www.loro-x.com

LORO®

LORO-X

LORO-X
Retention roof drainage

LORO-VARIOFIT retention and emergency drainage units for building-related application in combination with standard LORO-X flat roof and parapet drains in order to fulfill the restrictions of piping rainwater into the ground pipe.

Main drainage

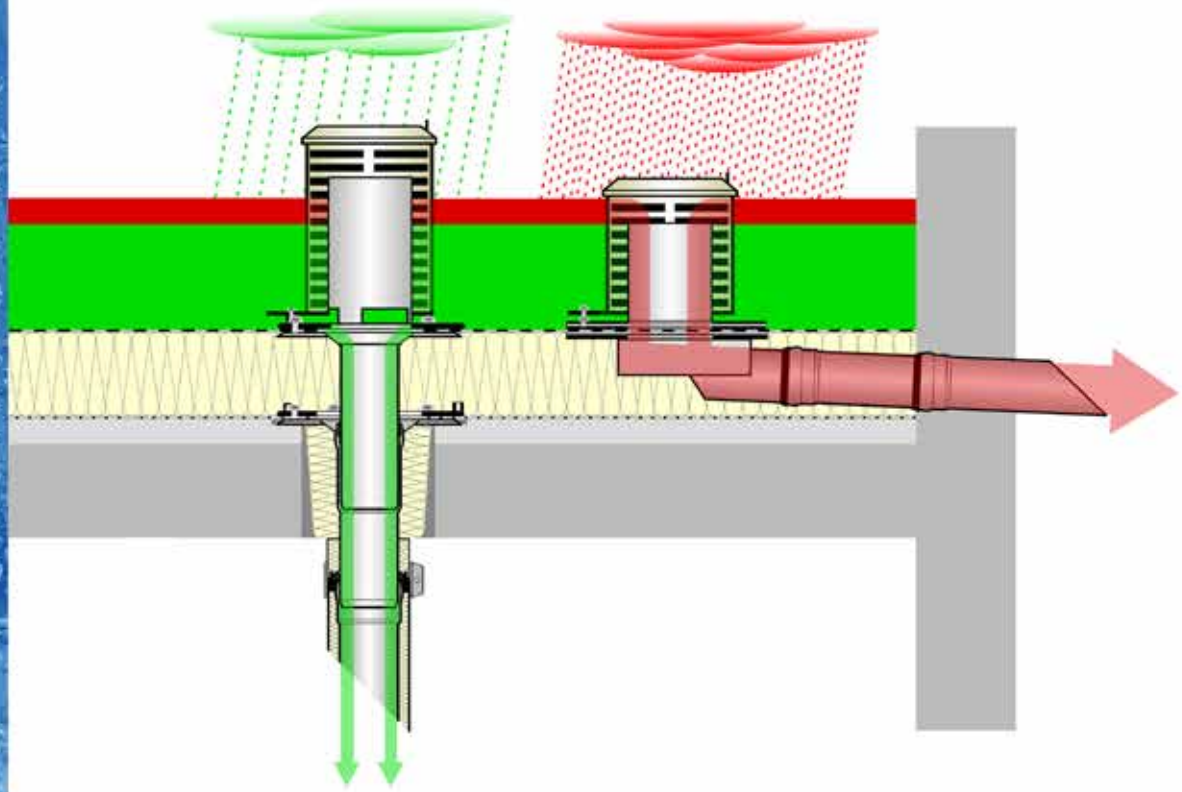
LORO-X VARIOFIT retention units

- high water level on the roof
- small drainage from the roof

Emergency drainage

LORO-X VARIOFIT emergency drainage units

- small increase in water on the roof
- strong drainage from the roof



A strong retention requires a strong emergency drainage:

LORO-X
Roof drainage systems

LORO-X VARIOFIT retention roof drainage
main drainage with retention with building-related retention openings

VARIOFIT
retention unit
DN 50, 70 and 100
No. 14530.000X

Parapet

Series 79
RAINSTAR® Standard
DN 50, 70 and 100
Flange 45° 13700X
Flange 90° 13720X

Series 88
RAINSTAR® Distant
DN 50, 70 and 100
Art.-No. 13900X

Series 89
RAINSTAR® 55 mm
DN 70, DN 100
Flange 45° 13600X
Flange 90° 13620X

VARIOFIT
retention unit
DN 50 and 70
No. 14510.070X
DN 100
No. 14510.100X
DN 125
No. 14510.125X

