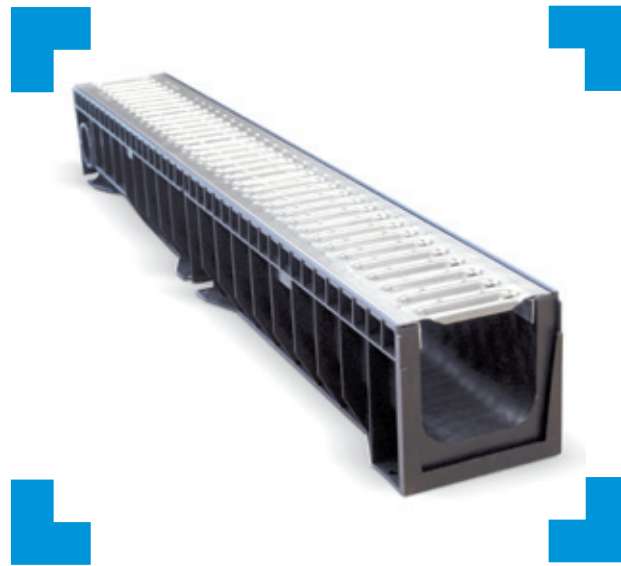


HYDRO SYSTEM



MEETING YOUR NEEDS
COMPOSITE
SOLUTIONS

WHO WE ARE



ULMA Architectural Solutions is a member of the **ULMA Group**, a leading industry group in the Basque Country, and also part of the Industrial Division of the **MONDRAGON Corporation**, one of the largest business corporations in Spain and the largest Cooperative Group in the world. Our expertise and experience in **prefabricated systems for construction** has led us to develop a wide range of products aimed at **four market** segments:



APPLICATIONS



WINERIES

FOOD WAREHOUSES

SWIMMING POOLS

SPORT FACILITIES

DRESSING ROOMS

HYDRO SYSTEM

ULMA, specialists in precast channelling and drainage systems, have launched a new range of **HYDRO** channels. EN-1433 Standard compliant and manufactured in thermoplastic matrix composite, Polypropylene (PP)/ Polyethylene (PEHD), with mineral filler reinforcement, the new **HYDRO** channels complement the wide range of existing Polymer Concrete products.



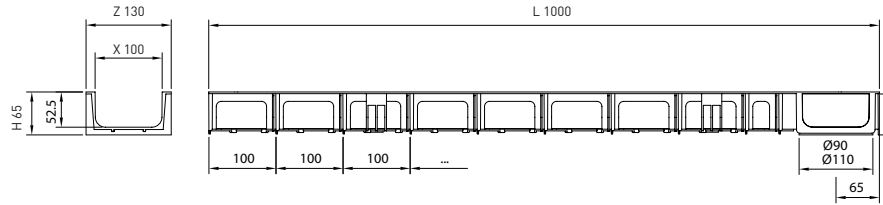
Salón de Pinos del Manzanares, Madrid. Over 8000 metres of HYDRO channels installed.

MAIN CHARACTERISTICS

- **Compatible with the full range of grates available for polymer concrete channels;** a limited product range covers all needs
- **The broadest range of grates** available in ductile casting, galvanized steel, stainless steel and plastic including the new heelproof versions.
- **Modular and robust design** for load classes of up to C250 in accordance with the EN-1433 Standard.
- **Lightweight and easy to transport and handle.**
- **High drainage capacity**
- **Simple leak tight** tongued and grooved assembly.
- **Premarked to cut at 0.5m** maintaining the leak tight tongued and grooved assembly.
- **Prejoined outlets,** vertical and horizontal.
- **Easy to trim** to any length with a manual saw.
- **End caps at start and end of line, with and without outlets.**
- **Installation instructions** printed on base of channel.
- **High resistance to chemical products.**
- Operating temperature range from -20°C to 80°C.



HYDROKIT



| Code | L (mm) | H (mm) | Width (mm) | | Outlet (mm) | | Hydraul. Section (cm ²) | Pcs (x pallet) |
|-------------|--------|--------|------------|-----|-------------|-----------------------|-------------------------------------|----------------|
| | | | Z | X | Vert. | Horiz. | | |
| HYDROKITH65 | 1000 | 65 | 130 | 100 | 90-110 | Connection at 90° (1) | 51 | 126 |

(1) Every channel has two preformed side knockouts for T, L and cross connections.

