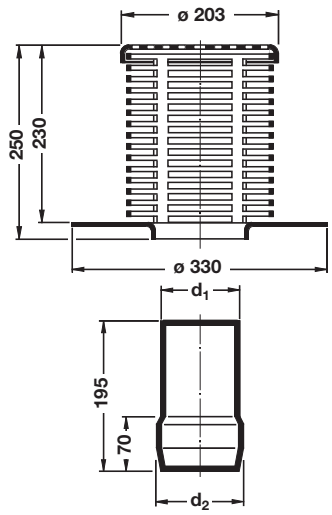
**Version b** (with thermal insulation)
DN 100: Item no. 17146.100A Weight: 5.1 kg
consisting of:
Drain pot with thermal insulation, connecting sleeve, clamping ring, extension cartridge, connecting sleeve, clamping ring, strainer, strainer cover

**Version c** (with thermal insulation and heating)
DN 100: Item no. 17148.100A Weight: 5.2 kg
consisting of:
Drain pot with thermal insulation and heating, connecting sleeve, clamping ring, extension cartridge, connecting sleeve, clamping ring, strainer, strainer cover

* In accordance with test assembly according to EN 1253 at 35 mm backflow level (DN 100) or 45 mm backflow level (DN 125)

# Dimensions and weights

## Special parts

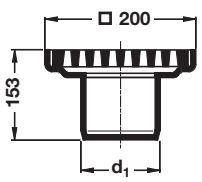



### Strainer unit wet roof

made of aluminium, plastic-coated,
consisting of: Strainer, strainer cover, weir element

| Item no. | DN | $d_1$ | $d_2$ | kg |
|---|---|---|---|---|
| 17137.100A | 100 | 102 | 110 | 1.6 |
| 17137.125A | 125 | 133 | 140 | 1.7 |

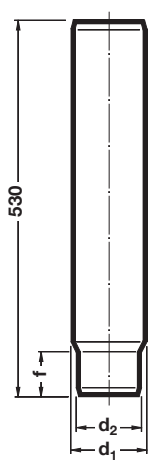
### Weir element




### LORO strainer units, walkable, class L (1.5 t)

hot-dip galvanised, additionally coated,
consisting of: Strainer receptacle, asphalted cast-iron strainer,
for installation height 40 - 100 mm

| Item no. | DN | $d_1$ | kg |
|---|---|---|---|
| 18620.100X | 100 | 102 | 4.5 |
| 18620.125X | 125 | 133 | 4.6 |

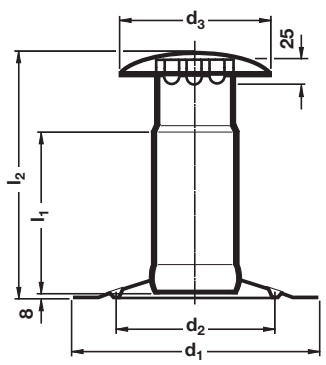



### Ventilation pipe

| Item no. | DN | $d_1$ | $d_2$ | f | kg |
|---|---|---|---|---|---|
| 17202.100A | 100 | 103 | 96 | 95 | 3.2 |
| 17202.125A | 125 | 133 | 125 | 85 | 4.5 |

### Roof ventilation

Ventilation of cold roofs. The LORO roof vent is screwed onto the upper layer, and bonded to the roof covering in the usual way.
The ventilation pipe can be extended downwards by inserting a LORO-X pipe into the existing LORO-X socket.



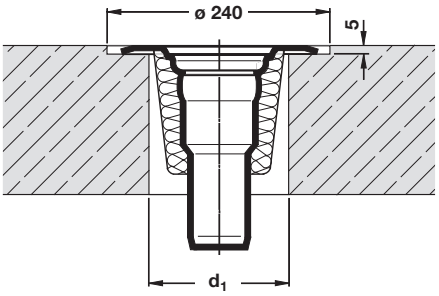

### LORO roof vent*

made of steel, hot-dip galvanised, with connecting edge

| Item no. | DN | $d_1$ | $d_2$ | $d_3$ | $l_1$ | $l_2$ | kg |
|---|---|---|---|---|---|---|---|
| 01310.050X | 50 | 330 | 220 | 160 | 220 | 300 | 2.3 |
| 01310.070X | 70 | 330 | 220 | 160 | 220 | 300 | 2.5 |
| 01310.100X | 100 | 330 | 220 | 195 | 220 | 300 | 3.4 |
| 01310.125X | 125 | 400 | 290 | 245 | 230 | 310 | 5.1 |
| 01310.150X | 150 | 400 | 310 | 245 | 230 | 320 | 5.7 |
| 01310.200X | 200 | 550 | 440 | 330 | 250 | 360 | 9.7 |

* Note: Not suitable for use as a downpipe vent.

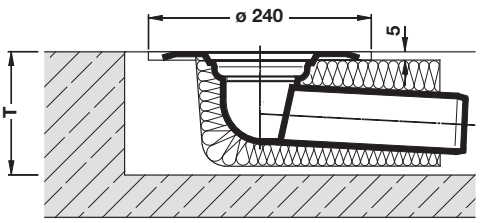
# Cut-out dimensions




**Roof drain DN 70**
**Vertical drain**

| DN | $d_1$ |
|---|---|
| 70 | 122/158* |

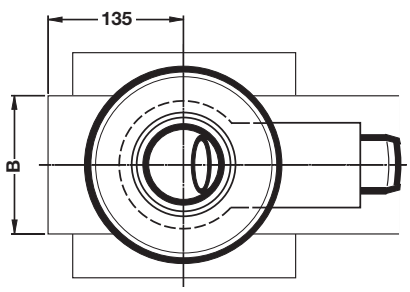
* Core hole for drain pot with thermal insulation

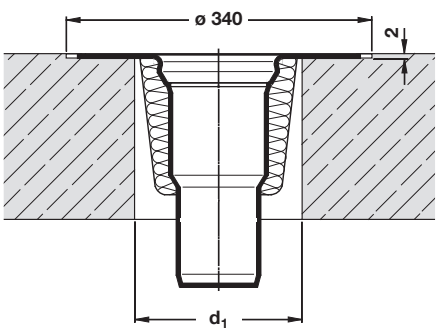



**Roof drain DN 70**
**Side drain**

| | Cut-out depth T | | Cut-out width B | |
|---|---|---|---|---|
| DN | a | b | a | b |
| 70 | 130 | 140 | 130 | 160 |

a = without thermal insulation
b = with thermal insulation

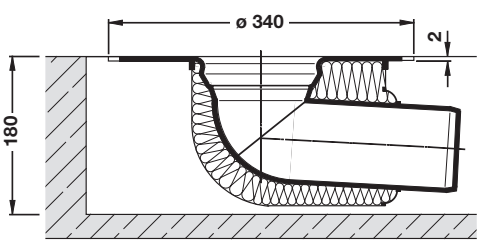


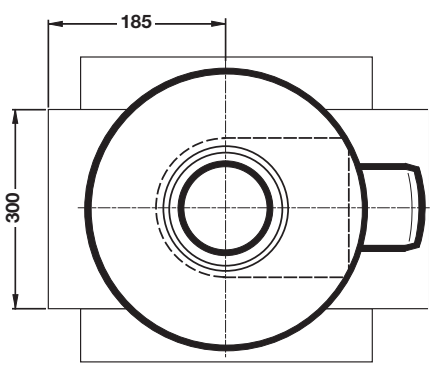

**Roof drain DN 100 and DN125**
**Vertical drain**

| DN | $d_1$ |
|---|---|
| 100 | 160/200* |
| 125 | 190/230* |

* Core hole for drain pot with thermal insulation




**Roof drain DN 100**
**Side drain**




Prepare and attach a lower shuttering panel for filling.
Lift the drain a little and fill. Return the drain to its position.

# LORO-DRAINLET® flat roof drains with clamping flange, made of stainless steel, DL series, DN 70, DN 100 and DN 125, for gravity flow

- as roof drain
- as emergency drain

## for bituminous and plastic sealing sheets

## Technical product data

### Material:

**Drain pot:**
Stainless steel 1.4301

**Drainlet strainer:**
Stainless steel 1.4301

**Loose flange:**
G Al Si 10 Mg

**Sealing elements:**
SB (SBR) styrene-butadiene copolymer, trade name e.g. BUNA, DN 70 - DN 125, silicone-free.

**Compression seal:**
Perbunan P 599 (can be omitted from bituminous sealing sheets).

### Thermal insulation:

POLYSTYRENE SE WLG 0.35, CFC-free,
Thickness: at least 20 mm on faces directly exposed to water.
Coefficient of thermal conductivity: 0.035 W/m x K.
Resistance to water vapour diffusion: $\mu = 40/100$.
Water absorption: 0.5 - 1.5 vol. %.
Building material class B2
Thermal insulation, fire protection class R 90 by request.

### Thermal insulation with heating:

Polyurethane rigid foam (PUR), CFC-free,
Foam structure: 90% closed cells,
Thickness: at least 20 mm on faces directly exposed to water.
Coefficient of thermal conductivity: 0.030 W/m x K.
Resistance to water vapour diffusion: $\mu = 60 - 80$.
Water absorption: 2 vol. %.
Building material class B2.
Thermal insulation, non-combustible, fire protection class R 90 by request.

### Heating:

Self-regulating parallel heating line
$T_{max.}$ +80 °C.
Rated voltage: 230 V / 50 Hz.
Rated power consumption: approx. 18 W at 0 °C ambient temperature
Fusing: slow-blow fuses (C-characteristic) with max. 80% loading

### Fire resistance:

LORO-DRAINLET® flat roof drains are assigned in accordance with DIN 4102 to building material class A1, non-combustible.

### External supervision:

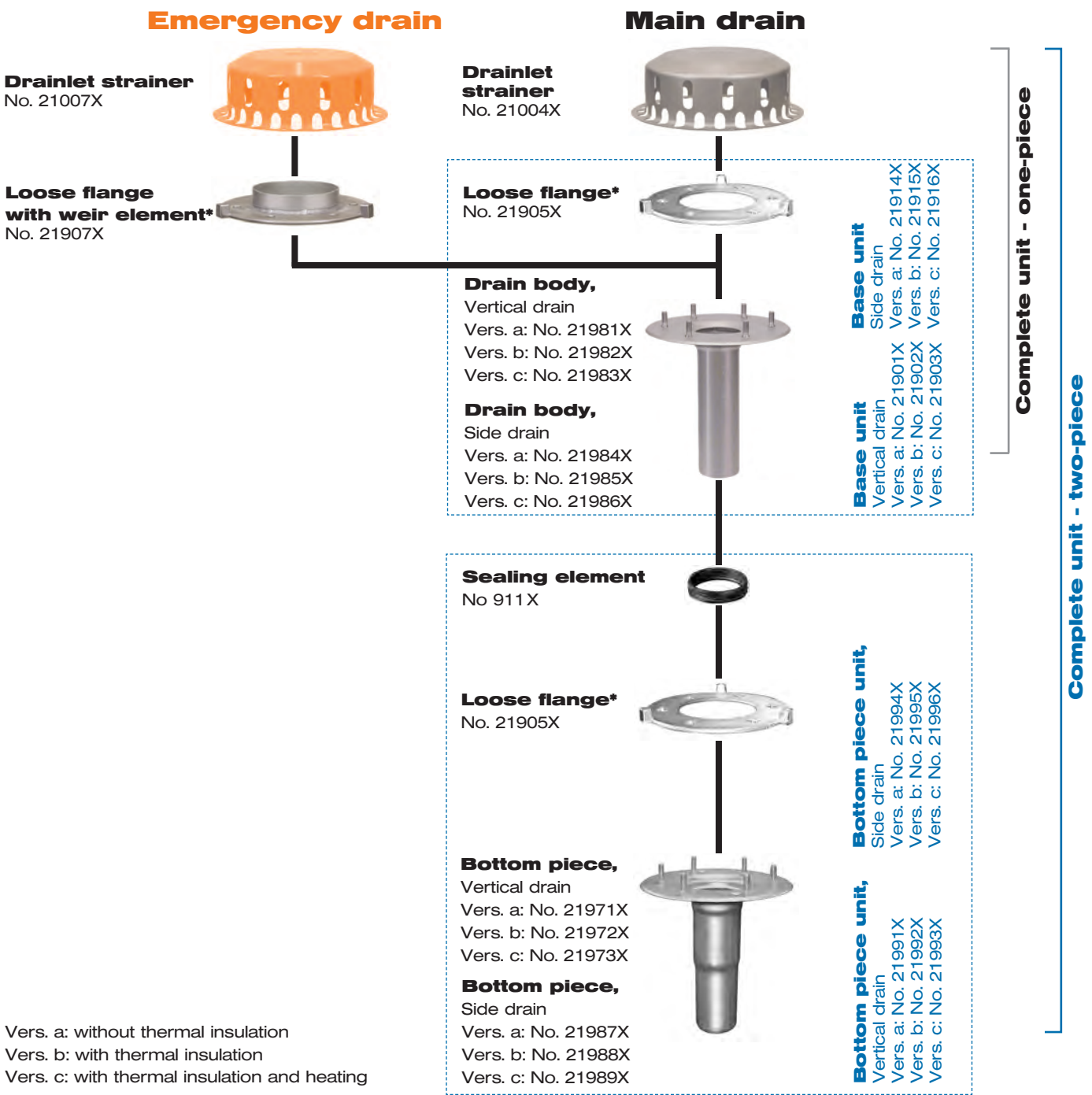
LORO-DRAINLET® flat roof drains meet EN 1253. External supervision is carried out by the Würzburg Materials Testing Institute of the LGA (State Trade Agency) QualiTest GmbH.

**LORO-DRAINLET® flat roof drains, DN 70 - DN 125**

**LORO-DRAINLET® flat roof drains as emergency drain, DN 70 - DN 100**

## Structure scheme/system components

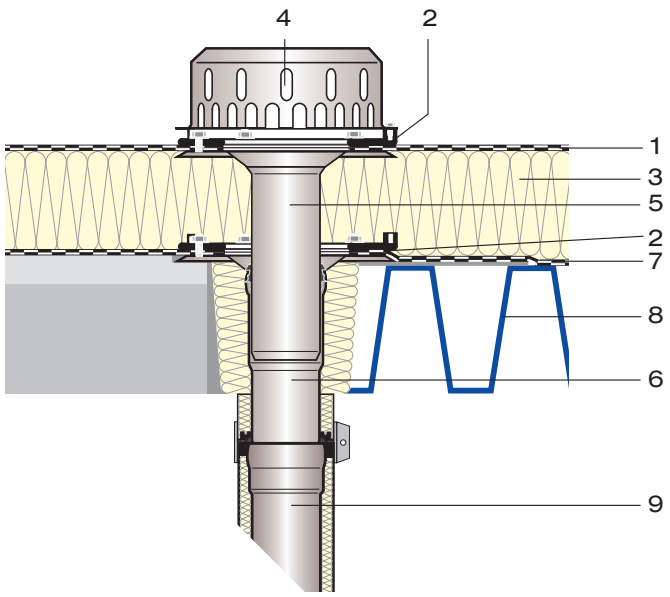
# LORO-DRAINLET® flat roof drains/flat roof emergency drains with clamping flange, for flat roof drainage with gravity flow, DL series, made of stainless steel, DN 70, DN 100 and DN 125




Vers. a: without thermal insulation
Vers. b: with thermal insulation
Vers. c: with thermal insulation and heating

* Including compression seal of perbunan, can be omitted when bituminous roof sealing sheets are used.

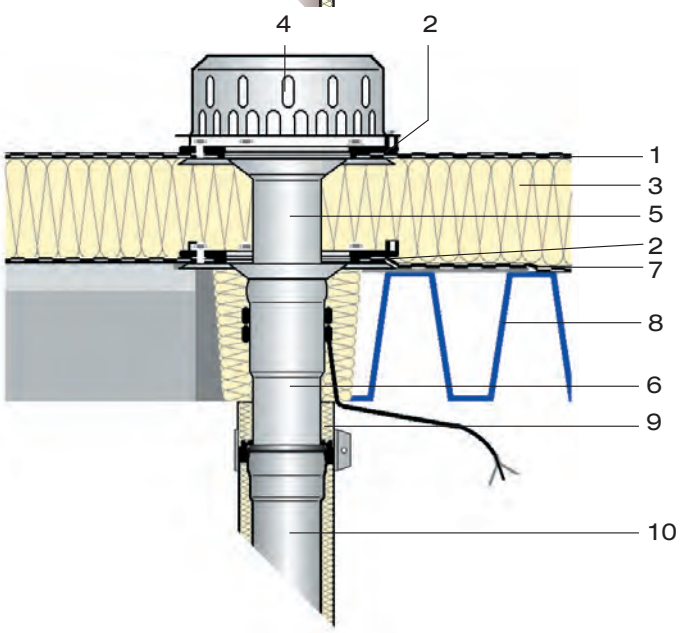
# Example applications




**LORO-DRAINLET®**
**flat roof drain,**
**in concrete/trapezoidal sheet metal roofs, insulated**

1 Sealing sheet
2 Compression seal*
3 Thermal insulation
4 LORO-DRAINLET® strainer
5 LORO-DRAINLET® drain body with loose flange
6 LORO-DRAINLET® bottom piece with loose flange and thermal insulation
7 Vapour barrier
8 Concrete slab or trapezoidal sheet metal roof
9 LORO-X steel discharge pipe

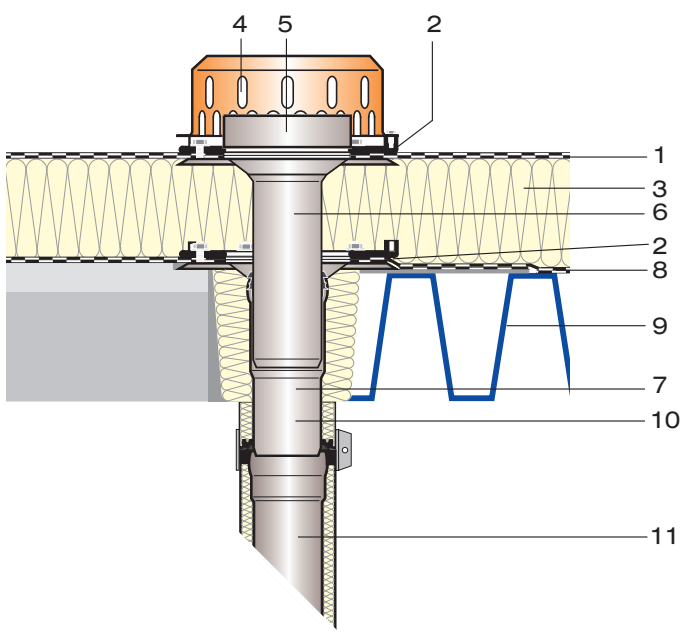
* Can be omitted when bituminous roof sealing sheets are used.




**LORO-DRAINLET®**
**flat roof drain,**
**in concrete/trapezoidal sheet metal roofs, insulated**

1 Sealing sheet
2 Compression seal*
3 Thermal insulation
4 LORO-DRAINLET® strainer
5 LORO-DRAINLET® drain body with loose flange
6 LORO-DRAINLET® bottom piece with loose flange, thermal insulation and heating
7 Vapour barrier
8 Concrete slab or trapezoidal sheet metal roof
9 Compound pipe insulating piece
10 LORO compound pipe

* Can be omitted when bituminous roof sealing sheets are used.

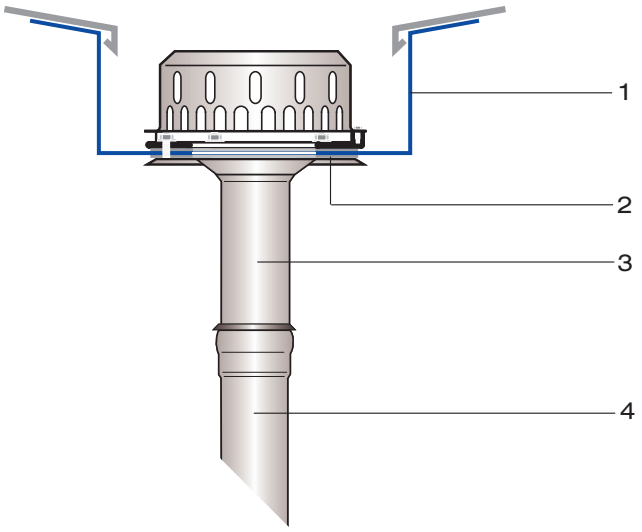



**LORO-DRAINLET®**
**flat roof drain,**
**in concrete/trapezoidal sheet metal roofs, insulated**

1 Sealing sheet
2 Compression seal*
3 Thermal insulation
4 LORO-DRAINLET® emergency drain strainer
5 LORO-DRAINLET® loose flange with weir element
6 LORO-DRAINLET® drain body
7 LORO-DRAINLET® bottom piece with loose flange and thermal insulation
8 Vapour barrier
9 Concrete slab or trapezoidal sheet metal roof
10 Compound pipe insulating piece
11 LORO compound pipe

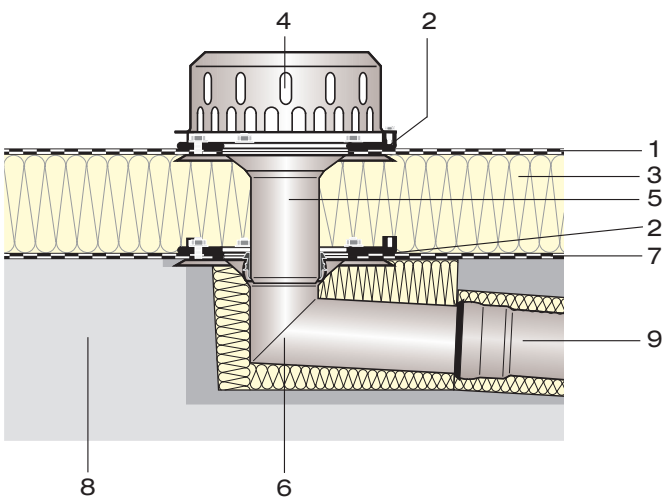
* Can be omitted when bituminous roof sealing sheets are used.

# Example applications




## LORO-DRAINLET®
## flat roof drain, in uninsulated box gutter

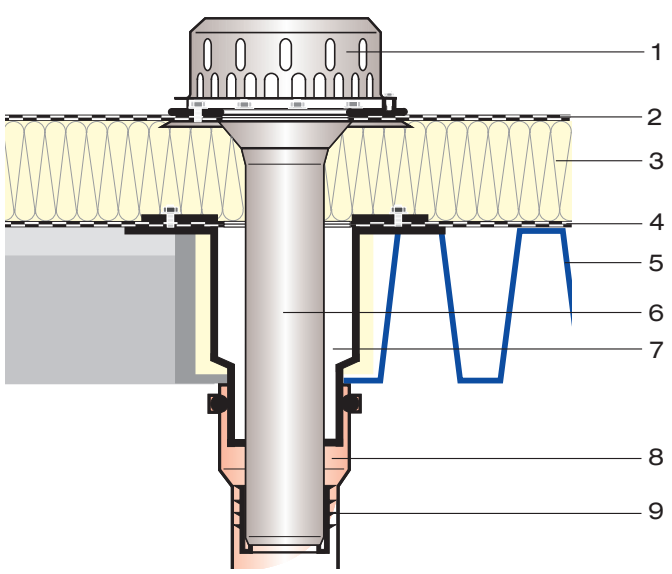
1 Box gutter
2 Compression seal
3 LORO-DRAINLET® drain body
4 LORO-X steel discharge pipe




## LORO-DRAINLET®
## flat roof drain, in concrete roof, insulated

1 Sealing sheet
2 Compression seal*
3 Thermal insulation
4 LORO-DRAINLET® strainer
5 LORO-DRAINLET® drain body with loose flange
6 LORO-DRAINLET® bottom piece with loose flange and thermal insulation
7 Vapour barrier
8 Concrete slab
9 LORO compound pipe

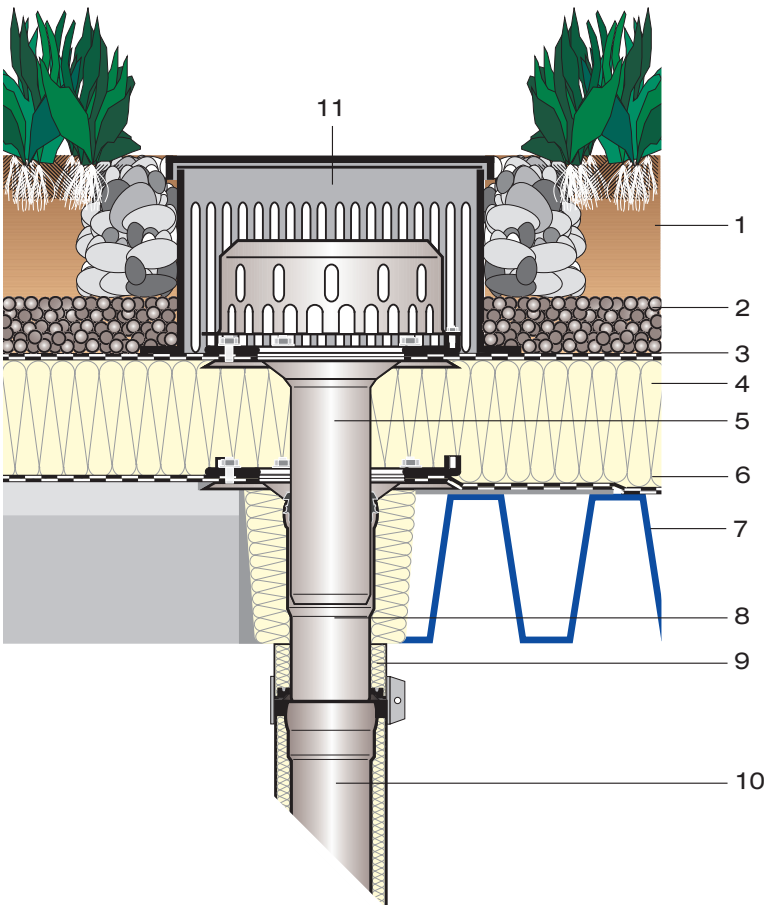
* Can be omitted when bituminous roof sealing sheets are used.