Roof

Series 84 DRAINLET®, DN 50 - DN 125

without thermal insulation
one-piece No. 21901X

with thermal insulation
one-piece No. 21902X

with thermal insulation and heating
one-piece No. 21903X

Bottom units as addition for two-piece version:

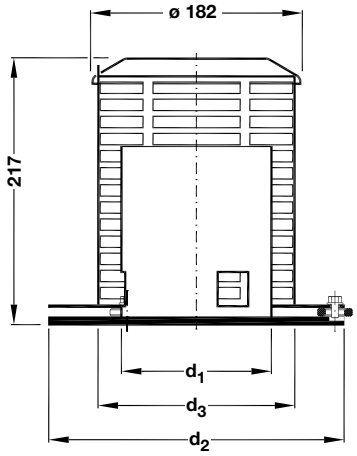
without thermal insulation
two-piece No. 21991X

with thermal insulation
two-piece No. 21992X

with thermal insulation and heating
two-piece No. 21993X

Horizontal design available upon request.

Dimensions and weights



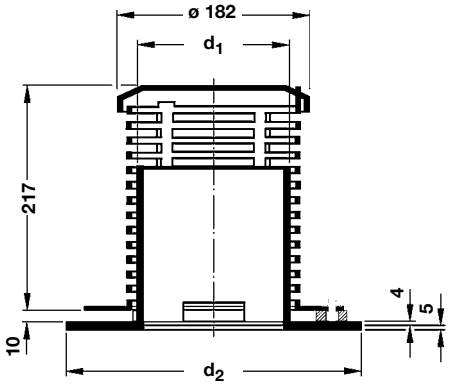
LORO-X VARIOFIT
retention roof drainage
main drainage with retention

Attention:
building-related design - please contact LOROWERK for the determination of the necessary retention openings.

LORO-X VARIOFIT retention unit fits onto LORO-X parapet drain body:

Series 79 DN 50, 70 and 100
Series 88 DN 50, 70 and 100
Series 89 DN 70 and 100
Art.-No. 14530.000X

d_1	d_2	d_3
133	260	172

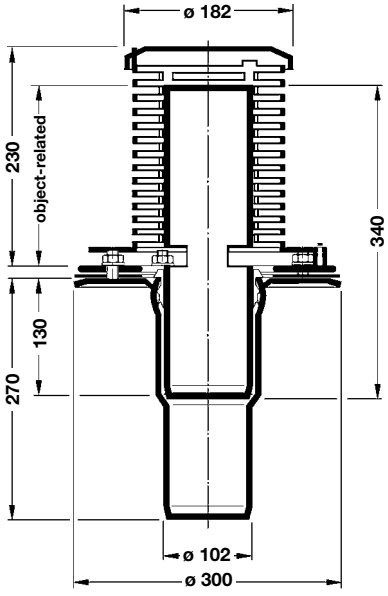


Attention:
building-related design - please contact LOROWERK for the determination of the necessary retention openings.

LORO-X VARIOFIT retention unit for LORO-X flat roof drain body:

Series 84 DRAINLET®, DN 50 and DN 70
Art.-No. 14510.070X
Series 84 DRAINLET®, DN 100
Art.-No. 14510.100X
Series 84 DRAINLET® DN 125
Art.-No. 14510.125X

DN	d_1	d_2
50	133	260
70	133	260
100	159	290
125	159	320



LORO-X retention roof drainage DN 100, with clamping flange, made of stainless steel, according to DIN EN 1253

with building-related retention pipe cut to size for planned rainwater retention on the roof

Complete units, one-piece

without thermal insulation
DN 100: Art.-No. 41511.100X weight: 5.6 kg
consisting of: drain body, compression seal, loose flange, retention pipe, strainer basket