Slotted

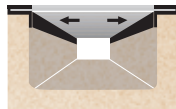


GRATING

| Material | Design | Load | Code | L (mm) | Width (mm) | Thickness (mm) | Units (x lm) |
|------------------|---------|------|----------|--------|------------|----------------|--------------|
| GALVANIZED STEEL | SLOTTED | A 15 | GN100UOA | 1000 | 130 | 3 | 1 |

LOCKING SYSTEM

CLICK. Without screws



Closed

END CAPS

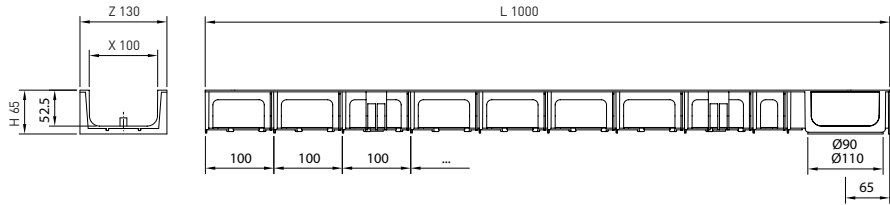
| Code | Type |
|-----------|--------|
| TH100H65C | CLOSED |

LEAF GUARD

| Code |
|------|
| FS90 |

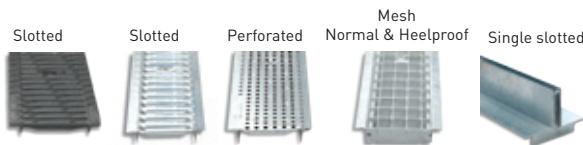


HYDROMINI



| Code | L (mm) | H (mm) | Width (mm) | | Outlet (mm) | | Hydraul. Section (cm ²) | Pcs (x pallet) |
|----------|--------|--------|------------|-----|-------------|-----------------------|-------------------------------------|----------------|
| | | | Z | X | Vert. | Horiz. | | |
| HYDR0H65 | 1000 | 65 | 130 | 100 | 90-110 | Connection at 90° (1) | 51 | 204 |

(1) Every channel has two preformed side knockouts for T, L and cross connections.

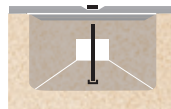


GRATINGS

| Material | Design | Load | Code | L (mm) | Width (mm) | Thickness (mm) | Units (x lm) |
|------------------|-----------------|---------|-------------|----------|------------|----------------|--------------|
| DUCTILE IRON | SLOTTED | B 125 | FNX100UCBM | 500 | 130 | 6 | 2 |
| | SLOTTED | C 250 | FNX100UCCM | 500 | 130 | 6 | 2 |
| GALVANIZED STEEL | SLOTTED | A 15 | GN100UCA | 1000 | 130 | 3 | 1 |
| | PERFORATED | A 15 | GP100UCA | 1000 | 130 | 3 | 1 |
| | MESH | B 125 | GEX100UCB33 | 1000 | 130 | 2 | 1 |
| | HEELPROOF MESH | B 125 | GEHX100UCB | 1000 | 130 | 2 | 1 |
| | SINGLE SLOTTED | C 250 | GR100UOC | 1000 | 130 | 70 | 1 |
| | DOUBLE SLOTTED | C 250 | GDR100UOC | 1000 | 130 | 70 | 1 |
| | STAINLESS STEEL | SLOTTED | A 15 | IN100UCA | 1000 | 130 | 3 |
| PERFORATED | | A 15 | IP100UCA | 1000 | 130 | 3 | 1 |
| MESH | | B 125 | IEX100UCB | 1000 | 130 | 3 | 1 |

LOCKING SYSTEM

SCREW LOCKING SYSTEM. 2 screw per metre.



Closed



END CAPS

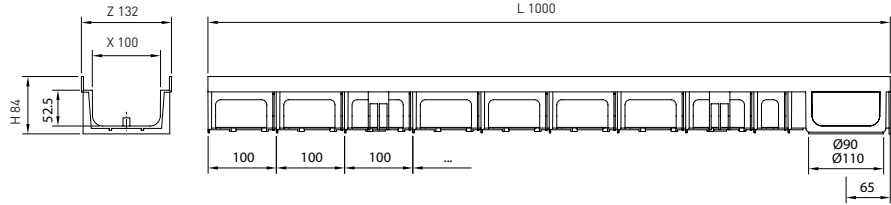
| Code | Type |
|-----------|--------|
| TH100H65C | CLOSED |

LEAF GUARD

| Code |
|------|
| FS90 |



HYDROMINIPLUS



| Code | L (mm) | H (mm) | Width (mm) | | Ø Outlet (mm) | | Hydraul. Section (cm ²) | Pcs (x pallet) |
|--------------|--------|--------|------------|-----|---------------|-----------------------|-------------------------------------|----------------|
| | | | Z | X | Vert. | Horiz. | | |
| HYDROPLUSH85 | 1000 | 84 | 132 | 100 | 90-110 | Connection at 90° (1) | 51 | 170 |

(1) Every channel has two preformed side knockouts for T, L and cross connections.

