STORA-DRAIN

Storage

Storage of linear drains with galvanised elements.

Greasing and passivation of galvanised gratings ensures protection against zinc oxidation only during transport. Drains stored in pallet packs must not be stored outdoors or in rooms exposed to moisture and variable temperatures. Zinc coatings, in particular those that have not been subjected to weather conditions, and therefore without a protective zone, are sensitive to water condensate with limited air access.

Special attention should be paid when unloading in winter conditions and stored in heated rooms. Due to the significant differences in temperature between galvanised products, water precipitates.

Galvanised elements which get wet during transport or storage must be allowed free air circulation. After drying, elements should be inspected and then covered with a layer of preservative lubricant. Products with galvanised parts must not be stored near fertilizers, acids, alkali, etc. or in any other aggressive environment.

If the above guidelines are not followed, zinc oxides will form relatively quickly (for galvanised elements it can be only a few days) – i.e., in the case of galvanised gratings, white, surface-bound layers which do not provide protection against corrosion. Linear drains in factory packaging should not be stored for longer than 2 weeks from the date of delivery. After that time, packaging must be cut to allow air to circulate freely. The maximum storage time should not be longer than 3 months from the date of delivery.

STORA-DRAIN

General assembly guide

The trench is excavated, taking into account the thickness of the foundation, the height of the channel and possibly the thickness of an onlay grating or kerb top.The foundation concrete is poured in the trench. The quality and thickness of the concrete depends on the expected load. The table below indicates the minimum dimensions and quality of the concrete, as re--quired by the EN1433 standard. The STORA-DRAIN channels are of the M-type in accordance with article 3.3 of the EN1433 standard.

Point 11 of standard PN-EN 1433: installation should be carried out of in accordance with the relevant Code of Practice. Until such European Codes of Practice exist the National Code of Practice or the manufacturer's guide should be used.

Table 1: Minimum requirements for the foundation and surrounding overlay for M-type channels in accordance with EN1433 art. 3.3

Load class	Concrete quality according to PN-EN 206-1	Lateral support X (mm)	Y (mm)	Underlaying foundation Z (mm)
A15	C12/15	80	1/2 channel height	80
B125	C12/15	100	1/2 channel height	100
C250	C20/25	150	1/2 channel height	150
D400	C20/25	200	channel height (*)	200
E600	C20/25	200	channel height (*)	200
F900	C25	250	channel height (*)	250

(*) For class D400-E600-F900 the channels must be entirely supported laterally by the surrounding concrete.

The channels are assembled against each other by means of a tongue and groove join--ting system. Starting from the outlet the channel ends are fit into each other. The arrow on the channel elements indicates the direction of the water. The channel elements must be kept clean while installing. To obtain an impermeable finish the security joints must be filled up with an adapted building sealant (please contact our technical department for advice).

The gratings must be installed and secured in the channel before pouring the surrounding concrete. Both gratings and edge profile are best protected with a synthetic foil that is removed after finishing the works. This prevents the profiles and gratings from being damaged and prevents concrete from ending up in the channels. The top of the edge profile and the gratings must be installed 3 to 5mm below the overlay to ensure an optimum evacuation of the surface water and to protect the channel edges.

STORA-DRAIN

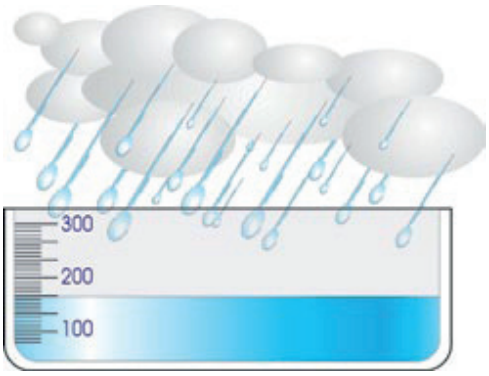
Capacity determination

Depending on the site location the catchment area is provided with one or several channel runs. It is very important to know what channel runs are possible from which specific channel type in function of the catchment area width or the terrain depth and the likely rainfall intensity (n = L/sec/ha). It may be necessary to integrate several outlet points or to choose a wider channel type.

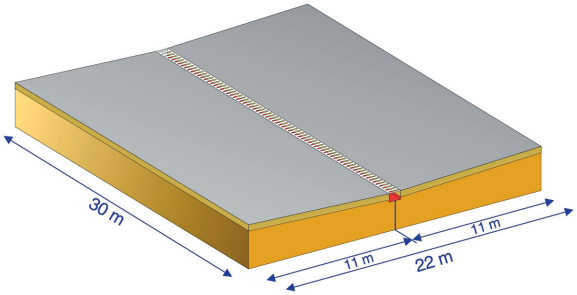
Rainfall intensity

In meteorological institutes the rainfall on a specifi c surface during a certain time span is measured with pluviometers (these meteorological data must NOT be compared by divi-ding or multiplying the units !).