## LORO-DRAINLET®
## renovation drain, for pushing through existing roof drains

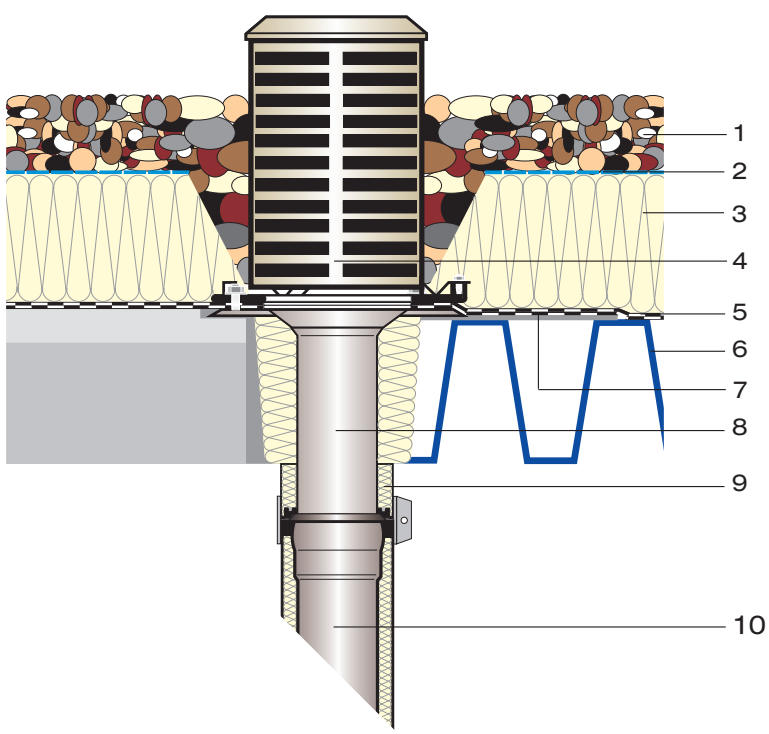
1 LORO-DRAINLET® strainer
2 Sealing sheet
3 Thermal insulation
4 Vapour barrier
5 Concrete slab or trapezoidal sheet metal roof
6 LORO-DRAINLET® renovation drain
7 Drain bottom piece (existing)
8 Drain pipe, DN 100
9 Lip sealing element

## Example applications




**LORO-DRAINLET®**
**flat roof drain,**
**in concrete roof, insulated,**
**with extensive roof planting**

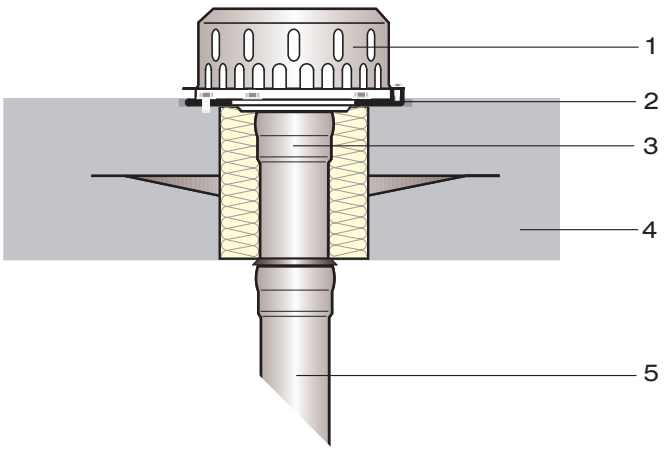
1 Layer of vegetation
2 Drainage layer
3 Root-resistant roof sealing sheet
4 Thermal insulation
5 LORO-DRAINLET® drain body with loose flange
6 Vapour barrier
7 Concrete slab
8 LORO-DRAINLET® bottom piece with loose flange and thermal insulation
9 Compound insulating piece
10 LORO compound pipe
11 LORO inspection shaft




**LORO-DRAINLET®**
**flat roof drain**
**for inverted roofs,**
**in concrete/trapezoidal sheet metal roofs, insulated**

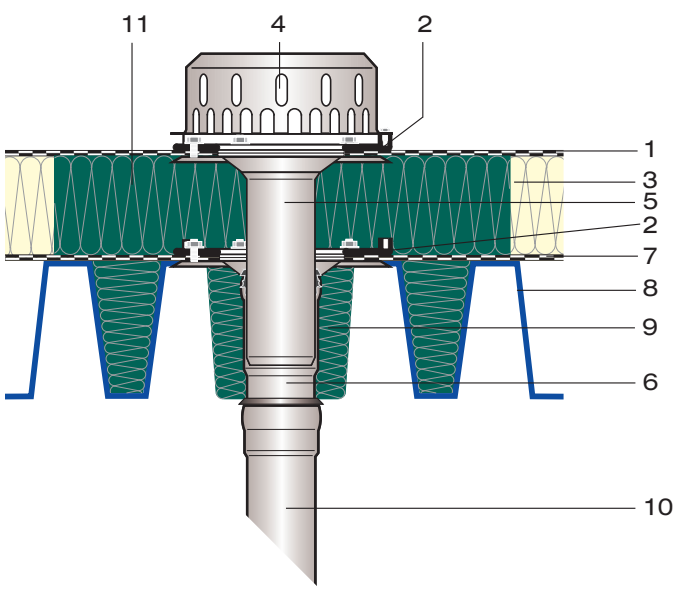
1 Gravel layer
2 Separating layer
3 Thermal insulation
4 LORO-DRAINLET® strainer unit for inverted roofs
5 Sealing sheet
6 Concrete slab or trapezoidal sheet metal roof
7 Reinforcing metal sheet
8 LORO-DRAINLET® drain body with loose flange
9 Compound pipe insulating piece
10 LORO compound pipe

# Example applications




**LORO flat roof drain,
in concrete roof made from
waterproof concrete,
as special fabrication**

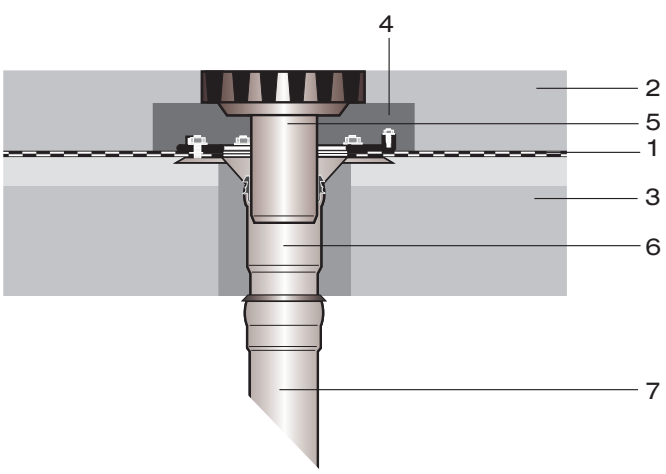
1 LORO-DRAINLET® strainer
2 Loose flange
3 LORO drain body with locking flange
4 Concrete slab
5 LORO-X steel discharge pipe




**LORO-DRAINLET®
flat roof drain,
in trapezoidal sheet metal roof,
insulated
(Fire protection solution)**

1 Sealing sheet
2 Compression seal*
3 Thermal insulation
4 LORO-DRAINLET® strainer
5 LORO-DRAINLET® drain body with loose flange
6 LORO-DRAINLET® bottom piece with loose flange and thermal insulation
7 Vapour barrier
8 Trapezoidal sheet metal roof
9 CONLIT thermal insulation, non-combustible
10 LORO-X steel discharge pipe
11 Thermal insulation partitioning

* Can be omitted when bituminous roof sealing sheets are used.




**LORO-DRAINLET®
rainwater drain
with walkable strainer**

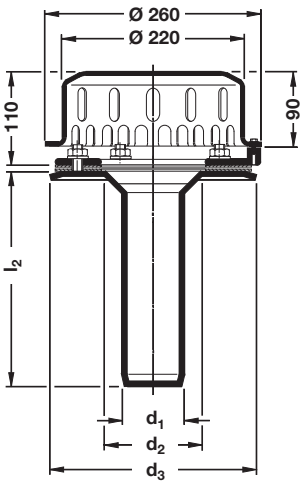
1 Sealing sheet
2 Ready-mixed screed
3 Concrete slab
4 Under-filling on site
5 LORO strainer unit, walkable
6 LORO-DRAINLET® bottom piece unit
7 LORO-X steel discharge pipe

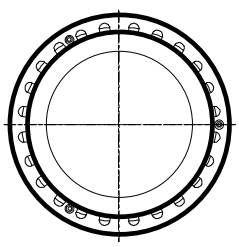
# Dimensions and weights

## LORO-DRAINLET® flat roof drains, DN 70 - DN 125, with clamping flange, made of stainless steel, meeting EN 1253, DL series

**Discharge capacity according to data sheet:**

**LX 846 DN 70 = 6.3 l/s***
**LX 873 DN 100 = 6.5 l/s***
**LX 874 DN 125 = 9.8 l/s***



## Complete units, one-piece

**Version a** (without thermal insulation)

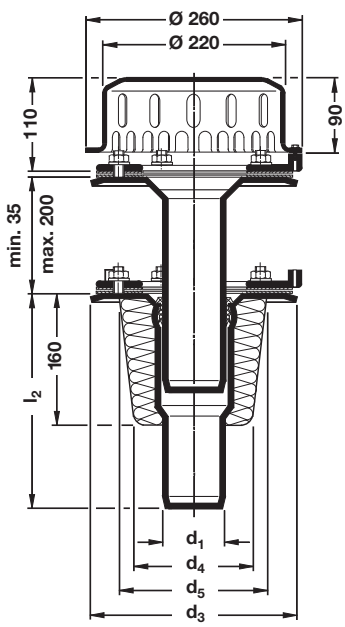
DN 70: Item no. 21511.070X Weight: 2.9 kg
DN 100: Item no. 21511.100X Weight: 3.7 kg
DN 125: Item no. 21511.125X Weight: 4.5 kg
consisting of:
Drain body, compression seal**, loose flange, drainlet strainer

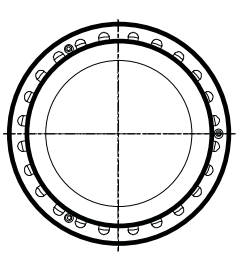
**Version b** (with thermal insulation)

DN 70: Item no. 21512.070X Weight: 3.0 kg
DN 100: Item no. 21512.100X Weight: 3.8 kg
DN 125: Item no. 21512.125X Weight: 4.6 kg
consisting of:
Drain body with thermal insulation, compression seal**, loose flange, drainlet strainer

**Version c** (with thermal insulation and heating)

DN 70: Item no. 21513.070X Weight: 3.1 kg
DN 100: Item no. 21513.100X Weight: 3.9 kg
DN 125: Item no. 21513.125X Weight: 4.7 kg
consisting of:
Drain body with thermal insulation and heating, compression seal**, loose flange, drainlet strainer



## Complete units, two-piece

**Version a** (without thermal insulation)

DN 70: Item no. 21521.070X Weight: 4.7 kg
DN 100: Item no. 21521.100X Weight: 5.5 kg
DN 125: Item no. 21521.125X Weight: 6.3 kg
consisting of:
Drain body, compression seal**, loose flange, drainlet strainer, bottom piece, compression seal**, loose flange, sealing element

**Version b** (with thermal insulation)

DN 70: Item no. 21522.070X Weight: 4.8 kg
DN 100: Item no. 21522.100X Weight: 5.6 kg
DN 125: Item no. 21522.125X Weight: 6.4 kg
consisting of:
Drain body, compression seal**, loose flange, drainlet strainer, bottom piece with thermal insulation, compression seal**, loose flange, sealing element

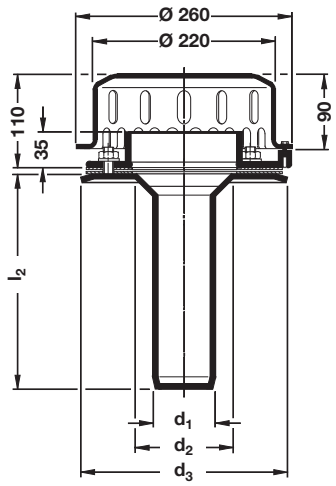
**Version c** (with thermal insulation and heating)

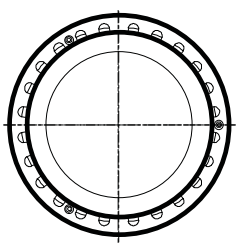
DN 70: Item no. 21523.070X Weight: 4.9 kg
DN 100: Item no. 21523.100X Weight: 5.7 kg
DN 125: Item no. 21523.125X Weight: 6.5 kg
consisting of:
Drain body, compression seal**, loose flange, drainlet strainer, bottom piece with thermal insulation and heating, compression seal**, loose flange, sealing element

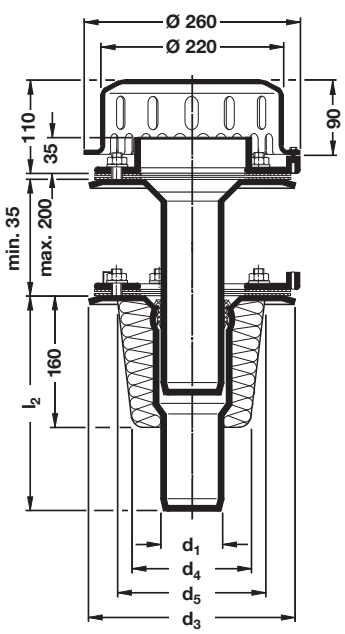
| DN | $d_1$ | $d_2$ | $d_3$ | $d_4$ | $d_5$ | $l_2$ |
|---|---|---|---|---|---|---|
| 70 | 73 | 125 | 245 | 120 | 150 | 260 |
| 100 | 102 | 145 | 300 | 160 | 190 | 270 |
| 125 | 133 | 175 | 330 | 190 | 220 | 280 |

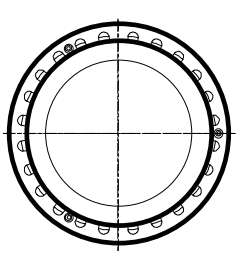
* According to the test assembly of EN 1253
** Can be omitted with bituminous sealing sheets.

# Dimensions and weights





**LORO-DRAINLET® flat roof drains,**
**as emergency drains, DL series**
**DN 70 - DN 100, with clamping flange,**
**made of stainless steel, meeting EN 1253**
**Discharge capacity according to data sheet:**
**LX 848 DN 70 = 9.0 l/s***
**LX 875 DN 100 = 9.0 l/s***

## Complete units, one-piece

**Version a** (without thermal insulation)
DN 70: Item no. 21711.070X Weight: 3.1 kg
DN 100: Item no. 21711.100X Weight: 3.9 kg
consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet strainer

**Version b** (with thermal insulation)
DN 70: Item no. 21712.070X Weight: 3.2 kg
DN 100: Item no. 21712.100X Weight: 4.0 kg
consisting of:
Drain body with thermal insulation, compression seal**, loose flange with weir element, drainlet strainer

**Version c** (with thermal insulation and heating)
DN 70: Item no. 21713.070X Weight: 3.3 kg
DN 100: Item no. 21713.100X Weight: 4.1 kg
consisting of:
Drain body with thermal insulation and heating, compression seal**, loose flange with weir element, drainlet strainer

## Complete units, two-piece

**Version a** (without thermal insulation)
DN 70: Item no. 21721.070X Weight: 4.9 kg
DN 100: Item no. 21721.100X Weight: 5.7 kg
consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet strainer, bottom piece, compression seal**, loose flange, sealing element

**Version b** (with thermal insulation)
DN 70: Item no. 21722.070X Weight: 5.0 kg
DN 100: Item no. 21722.100X Weight: 5.8 kg
consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet strainer, bottom piece with thermal insulation, compression seal**, loose flange, sealing element

**Version c** (with thermal insulation and heating)
DN 70: Item no. 21723.070X Weight: 5.1 kg
DN 100: Item no. 21723.100X Weight: 5.9 kg
consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet strainer, bottom piece with thermal insulation and heating, compression seal**, loose flange, sealing element,

| DN | $d_1$ | $d_2$ | $d_3$ | $d_4$ | $d_5$ | $l_2$ |
|---|---|---|---|---|---|---|
| 70 | 73 | 125 | 245 | 120 | 150 | 260 |
| 100 | 102 | 145 | 300 | 160 | 190 | 270 |

* According to the test assembly of EN 1253

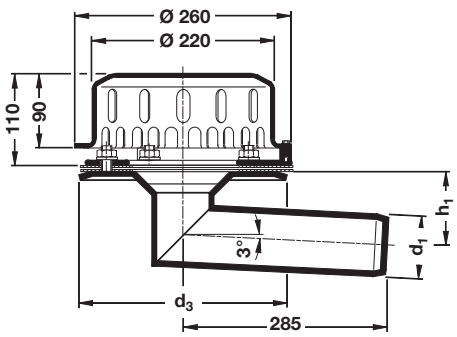
** Can be omitted with bituminous sealing sheets.

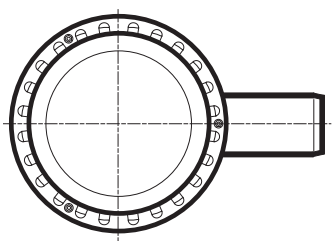
# Dimensions and weights

## LORO-DRAINLET® flat roof drains, DN 70 - DN 125, with clamping flange, made of stainless steel, meeting EN 1253, DL series

**Discharge capacity according to data sheet:**

**LX 888 DN 70 = 5.6 l/s***
**LX 855 DN 100 = 6.1 l/s***
**LX 890 DN 125 = 9.2 l/s***



### Complete units, one-piece

**Version a** (without thermal insulation)

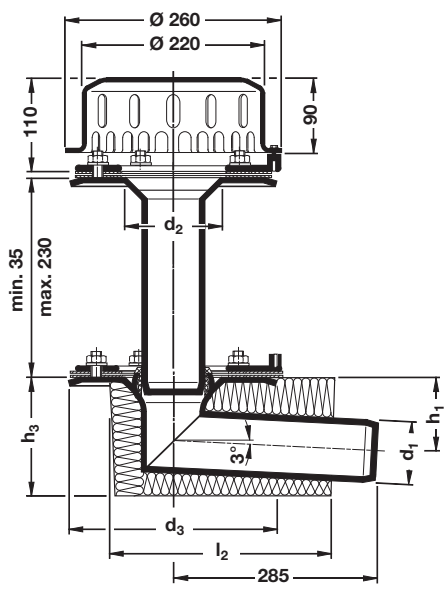
DN 70: Item no. 21514.070X — Weight: 2.9 kg
DN 100: Item no. 21514.100X — Weight: 3.7 kg
DN 125: Item no. 21514.125X — Weight: 4.5 kg
consisting of:
Drain body, compression seal**, loose flange, drainlet strainer

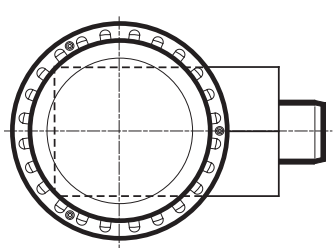
**Version b** (with thermal insulation)

DN 70: Item no. 21515.070X — Weight: 3.0 kg
DN 100: Item no. 21515.100X — Weight: 3.8 kg
DN 125: Item no. 21515.125X — Weight: 4.6 kg
consisting of:
Drain body with thermal insulation, compression seal**, loose flange, drainlet strainer

**Version c** (with thermal insulation and heating)

DN 70: Item no. 21516.070X — Weight: 3.1 kg
DN 100: Item no. 21516.100X — Weight: 3.9 kg
DN 125: Item no. 21516.125X — Weight: 4.7 kg
consisting of:
Drain body with thermal insulation and heating, compression seal**, loose flange, drainlet strainer



### Complete units, two-piece

**Version a** (without thermal insulation)

DN 70: Item no. 21524.070X — Weight: 4.7 kg
DN 100: Item no. 21524.100X — Weight: 5.5 kg
DN 125: Item no. 21524.125X — Weight: 6.3 kg
consisting of:
Drain body, compression seal**, loose flange, drainlet strainer, bottom piece, compression seal**, loose flange, sealing element

**Version b** (with thermal insulation)

DN 70: Item no. 21525.070X — Weight: 4.8 kg
DN 100: Item no. 21525.100X — Weight: 5.6 kg
DN 125: Item no. 21525.125X — Weight: 6.4 kg
consisting of:
Drainlet strainer, bottom piece with thermal insulation, compression seal**, loose flange, sealing element

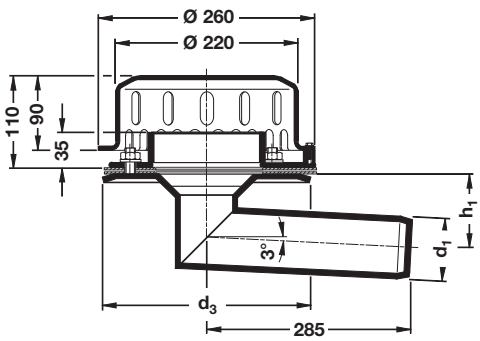
**Version c** (with thermal insulation and heating)

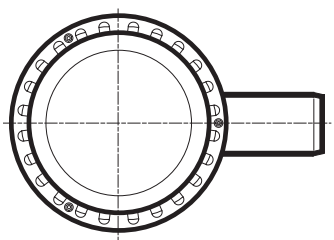
DN 70: Item no. 21526.070X — Weight: 4.9 kg
DN 100: Item no. 21526.100X — Weight: 5.7 kg
DN 125: Item no. 21526.125X — Weight: 6.5 kg
consisting of:
Drain body, compression seal**, loose flange, drainlet strainer, bottom piece with thermal insulation and heating, compression seal**, loose flange, sealing element

| DN | $d_1$ | $d_2$ | $d_3$ | $h_1$ | $h_3$ | $l_2$ |
|---|---|---|---|---|---|---|
| 70 | 73 | 125 | 245 | 80 | 137 | 260 |
| 100 | 102 | 145 | 300 | 103 | 174 | 270 |
| 125 | 133 | 175 | 330 | 121 | 200 | 280 |

* According to the test assembly of EN 1253
** Can be omitted with bituminous sealing sheets.