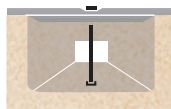


GRATINGS

| Material | Design | Load | Code | L (mm) | Width (mm) | Units (x 1m) |
|------------------|-------------------------|-------|-----------------|--------|------------|--------------|
| COMPOSITE | HEELPROOF BLACK SLOTTED | A 15 | PNH100KCAM | 500 | 123 | 2 |
| | HEELPROOF GREY SLOTTED | A 15 | PNH100KCAM-GRIS | 500 | 123 | 2 |
| DUCTILE IRON | SLOTTED | C 250 | FNX100KCCM | 500 | 123 | 2 |
| | HEELPROOF SLOTTED | C250 | FNHX100KCCM | 500 | 123 | 2 |
| GALVANIZED STEEL | SLOTTED | A 15 | GN100KCA | 1000 | 123 | 1 |
| | MESH | B 125 | GEX100KCB | 1000 | 123 | 1 |
| STAINLESS STEEL | SLOTTED | A 15 | IN100KCA | 1000 | 123 | 1 |
| | MESH | B 125 | IEX100KCB | 1000 | 123 | 1 |
| | PERFORATED | A 15 | IP100KCA | 1000 | 123 | 1 |

LOCKING SYSTEM

SCREW LOCKING SYSTEM. 2 screw per metre.



Closed



END CAPS

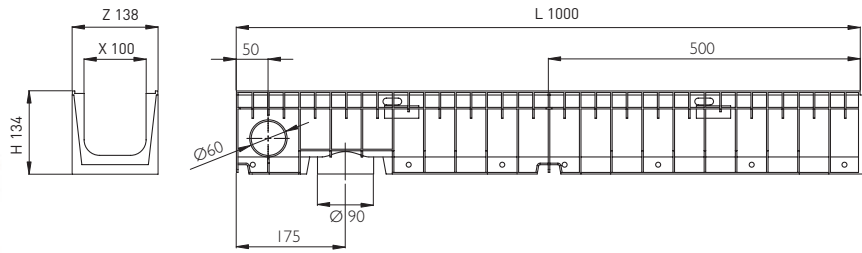
| Code | Type |
|-----------|--------|
| TH100H80C | CLOSED |

LEAF GUARD

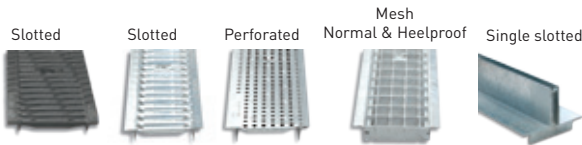
| Code |
|------|
| FS90 |



HYDRO



| Code | L (mm) | H (mm) | Width (mm) | | Ø Outlet (mm) | | Hydraul. Section (cm ²) | Pcs (x pallet) |
|-------|--------|--------|------------|-----|---------------|--------|-------------------------------------|----------------|
| | | | Z | X | Vert. | Horiz. | | |
| HYDRO | 1000 | 134 | 138 | 100 | 90 | 60 | 97 | 90 |



GRATINGS

| Material | Design | Load | Code | L (mm) | Width (mm) | Thickness (mm) | Units (x lm) |
|------------------|----------------|-------|--------------|--------|------------|----------------|--------------|
| DUCTILE IRON | SLOTTED | B 125 | FNX100UCBM | 500 | 130 | 6 | 2 |
| | SLOTTED | C 250 | FNX100UCCM | 500 | 130 | 6 | 2 |
| GALVANIZED STEEL | SLOTTED | A 15 | GN100UOA (1) | 1000 | 130 | 3 | 1 |
| | SLOTTED | A 15 | GN100UCA | 1000 | 130 | 3 | 1 |
| | PERFORATED | A 15 | GP100UCA | 1000 | 130 | 3 | 1 |
| | MESH | B 125 | GEX100UCB33 | 1000 | 130 | 2 | 1 |
| | HEELPROOF MESH | B 125 | GEHX100UCB | 1000 | 130 | 2 | 1 |
| | SINGLE SLOTTED | C 250 | GR100UOC | 1000 | 130 | 70 | 1 |
| | DOUBLE SLOTTED | C 250 | GDR100UOC | 1000 | 130 | 70 | 1 |
| STAINLESS STEEL | SLOTTED | A 15 | IN100UCA | 1000 | 130 | 3 | 1 |
| | PERFORATED | A 15 | IP100UCA | 1000 | 130 | 3 | 1 |
| | MESH | B 125 | IEX100UCB | 1000 | 130 | 3 | 1 |