The average precipitation of the heaviest rainfalls in Belgium amounts to about one litre per minute and per m^2 horizontal surface. However this quantity is often exceeded locally during relatively short time spans. Therefore you should take into account a maximum precipitation of 3 l/min/m^2 (NBN 306) for the calculation of drainage from roofs. This standard prescribes a high value as gutters may get partially obstructed (thaw, leaves, ...).



Public sewers on the other hand are submitted to a maximum preci-pitation intensity of 125 l/sec/ha (Δ t =15' T=2y). As for the capacity determination of drainage channels this value can be increased (e.g. 300 l/sec/ha) if an unfavourable location or a possible pollution of the channels should be taken into account.



Calculation example.
Information needed for the calculation:

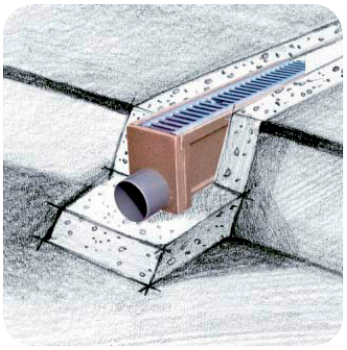
Given:
Site length: 30m
Site width: 22m
Rainfall intensity n= 300 l/sec.ha

Location of the channels: one channel run parallel to the longest side of the site.

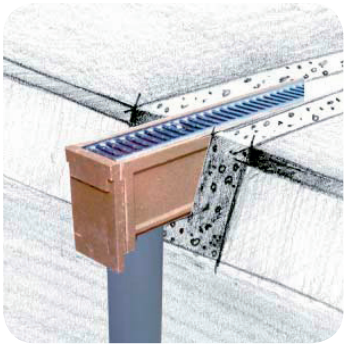
STORA-DRAIN

How do you connect to the sewer system?

connection by means of a sump unit



connection by means of a horizontal outlet (end-cap with pipe)



connection by means of an closed endcap and vertical pipe

Certain drainage channels are fi tted with a pre-formed knocko-ut to create a vertical outlet.

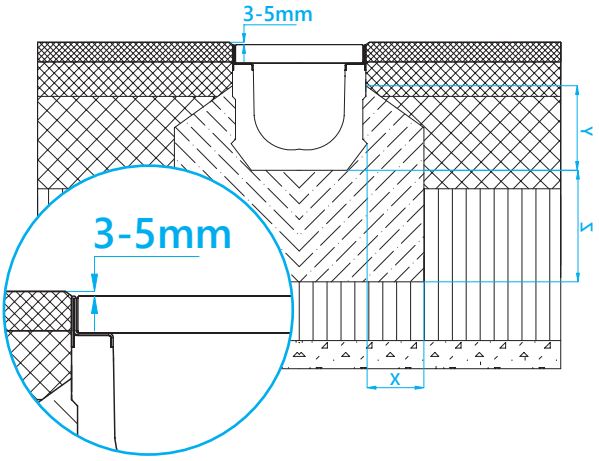
The knockout is easily knocked open with hammer and chisel. Be careful to knock it out from the inside towards the outside to avoid dama-ging the inside of the channel.

Finished knockout is ready to in-stall vertical outlet with pipe.

INSTALLATION EXAMPLE - ASPHALT

CLASS A15 / B125 / C250

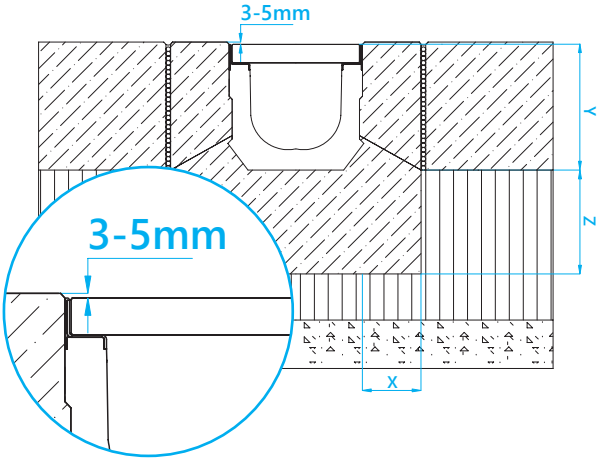
Load Class ac.: PN EN 1433		A15	B125	C250
Minimum compressive concrete strength to:	DIN 1045-2	B15	B15	B25
	DIN EN 206-01	C12/15	C12/15	C20/25
Dimensions	X (mm)	≥ 100	≥ 100	≥ 150
	Y (mm)	Upper part of pocket anchor		
	Z (mm)	≥ 100	≥ 100	≥ 150