# Dimensions and weights



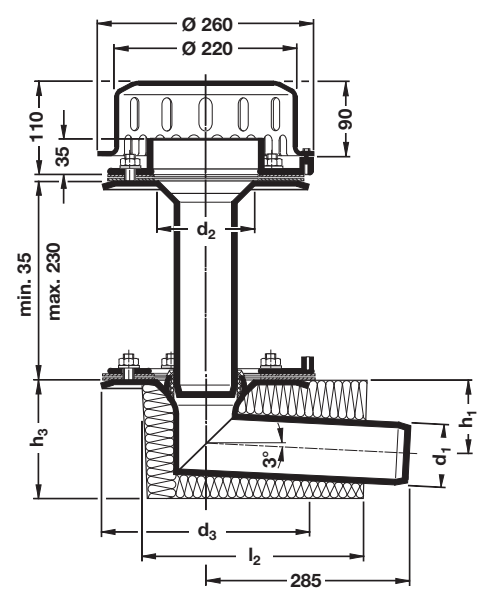
**LORO-DRAINLET® flat roof drains,**
**as emergency drains, DL series**
**DN 70 - DN 100, with clamping flange,**
**made of stainless steel, meeting EN 1253**
**Discharge capacity according to data sheet:**
**LX 889 DN 70 = 10.0 l/s***
**LX 854 DN 100 = 11.0 l/s***

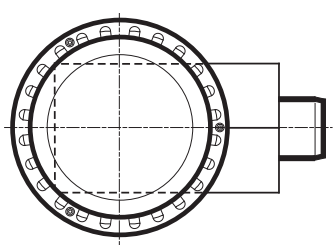
## Complete units, one-piece

**Version a** (without thermal insulation)
DN 70: Item no. 21714.070X Weight: 3.1 kg
DN 100: Item no. 21714.100X Weight: 3.9 kg
consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet strainer

**Version b** (with thermal insulation)
DN 70: Item no. 21715.070X Weight: 3.2 kg
DN 100: Item no. 21715.100X Weight: 4.0 kg
consisting of:
Drain body with thermal insulation, compression seal**, loose flange with weir element, drainlet strainer

**Version c** (with thermal insulation and heating)
DN 70: Item no. 21716.070X Weight: 3.3 kg
DN 100: Item no. 21716.100X Weight: 4.1 kg
consisting of:
Drain body with thermal insulation and heating, compression seal**, loose flange with weir element, drainlet strainer



## Complete units, two-piece

**Version a** (without thermal insulation)
DN 70: Item no. 21734.070X Weight: 4.9 kg
DN 100: Item no. 21734.100X Weight: 5.7 kg
consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet strainer, bottom piece, compression seal**, loose flange, sealing element

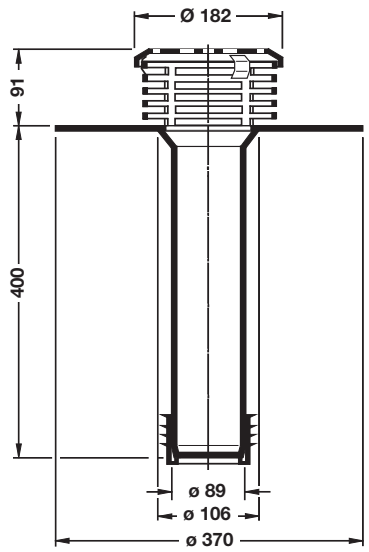
**Version b** (with thermal insulation)
DN 70: Item no. 21735.070X Weight: 5.0 kg
DN 100: Item no. 21735.100X Weight: 5.8 kg
consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet strainer, bottom piece with thermal insulation, compression seal**, loose flange, sealing element

**Version c** (with thermal insulation and heating)
DN 70: Item no. 21736.070X Weight: 5.1 kg
DN 100: Item no. 21736.100X Weight: 5.9 kg
consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet strainer, bottom piece with thermal insulation and heating, compression seal**, loose flange, sealing element,

| DN | $d_1$ | $d_2$ | $d_3$ | $h_1$ | $h_3$ | $l_2$ |
|---|---|---|---|---|---|---|
| 70 | 73 | 125 | 245 | 80 | 137 | 260 |
| 100 | 102 | 145 | 300 | 103 | 174 | 270 |

* According to the test assembly of EN 1253

** Can be omitted with bituminous sealing sheets.

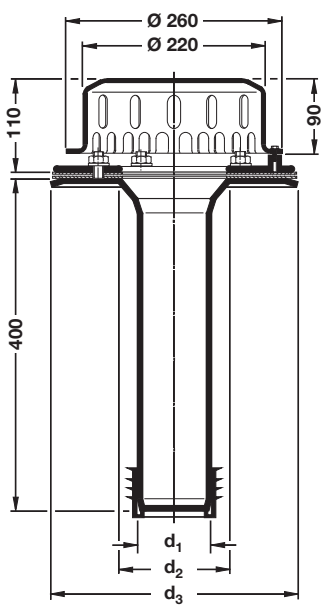



## Dimensions and weights

**LORO-DRAINLET®**
**flat roof renovation drain, DN 80,**
**for renovation with liquid plastic,**
**with bonding flange and transition sealing element,**
**made of steel, hot-dip galvanised**
**Discharge capacity: DN 80 = 5.6 l/s***

### Complete unit

DN 80: Item no. 15518.080X Weight: 3,6 kg
consisting of:
Drain body, strainer, strainer cover



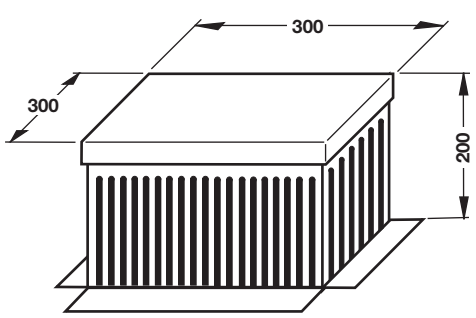

**LORO-DRAINLET®**
**flat roof renovation drains,**
**DN 80 - DN 125,**
**with clamping flange and transition sealing element,**
**made of stainless steel, meeting EN 1253**
**Discharge capacity: DN 80 = 5.6 l/s***
**DN 100 = 6.5 l/s***
**DN 125 = 9.8 l/s***

### Complete units

DN 80: Item no. 21518.080X Weight: 3.6 kg
DN 100: Item no. 21518.100X Weight: 4.3 kg
DN 125: Item no. 21518.125X Weight: 5.2 kg
consisting of:
Drain body, transition sealing element, compression seal**, loose flange, drainlet strainer

| DN | $d_1$ | $d_2$ | $d_3$ | for pipes with internal diameters |
|---|---|---|---|---|
| 80 | 89 | 145 | 300 | 98 - 106 |
| 100 | 110 | 145 | 300 | 118*** - 130 |
| 125 | 128 | 175 | 330 | 145 - 155 |

*** Two upper sealing lips to be trimmed off on site




## Dimensions and weights

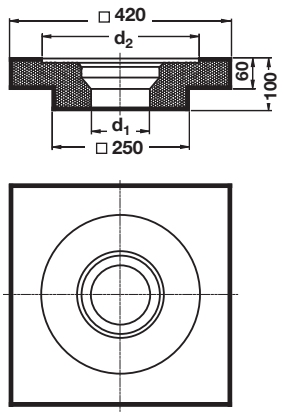
## Special parts

**Inspection shaft for LORO-DRAINLET® roof drains**
made of aluminium
Item no. 19973.000X Weight: 4.1 kg

* According to the test assembly of EN 1253
** Can be omitted with bituminous sealing sheets.

# Dimensions and weights

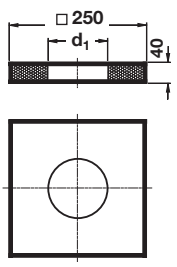
## Special parts




### LORO-DRAINLET® thermal insulation

of foam glass, non-combustible

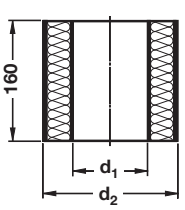
| Item no. | DN | $d_1$ | $d_2$ | kg |
|---|---|---|---|---|
| 19845.070X | 70 | 80 | 247 | 0.4 |
| 19845.100X | 100 | 112 | 303 | 0.6 |
| 19845.125X | 125 | 145 | 333 | 0.8 |




### LORO-DRAINLET® compensating piece

of foam glass, non-combustible

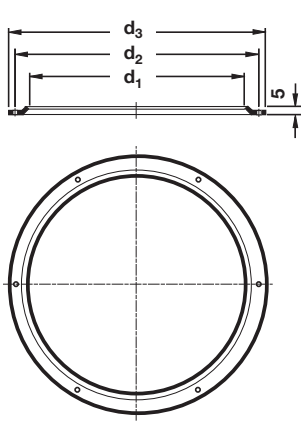
| Item no. | DN | $d_1$ | kg |
|---|---|---|---|
| 19844.070X | 70 | 80 | 0.2 |
| 19844.100X | 100 | 112 | 0.3 |
| 19844.125X | 125 | 145 | 0.4 |




### Thermal insulation, non-combustible

The thermal insulation is factory-fitted to the LORO-DRAINLET® flat roof drains, without thermal insulation (version a)

| Item no. | DN | $d_1$ | $d_2$ | kg |
|---|---|---|---|---|
| 19995.070X | 70 | 73 | 150 | 0.2 |
| 19995.100X | 100 | 102 | 180 | 0.3 |
| 19995.125X | 125 | 133 | 220 | 0.4 |



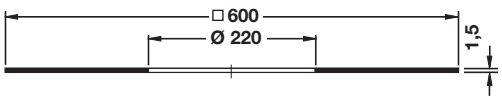

### LORO-DRAINLET® fastening flange

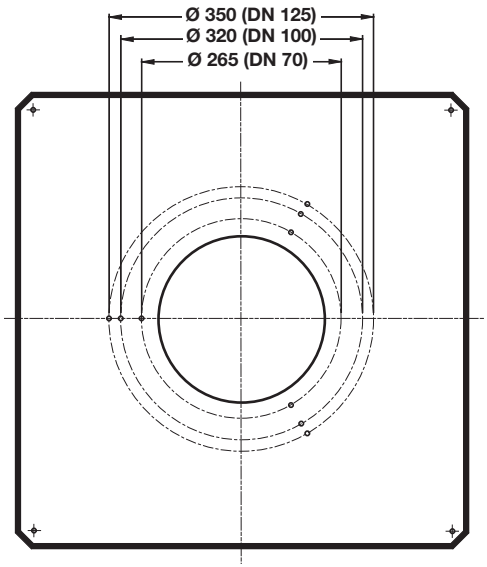
made of steel, hot-dip galvanised

| Item no. | DN | $d_1$ | $d_2$ | $d_3$ | kg |
|---|---|---|---|---|---|
| 21910.070X | 70 | 237 | 265 | 285 | 0.2 |
| 21910.100X | 100 | 292 | 320 | 340 | 0.3 |
| 21910.125X | 125 | 322 | 350 | 370 | 0.4 |

# Dimensions and weights

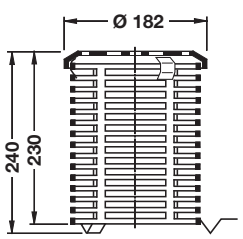
## Special parts

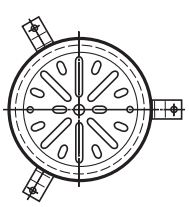



**LORO-DRAINLET® reinforcing metal sheet**
made of steel, hot-dip galvanised,
including fastening clips and screws for fitting
to trapezoidal sheet metal roofs

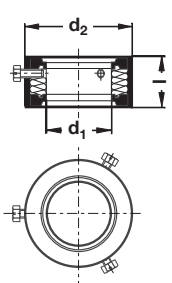
Item no. 19975.000X Weight: 3.9 kg



**LORO-DRAINLET® strainer unit for inverted roofs**
made of steel, hot-dip galvanised, with additional plastic coating,
consisting of: Strainer and strainer cover

Item no. 19494.000X Weight: 2.5 kg

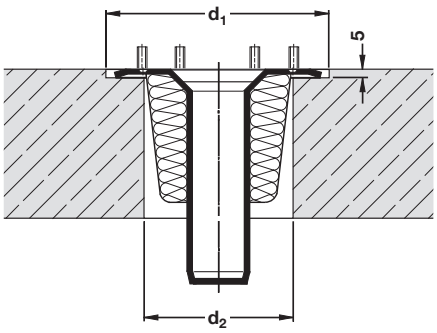


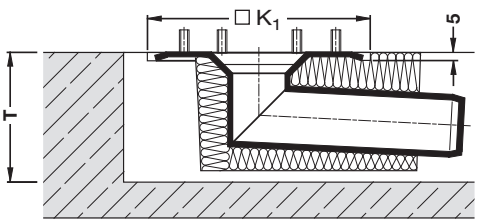

**LORO-DRAINLET® compound insulating piece**
Steel, hot-dip galvanised, with additional internal coating
also for heated drains

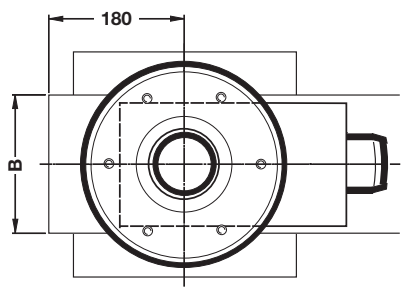
| Item no. | DN | $d_1$ | $d_2$ | l | kg |
|---|---|---|---|---|---|
| 19974.070X | 70 | 73 | 102 | 57 | 0.2 |
| 19974.100X | 100 | 102 | 133 | 47 | 0.3 |

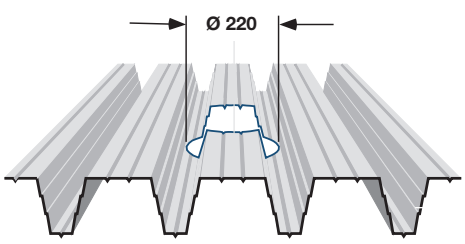
**Heating tape cable for LORO drains**
Item no. 19853.000X Weight: 0.3 kg

# Cut-out dimensions




**LORO-DRAINLET® roof drains**
**DN 70, DN 100 and DN 125**
**in flat concrete roofs**

**Core hole, single stage**
for LORO-DRAINLET® drain body
and LORO-DRAINLET® bottom piece

| DN | $d_1$ | $d_2$ |
|---|---|---|
| 70 | 260 | 122/158* |
| 100 | 320 | 142/200* |
| 125 | 340 | 172/230* |

* Core hole for LORO-DRAINLET® bottom piece with thermal insulation (two-piece version).

**Side drain**

| | Cut-out depth T | | Cut-out width B | |
|---|---|---|---|---|
| DN | a | b | a | b |
| 70 | 130 | 150 | 140 | 160 |
| 100 | 170 | 190 | 160 | 200 |
| 125 | 200 | 210 | 190 | 230 |

| | Cut-out □ $K_1$ | |
|---|---|---|
| DN | a | b |
| 70 | 260 | 260 |
| 100 | 320 | 320 |
| 125 | 340 | 340 |

a = without thermal insulation
b = with thermal insulation

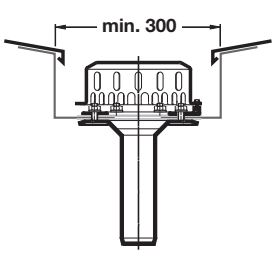
ZPrepare and attach a lower shuttering panel for filling.`
Lift the drain a little and fill. Return the drain to its position.

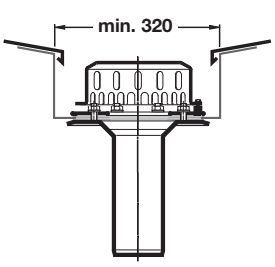
**LORO-DRAINLET® roof drains**
**DN 70, DN 100 and DN 125**
**for fitting into trapezoidal sheet metal roofs**

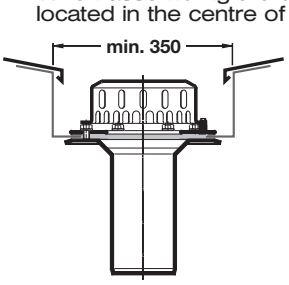
- for LORO-DRAINLET® drain body with clamping flange
- for LORO-DRAINLET® bottom piece with clamping flange

**LORO-DRAINLET® roof drains,**
**DN 70, DN 100 and DN 125,**
**for fitting into box gutters**

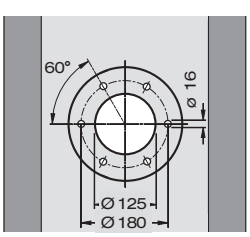
- Make holes (diameter 16 mm) according to the pattern in the box gutter. The loose flange can be used as a template for the holes. When assembling the drain, make sure that the threaded bolts are located in the centre of the pre-drilled holes.



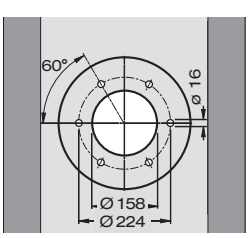



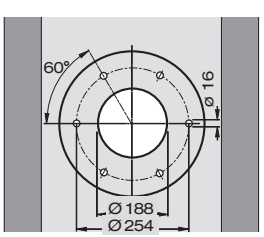

**Note:** Longitudinal expansion of the gutter must be taken appropriately into account.




**DN 70**




**DN 100**

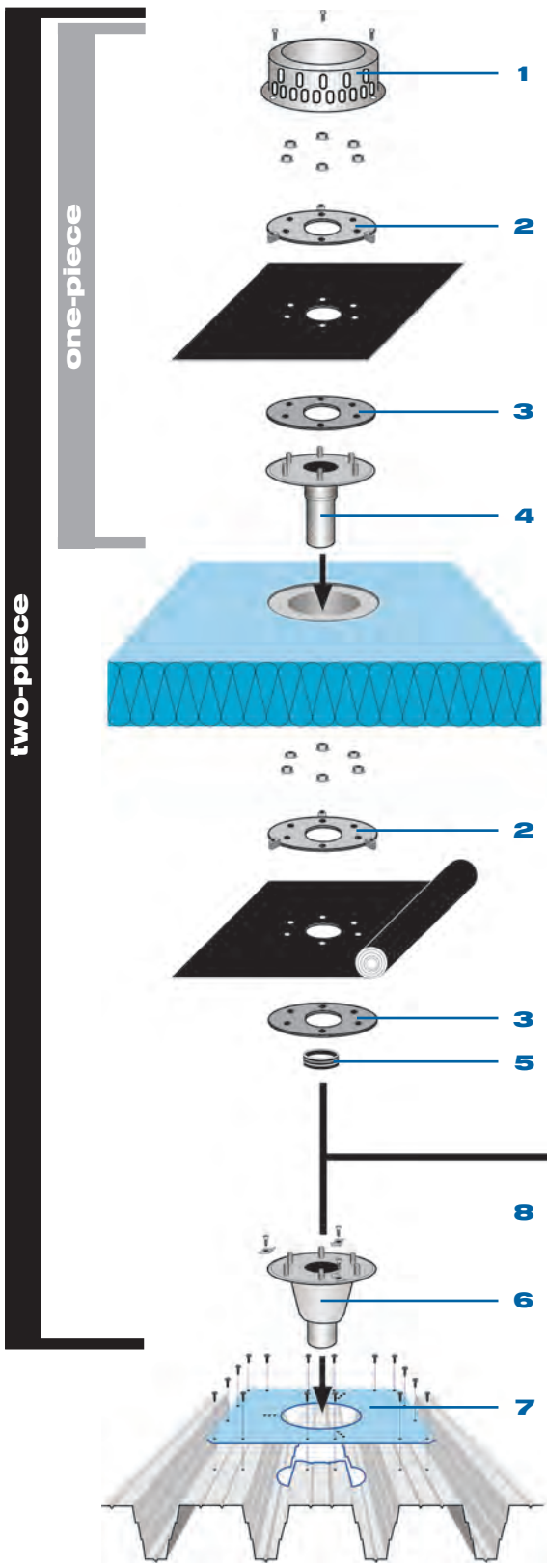


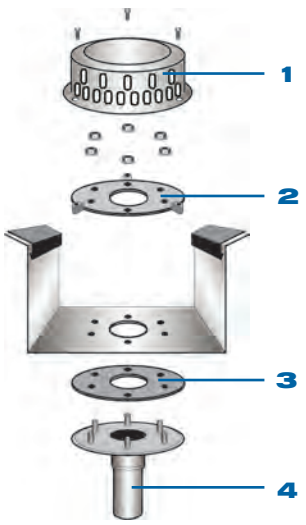

**DN 125**

# Assembly Instructions

**for fitting into trapezoidal sheet metal or concrete roofs**

**for fitting into gutters**




**1 DRAINLET® cover**
with 3 fastening screws

**2 Loose flange**
with 6 hexagonal nuts M 10 (tightened to 20 Nm for bituminous roof sealing sheets, or 30 Nm on plastic roof sealing sheets)

**3 Compression seals***

**4 DRAINLET® drain body**

**5 Sealing element**

**6 DRAINLET® bottom piece**

**7 Reinforcing metal sheet**
with 3 self-tapping screws and 3 fastening clips

**8 Fastening flange**

*Can be omitted when using bituminous roof sealing sheets.

**Cut-out**
on trapezoidal sheet metal roofs

on concrete roofs

# Designing roof drains for flat roofs

## Determining the design rainfall intensity

$$Q_r = \frac{A \cdot (r_{5,5} \cdot C)}{10000}$$

Qr = design rainfall intensity
A = effective roof surface or partial surface in $m^2$
$r_{5,5}$ = local 2-year rainfall (5 min. rainfall) according to DIN 1986-100 Table A1, page 82-85
C = discharge coefficient according to DIN 1986-100 Table 6

## Determining the volumetric overflow rate for emergency drains

$$Q_{not} = \frac{A \cdot (r_{5,100} - r_{5,5} \cdot C)}{10000}$$

Qnot = volumetric overflow rate
A = effective roof surface or partial surface in $m^2$
$r_{5,100}$ = local once-in-a-hundred-year rain (5 min. rainfall) according to DIN 1986-100 Table A1, page 82-85
$r_{5,5}$ = local 2-year rainfall according to DIN 1986-100 Table A1, page 82-85
C = discharge coefficient according to DIN 1986-100 Table 6

## Determining the number of roof drains

(when evenly distributed around the roof area)

$$n_{DA} = \frac{Q_r}{Q_{DA}} \quad \text{number of items}$$

$n_{DA}$ = minimum number of roof drains
$Q_r$ = rain water discharge from an effective roof surface or partial surface
$Q_{DA}$ = discharge from a roof drain at the planning stage in l/(s • ha) at a specified backflow level at the roof drain according to DIN 1986-100 Table 7

Required backflow level at the roof drain in order to achieve the minimum discharge according to EN 1253-1

| Nominal diameter | Backflow level Øh mm | Discharge capacity l/s |
|---|---|---|
| DN 50 | 35 | 0.9 |
| DN 70 | 35 | 1.7 |
| DN 100 | 35 | 4.5 |
| DN 125 | 45 | 7.0 |
| DN 150 | 45 | 8.1 |

**Calculation examples for main and emergency drainage, see page 89.**

# Designing roof drains for flat roofs

**Calculation example***
- Hall roof with effective precipitation area of 500m² (no partial areas) in the Cologne region
- Discharge coefficient c = 1.0
- Rainfall $r_{5,5}$ = 281 l/(s x ha)
- Backflow level 35 mm
- Rainfall $r_{5,100}$ = 648 l/(s x ha)
- Roof drains e.g. LORO-DRAINLET® DN 100 with discharge capacity 6.2 l/s
- Emergency drains e.g. LORO emergency scupper drain DN 70 with discharge capacity 7.8 l/s

* For connection of one drain to one downpipe

## For main drainage:

$$Q_r = \frac{500 \cdot (281 \cdot 1.0)}{10000} \qquad Q_r = 14.05 \text{ l/s}$$

$$n_{DA} = \frac{14.05}{6.2} \qquad n_{DA} = 3 \text{ roof drains, DN 100}$$

## For emergency drainage:

$$Q_{not} = \frac{500 \cdot (367 \cdot 1.0)}{10000} \qquad Q_{not} = 18.35 \text{ l/s}$$

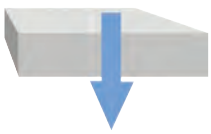
$$n_{not} = \frac{18.35}{7,8} \qquad n_{not} = 3 \text{ emergency drains, DN 70}$$

**Table 6 - Discharge coefficients C according to DIN 1986-100 for determining the rainwater discharge**

| No. | Type of surfaces | Discharge coefficient C |
|---|---|---|
| 1 | Waterproof surfaces, e.g. | |
| | - Roof areas | 1.0 |
| | - Concrete surfaces | 1.0 |
| | - Ramps | 1.0 |
| | - Surfaces fastened in place with sealed joints | 1.0 |
| | - Blacktops (asphalt) | 1.0 |
| | - Paving with sealed joints | 1.0 |
| | - Gravel roofs | 0.5 |
| | - Green roof areas | |
| | - For intensive green roofs | 0.3 |
| | - For extensive green roofs from 10 cm thickness | 0.3 |
| | - For extensive green roofs below 10 cm thickness | 0.5 |

**Please contact the technical LORO field service consultant if you have questions about the design of roof drains.**

## System overview:

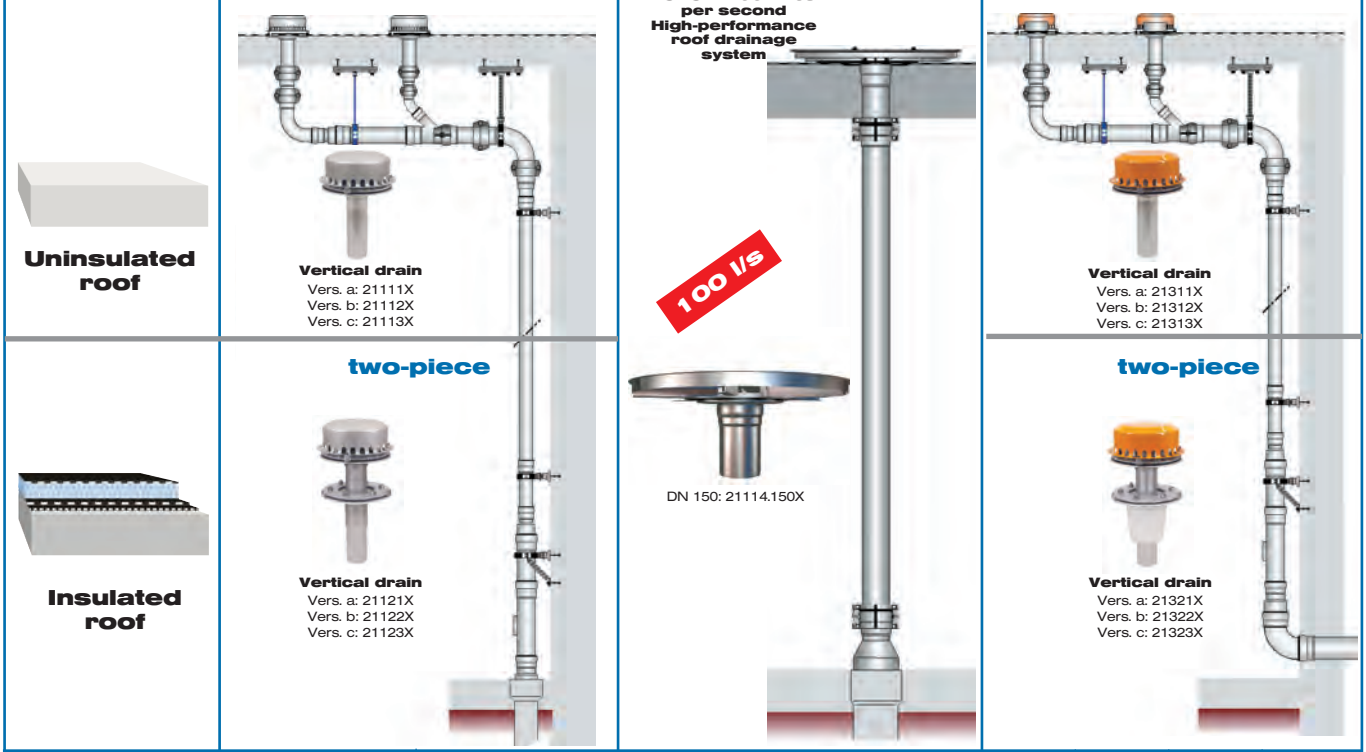


### LORO-X roof drainage systems for pressure flow

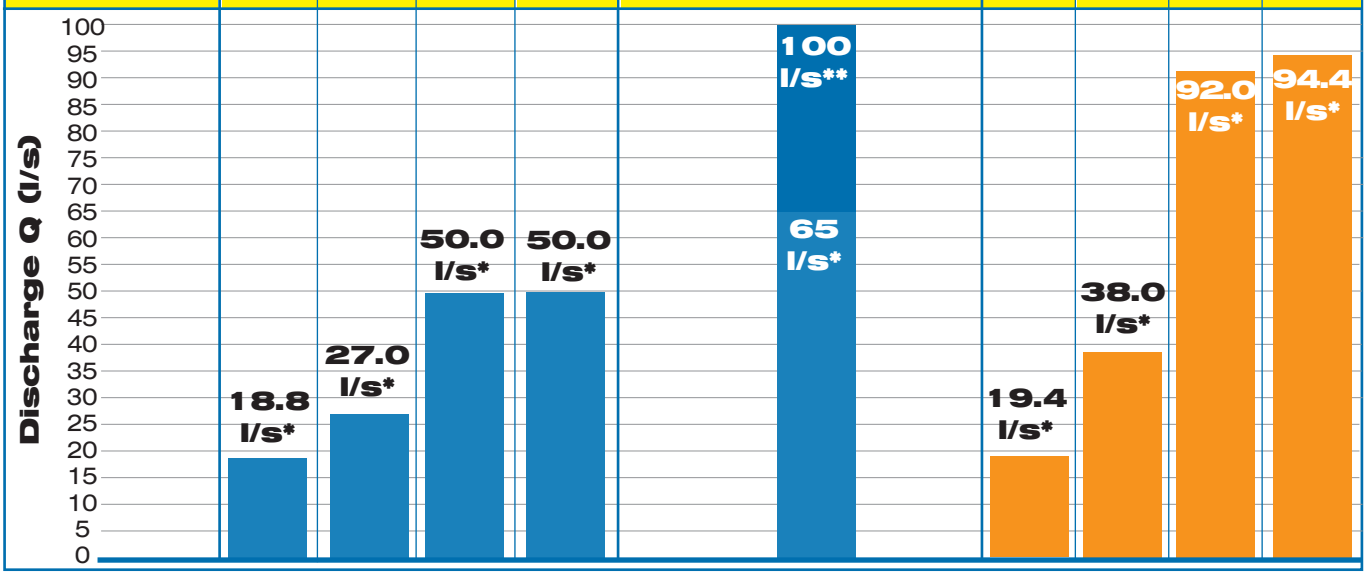
**Main drainage** — Pressure flow | **Emergency drainage** — Pressure flow