(1) Without screws

LOCKING SYSTEM

LOCKING BAR. Two locking bars and two screws per linear metre.



END CAPS

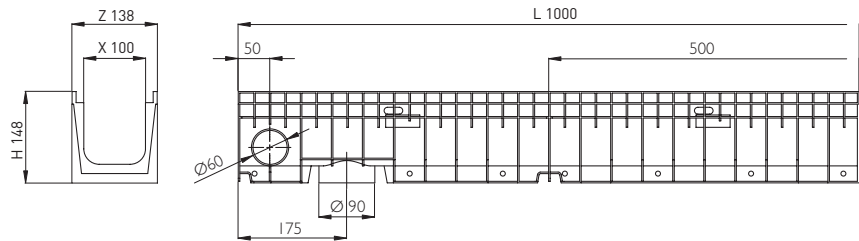
| Code | Type | Ø (mm) |
|--------|--------|--------|
| TH100C | CLOSED | - |
| TH100A | OPEN | Ø90 |

LEAF GUARD

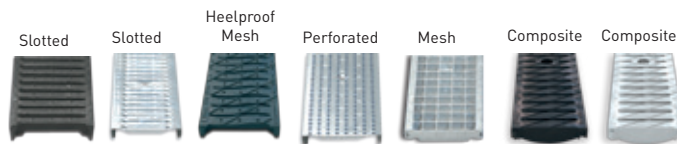
| Code |
|------|
| FS90 |



HYDROPLUS



| Code | L (mm) | H (mm) | Width (mm) | | Ø Outlet (mm) | | Hydraul. Section (cm ²) | Pcs (x pallet) |
|-----------|--------|--------|------------|-----|---------------|--------|-------------------------------------|----------------|
| | | | Z | X | Vert. | Horiz. | | |
| HYDROPLUS | 1000 | 148 | 138 | 100 | 90 | 60 | 97 | 90 |

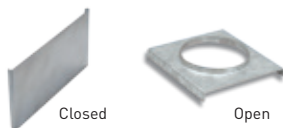


GRATINGS

| Material | Design | Load | Code | L. (mm) | Width (mm) | Units (x lm) |
|------------------|-------------------------|-------|-----------------|---------|------------|--------------|
| COMPOSITE | HEELPROOF BLACK SLOTTED | A 15 | PNH100KCAM | 500 | 123 | 2 |
| | HEELPROOF GREY SLOTTED | A 15 | PNH100KCAM-GRIS | 500 | 123 | 2 |
| DUCTILE IRON | SLOTTED | C 250 | FNX100KCCM | 500 | 123 | 2 |
| | HEELPROOF SLOTTED | C 250 | FNHX100KCCM | 500 | 123 | 2 |
| GALVANIZED STEEL | SLOTTED | A 15 | GN100KCA | 1000 | 123 | 1 |
| | MESH | A 15 | GEX100KOA | 1000 | 123 | 1 |
| | PERFORATED | A 15 | GP100KCA | 1000 | 123 | 1 |
| | MESH | B 125 | GEX100KCB | 1000 | 123 | 1 |
| STAINLESS STEEL | SLOTTED | A 15 | IN100KCA | 1000 | 123 | 1 |
| | PERFORATED | A 15 | IP100KCA | 1000 | 123 | 1 |
| | MESH | B 125 | IEX100KCB | 1000 | 123 | 1 |

LOCKING SYSTEM

LOCKING BAR. Two locking bars and two screws per linear metre.