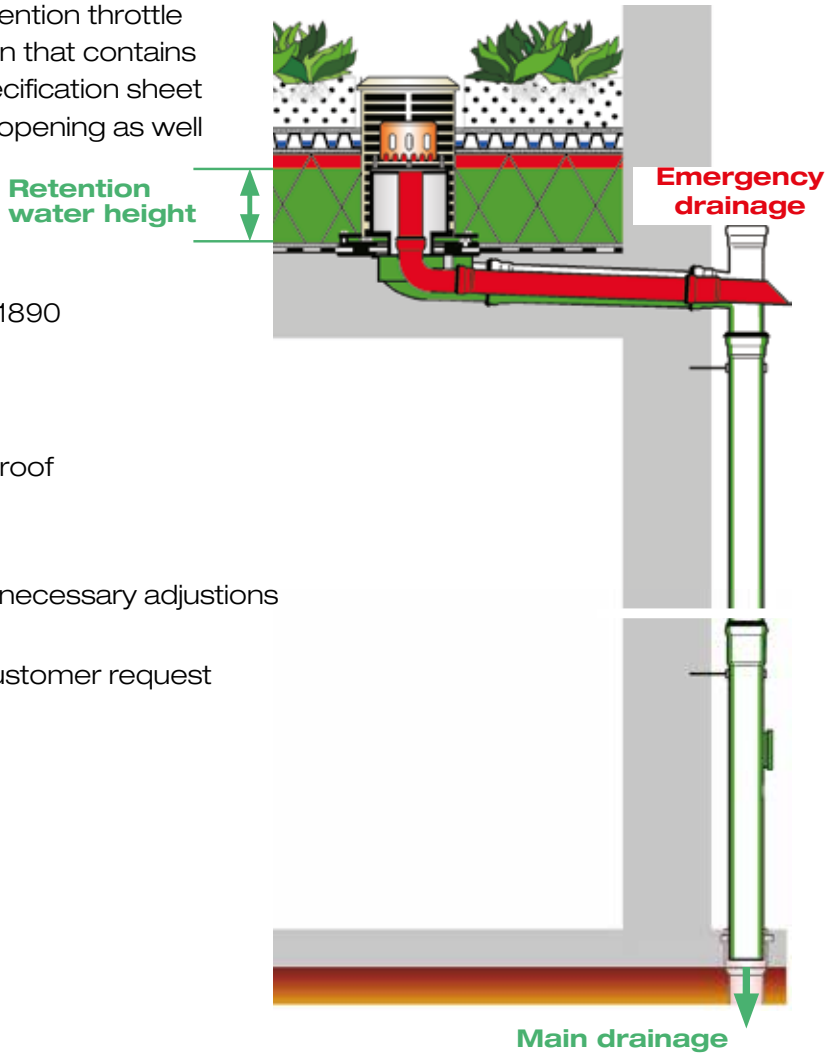
Further strainer basket sizes available upon request.

LORO-X
Retention roof drainage
main-emergency-combination set

The LORO-X retention roof drainage enables the controlled holding back of rainwater on the flat roof if restrictions of piping water into the ground pipe have to be met. For this purpose building-related retention openings with measured throttle bends are used.

When installing the LORO-X main-emergency-combination for retention parapet drainage with the patented LORO pipe-in-pipe principle, the upper edge of the outer retention pipe constitutes the weir height for the emergency drain that is placed on top of that pipe. The emergency drainage runs through the internal DN 50 pipe.

LORO provides a building-related specification sheet with drawings of the retention pipe and the retention throttle graph (flow graph) for every retention drain that contains the retention pipe as special part. The specification sheet takes into account the required retention opening as well as the height of the retention pipe.



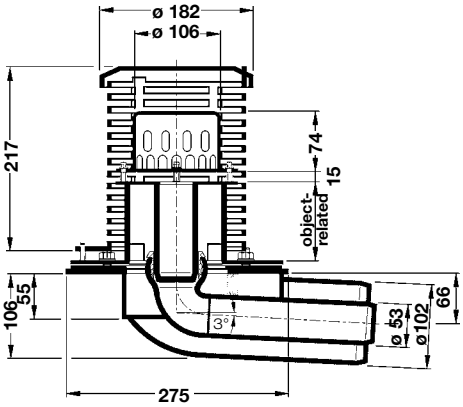
Example: specification sheets LX1842, LX1890

Advantages:

- Controlled retention of rainwater on the roof
- Controlled relief of the ground pipe
- Building-related calculation of the inlets
- Building-related production without any necessary adjustions by the customer
- Building-related measurements upon customer request

Dimensions and weights

LORO-X VARIOFIT
main-emergency-combination retention roof drainage

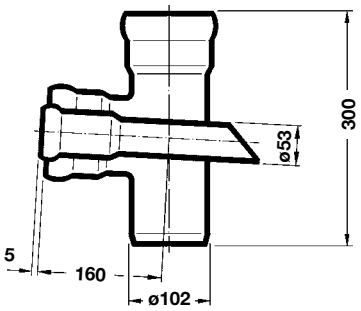


DRAINLET® mini-hood
for bitumen and plastic roofing sheets

consisting of:
strainer basket, loose flange, compression seal, overflow connector, drain body