INSTALLATION EXAMPLE - CONRETE

CLASS A15 / B125 / C250

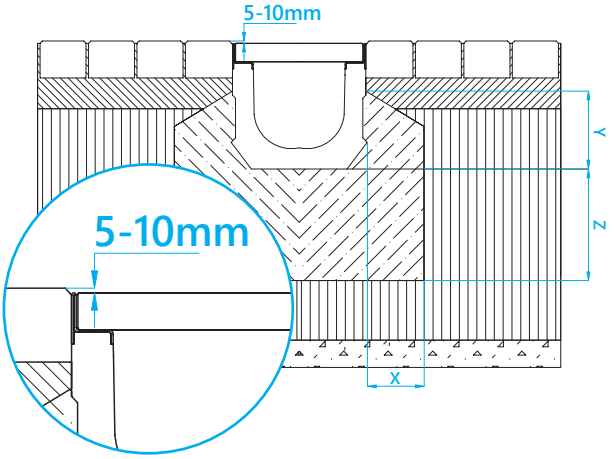
Load Class ac.: PN EN 1433		A15	B125	C250
Minimum compressive concrete strength to:	DIN 1045-2	B15	B15	B25
	DIN EN 206-01	C12/15	C12/15	C20/25
Dimensions	X (mm)	≥ 100	≥ 100	≥ 150
	Y (mm)	Upper part of pocket anchor		
	Z (mm)	≥ 100	≥ 100	≥ 150



INSTALLATION EXAMPLE - CLINKER BRICK

CLASS A15 / B125 / C250

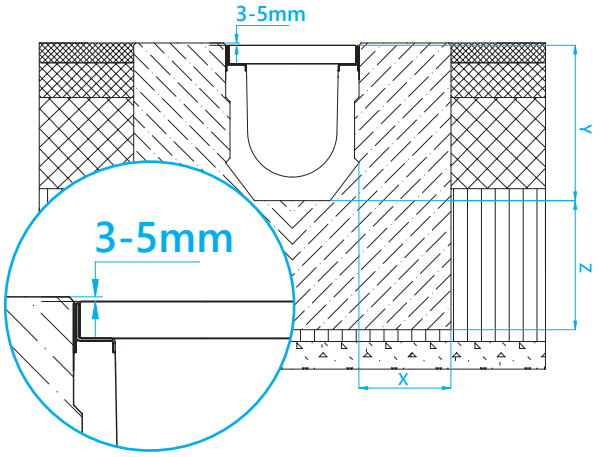
Load Class ac.: PN EN 1433		A15	B125	C250
Minimum compressive concrete strength to:	DIN 1045-2	B15	B15	B25
	DIN EN 206-01	C12/15	C12/15	C20/25
Dimensions	X (mm)	≥ 100	≥ 100	≥ 150
	Y (mm)	Upper part of pocket anchor		
	Z (mm)	≥ 100	≥ 100	≥ 150



INSTALLATION EXAMPLE - ASPHALT

CLASS D400 / E600 / F900

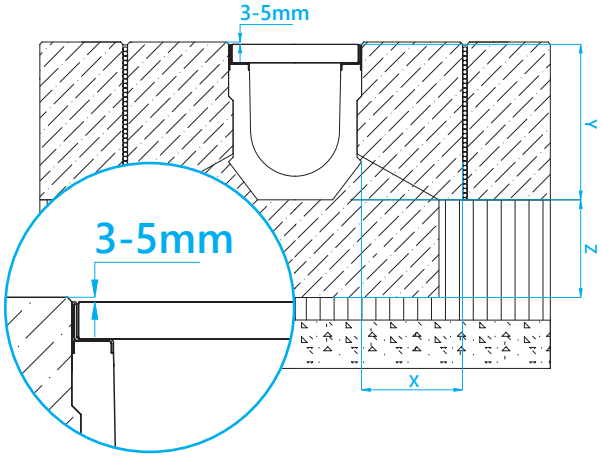
Load Class ac.: PN EN 1433		D400	E600	F900
Minimum compressive concrete strength to:	DIN 1045-2	B25	B25	B25
	DIN EN 206-01	C20/25	C20/25	C20/25
Dimensions	X (mm)	≥ 200	≥ 200	≥ 200
	Y (mm)	Full channel height		
	Z (mm)	≥ 200	≥ 200	≥ 200



INSTALLATION EXAMPLE - CONCRETE

CLASS D400 / E600 / F900

Load Class ac.: PN EN 1433		D400	E600	F900
Minimum compressive concrete strength to:	DIN 1045-2	B25	B25	B25
	DIN EN 206-01	C20/25	C20/25	C20/25
Dimensions	X (mm)	≥ 200	≥ 200	≥ 200
	Y (mm)	Full channel height		
	Z (mm)	≥ 200	≥ 200	≥ 200



INSTALLATION EXAMPLE - CLINKER BRICK

CLASS D400 / E600 / F900

Load Class ac.: PN EN 1433		D400	E600	F900
Minimum compressive concrete strength to:	DIN 1045-2	B25	B25	B25
	DIN EN 206-01	C20/25	C20/25	C20/25
Dimensions	X (mm)	≥ 200	≥ 200	≥ 200
	Y (mm)	Full channel height		
	Z (mm)	≥ 200	≥ 200	≥ 200