END CAPS

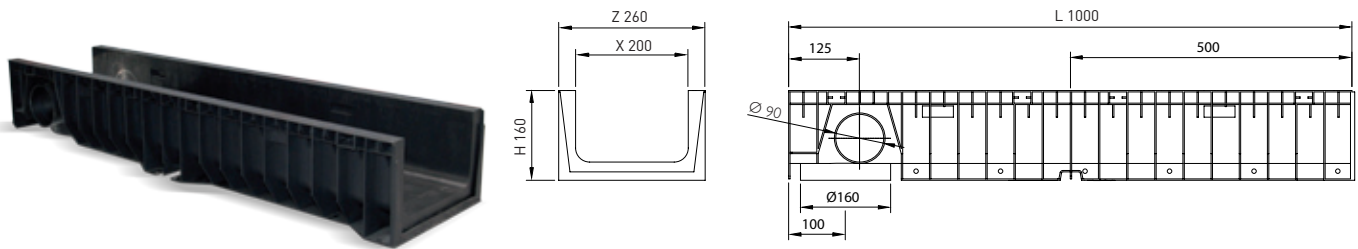
| Code | Type | Ø (mm) |
|---------|--------|--------|
| TH100KC | CLOSED | - |
| TH100KA | OPEN | Ø90 |

LEAF GUARD

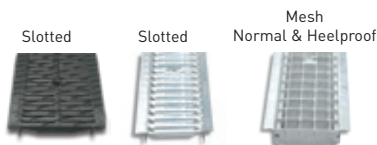
| Code |
|------|
| FS90 |



HYDRO250



| Code | L (mm) | H (mm) | Width (mm) | | Ø Outlet (mm) | | Hydraul. Section (cm ²) | Pcs (x pallet) |
|----------|--------|--------|------------|-----|---------------|--------|-------------------------------------|----------------|
| | | | Z | X | Vert. | Horiz. | | |
| HYDRO250 | 1000 | 160 | 260 | 200 | 160 | 90 | 252 | 40 |

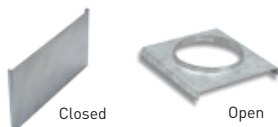


GRATINGS

| Material | Design | Load | Code | L. (mm) | Width (mm) | Thickness (mm) | Units (x 1m) |
|------------------|----------------|-------|-------------|---------|------------|----------------|--------------|
| DUCTILE IRON | SLOTTED | C 250 | FNX200UCCM | 500 | 250 | 6 | 2 |
| GALVANIZED STEEL | SLOTTED | A 15 | GN200UCA | 1000 | 250 | 4 | 1 |
| | MESH | B 125 | GEX200UCB33 | 1000 | 250 | 2,5 | 1 |
| | HEELPROOF MESH | B 125 | GEHX200UCB | 1000 | 250 | 2,5 | 1 |

LOCKING SYSTEM

LOCKING BAR. Two locking bars and two screws per linear metre.

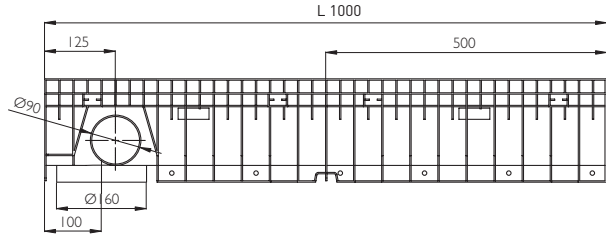
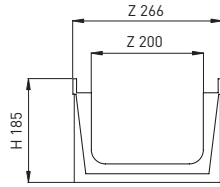
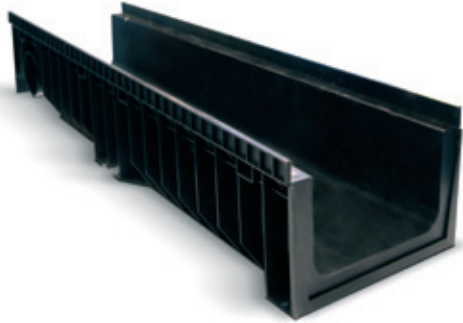


END CAPS

| Code | Type | Ø (mm) |
|--------|--------|--------|
| TH200C | CLOSED | - |
| TH200A | OPEN | Ø90 |



HYDRO250PLUS



| Code | L (mm) | H (mm) | Width (mm) | | Ø Outlet (mm) | | Hydraul. Section (cm ²) | Pcs (x pallet) |
|--------------|--------|--------|------------|-----|---------------|--------|-------------------------------------|----------------|
| | | | Z | X | Vert. | Horiz. | | |
| HYDRO250PLUS | 1000 | 185 | 266 | 200 | 160 | 90 | 252 | 40 |

Slotted

Mesh



GRATINGS

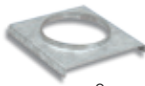
| Material | Design | Load | Code | L. (mm) | Width (mm) | Units (x lm) |
|------------------|-----------|-------|------------|---------|------------|--------------|
| DUCTILE IRON | NERVADA | C 250 | FNX200KCCM | 500 | 250 | 2 |
| GALVANIZED STEEL | ENTRAMADA | B 125 | GE200KCB | 1000 | 250 | 1 |

LOCKING SYSTEM

LOCKING BAR. Two locking bars and two screws per linear metre.