DN 100/50: Art.-No. 01485.100X weight: 9.3 kg

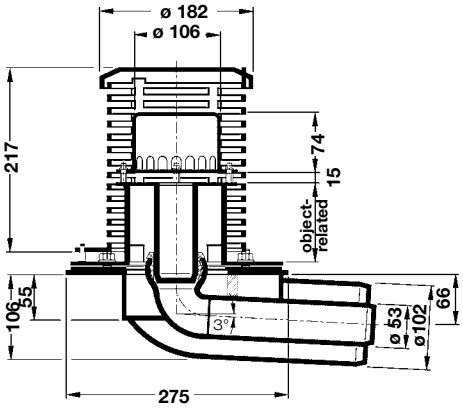
Specification sheet LX1842



LORO-X branch pipe-in-pipe, DN 100/50, spout

made of galvanized steel

Art.-No. 13519.DB0X weight: 2.6 kg

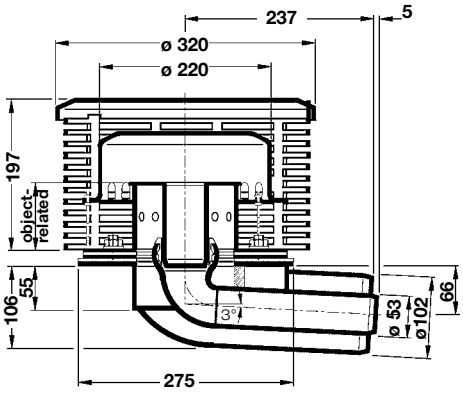


DRAINJET® mini-hood
for bitumen and plastic roofing sheets

consisting of:
DRAINJET® mini-hood, loose flange, compression seal, overflow connector, drain body

DN 100/50: Art.-No. 01475.100X weight: 12.1 kg

Specification sheet LX1890



DRAINJET® hood
for bitumen and plastic roofing sheets

consisting of:
DRAINJET® hood, loose flange, compression seal, overflow connector, drain body

DN 100/50: Art.-No. 41516.100X weight: 9.8 kg

Specification sheet LX1939

LORO-X
Roof drainage systems

LORO-X VARIOFIT emergency drainage
with variable-height weir for gravity flow with building-related weir heights

VARIOFIT
emergency
drainage unit
DN 50, 70 and 100
No. 14730.000X

Parapet

Series 79
RAINSTAR® standard
DN 50, 70 and 100
Flange 45° 13700X
Flange 90° 13720X

Series 88
RAINSTAR® distant
DN 50, 70 and 100
Art.-No. 13900X

Series 89
RAINSTAR® 55 mm
DN 70, DN 100
Flange 45° 13600X
Flange 90° 13620X

VARIOFIT
emergency
drainage unit
DN 50 and 70
No. 14710.070X
DN 100
No. 14710.100X
DN 125
No. 14710.125X

Roof

Series 84 DRAINLET®, DN 50 - DN 125

without thermal insulation
one-piece No. 21901X

with thermal insulation
one-piece No. 21902X

with thermal insulation and heating
one-piece No. 21903X

Bottom units as addition for two-piece version:

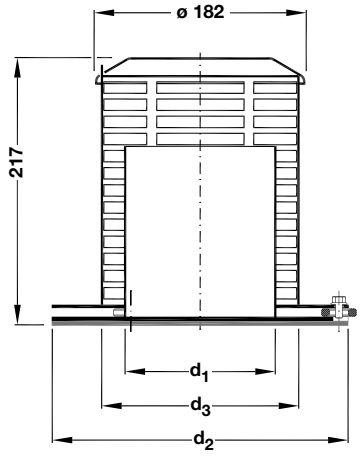
without thermal insulation
two-piece No. 21991X

with thermal insulation
two-piece No. 21992X

with thermal insulation and heating
two-piece No. 21993X

Horizontal design available upon request.