**Silent Power**

| Series | DJ series with clamping flange | 112 series with clamping flange | DJ series with clamping flange |
|---|---|---|---|
| Uninsulated roof | one-piece | LORO-X 100 litres per second High-performance roof drainage system | one-piece |
| | Vertical drain<br>Vers. a: 21111X<br>Vers. b: 21112X<br>Vers. c: 21113X | 100 l/s<br>DN 150: 21114.150X | Vertical drain<br>Vers. a: 21311X<br>Vers. b: 21312X<br>Vers. c: 21313X |
| Insulated roof | two-piece | | two-piece |
| | Vertical drain<br>Vers. a: 21121X<br>Vers. b: 21122X<br>Vers. c: 21123X | | Vertical drain<br>Vers. a: 21321X<br>Vers. b: 21322X<br>Vers. c: 21323X |



| DN | 70 | 100 | 125 | 150 | 150 | 70 | 100 | 125 | 150 |
|---|---|---|---|---|---|---|---|---|---|
| LX no. | LX845 | LX530 | LX948 | LX960 | LX836 | LX847 | LX542 | LX947 | LX961 |




* Discharge capacity measured in test assembly according to EN 1253, downpipe length 4.2 m ** At a backflow level of 60 mm

**Vers. a = without thermal insulation, vers. b = with thermal insulation, vers. c = with thermal insulation and heating**

# LORO-DRAINJET®

## siphonic drains, DN 70 - DN 150, DJ series

### for roof drainage with pressure flow

- **as main drain**
- **as emergency drain**

**with clamping flange, for bituminous and plastic sealing sheets**

LORO-DRAINJET® siphonic drains meet EN 1253. These are roof drains with optimised flow characteristics, offering higher discharge capacity, improved flow properties, reduced fitting size and better noise performance.
With a capacity of up to 27 l/s, they are amongst the drains with the highest discharge capacity.

Together with LORO-DRAINJET® emergency drains, whose use is specified by DIN 1986-100 for drainage systems with pressure flow, the drains, in combination with a wide range of pipes and pipe fittings, the drains provide a complete roof drainage system that satisfies the toughest demands.

**Particular advantages:**

- **High discharge capacity**
- **LORO-DRAINJET® emergency drains are fitted at the same level as the main drainage systems**

**LORO-DRAINJET® siphonic drains, DN 70 - DN 150**

**LORO-DRAINJET® siphonic drains as emergency drain, DN 70 - DN 150**

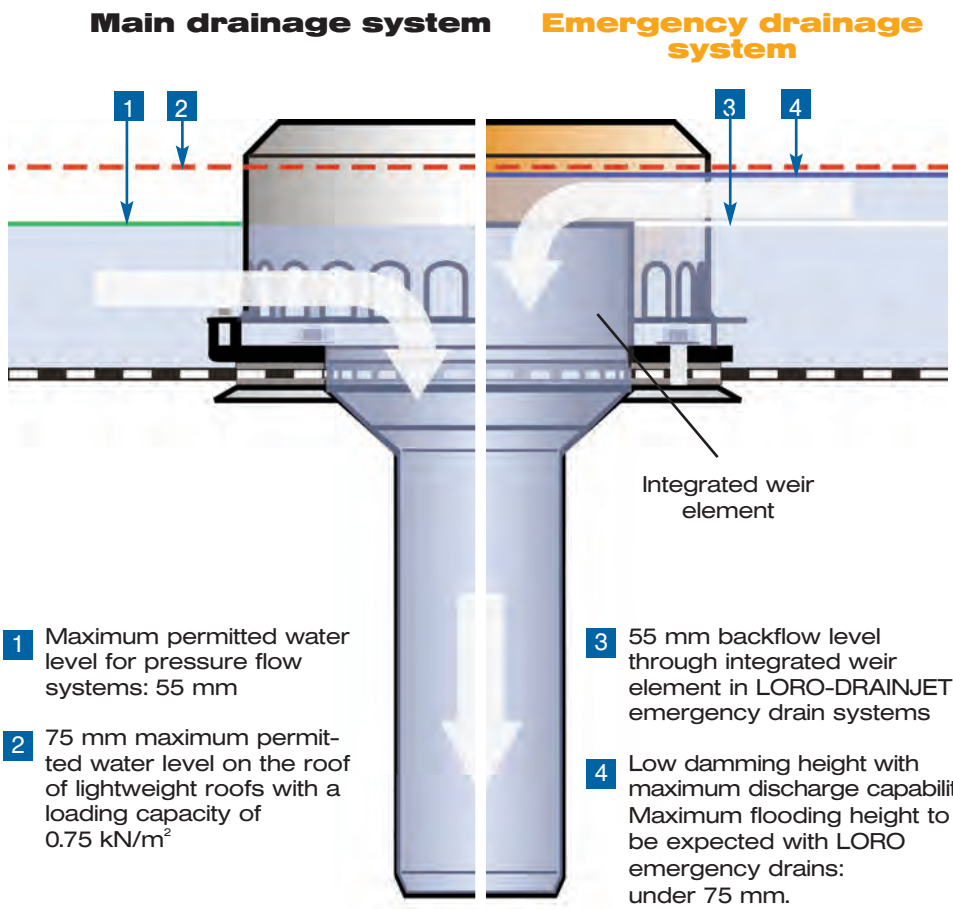
# LORO-DRAINJET® siphonic drains

## The system for use in lightweight roofs*

**LORO DRAINJET® siphonic drains of stainless steel**
LORO DRAINJET® siphonic drains are made of stainless steel, and are therefore:
- dimensionally stable
- long-lasting
- UV-resistant

**LORO DRAINJET® main and emergency drains are fitted at one level.**
The patented, integrated weir element allows the trouble of setting the emergency drains higher to be omitted.

**Low additional banked-up water level in the event of overload.**
In the event of overload, LORO emergency drains discharge the maximum additional rainfall with a low damming height of less than 20 mm.
This means that when they reach their rated capacity, LORO emergency drains hold the water lower than the maximum flooding height* permitted for lightweight roofs.




1 Maximum permitted water level for pressure flow systems: 55 mm

2 75 mm maximum permitted water level on the roof of lightweight roofs with a loading capacity of 0.75 kN/m²

3 55 mm backflow level through integrated weir element in LORO-DRAINJET® emergency drain systems

4 Low damming height with maximum discharge capability. Maximum flooding height to be expected with LORO emergency drains: under 75 mm.

**The requirement:**

**DIN 1986-100: 2002-03 (extract):**
9.1 Any roof area that has drainage that is led away either inside or on the building must include at least one drain and one emergency drain that has a free outlet over the facade of the building.
The loads that result from the backflow level must be taken into account in the static calculations for dimensioning the roof and its supporting construction.

**The solution:**

In LORO-DRAINJET® siphonic drain systems, the siphonic drain and the emergency drain remove water at one level. The banked-up water level required by the patented LORO-DRAINJET® emergency drain is achieved by an integrated weir element (55 mm backflow level). Operation in a single plane means that the water level on the roof is limited to a maximum of 75 mm.
LORO-DRAINJET® siphonic drains can be installed without expensive modifications to the structure of the roof and all the associated problems.

* Maximum permitted flooding height on lightweight roofs with a loading capacity of 0.75 kN/m²: 75 mm.

# Technical product data

## Material:

**Drain pot:**
Stainless steel 1.4301

**Drainjet cover:**
Stainless steel 1.4301

**Loose flange:**
G Al Si 10 Mg

**Sealing elements:**
SB (SBR) styrene-butadiene copolymer, trade name e.g. BUNA, DN 70 - DN 100, silicone-free.

**Compression seal:**
Perbunan P 599 (can be omitted from bituminous sealing sheets).

## Thermal insulation:

POLYSTYRENE SE WLG 0.35
CFC-free,
Thickness: at least 20 mm on faces directly exposed to water.
Coefficient of thermal conductivity: 0.035 W/m x K.
Resistance to water vapour diffusion: $\mu = 40/100$.
Water absorption: 0.5 - 1.5 vol. %.
Building material class B2
Thermal insulation fire protection class R 90 by request.

## Heating:

Self-regulating parallel heating line
$T_{max.}$ +80 °C.
Rated voltage: 230 V / 50 Hz.
Rated power consumption: approx. 18 W at 0 °C ambient temperature
Fusing: slow-blow fuses (C-characteristic) with max. 80% loading

## Fire resistance:

LORO-DRAINJET® siphonic drains are assigned in accordance with DIN 4102 to building material class A1, non-combustible.

## External supervision:

LORO-DRAINJET® siphonic drains meet EN 1253. External supervision is carried out by the Materials Inspection Institute at Würzburg, operated by the LGA (State Trade Agency) Qualitest GmbH.

TÜV CERT
DIN EN ISO 9001:2008

MPA NRW
DIN EN 1123
DIN EN 1124

LGA
DIN EN 1123
DIN EN 1124

**Structure scheme/system components**

# LORO-DRAINJET® siphonic drains/emergency drains with clamping flange, for flat roof drainage with pressure flow, DJ series, made of stainless steel, DN 70 and DN 100

## Emergency drain

**Drainjet cover**
No. 21009X

**Loose flange with weir element***
No. 21906X

## Main drain

**Drainjet cover**
No. 21000X

**Loose flange***
No. 21905X

**Drain body**
Vers. a: No. 21981X
Vers. b: No. 21982X
Vers. c: No. 21983X

**Base unit**
Vertical drain
Vers. a: No. 21901X
Vers. b: No. 21902X
Vers. c: No. 21903X

**Sealing element**
No. 911X

**Loose flange***
No. 21905X

**Bottom piece**
Vers. a: No. 21971X
Vers. b: No. 21972X
Vers. c: No. 21973X

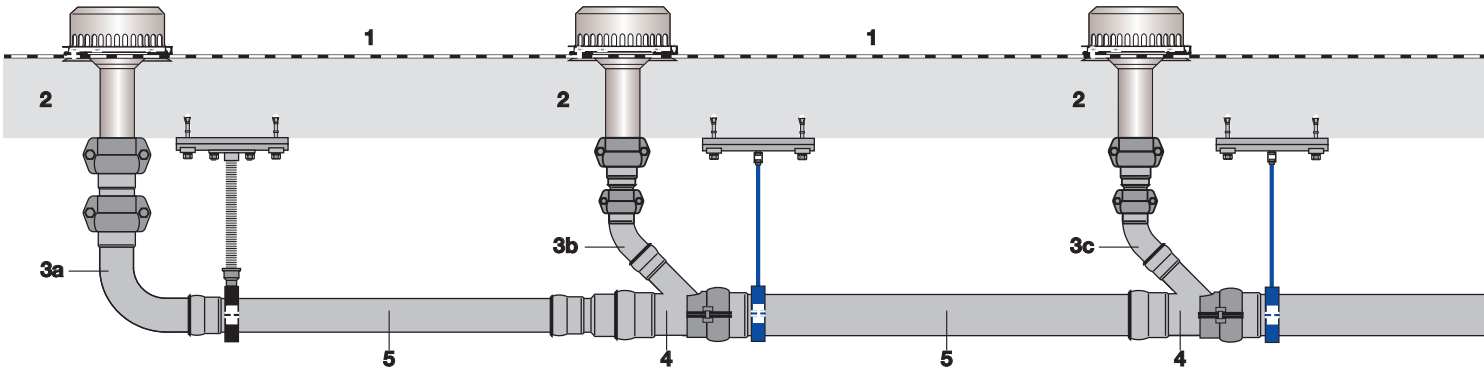
**Bottom piece unit**
Vertical drain
Vers. a: No. 21991X
Vers. b: No. 21992X
Vers. c: No. 21993X

**Complete unit - one-piece**

**Complete unit - two-piece**

Vers. a: without thermal insulation
Vers. b: with thermal insulation
Vers. c: with thermal insulation and heating

* Including compression seal of perbunan, can be omitted when bituminous roof sealing sheets are used.




1 - Roof area
2 - Roof drains
3a - Connecting line
3b - Connecting line
3c - Connecting line
4 - Flow merging
5 - Collecting pipe
6 - Flow deflection horizontal / vertical
7 - Downpipe
8 - Extension
9 - Calming section
10 - Transfer to the underground or collecting pipe operated with gravity flow

## Fundamental hydraulic conditions

1. The diameters of the connecting lines (3a, 3b, 3c) are selected in accordance with constant pressure loss in all the flow routes - from the edge of the roof (1) through to the transfer from pressure flow into the gravity line (10).

2. The diameter of the connecting line (3c) that is closest to the downpipe is usually the smallest diameter in the system, so that the highest flow rate occurs here. This diameter should be selected in such a way that the negative pressure resulting from the dynamic pressure in the line is not too large, and that an excessive initial banked-up water level on the roof is avoided before the negative pressure effect from the downpipe starts to act.

3. The diameter of the connecting line (3a) that is most distant from the downpipe is usually large, with a low water flow, so that the lowest flow rate in the system occurs here. A flow rate of less than 1 m/s is to be avoided during the design, so that a good self-cleaning effect is achieved.

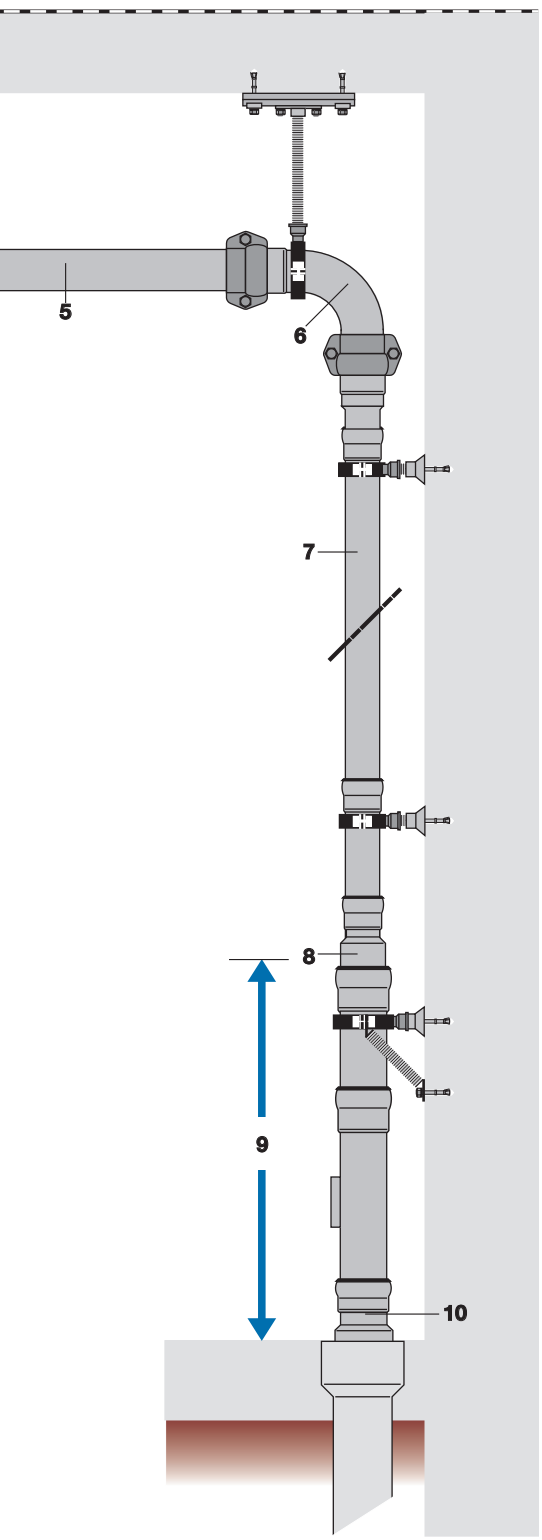
4. The diameters of the collecting pipe (5) are favourably chosen to provide constant pressure loss per metre of pipe length rather than constant pipe diameter or constant flow speed.

5. The diameter of the downpipe (7) is selected so that the negative-pressure effect of the downpipe reliably starts to operate. The basic aim of the siphonic drain system is to implement a horizontal collecting pipe, and to support transport of the rainwater above the deflection (6) through the geodetic height below the deflection. The result of this is that the intended negative pressures develop at the deflection. The smaller the diameters of the connecting and collecting pipes that are installed, the lower is the rain discharge that the geodetic height above the deflection will be able to drive towards the downpipe. The selection of the diameter of the downpipe is of particular importance here in order to ensure the effectiveness of the geodetic height of the downpipe *).

6. The diameter of the calming section (9) must be selected in such a way that at the outlet, i.e. at the transition (10) into the underground or collecting pipe, which is being operated with gravity flow, the conversion of the high kinetic energy through reducing the flow speed to ≤ 2.5 m/s in accordance with EN 12056 is ensured. In order to avoid damage resulting from entry velocities that are too high, the calming section (9) is dimensioned to generate at most 2.5 m/s before the transition to the partially filled line.

7. Because this is a roof drainage system with pressure flow, the diameters fitted in the system must be chosen in such a way that, when there is a risk of backflow from the sewer system, or when security requirements are tighter than normal (no backflow as far as the roof), the discharge head between the roof and the backflow level is sufficient to drive the rain discharge to the open outlet. The open outlet can either be a direct outlet of the rain discharge into the open at the height of the backflow level, or a free outlet into, for instance:
   - a pressure compensation shaft with a sufficiently large opening in cover
   - a natural water body
   - a traffic area
   - a rain storage reservoir or canal
   - a cistern or a rainwater harvesting system
   - a fire pond

   Its volume must be large enough to provide temporary storage for the difference in the water quantity between a heavy rain discharge from the roof drainage system with pressure flow and a small rain discharge into the sewer system with a small rise in the water level.

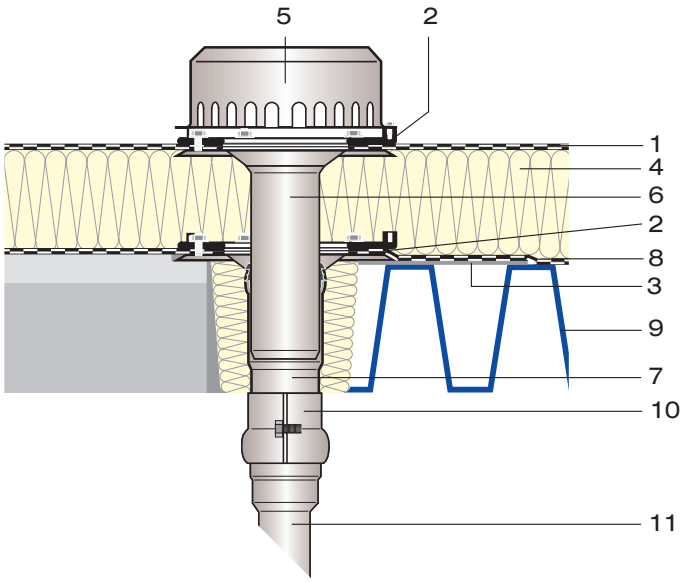



7.1 The diameters in the pressure flow system can be selected in such a way that, in order to minimise the diameter of the system, the entire geodetic height between the roof level and the backflow level is utilised, and the corresponding geodetic pressure fully exploited to convey the rain discharge within the roof drainage system.
The dimensioning of the pressure flow system with minimal diameters must allow the free release of the rain discharge at the end of the roof drainage system with pressure flow in the form of an outlet opening into the open at the height of the backflow level. In this case, the free release of the rain discharge should occur in the immediate neighbourhood of the downpipe (7).

7.2 If it is not possible to provide free release of the rain discharge at the end of the pressure flow system in the form of an outlet opening into the open at the height of the backflow level, then it is necessary to ensure that the diameters are selected such that the rainwater can be conveyed within the discharge system below the backflow level as far as the free release of the rain discharge. The diameters of the discharge system below the back flow level are to be selected, in the light of pressure drops, in such a way that in the event that backflow occurs, the hydrostatic water head between the levels of the roof and the backflow is sufficient to drive the rainwater to the free outlet.

*) see also Vahlbrauk, W. : Sparsam vom Dach in die Traufe - Grundgedanken zur sicheren Bemessung von Druck-Regenentwässerungssystemen.

Sanitär- und Heizungstechnik 57 (1992)
No. 12, pp. 857 - 862 and
Haustechnische Rundschau (1993)
Nos. 7-8, pp. 56-60.

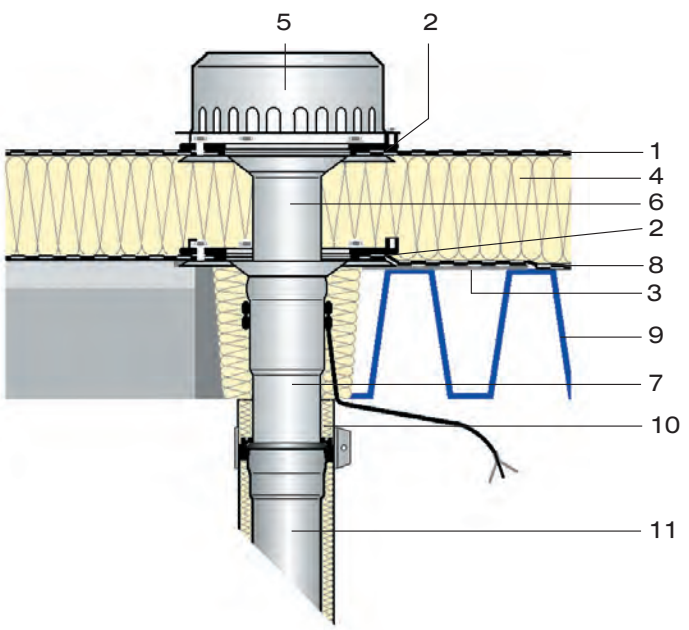



## Example applications

### LORO-DRAINJET® siphonic drain, in concrete/trapezoidal sheet metal roofs, insulated

1 Sealing sheet
2 Compression seal*
3 Reinforcing metal sheet
4 Thermal insulation
5 LORO-DRAINJET® cover
6 LORO-DRAINJET® drain body with loose flange
7 LORO-DRAINJET® bottom piece with loose flange and thermal insulation
8 Vapour barrier
9 Concrete slab or trapezoidal sheet metal roof
10 LORO-X anchor clip
11 LORO-DRAINJET® compensating piece

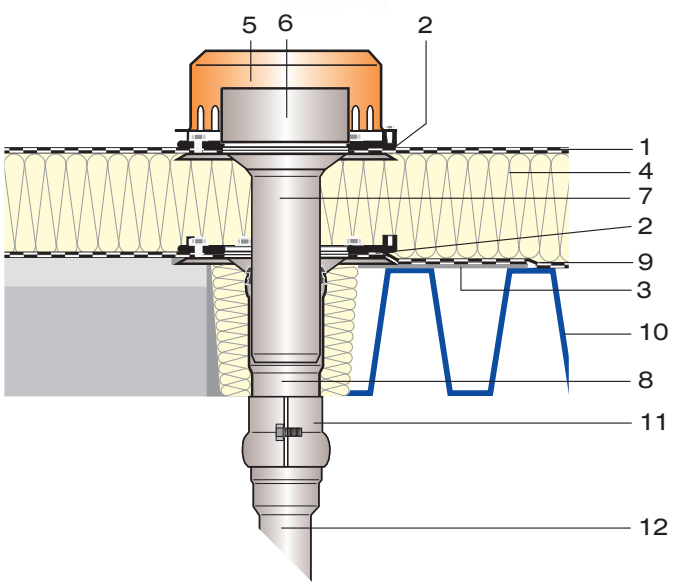
* Can be omitted when bituminous roof sealing sheets are used.