Dimensions and weights

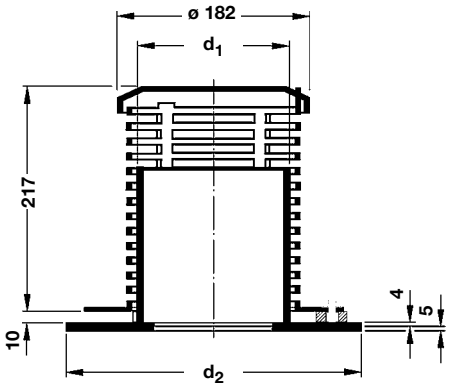


LORO-X VARIOFIT
emergency drainage
Attention:
building-related design - please indicate desired weir height when ordering.

LORO-X VARIOFIT
emergency drainage unit
fits onto
LORO-X parapet drain body:

Series 79 DN 50, 70 and 100
Series 88 DN 50, 70 and 100
Series 89 DN 70 and 100
Art.-No. 14730.000X

d_1	d_2	d_3
133	260	172



LORO-X VARIOFIT
emergency drainage
Attention:
building-related design - please indicate desired weir height when ordering.

LORO-X VARIOFIT
emergency drainage unit
for LORO-X flat roof drain body:

Series 84 DRAINLET®, DN 50 and DN 70
Art.-No. 14710.070X

Series 84 DRAINLET®, DN 100
Art.-No. 14710.100X

Series 84 DRAINLET®, DN 125
Art.-No. 14710.125X

DN	d_1	d_2
50	133	260
70	133	260
100	159	290
125	159	320

LORO-X Emergency drainage with variable-height weir

Usually, a weir height of 40 mm is used for the main drainage with gravity flow and a weir height of 60 mm for the emergency drainage with siphonic flow. The structure of the roof, however, often requires a variable-height weir (picture below).

For instance, on roofs designed in leightweight construction a weir height of below 40 mm can be applied and on roofs with a green roof a weir height of above 60 mm.

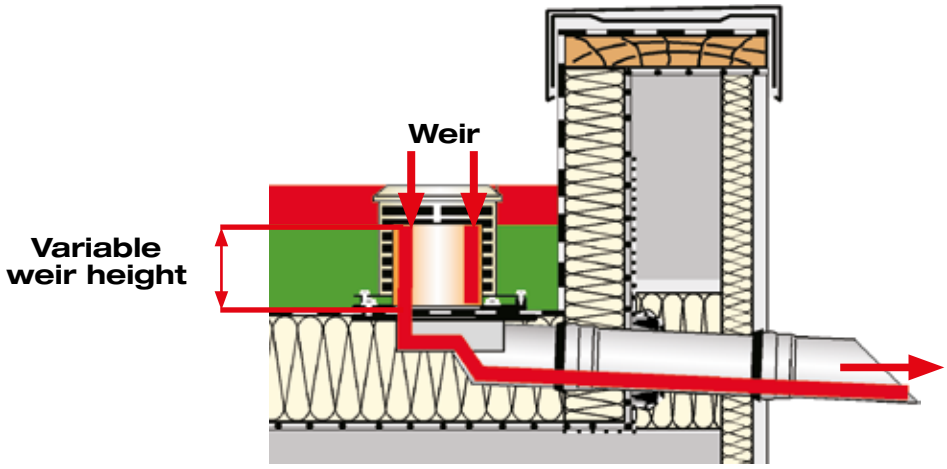
In order to guarantee the permanent sealing of the drain even when using interchangeable flow aids, the roofing sheet has to be installed between the fixed and the loose flange regardless of the flow aid that is installed on top. That way, the variable-height weir can be exchanged afterwards if the planned heights differ from those one site.

The LORO-X flow aid can be installed on and dismantled from the drain body regardless of the type of clamping used for the roofing sheet.

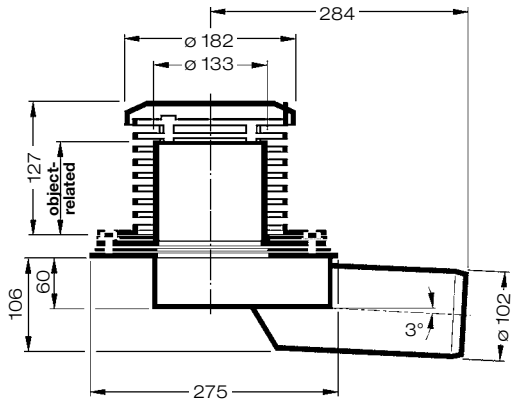
LORO provides specification sheets for every drain (picture above) that contains the variable-height weir as special part. The specification sheets are categorized according to the weir height. Examples: Specification sheets: LX1343, LX1344 and LX1840.