### LORO-DRAINJET® siphonic drain, in concrete/trapezoidal sheet metal roofs, insulated

1 Sealing sheet
2 Compression seal*
3 Reinforcing metal sheet
4 Thermal insulation
5 LORO-DRAINJET® strainer
6 LORO-DRAINJET® drain body with loose flange
7 LORO-DRAINJET® bottom piece with loose flange, thermal insulation and heating
8 Vapour barrier
9 Concrete slab or trapezoidal sheet metal roof
10 Compound pipe insulating piece
11 LORO compound pipe

* Can be omitted when bituminous roof sealing sheets are used.

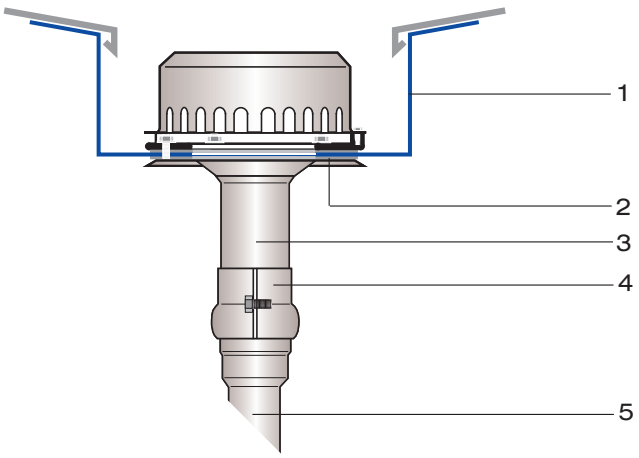



### LORO-DRAINJET® siphonic drain as emergency drain, in concrete/trapezoidal sheet metal roofs, insulated

1 Sealing sheet
2 Compression seal*
3 Reinforcing metal sheet
4 Thermal insulation
5 LORO-DRAINJET® emergency drain cover
6 LORO-DRAINJET® loose flange with weir element
7 LORO-DRAINJET® drain body
8 LORO-DRAINJET® bottom piece with clamping flange and thermal insulation
9 Vapour barrier
10 Concrete slab or trapezoidal sheet metal roof
11 LORO-X anchor clip
12 LORO-DRAINJET® compensating piece

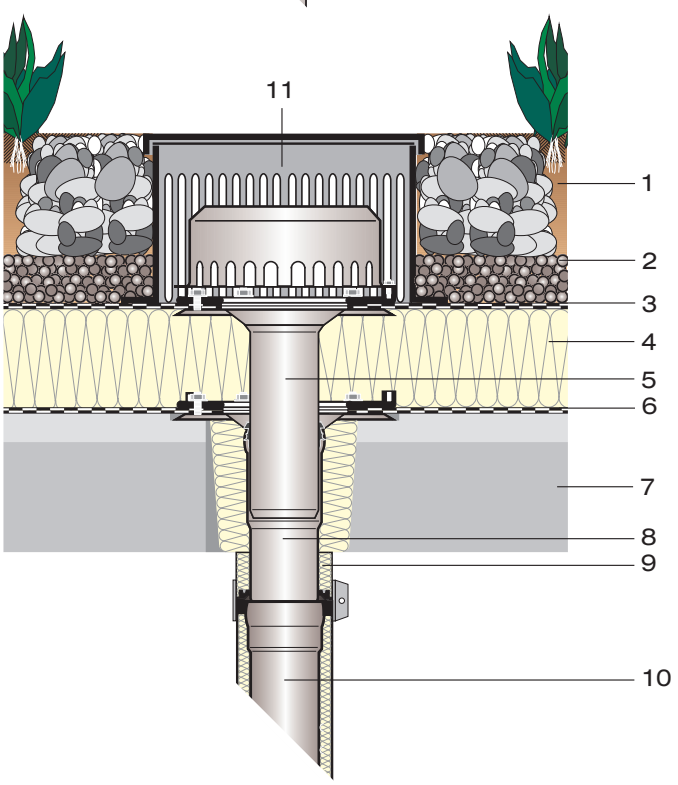
* Can be omitted when bituminous roof sealing sheets are used.

## Example applications



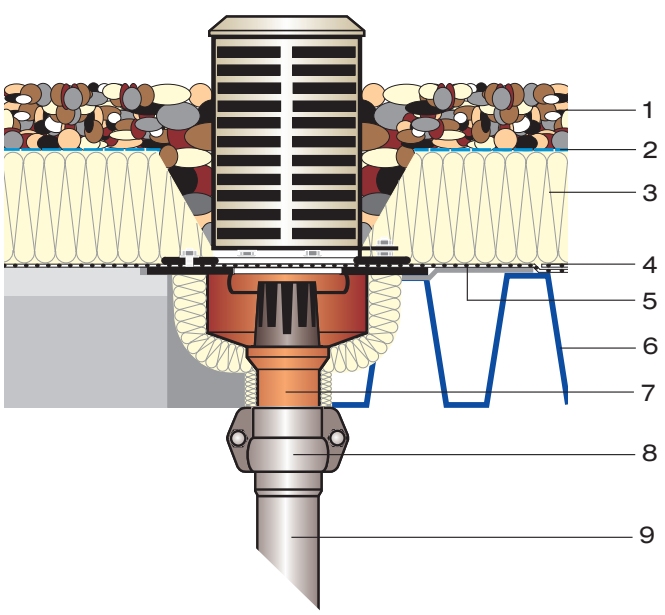

**LORO-DRAINJET®**
**siphonic drain,**
**in uninsulated box gutter**

1 Box gutter
2 Compression seal
3 LORO-DRAINJET® drain body
4 LORO-X anchor clip
5 LORO-DRAINJET® compensating piece




**LORO-DRAINJET®**
**siphonic drain,**
**in concrete roof, insulated,**
**with extensive roof planting**

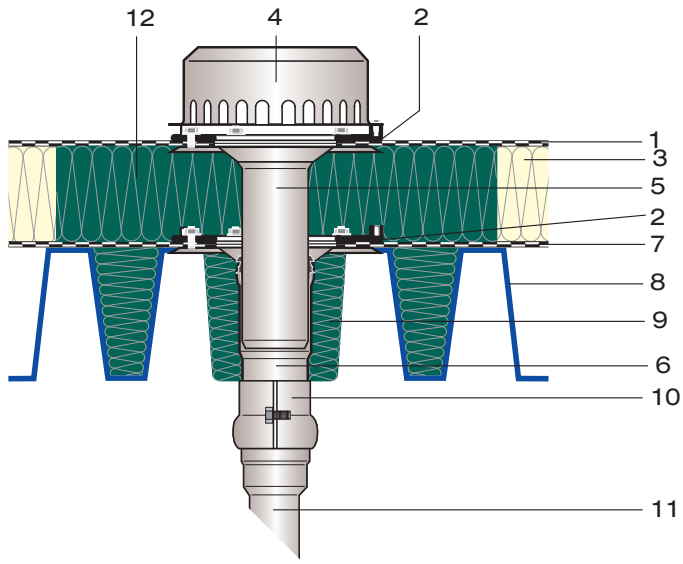
1 Layer of vegetation
2 Drainage layer
3 Root-resistant roof sealing sheet
4 Thermal insulation
5 LORO-DRAINJET® drain body with loose flange
6 Vapour barrier
7 Concrete slab
8 LORO-DRAINJET® bottom piece with loose flange and thermal insulation
9 Compound insulating piece
10 LORO compound pipe
11 LORO inspection shaft




**LORO-VERSAL®**
**siphonic drains**
**for inverted roofs,**
**in concrete/trapezoidal sheet**
**metal roofs, insulated**

1 Gravel layer
2 Separating layer
3 Thermal insulation
4 Vapour barrier
5 Reinforcing metal sheet
6 Concrete slab or trapezoidal sheet metal roof
7 LORO-VERSAL® siphonic drain, one-piece, consisting of: Base unit and strainer unit
8 LORO-X anchor clip
9 LORO-X steel discharge pipe

Roof
Pressure flow

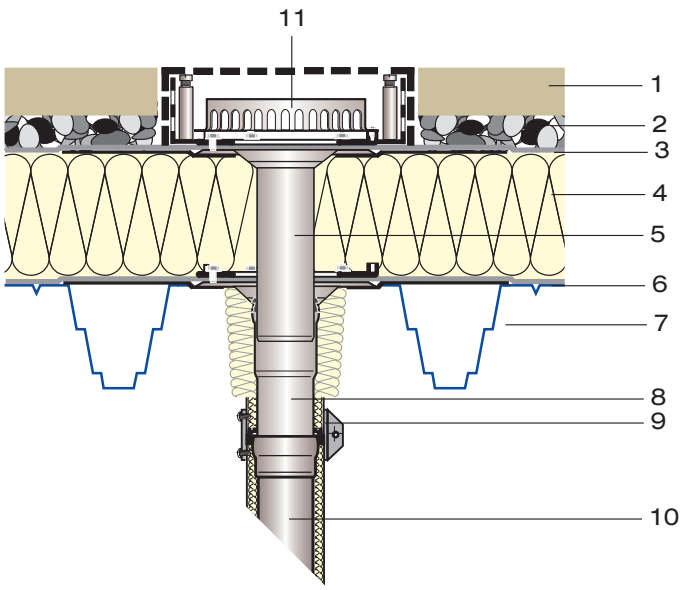



## Example applications

### LORO-DRAINJET® flat roof drain, in trapezoidal sheet metal roof, insulated (Fire protection solution)

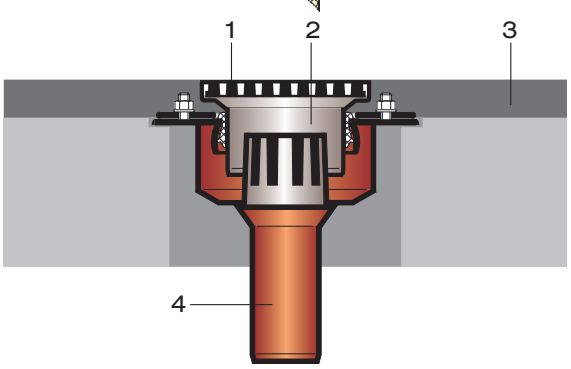
1 Sealing sheet
2 Compression seal*
3 Thermal insulation
4 LORO-DRAINJET® strainer
5 LORO-DRAINJET® drain body with loose flange
6 LORO-DRAINJET® bottom piece with loose flange and thermal insulation
7 Vapour barrier
8 Trapezoidal sheet metal roof
9 CONLIT thermal insulation, non-combustible
10 LORO-X anchor clip
11 LORO-DRAINJET® compensating piece
12 Thermal insulation partitioning

* Can be omitted when bituminous roof sealing sheets are used.




### LORO-DRAINJET® siphonic drain with flat cover, in special version for attachment to the roof drain on site

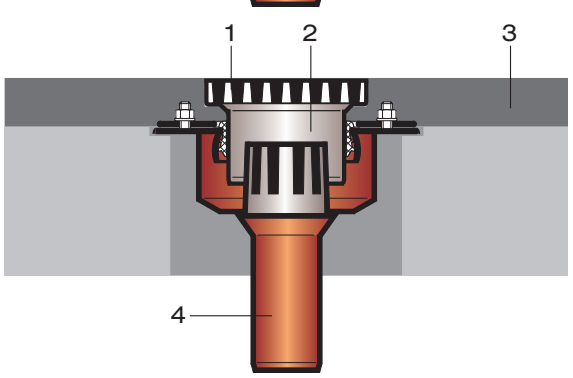
1 Slab covering
2 Foundation bed
3 Sealing sheets
4 Thermal insulation
5 LORO-DRAINJET® drain body
6 Vapour barrier
7 Trapezoidal sheet metal roof
8 LORO-DRAINJET® bottom piece with clamping flange and thermal insulation
9 Compound insulating piece
10 LORO compound pipe
11 LORO-DRAINJET® flat cover




### LORO rainwater drains for traffic areas, without trap

LORO-VERSAL® siphonic drains in combination with walkable cast strainers (please enquire at the LOROWERK factory)

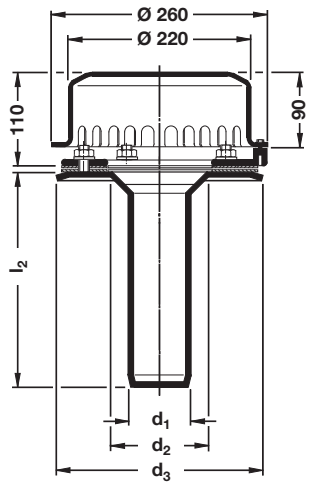
1 Cast strainer, □187 mm, class L (1.5 t)
2 Strainer receptacle
3 Walkway /roadway paving
4 LORO-VERSAL® siphonic drain pot

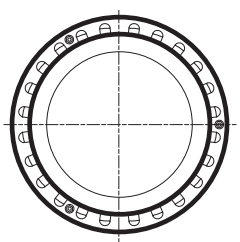


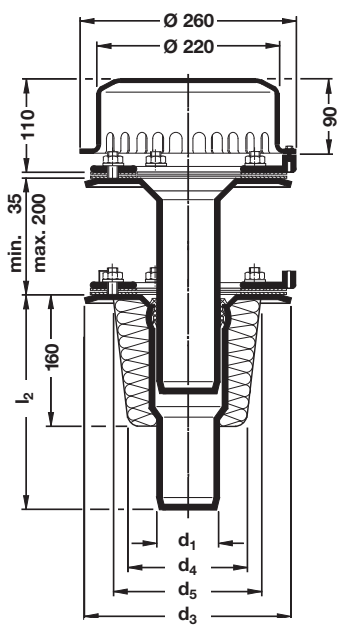

### LORO rainwater drains for traffic areas, without trap

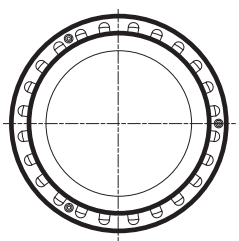
LORO-VERSAL® siphonic drains in combination with driveable cast strainers (please enquire at the LOROWERK factory)

1 Cast strainer, □170 mm, class M (12.5 t)
2 Strainer receptacle
3 Walkway /roadway paving
4 LORO-VERSAL® siphonic drain pot





# Dimensions and weights

**LORO-DRAINJET® siphonic drains, DN 70 - DN 100, with clamping flange, made of stainless steel, meeting EN 125, DJ series, Discharge capacity according to data sheet:**
**LX 845 DN 70 = 18.8 l/s***
**LX 530 DN 100 = 27.0 l/s***

## Complete units, one-piece

**Version a** (without thermal insulation)
DN 70: Item no. 21111.070X Weight: 2.9 kg
DN 100: Item no. 21111.100X Weight: 3.7 kg
consisting of:
Drain body, compression seal**, loose flange, drainjet cover

**Version b** (with thermal insulation)
DN 70: Item no. 21112.070X Weight: 3.0 kg
DN 100: Item no. 21112.100X Weight: 3.8 kg
consisting of:
Drain body with thermal insulation, compression seal**, loose flange, drainjet cover

**Version c** (with thermal insulation and heating)
DN 70: Item no. 21113.070X Weight: 3.1 kg
DN 100: Item no. 21113.100X Weight: 3.9 kg
consisting of:
Drain body with thermal insulation and heating, compression seal**, loose flange, drainjet cover

## Complete units, two-piece

**Version a** (without thermal insulation)
DN 70: Item no. 21121.070X Weight: 4.7 kg
DN 100: Item no. 21121.100X Weight: 5.5 kg
consisting of:
Drain body, compression seal*, loose flange, drainjet cover, bottom piece, compression seal**, loose flange, sealing element

**Version b** (with thermal insulation)
DN 70: Item no. 21122.070X Weight: 4.8 kg
DN 100: Item no. 21122.100X Weight: 5.6 kg
consisting of:
Drain body, compression seal*, loose flange, drainjet cover, bottom piece with thermal insulation, compression seal**, loose flange, sealing element

**Version c** (with thermal insulation and heating)
DN 70: Item no. 21123.070X Weight: 4.8 kg
DN 100: Item no. 21123.100X Weight: 6.0 kg
consisting of:
Drain body, compression seal**, loose flange, drainjet cover, bottom piece with thermal insulation and heating, compression seal*, loose flange, sealing element

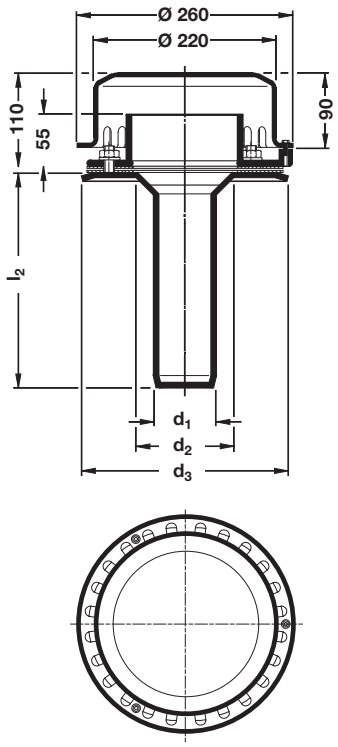
| DN | $d_1$ | $d_2$ | $d_3$ | $d_4$ | $d_5$ | $l_2$ |
|---|---|---|---|---|---|---|
| 70 | 73 | 125 | 245 | 120 | 150 | 260 |
| 100 | 102 | 145 | 300 | 160 | 190 | 270 |

* According to the test assembly of EN 1253

** Can be omitted with bituminous sealing sheets.

Roof Pressure flow

# Dimensions and weights




**LORO-DRAINJET® siphonic drains, as emergency drains, DJ series DN 70 - DN 100, with clamping flange, made of stainless steel, meeting EN 1253, Discharge capacity according to data sheet:**

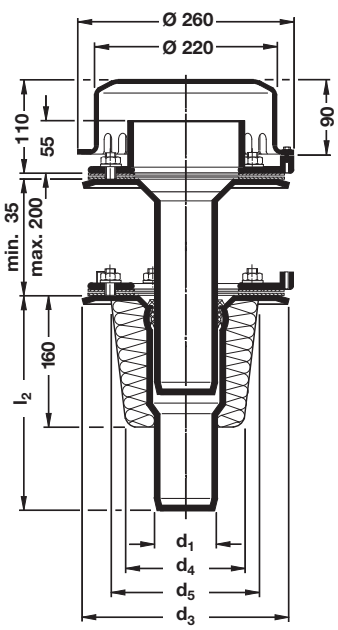
**LX 847 DN 70 = 19.4 l/s***
**LX 542 DN 100 = 38.0 l/s***

## Complete units, one-piece

**Version a** (without thermal insulation)
DN 70: Item no. 21311.070X Weight: 3.1 kg
DN 100: Item no. 21311.100X Weight: 3.9 kg
consisting of:
Drain body, compression seals**, loose flange with weir element, drainjet cover

**Version b** (with thermal insulation)
DN 70: Item no. 21312.070X Weight: 3.2 kg
DN 100: Item no. 21312.100X Weight: 4.0 kg
consisting of:
Drain body with thermal insulation, compression seals**, loose flange with weir element, drainjet cover

**Version c** (with thermal insulation and heating)
DN 70: Item no. 21313.070X Weight: 3.3 kg
DN 100: Item no. 21313.100X Weight: 4.1 kg
consisting of:
Drain body with thermal insulation and heating, compression seals*, loose flange with weir element, drainjet cover




## Complete units, two-piece

**Version a** (without thermal insulation)
DN 70: Item no. 21321.070X Weight: 5.1 kg
DN 100: Item no. 21321.100X Weight: 5.9 kg
consisting of:
Drain body, compression seal**, loose flange with weir element, drainjet cover, bottom piece, compression seal*, loose flange, sealing element

**Version b** (with thermal insulation)
DN 70: Item no. 21322.070X Weight: 5.2 kg
DN 100: Item no. 21322.100X Weight: 6.0 kg
consisting of:
Drain body with thermal insulation, compression seal**, loose flange with weir element, drainjet cover, bottom piece with thermal insulation, compression seal*, loose flange, sealing element

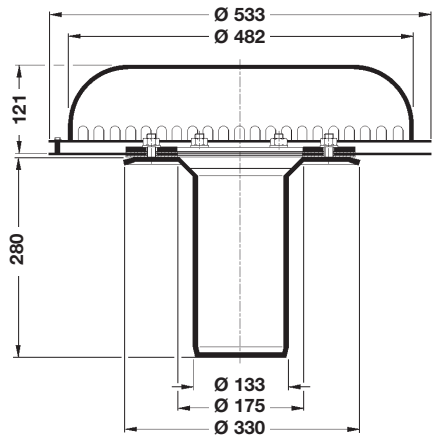
**Version c** (with thermal insulation and heating)
DN 70: Item no. 21323.070X Weight: 5.3 kg
DN 100: Item no. 21323.100X Weight: 6.1 kg
consisting of:
Drain body, compression seal**, loose flange with weir element, drainjet cover, bottom piece with thermal insulation and heating, compression seal**, loose flange, sealing element

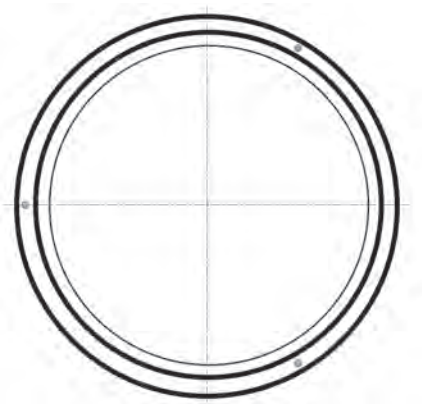
| DN | $d_1$ | $d_2$ | $d_3$ | $d_4$ | $d_5$ | $l_2$ |
|---|---|---|---|---|---|---|
| 70 | 73 | 125 | 245 | 120 | 150 | 260 |
| 100 | 102 | 145 | 300 | 160 | 190 | 270 |

* According to the test assembly of EN 1253

** Can be omitted with bituminous sealing sheets.

# Dimensions and weights



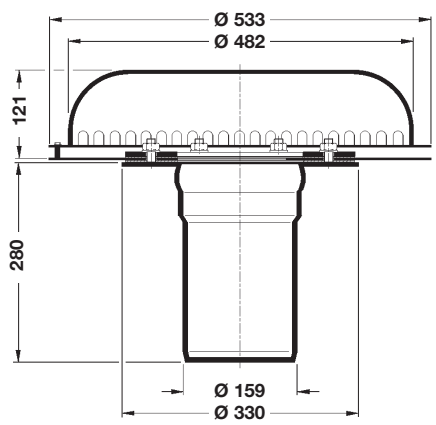



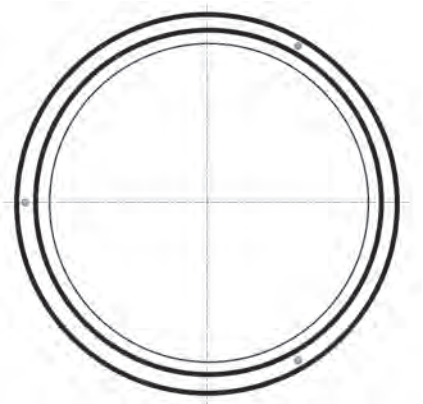
## LORO-DRAINJET® siphonic drains, DN 125, with clamping flange, DJ series made of stainless steel, meeting EN 1253
**Discharge capacity according to data sheet:**
**LX 948 DN 125 = 50.0 l/s***

### Complete units, one-piece
**without thermal insulation**

DN 125: Item no. 21111.125X  Weight: 11.1 kg

consisting of:
Drain body, compression seal**, loose flange, baseplate, suction cover



## LORO-DRAINJET® siphonic drains, DN 150, with clamping flange, DJ series made of stainless steel, meeting EN 1253
**Discharge capacity according to data sheet:**
**LX 960 DN 150 = 50.0 l/s***

### Complete units, one-piece
**without thermal insulation**

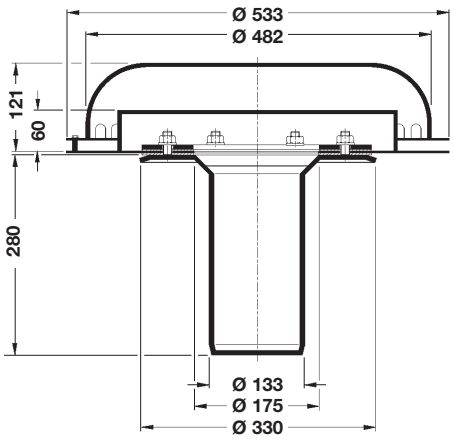
DN 150: Item no. 21111.150X  Weight: 13.5 kg