Advantages:

- Building-related weir height
- Order-related production without cutting to length on site
- Weir heights under 40 mm for roofs designed as leightweight construction
- Weir heights above 60 mm for green roofs
- Stepless calculable weir heights for rainwater retention



Dimensions and weights



LORO-X Emergency drainage with variable-height weir

with clamping flange for bitumen and plastic roofing sheets

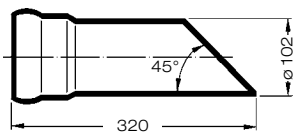
Attention:

building-related design - please indicate desired weir height when ordering.

made of stainless steel, consisting of:
strainer basket, loose flange, compression sealing, overflow connector, drain body

DN 100: Art.-No. 01491.100X weight: 6.8 kg

Specification sheet LX1840



LORO-X Spout

made of galvanized steel,
with additional internal coating

Art.-No. 15199.100X weight: 1.4 kg

LORO-X Retention roof drainage in use

An urban residential complex with several part roof areas has already been equipped with diverse LORO-X parapet and flat roof drainage systems.

Six months after completion of the project, the municipality introduced restrictions for piping rainwater into the ground pipe in this residential area.

Thus, the existing drainage concept was „too powerful“. That is why the drainage into the ground pipe had to be throttled afterwards.

Residental complex

Main Drainage

with a strong retention

The basis of the calculation is already determined by the municipality in form of the restrictions of piping water into the ground pipe.

The maximum discharge rate of 0.7 l/s per drain (retention drainage) into the ground pipe may not be exceeded.

In order to calculate the amount of rainwater on the roof surface that shall be discharged into the ground pipe, the local rain factors, the size of the roof surface and the presumed duration of precipitation have to be taken into account.

By taking the amount of rainwater on the roof and subtracting thereof the amount of rainwater that constitutes the retention discharge, one can determine the amount of rainwater to be retained on the roof (= difference volume).

In the next step, the difference volume in m^3 is divided by the roof area in m^2. The result of this calculation is the retention water height. In this case 60 mm.

LORO-X RAINSTAR® parapet drain with clamping flange, 45° upstand

Part roof areas with given retention drain

A suitable LORO-X VARIOFIT retention unit for every part roof area

Building-related VARIOFIT retention unit

On the basis of the expected retention water height and the given retention drainage, the size of the horizontal retention drain openings in the retention pipe are calculated (green arrow).

For the calculation, the LORO-X calculation programme for retention is used. Thereby a formula that has been confirmed through measuring is applied. The calculation ensures a discharge of exactly the amount of water from the retention water height that is demanded by the restrictions.

If a permanent retention of water on the roof is desired, the retention drain openings can be adjusted. When adjusting the openings, the bottom edge of the retention drain openings should match the height of the permanent retention.

The LORO-X VARIOFIT retention unit is a building-related production that is delivered ready for installation. It can be easily installed on already existing parapet and flat roof drains of the series LORO-X RAINSTAR, DRAINLET and DRAINJET. Thus, it is suitable for new buildings as well as for renovation.

Installation of
LORO-X VARIOFIT retention unit

Strong emergency drainage with variable-height weir

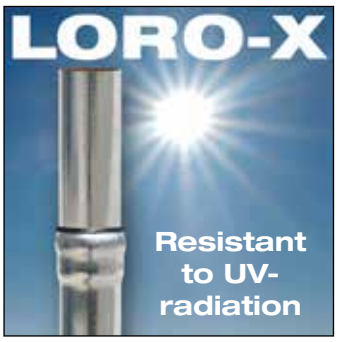
The maximum permissible water height indicates how high the water is allowed to congest during the operation of the emergency drainage. In this case 80 mm.

Consequently, for the operation of the emergency drainage only a function range consisting of the difference between the maximum water height and the height of the congestion element is available. In this case, only a small function range of 20 mm is possible although a high discharge rate of 8 l/s is required for the emergency drainage.

The emergency drainage is selected by comparing the flow graphs of different emergency drainge systems that reach the required discharge at the possible function range. Hence, in this case at a function range of 20 mm.

With retention refitted
LORO-X RAINSTAR parapet drain

Advantages of LORO-X pipe systems made of steel with LORO-X push-fit socket



Please contact us for further information or for placing an order:

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