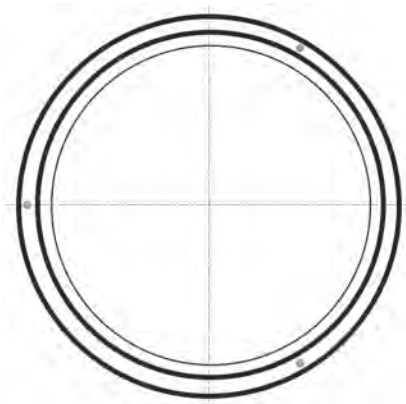
consisting of:
Drain body, compression seal**, loose flange, baseplate, suction cover

* According to the test assembly of EN 1253

** Can be omitted with bituminous sealing sheets.

# Dimensions and weights

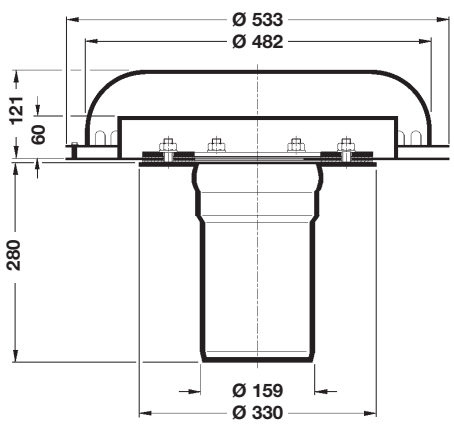


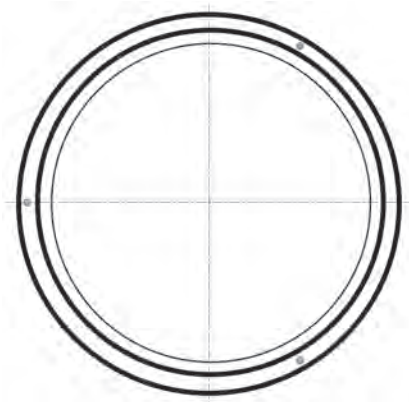



## LORO-DRAINJET® siphonic drains, as emergency drains, DJ series, DN 125, with clamping flange, made of stainless steel, meeting EN 1253
**Discharge capacity according to data sheet:**
**LX 947 DN 125 = 92.0 l/s***

### Complete units, one-piece
**without thermal insulation**
DN 125: Item no. 21311.125X  Weight: 12.0 kg

consisting of:
Drain body, compression seal**, loose flange, baseplate, weir basin, suction cover



## LORO-DRAINJET® siphonic drains, as emergency drains, DJ series, DN 150, with clamping flange, made of stainless steel, meeting EN 1253
**Discharge capacity according to data sheet:**
**LX 961 DN 150 = 94.4 l/s***

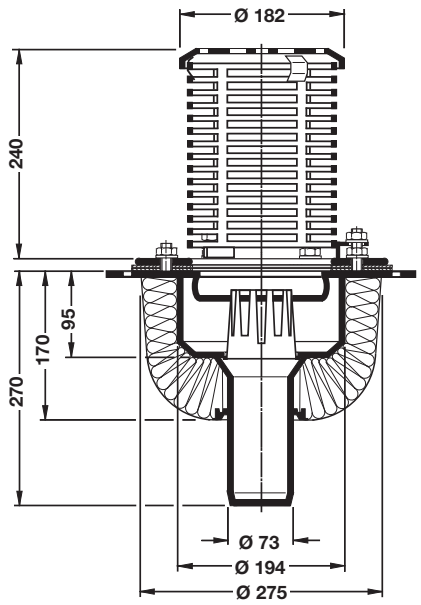
### Complete units, one-piece
**without thermal insulation**
DN 150: Item no. 21311.150X  Weight: 14.5 kg

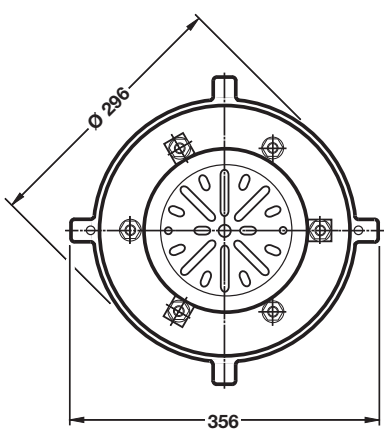
consisting of:
Drain body, compression seal**, loose flange, baseplate, weir basin, suction cover

* According to the test assembly of EN 1253

** Can be omitted with bituminous sealing sheets.

## LORO-Versal® siphonic drains, for inverted roofs, DN 70, with clamping flange, made of steel, meeting EN 1253




### Partial units, to be supplemented according to the modular system

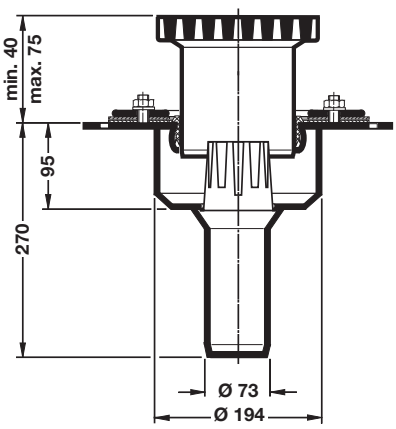
**LORO-VERSAL® siphonic drain base unit**
consisting of:
Drain pot, air filter and loose flange

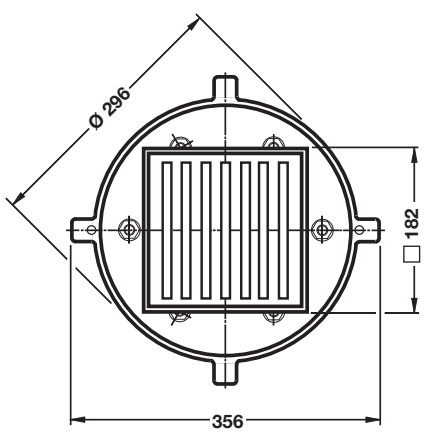
Version a (without thermal insulation)
Item no. 19543.070X Weight: 6.8 kg
Version b (with thermal insulation)
Item no. 19544.070X Weight: 7.1 kg
Version c (with thermal insulation and heating)
Item no. 19545.070X Weight: 7.3 kg

**Siebeinheit für LORO-VERSAL® siphonic drain for inverted roofs**
consisting of:
Strainer and strainer cover of steel, hot-dip galvanised, with additional plastic coating
Item no. 19491.070X Weight: 1.4 kg

See page 99 for an installation example

## LORO-Versal® siphonic drains, for traffic areas, DN 70, with clamping flange, made of steel, meeting EN 1253




### Partial units, to be supplemented according to the modular system

**LORO-VERSAL® siphonic drain base unit**
consisting of:
Drain pot, air filter and loose flange
Item no. 19543.070X Weight: 6.8 kg

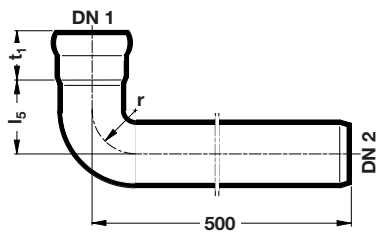
**Strainer unit, walkable, class L (1.5 t)**
for installation height 40 - 75 mm, consisting of:
Strainer receptacle, hot-dip galvanised, additionally coated, □199 mm
Cast strainer, asphalted, □ 187 mm
Item no. 18620.125X Weight: 4.6 kg

**Strainer unit, driveable, class M (12.5 t)**
for installation height 40 - 75 mm, consisting of:
Strainer receptacle, hot-dip galvanised, additionally coated, □182 mm
Cast strainer, asphalted, □ 170 mm
Item no. 18621.125X Weight: 6.4 kg

See page 100 for an installation example

# Dimensions and weights

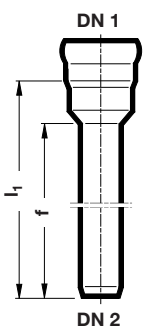
## Special parts for pressure flow




### LORO-DRAINJET® connecting bend

Steel, hot-dip galvanised, with additional internal coating

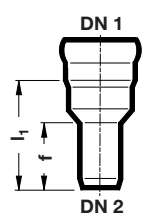
| Item no. | DN 1 | DN 2 | $l_5$ | $t_1$ | r | kg |
|---|---|---|---|---|---|---|
| 05042.CA0X | 70 | 40 | 85 | 55 | 26.0 | 1.3 |
| 05042.CB0X | 70 | 50 | 85 | 55 | 36.5 | 1.4 |
| 05042.CC0X | 70 | 70 | 85 | 55 | 50.0 | 2.0 |
| 05042.DC0X | 100 | 70 | 75 | 70 | 50.0 | 2.3 |
| 05042.DM0X | 100 | 80 | 75 | 70 | 60.0 | 2.4 |
| 05042.DD0X | 100 | 100 | 85 | 70 | 70.0 | 3.0 |




### LORO-DRAINJET® connecting pieces

Steel, hot-dip galvanised, with additional internal coating

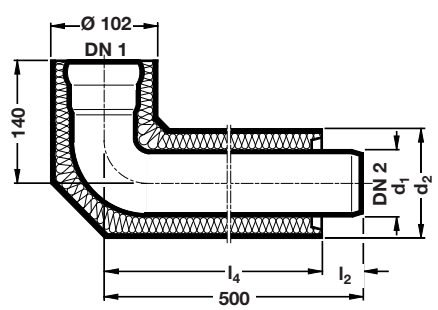
| Item no. | DN 1 | DN 2 | $l_1$ | f | kg |
|---|---|---|---|---|---|
| 05043.CA0X | 70 | 40 | 250 | 195 | 0.7 |
| 05043.CB0X | 70 | 50 | 250 | 200 | 0.7 |
| 05043.DC0X | 100 | 70 | 240 | 200 | 1.1 |
| 05043.DM0X | 100 | 80 | 240 | 210 | 1.3 |




### LORO-DRAINJET® compensating pieces

Steel, hot-dip galvanised, with additional internal coating

| Item no. | DN 1 | DN 2 | $l_1$ | f | kg |
|---|---|---|---|---|---|
| 19602.BA0X | 50 | 40 | 94 | 75 | 0.2 |
| 19602.CB0X | 70 | 50 | 118 | 80 | 0.4 |
| 19602.MB0X | 80 | 50 | 134 | 80 | 0.5 |
| 19602.MC0X | 80 | 70 | 135 | 100 | 0.7 |
| 19602.DB0X | 100 | 50 | 125 | 80 | 0.8 |
| 19602.DC0X | 100 | 70 | 140 | 100 | 0.8 |
| 19602.DM0X | 100 | 80 | 140 | 110 | 1.0 |
| 19602.ED0X | 125 | 100 | 185 | 120 | 1.8 |
| 19602.FE0X | 150 | 125 | 205 | 130 | 2.5 |
| 19602.GF0X | 200 | 150 | 196 | 130 | 4.2 |



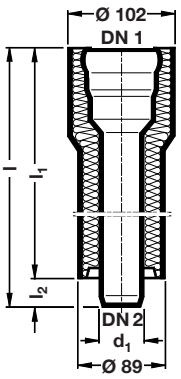

### LORO-DRAINJET® compound pipe connecting bend

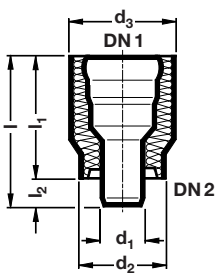
Steel, hot-dip galvanised, with additional internal coating

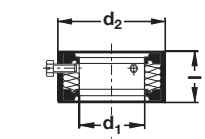
| Item no. | DN 1 | DN 2 | $d_1$ | $d_2$ | $l_2$ | $l_4$ | kg |
|---|---|---|---|---|---|---|---|
| 58042.CA0X | 70 | 40 | 42 | 89 | 25 | 475 | 4.2 |
| 58042.CB0X | 70 | 50 | 53 | 89 | 30 | 470 | 4.3 |
| 58042.CC0X | 70 | 70 | 73 | 102 | 45 | 455 | 5.3 |

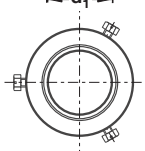
**You will find all the pipes and pipe fittings from the standard range necessary to lay the lines in the brochure: LORO-X steel discharge pipes.**

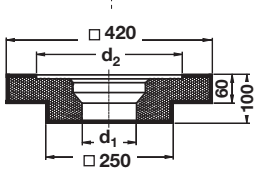
# Dimensions and weights

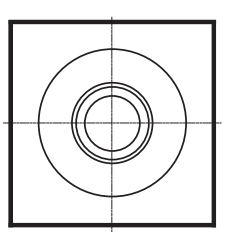


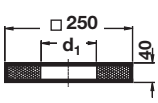



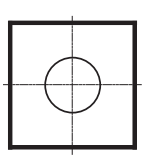







## Special parts for pressure flow

### LORO-DRAINJET® compound pipe connecting pieces

Steel, hot-dip galvanised, with additional internal coating

| Item no. | DN 1 | DN 2 | $d_1$ | l | $l_1$ | $l_2$ | kg |
|---|---|---|---|---|---|---|---|
| 58043.CA0X | 70 | 40 | 42 | 305 | 280 | 25 | 2.1 |
| 58043.CB0X | 70 | 50 | 53 | 305 | 275 | 30 | 2.2 |

### LORO-DRAINJET® compound pipe compensating pieces

Steel, hot-dip galvanised, with additional internal coating

| Item no. | DN 1 | DN 2 | $d_1$ | $d_2$ | $d_3$ | l | $l_1$ | $l_2$ | kg |
|---|---|---|---|---|---|---|---|---|---|
| 58602.BA0X | 50 | 40 | 42 | 89 | 89 | 151 | 126 | 25 | 0.8 |
| 58602.CB0X | 70 | 50 | 53 | 89 | 102 | 173 | 143 | 30 | 1.2 |
| 58602.MB0X | 80 | 50 | 53 | 89 | 133 | 194 | 164 | 30 | 1.7 |
| 58602.MC0X | 80 | 70 | 73 | 102 | 133 | 195 | 150 | 45 | 2.0 |
| 58602.DB0X | 100 | 50 | 53 | 89 | 133 | 195 | 165 | 30 | 2.1 |
| 58602.DC0X | 100 | 70 | 73 | 102 | 133 | 210 | 165 | 45 | 2.3 |
| 58602.DM0X | 100 | 80 | 89 | 133 | 133 | 210 | 100 | 50 | 2.4 |
| 58602.ED0X | 125 | 100 | 102 | 133 | 168 | 260 | 200 | 60 | 3.5 |
| 58602.FE0X | 150 | 125 | 133 | 168 | 219 | 285 | 225 | 60 | 5.5 |

### LORO-DRAINJET® compound insulating piece

Steel, hot-dip galvanised, with additional internal coating

| Item no. | DN | $d_1$ | $d_2$ | l | kg |
|---|---|---|---|---|---|
| 19974.070X | 70 | 73 | 102 | 57 | 0.2 |
| 19974.100X | 100 | 102 | 133 | 47 | 0.3 |

### LORO-DRAINJET® thermal insulation,

of foam glass, non-combustible

| Item no. | DN | $d_1$ | $d_2$ | kg |
|---|---|---|---|---|
| 19845.070X | 70 | 80 | 247 | 0.4 |
| 19845.100X | 100 | 112 | 303 | 0.6 |

### LORO-DRAINJET® compensating piece,

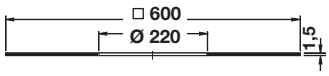
of foam glass, non-combustible

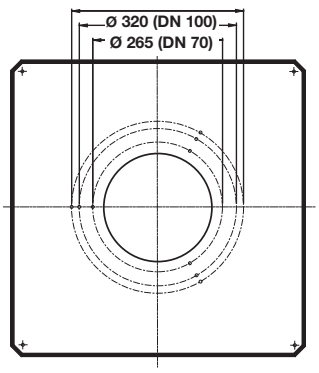
| Item no. | DN | $d_1$ | kg |
|---|---|---|---|
| 19844.070X | 70 | 80 | 0.2 |
| 19844.100X | 100 | 112 | 0.3 |

**You will find all the pipes and pipe fittings from the standard range necessary to lay the lines in the brochure: LORO compound pipes.**

# Dimensions and weights

## Special parts

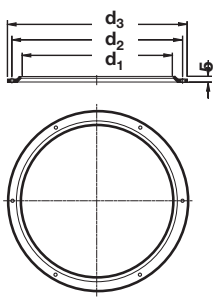



### LORO-DRAINJET® reinforcing metal sheet

made of steel, hot-dip galvanised
for fitting into trapezoidal sheet metal roofs

Item no. 19975.000X — Weight: 3.9 kg

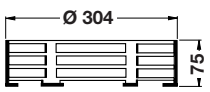


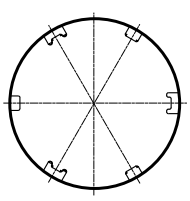

### LORO-DRAINJET® fastening flange

made of steel, hot-dip galvanised

DN 70: Item no. 21910.070X — Weight: 0.2 kg
DN 100: Item no. 21910.100X — Weight: 0.3 kg

| DN | $d_1$ | $d_2$ | $d_3$ |
|---|---|---|---|
| 70 | 237 | 265 | 285 |
| 100 | 292 | 320 | 340 |

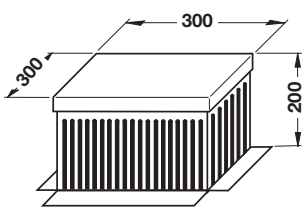


### Gravel basket for LORO-DRAINJET® roof drains

made of stainless steel, material no. 1.4571

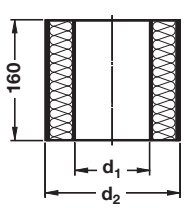
Item no. 19979.000X — Weight: 0.5 kg




### Inspection shaft for LORO-DRAINJET® roof drains

made of aluminium

Item no. 19973.000X — Weight: 4.1 kg




### Thermal insulation, non-combustible

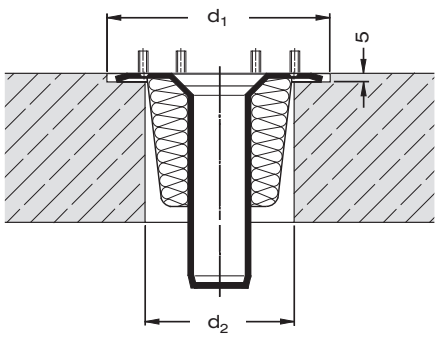
The thermal insulation is factory-fitted to the LORO-DRAINJET® flat roof drains, without thermal insulation (version a)

| Item no. | DN | $d_1$ | $d_2$ | kg |
|---|---|---|---|---|
| 19995.070X | 70 | 73 | 150 | 0,2 |
| 19995.100X | 100 | 102 | 180 | 0,3 |

### Heating tape cable for LORO drains

Item no. 19853.000X — Weight: 0.3 kg

# Cut-out dimensions



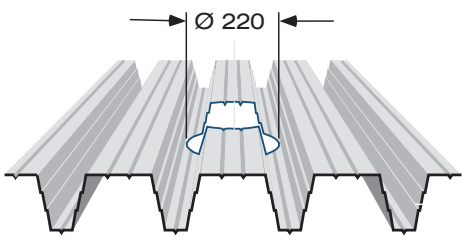

**LORO-DRAINJET® siphonic drains**
**DN 70 and DN 100**
**in flat concrete roofs**

**Core hole, single stage**
for LORO-DRAINJET® drain body
and LORO-DRAINJET® bottom piece

| DN | $d_1$ | $d_2$ |
|---|---|---|
| 70 | 260 | 122 / 158* |
| 100 | 320 | 142 / 200* |

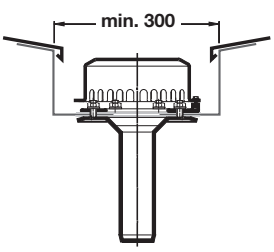
* Core hole for LORO-DRAINJET® bottom piece with thermal insulation (two-piece version).

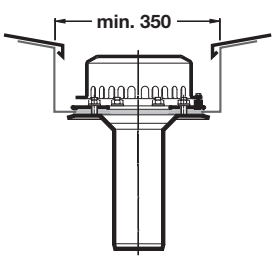
Prepare and attach a lower shuttering panel for filling. Lift the drain a little and fill. Return the drain to its position.

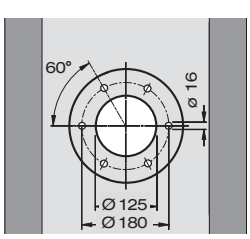



**LORO-DRAINJET® siphonic drains**
**DN 70 and DN 100**
**for fitting into trapezoidal sheet metal roofs**

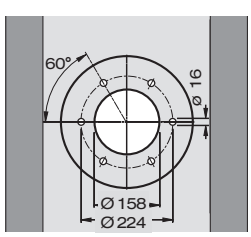
- for LORO-DRAINJET® drain body with clamping flange,
- for LORO-DRAINJET® bottom piece with clamping flange




DN 70

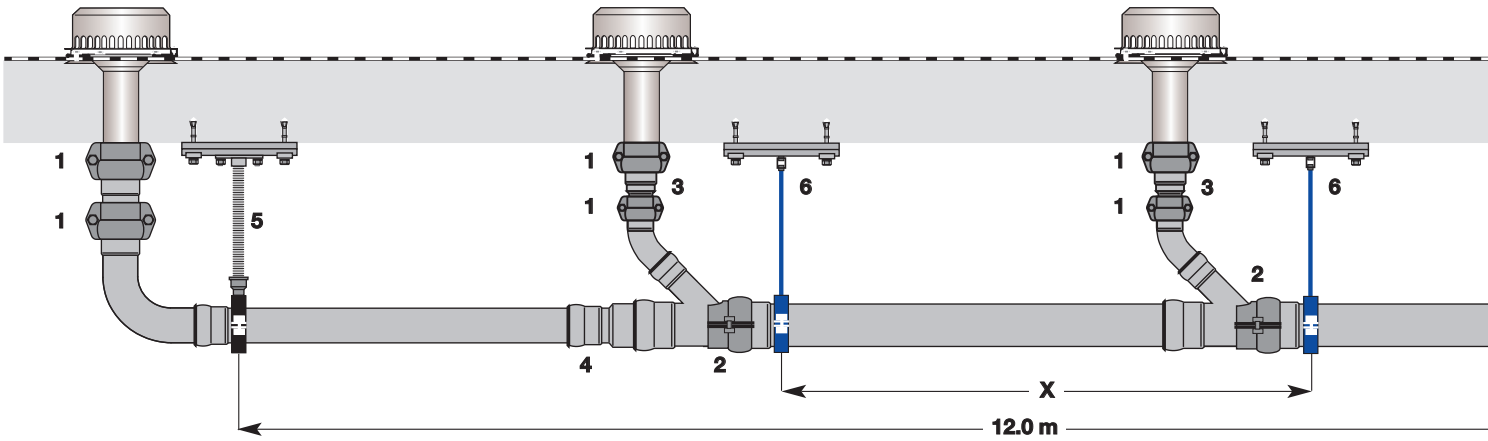



DN 100

**LORO-DRAINJET® siphonic drains,**
**DN 70 and DN 100,**
**for fitting into box gutters**

- Make holes (diameter 16 mm) according to the pattern in the box gutter. The loose flange can be used as a template for the holes. When assembling the drain, make sure that the threaded bolts are located in the centre of the pre-drilled holes.

**Note:** Longitudinal expansion of the gutter must be taken appropriately into account.




# Fundamental rules for installing the LORO siphonic drain system:

**Anchor clips:**
**Anchor clips must be applied to all socket joints. When suitable pipe fastening systems are used, some of them can be omitted. Essentially, the anchor clips are to be arranged:**

**at connecting and collecting pipes:**
- after LORO-DRAINJET® drains
- after branches
- before bends
- before compensating pieces

The use of suitable pipe fastening systems is essential for this version.

**On downpipes:**
- at the transition between collecting pipe and downpipe

**Fastening systems:**
The pipe system must be fastened in accordance with the applicable requirements (e.g. fixed point, pipe clips etc.). The rule is that

**at connecting and collecting pipes:**
- The distance between **fixed points** should be 12 m.
- The distance from **suspension points** should be:

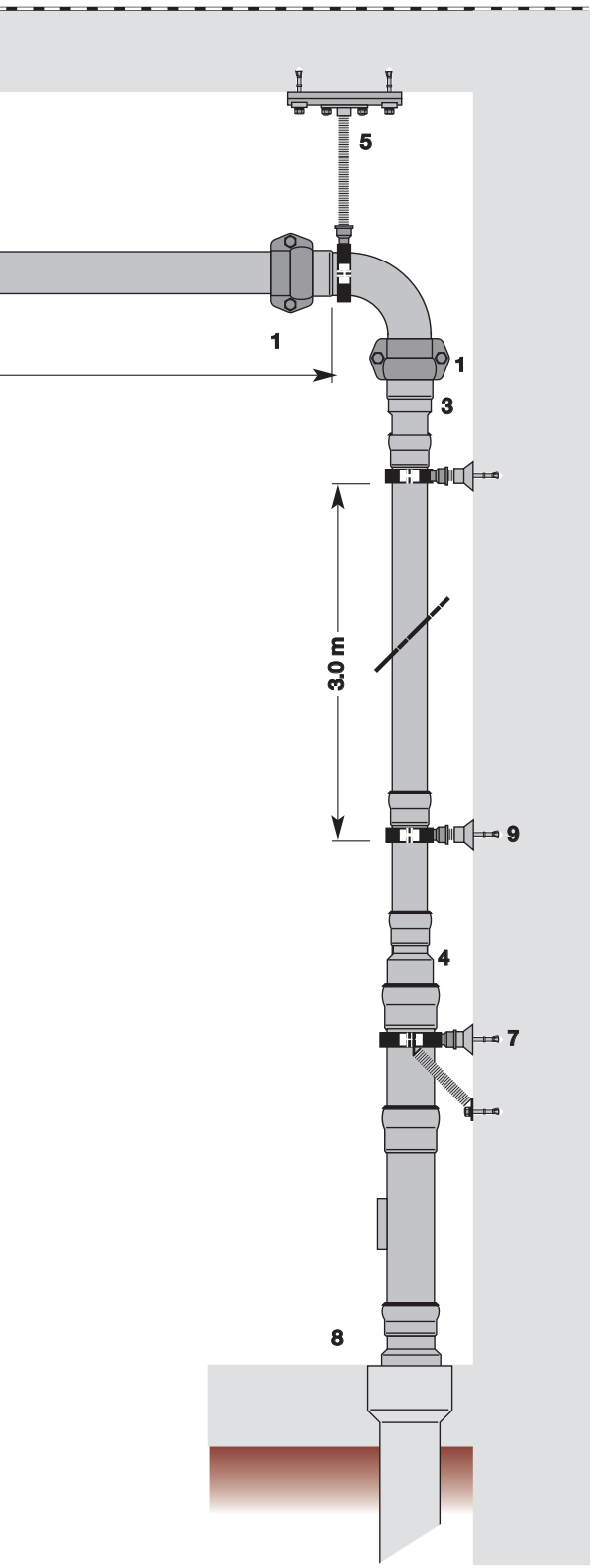
| DN | 40 | 50 | 70 | 80 | 100 | 125 | 150 | 200 |
|---|---|---|---|---|---|---|---|---|
| X | 2.0 m | 2.0 m | 3.0 m | 3.0 m | 3.0 m | 3.0 m | 3.0 m | 3.0 m |

For fastening LORO-XML pipes (socket-less pipe), DN 250 and DN 300, please ask for the installation instructions for LORO-XML steel discharge pipes DN 250/300.

**On downpipes:**
- 3 m spacing.
- Downpipe supports are placed approximately every 12 m, with at least one per downpipe.
- Fixed point at the transition between collecting pipe and downpipe.

**Fastening arrangement for appropriate forces**
In order to achieve appropriate fastening forces, the LORO siphonic drain system is designed in such a way that it should be considered rigid.
This means that the pipe system must be fastened at all the necessary points. Dynamic forces arising from the flow can therefore be neglected.
Impact forces – such as can occur in pressurised supply systems, e.g. when flow is switched – cannot occur in the LORO siphonic drain system, and it is only necessary to design for the purely static loading when the system is full.
The static forces that occur can be found in the weight table for filled pipes:

| DN | 40 | 50 | 70 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|---|---|---|---|---|---|---|---|---|---|---|
| | kg / m | | | | | | | | | |
| LORO-X steel discharge pipe | 2.6 | 4.1 | 7.0 | 9.9 | 13.0 | 21.8 | 29.4 | 57.0 | 77.0 | 104.0 |
| LORO compound pipe | 6.2 | 8.3 | 13.8 | 17.8 | 22.5 | 38.8 | 49.1 | 78.7 | - | - |




1 Anchor clip, no. 806X, DN 40 – DN 125, anchor hoop, no. 808X, DN 150 - DN 200, CV claw, no. 9071X, DN 250 - DN 300

2 Anchor clip with notch, no. 8061X, DN 40 - DN 125

3 Compensating pieces for pressure flow, no. 19602X

4 Transition pipes, concentric, no. 603X

5 Fixed point fastening

6 Suspension points

7 Downpipe support

8 Connecting piece for transition from LORO-X pipe to another type of pipe (e.g. stoneware or plastic pipe)

9 Downpipe fastening

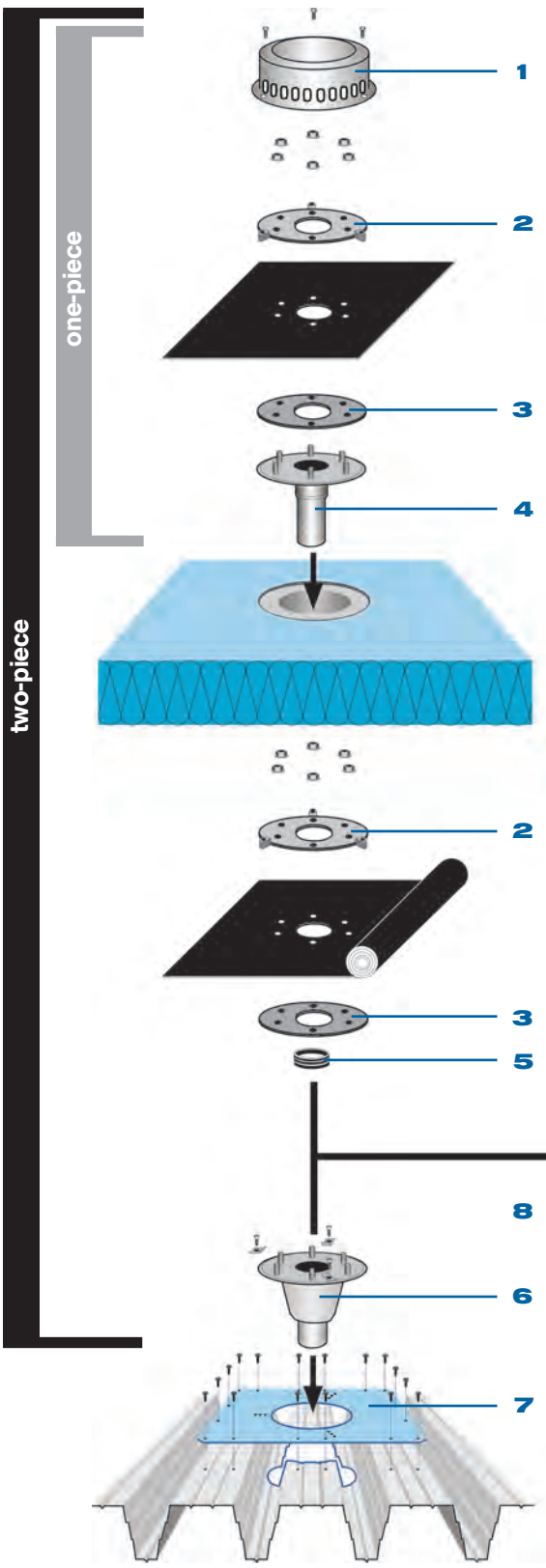
## Mounting instructions

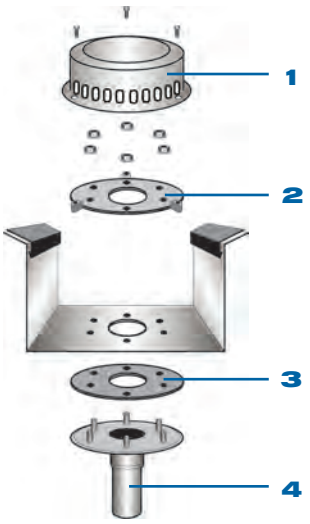
- Variations from planning documents that are based on a hydraulic calculation are to be avoided.
  If changes are unavoidable, the planner or the engineering consultation service from LORO should be asked for a computational verification.
- It is particularly necessary to consider:
  - the specified pipe routes
  - the lengths of the individual sections
  - the heights of the collecting and single connection lines
  - the specified pipe dimensions
  - the arrangement of the roof drains (dimensions) according to the plans.
- The materials specified in the plans for pipes and roof drains must be used.
- The lines can be laid without a fall, but must be able to drain fully.
- Clearance dimensions upper edge of roof drain pot or bare slab to collecting pipe, see page 113.
- The 45° version of branches should be used.
- The pressure drainage system must end the latest at the backflow level (transition into the gravity line).
- The connection to the underground pipes (gravity line) of other materials must be made with connecting pieces appropriate for the system and must be backflow-safe.
- The flanges of the roof drains should be fastened set back into the surface as far as possible. Any slab cut-outs must be closed.
- During the building period, the drains and the pipe system must be protected against contamination (packaging and insulation residues, gravel, green roof substrate etc.). Before the strainer unit is fitted, contamination must be removed from the drain pot.
- Details on installing LORO-X steel discharge pipes and LORO compound pipes: see the special installation instructions – please ask the LOROWERK factory for them.

# Assembly Instructions

**for fitting into trapezoidal sheet metal or concrete roofs**

**for fitting into gutters**




**1 DRAINJET® cover**
with 3 fastening screws

**2 Loose flange**
with 6 hexagonal nuts M 10 (tightened to 20 Nm for bituminous roof sealing sheets, or 30 Nm on plastic roof sealing sheets)

**3 Compression seals***

**4 DRAINJET® drain body**

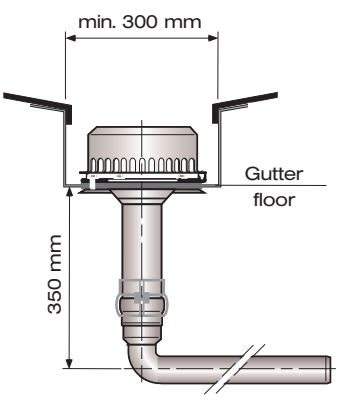
**5 Sealing element**

**6 DRAINJET® bottom piece**

**7 Reinforcing metal sheet**
with 3 self-tapping screws and 3 fastening clips

**8 Fastening flange**

*Can be omitted when using bituminous roof sealing sheets.

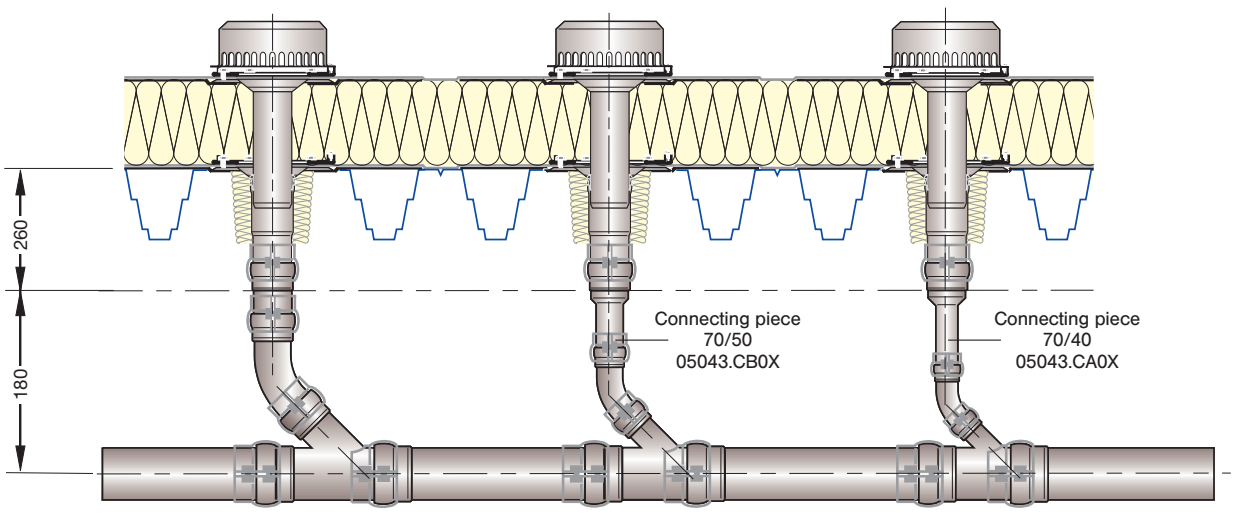



**Cut-out**
on trapezoidal sheet metal roofs

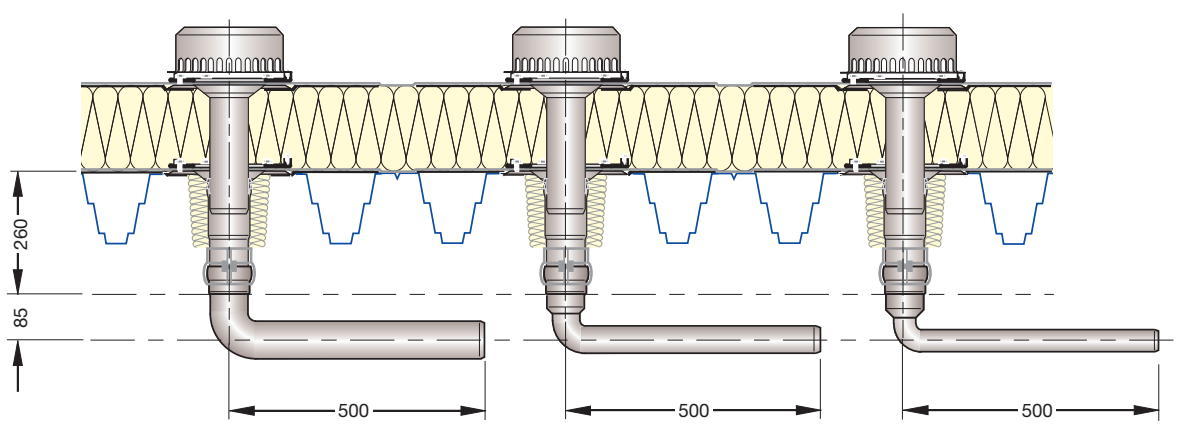
on concrete roofs

# Installation examples

## Use of branches with vertical connection

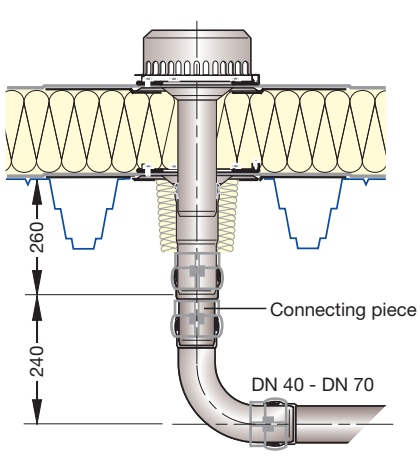



## Use of connecting bends with side connection




## Minimum fitting heights for LORO-DRAINJET® siphonic drains

in combination with LORO-X steel discharge pipe bends 87°



# Drainage capacity of LORO-DRAINJET® emergency drains depending on various drop heights

A = 1.00 m as fixed magnitude*
H = variable magnitude

*Note: If dimension A changes, it can impair the discharge Q.
In that case, please consult with the LOROWERK factory.

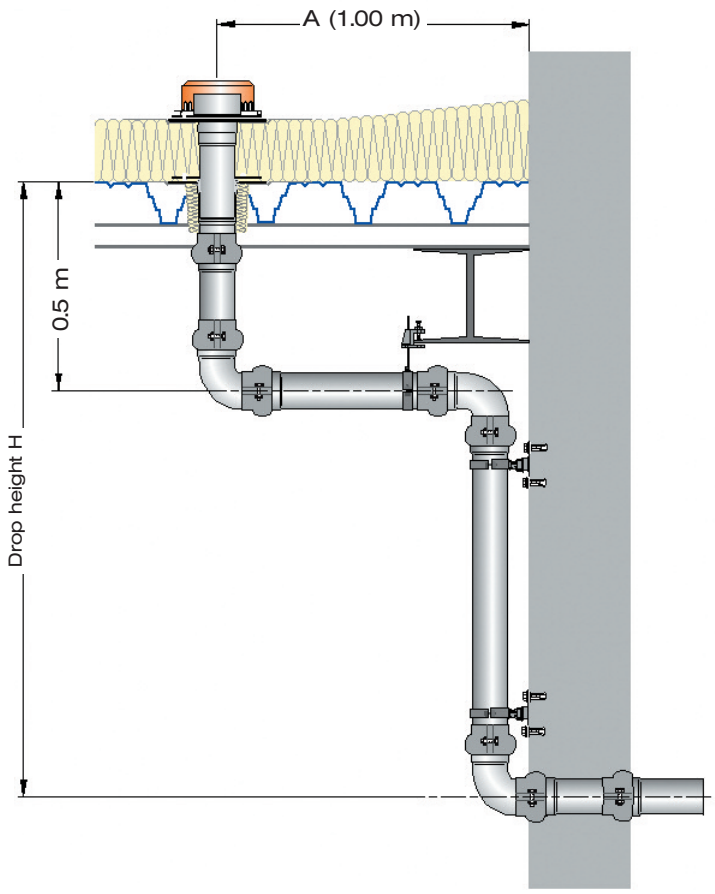
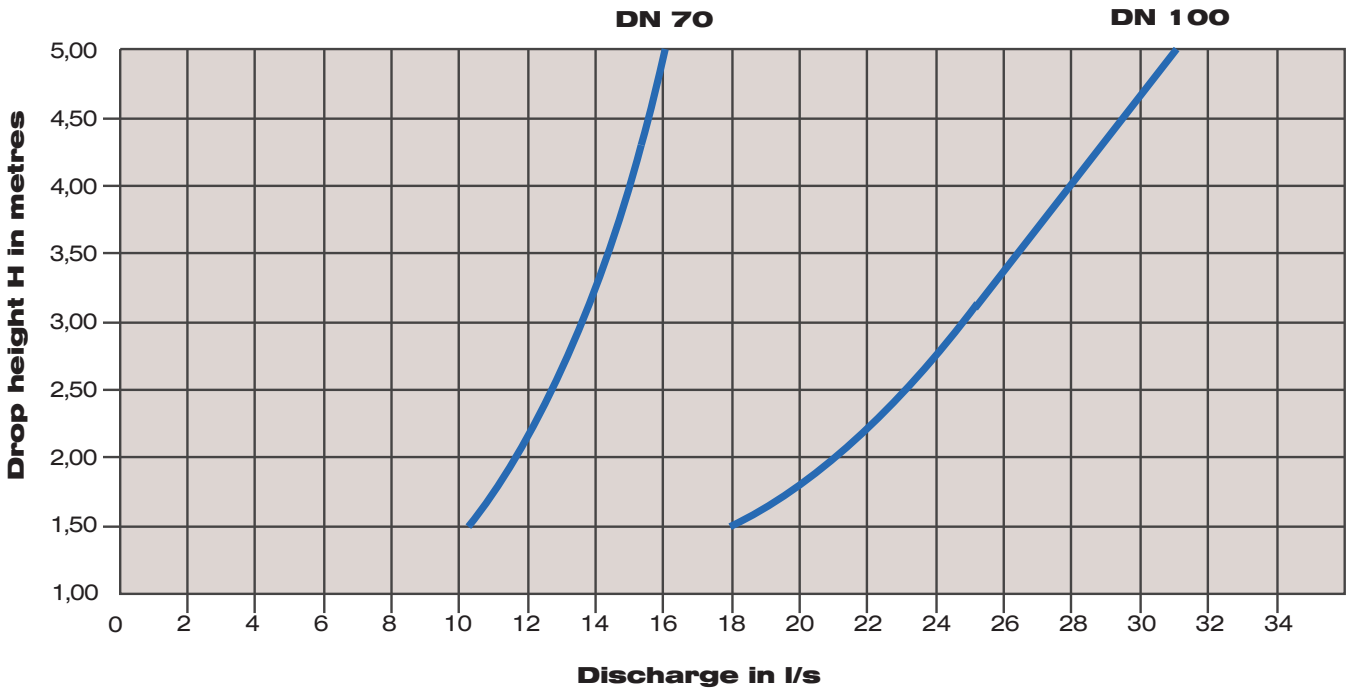



**Table:**
**Discharge Q at different drop heights**



LORO-X

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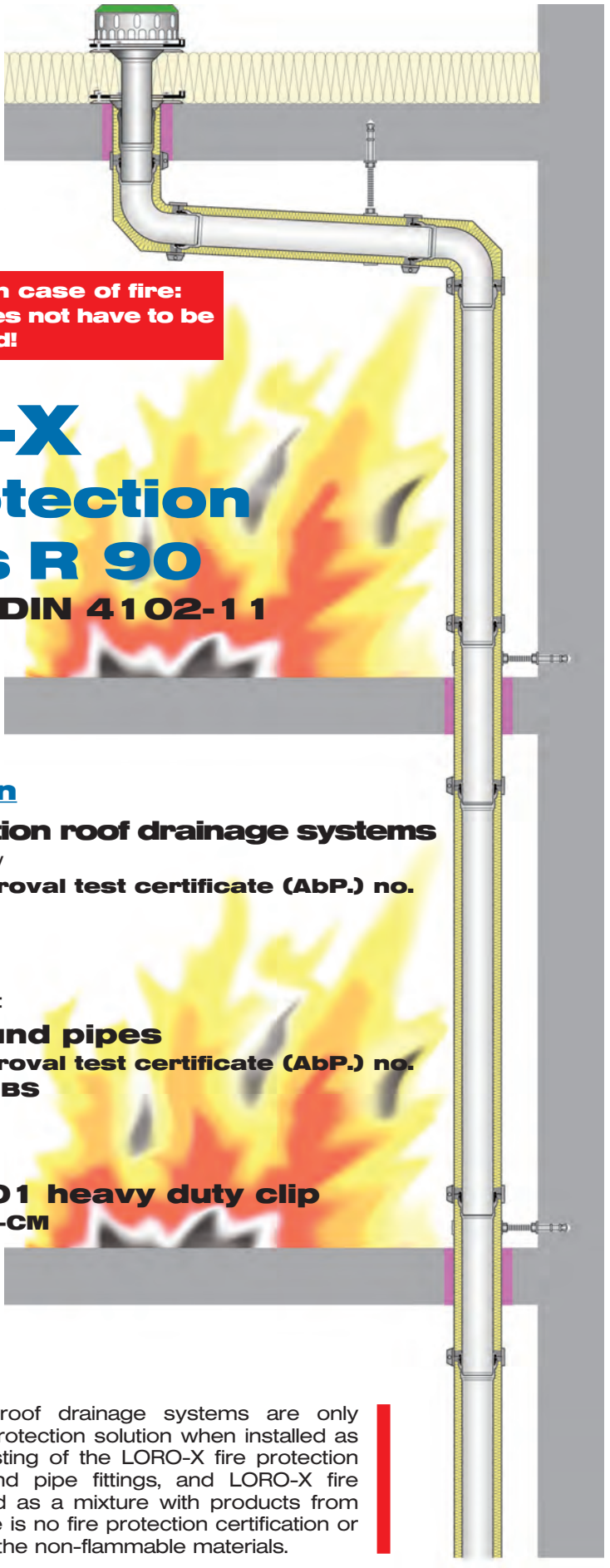
LORO®



**Full functionality in case of fire:**
**The drain system does not have to be closed!**

# LORO-X
# Fire protection systems R 90
## according to DIN 4102-11

### Roof penetration

**LORO fire protection roof drainage systems**
for gravity and pressure flow
**General building approval test certificate (AbP.) no. P-MPA-E-09-010**

### Pipe bushing

for wall and slab penetration:

**LORO-X compound pipes**
**General building approval test certificate (AbP.) no. P-3317/086/08-MPA BS**

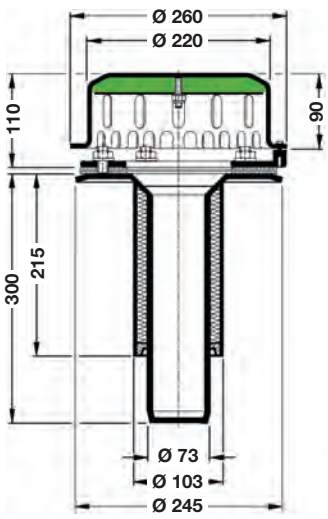
### Fastening

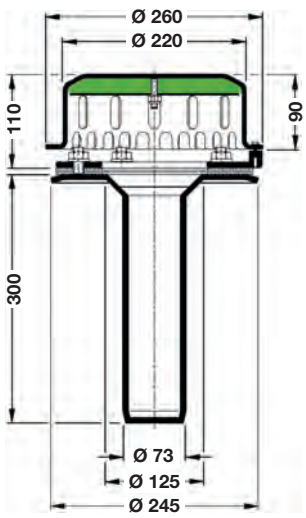
**BIS HD 500/1501 heavy duty clip**
**Pb. no. 3059/161/07-CM**

LORO-X fire protection roof drainage systems are only certified as an R 90 fire protection solution when installed as complete systems, consisting of the LORO-X fire protection drains, LORO-X pipes and pipe fittings, and LORO-X fire protection clips. If installed as a mixture with products from other manufacturers, there is no fire protection certification or guarantee beyond that of the non-flammable materials.

# LORO-X
# Special fire protection parts

## Dimensions and weights




**LORO-DRAINLET® flat roof drains**
**for gravity flow,**
**DN 70, with clamping flange,**
**made of stainless steel, meeting EN 1253**
General building approval test certificate (AbP.) no. P-MPA-E-09-010
**Discharge capacity: 6.3 l/s***

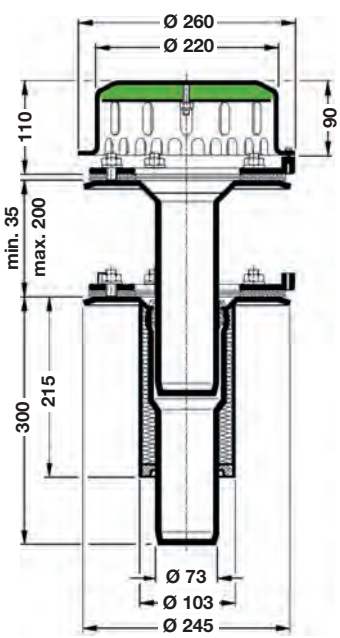
### Complete units, one-piece

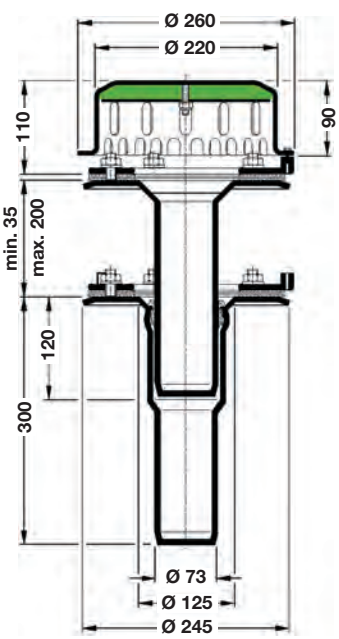
**Factory-installed fire protection**
DN 70: Item no. 22502.070X Weight: 3.1 kg

consisting of:
Drain body with thermal insulation, compression seal**, loose flange, drainlet fire protection cover

**Fire protection installed on-site**
DN 70: Item no. 22501.070X Weight: 3.0 kg

consisting of:
Drain body, compression seal**, loose flange, drainlet fire protection cover




### Complete units, two-piece

**Factory-installed fire protection**
DN 70: Item no. 22522.070X Weight: 4.9 kg

consisting of:
Drain body, compression seal**, loose flange, drainlet fire protection cover, bottom piece with thermal insulation, compression seal**, loose flange, sealing element

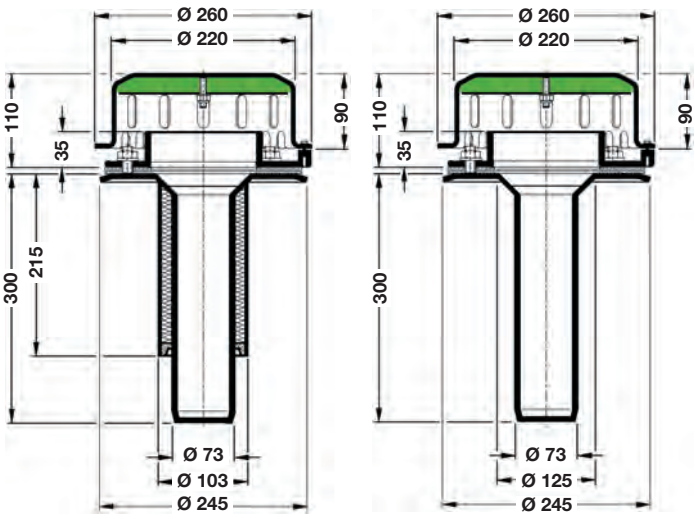
**Fire protection installed on-site**
DN 70: Item no. 22521.070X Weight: 4.8 kg

consisting of:
Drain body, compression seal**, loose flange, drainlet fire protection cover, bottom piece, compression seal**, loose flange, sealing element

* According to the test assembly of EN 1253
** Can be omitted with bituminous sealing sheets.

# LORO-X
# Special fire protection parts

## Dimensions and weights




**LORO-DRAINLET® flat roof drains**
**for gravity flow,**
**as emergency drains,**
**DN 70, with clamping flange,**
**made of stainless steel, meeting EN 1253**

General building approval test certificate (AbP.) no.
P-MPA-E-09-010

**Discharge capacity: 9.0 l/s***

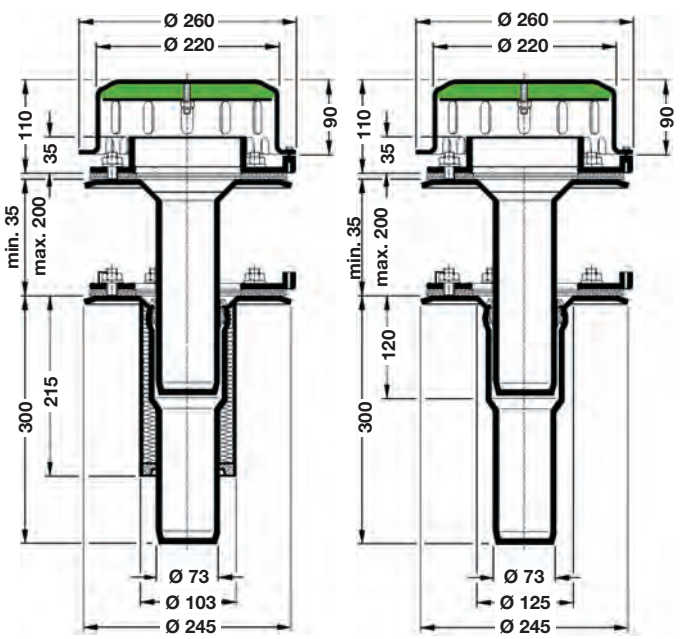
### Complete units, one-piece

**Factory-installed fire protection**
DN 70: Item no. 22702.070X Weight: 3.3 kg

consisting of:
Drain body with thermal insulation, compression seal**, loose flange with weir element, drainlet fire protection cover

**Fire protection installed on-site**
DN 70: Item no. 22701.070X Weight: 3.2 kg

consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet fire protection cover




### Complete units, two-piece

**Factory-installed fire protection**
DN 70: Item no. 22722.070X Weight: 5.1 kg

consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet fire protection cover, bottom piece with thermal insulation, compression seal**, loose flange, sealing element

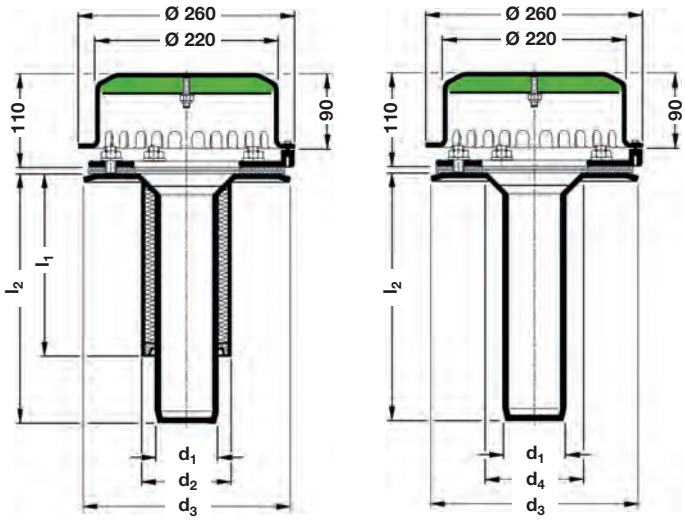
**Fire protection installed on-site**
DN 70: Item no. 22721.070X Weight: 5.0 kg

consisting of:
Drain body, compression seal**, loose flange with weir element, drainlet fire protection cover, bottom piece, compression seal**, loose flange, sealing element

* According to the test assembly of EN 1253
** Can be omitted with bituminous sealing sheets.

# LORO-X
# Special fire protection parts

## Dimensions and weights




**LORO-DRAINJET® flat roof drains**
**for pressure flow,**
**DN 70 - DN 100, with clamping flange, made of stainless steel, meeting EN 1253**

General building approval test certificate (AbP.) no.
P-MPA-E-09-010

**Discharge capacity: DN 70 = 18.8 l/s***
**DN 100 = 27.0 l/s***

### Complete units, one-piece

**Factory-installed fire protection**

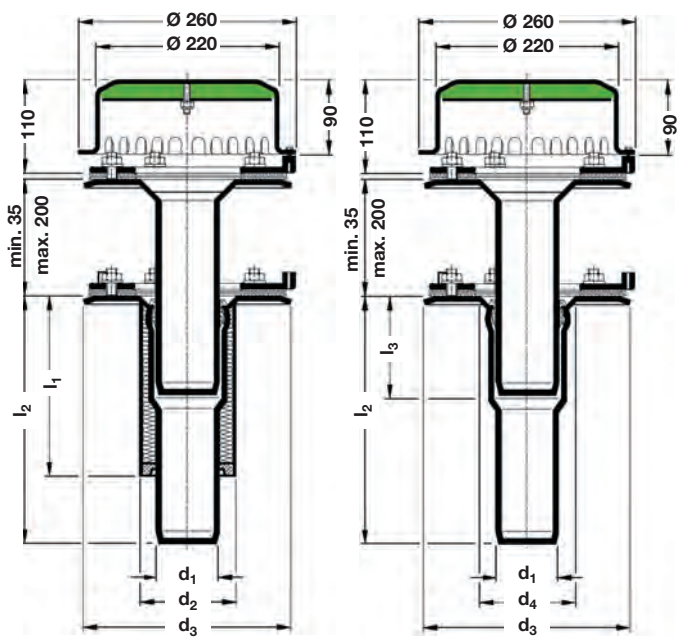
DN 70: Item no. 22102.070X Weight: 3.1 kg
DN 100: Item no. 22102.100X Weight: 3.9 kg

consisting of:
Drain body with thermal insulation, compression seal**, loose flange, drainjet fire protection cover

**Fire protection installed on-site**

DN 70: Item no. 22101.070X Weight: 3.0 kg
DN 100: Item no. 22101.100X Weight: 3.8 kg

consisting of:
Drain body, compression seal**, loose flange, drainjet fire protection cover




### Complete units, two-piece

**Factory-installed fire protection**

DN 70: Item no. 22122.070X Weight: 4.9 kg
DN 100: Item no. 22122.100X Weight: 5.7 kg

consisting of:
Drain body, compression seal**, loose flange, drainjet fire protection cover, bottom piece with thermal insulation, compression seal**, loose flange, sealing element

**Fire protection installed on-site**

DN 70: Item no. 22121.070X Weight: 4.8 kg
DN 100: Item no. 22121.100X Weight: 5.6 kg

consisting of:
Drain body, compression seal**, loose flange, drainjet fire protection cover, bottom piece, compression seal**, loose flange, sealing element

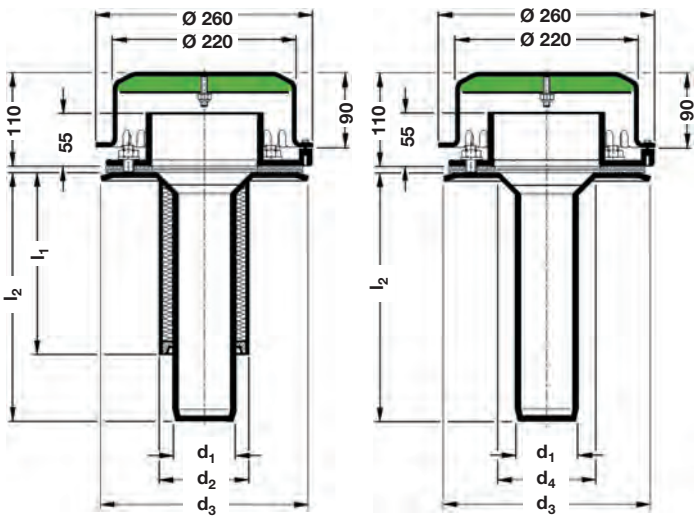
| DN* | $d_1$ | $d_2$ | $d_3$ | $d_4$ | $l_1$ | $l_2$ | $l_3$ |
|---|---|---|---|---|---|---|---|
| 70 | 73 | 103 | 245 | 125 | 215 | 300 | 120 |
| 100 | 102 | 133 | 300 | 145 | 210 | 310 | 130 |

* DN 125 by request

* According to the test assembly of EN 1253
** Can be omitted with bituminous sealing sheets.

# LORO-X
# Special fire protection parts

## Dimensions and weights




**LORO-DRAINJET® flat roof drains,**
**for pressure flow,**
**as emergency drains,**
**DN 70 - DN 100, with clamping flange,**
**made of stainless steel, meeting EN 1253**

General building approval test certificate (AbP.) no.
P-MPA-E-09-010

**Discharge capacity: DN 70 = 19.4 l/s***
**DN 100 = 38.0 l/s***

### Complete units, one-piece

**Factory-installed fire protection**

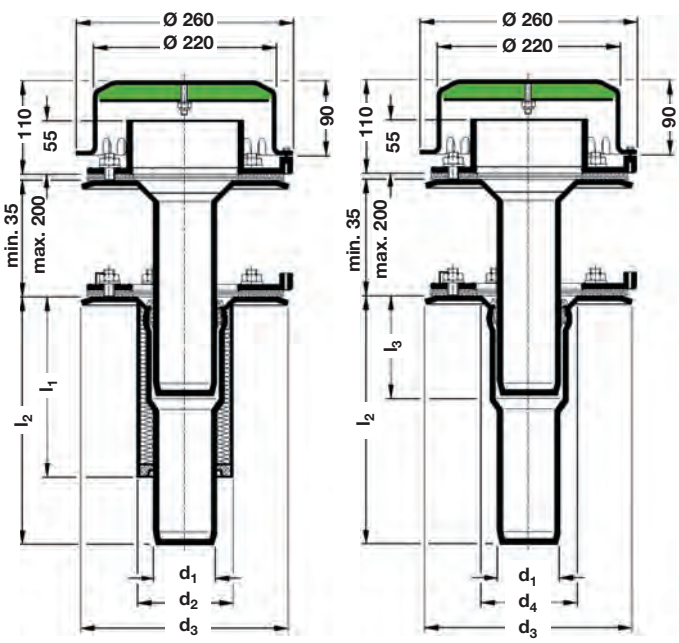
DN 70: Item no. 22302.070X Weight: 3.3 kg
DN 100: Item no. 22302.100X Weight: 4.1 kg

consisting of:
Drain body with thermal insulation, compression seal**, loose flange with weir element, drainjet fire protection cover

**Fire protection installed on-site**

DN 70: Item no. 22301.070X Weight: 3.2 kg
DN 100: Item no. 22301.100X Weight: 4.0 kg

consisting of:
Drain body, compression seal**, loose flange with weir element, drainjet fire protection cover




### Complete units, two-piece

**Factory-installed fire protection**

DN 70: Item no. 22322.070X Weight: 5.4 kg
DN 100: Item no. 22322.100X Weight: 6.2 kg

consisting of:
Drain body, compression seal**, loose flange with weir element, drainjet fire protection cover, bottom piece with thermal insulation, compression seal**, loose flange, sealing element

**Fire protection installed on-site**

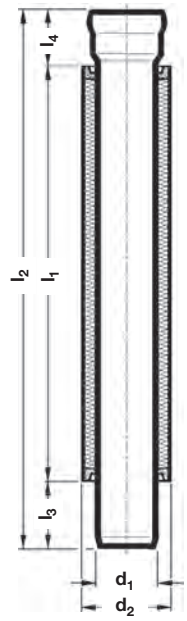
DN 70: Item no. 22321.070X Weight: 5.3 kg
DN 100: Item no. 22321.100X Weight: 6.1 kg

consisting of:
Drain body, compression seal**, loose flange with weir element, drainjet fire protection cover, bottom piece, compression seal**, loose flange, sealing element

| DN* | $d_1$ | $d_2$ | $d_3$ | $d_4$ | $l_1$ | $l_2$ | $l_3$ |
|---|---|---|---|---|---|---|---|
| 70 | 73 | 103 | 245 | 125 | 215 | 300 | 120 |
| 100 | 102 | 133 | 300 | 145 | 210 | 310 | 130 |

* DN 125 by request

* According to the test assembly of EN 1253
** Can be omitted with bituminous sealing sheets.




# LORO-X
# Special fire protection parts

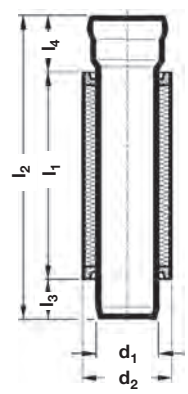
## LORO fire protection element

with open socket and extended spigot end,
outer pipe 500 mm long

| Item no. | DN | $d_1$ | $d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | kg |
|---|---|---|---|---|---|---|---|---|
| 58008.070X | 70 | 73 | 102 | 500 | 645 | 85 | 60 | 5.5 |
| 58008.100X | 100 | 102 | 133 | 500 | 675 | 100 | 75 | 8.5 |

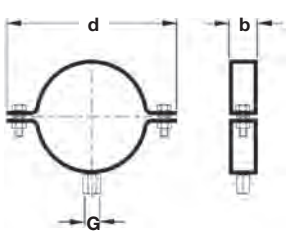
with open socket and extended spigot end,
outer pipe 1500 mm long

| Item no. | DN | $d_1$ | $d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | kg |
|---|---|---|---|---|---|---|---|---|
| 58007.070X | 70 | 73 | 102 | 1500 | 1645 | 85 | 60 | 15.5 |
| 58007.100X | 100 | 102 | 133 | 1500 | 1675 | 100 | 75 | 24.5 |




with open socket,
outer pipe 250 mm long

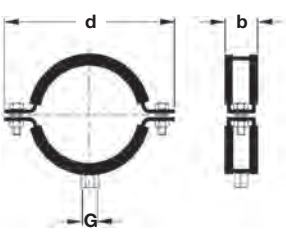
| Item no. | DN | $d_1$ | $d_2$ | $l_1$ | $l_2$ | $l_3$ | $l_4$ | kg |
|---|---|---|---|---|---|---|---|---|
| 58006.070X | 70 | 73 | 102 | 250 | 355 | 45 | 60 | 2.8 |
| 58006.100X | 100 | 102 | 133 | 250 | 385 | 60 | 75 | 4.3 |




## LORO-X heavy duty pipe clips

Steel, galvanised, with threaded connecting socket,
without sound insulation

| Item no. | DN | b | d | G | kg |
|---|---|---|---|---|---|
| 00983.070X | 70 | 30 | 136 | M 10 | 0.3 |
| 00983.100X | 100 | 30 | 165 | M 10 | 0.4 |
| 00983.125X | 125 | 30 | 193 | M 10 | 0.6 |




## LORO-X heavy duty pipe clips

Steel, galvanised, with threaded connecting socket,
with sound insulation

| Item no. | DN | b | d | G | kg |
|---|---|---|---|---|---|
| 00984.070X | 70 | 30 | 144 | M 10 | 0.4 |
| 00984.100X | 100 | 30 | 175 | M 10 | 0.5 |
| 00984.125X | 125 | 30 | 200 | M 10 | 0.7 |

# Questionnaire for LORO-DRAINJET®/RAINSTAR® siphonic drains

| | |
|---|---|
| Drawn up by | |
| District | |

| | |
|---|---|
| Building project | Building project: |
| | Street address: |
| | Postcode and town: |

| | |
|---|---|
| Planner's address | Planner: |
| | Street address: |
| | Postcode and town: |
| | Responsible person: |
| | Telephone no.: |
| | Fax no.: |
| | E-mail: |

| | | |
|---|---|---|
| Planning implementation | DIN 1986-100 | |
| | DIN EN 12056-3 | |
| | VDI 3806 | |
| | EN 752 (underground pipe outside buildings) | |

| | | | |
|---|---|---|---|
| Structural data | Building dimensions / roof area to be drained | | |
| | Width: | | m |
| | Length: | | m |
| | Upper edge of roof inlet (roof seal): | | m |
| | Height of collection connecting pipe | | m |
| | Connecting point for downpipes | | |
| | Backflow level: ± 0.00 upper edge of finished floor or: | | m |
| | Type of underground pipe (material and nominal diameter) | | |
| | Building plans as annex | | |
| | Floor plan - drawing or sketch | | |
| | Building section or sketch | | |
| | Detailed roof structure or sketch | | |
| | Underground pipe - drawing or sketch | | |
| | Discharge coefficients according to DIN 1986-100 | | |
| | Roof areas | C = 1.0 | |
| | Gravelled roof | C = 0.5 | |
| | Extensive roof planting under 10 cm | C = 0.5 | |
| | Extensive roof planting from 10 cm | C = 0.3 | |
| | Intensive roof planting | C = 0.3 | |
| | Inverted roof | C = 1.0 | |
| | Parking deck, blacktop | C = 1.0 | |
| | Effects of wind EN 12056-3 Section 4.3.4 (Wall areas) | | |

| | | | |
|---|---|---|---|
| Rainfall event | local rainfall event r (5/5) | l/(s x ha) | |
| | local heavy rainfall event r (5/100) | l/(s x ha) | |

# Questionnaire for LORO-DRAINJET®/RAINSTAR® siphonic drains

| | | | |
|---|---|---|---|
| Roof sealing | Roof sealing sheet | | |
| | | Bitumen | |
| | | Plastic sheet | Material: |
| | | without fabric reinforcement | |
| | | with fabric reinforcement | |
| | Vapour barrier | Bitumen | |
| | | Plastic sheet | Material: |
| | | PE foil | |

| | | | |
|---|---|---|---|
| Type of pipe | Pipe system implementation | | |
| | | LORO-X steel discharge pipe | |
| | | LORO compound pipe standard implementation | |
| | | LORO compound pipe silent implementation | |

| | | | |
|---|---|---|---|
| Drain type | LORO-DRAINJET® siphonic drain | | |
| | | One-piece drain | |
| | | Two-piece drain | |
| | | For flat roof | |
| | | For box gutter (gutter width min. 300 mm) | |
| | | Inverted roof | |
| | | Parking deck, driveable | |
| | | Without thermal insulation | |
| | | With thermal insulation | |
| | | With thermal insulation and self-regulating heating | |
| | Accessories | Inspection shaft for fitting into roof planting | |
| | | Gravel basket | |
| | LORO-RAINSTAR® siphonic scupper drain | | |

| | | |
|---|---|---|
| Emergency drain | LORO-DRAINJET® siphonic drain system | |
| | LORO-RAINSTAR® siphonic scupper drain system | |
| | Via parapet opening | |

| | | |
|---|---|---|
| Roof structure | Roofing sheet type | |
| | Thermal insulation type | |
| | Thickness of the thermal insulation | |
| | Implementation of the vapour barrier | |
| | Trapezoidal sheet metal | |
| | Concrete roof | |

| | |
|---|---|
| Pipe fastening | Pipe clip with insert |
| | Pipe clip without insert |

| | | |
|---|---|---|
| Preparation | For drainage application | |
| | With suggested tender text | |
| | For implementation with material listing (and partial section extract) | |

| | |
|---|---|
| | Documentation to: |
| | Deadline: |

# References (extract)

| | | |
|---|---|---|
| ARENA 'AUF SCHALKE' | Gelsenkirchen | Stadium, new build |
| ATHENS AIRPORT | Athens | New build |
| AUDI | Neckarsulm | New build |
| BAYER UERDINGEN | Uerdingen | High-bay warehouse, new build |
| BAYERISCHE VEREINSBANK | Munich | New build |
| BRAUN | Melsungen | New build |
| BREMEN AIRPORT | Bremen | Extension |
| CINEMAXX | Krefeld | New build |
| COCA-COLA | Gemshagen | Production and distribution centre |
| DACHDECKEREINKAUF WEST | Düsseldorf | Halls - new build |
| DEUTSCHE MESSE AG | Hanover | Halls - new build |
| DEUTSCHE STAR | Schweinfurt | Production site, new build |
| DORTMUNDER UNION BRAUEREI | Frankfurt/Main | Extension |
| EXPO-ARENA | Hanover | New build |
| FLYLINE | Bremen | New build |
| FURTHER EDUCATION ACADEMY | Herne | New build |
| GEWÜRZMÜLLER | Ditzingen | New build |
| HAWERA KARRER | Ravensburg | Production site, new build |
| INTERNATIONAL SCHOOL | Frankfurt/Main | New build |
| JOKER-JEANS | Bönnigheim | Production site, new build |
| KÄSSBOHRER | Neu- Ulm | Shipping hall, new build |
| KETTLER | Mersch | Production site, new build |
| KREISSPARKASSE DRESDEN | Dresden | Logistics Centre, new build |
| LIBRI | Bad Hersfeld | New build |
| MANNESMANN DEMATIC | Wetter | Production site, new build |
| MERCEDES-BENZ AG | Germersheim | Halls - new build |
| MERCEDES-BENZ AG | Bremen | Paint shop, new build |
| MERCEDES-BENZ AG | Rastatt | Production site, new build |
| MERCEDES-BENZ AG | Sindelfingen | Development centre, new build |
| MERCEDES-BENZ AG, RVL | Hanover-Ricklingen | Regional sales warehouse |
| MERCEDES-BENZ AG, NDL | Bielefeld | Car dealership branch, new build |
| MUNICH AIRPORT CENTRE WEST | Munich | Passenger handling |
| NOKIA | Bochum | Production site, new build |
| NOWEA | Düsseldorf | Exhibition Service Centre |
| OBI-BAUMARKT | Gießen | New build |
| OPEL | Rüsselsheim | Cafeteria M 2, new build |
| OPEL | Hungary | Production site, new build |
| PARACELSUS-CLINIC | Bad Gandersheim | New build |
| PRAKTIKER | Göttingen | Extension |
| RITTERBRAUEREI | Dortmund | Extension |
| SCHWÄBISCHE GLASHANDLUNG | Memmingen | New build |
| SIEMENS BAUELEMENTE OHG | Villach | Extension |
| STINNES BAUMARKT | Witten | New build |
| STUTE | Paderborn | High-bay warehouse, new build |
| TEST AND DEVELOPMENT CENTRE | Sailauf | New build |
| THYSSEN | Dortmund | Stainless Steel Service Center, new build |
| ULM MUSEUM | Ulm | New build |
| VOLKSWAGEN | Dresden | Transparent Factory |
| VOLKSWAGEN | Wolfsburg | Autostadt |
| WEIMAR BAUMASCHINEN GMBH | Weimar | Production site, new build |
| WERNER & MERZ | Mainz | High-bay warehouse, new build |
| WEST-LB | Düsseldorf | New build |
| WESTFALENSTADION | Dortmund | North/south stands, new construction |
| WESTMILCH | Altentreptow | Production site, new build |
| WÜRTH | Künzelsau | Extension |
| WÜRTH INDUSTRIAL PARK | Bad Mergentheim | High-bay warehouse, new build |
| ZWISCHENLAGER NORD | Lubmin | New build |