Closed



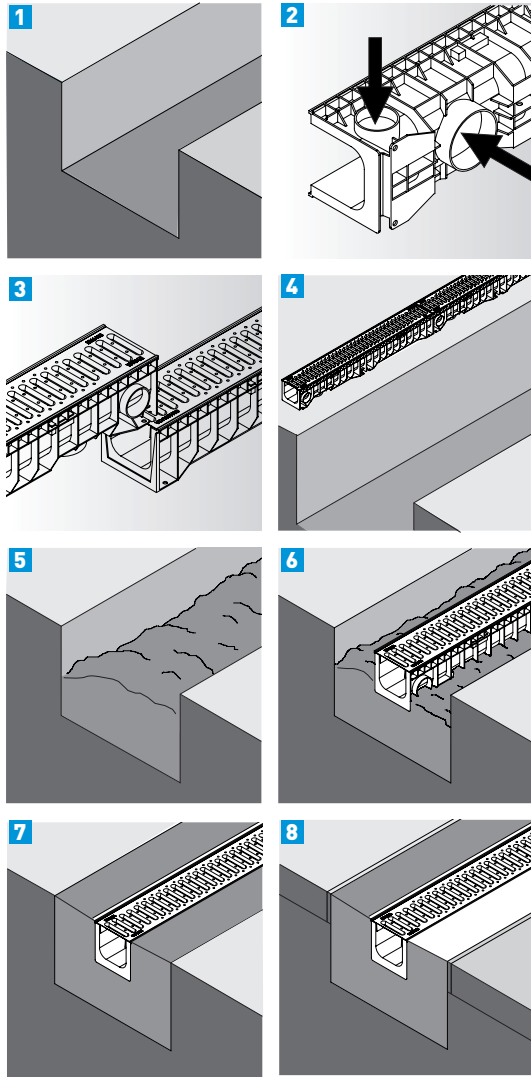
Open

END CAPS

| Code | Type | Ø (mm) |
|---------|--------|--------|
| TH200KC | CLOSED | - |
| TH200KA | OPEN | Ø110 |



INSTALLATION INSTRUCTIONS



1. Prepare the trench for the bedding and receiving the concrete, always taking into consideration the X, Y, Z dimensions, depending on the load class to bear.

2. If applicable, proceed to open the premarked assemblies, horizontal and vertical alike, using for that purpose a blade, hand saw, hammer, etc. The same way, if needed, you can easily cut the channels at wished length or at 45° angle. There is a pre-mark to cut channels at 0.5 m that keeps the tongue and groove assemblies.

3. To configure the channel line, join one after the other, using of the tongue and groove assemblies for that purpose. It can be done with the grating on. Verify that the arrow in the channel border points to the water evacuation point. In order to make the channel line waterproof, an elastic sealer can be applied on the groove side before joining the channels.

4. Set up an alignment string and prepare the channels along the trench. The channels must be put with the gratings on, protected with plastic if you are afraid from spoiling them with concrete, in order to avoid deformations that could hinder the posterior placing of them. In order to avoid deformations of the channel that could hinder the posterior placing of the gratings, the channels must be installed with the gratings on, protecting with plastic if you fear spoiling them.

The grilles must be fixed with their corresponding mooring system, by applying a torque strong enough in order to keep the grating from moving after vehicles pass by. To achieve a correctly functioning system, it is essential to install the adequate fastening system for every use.

5. Pour a good-quality concrete into the base of the trench and before it hardens start adding the channels.

6. Place the channels with a slight vertical element, trying that its base remains well-fixed and embedded in concrete without leaving holes and with the recommended base and thickness. Start placing the channels in the trench starting at the outlet point or the lowest point on the evacuation line. Check the alignment along the trench and the height of the channels compared with the die.

7. Pour the concrete along the sides of the channel. It is important that, in places where two layers of concrete meet, both layers be applied within a reasonable period of time to ensure their adherence. In case of placing in areas with load class C-250, install the corresponding wire mesh before pouring the whole concrete die at once.

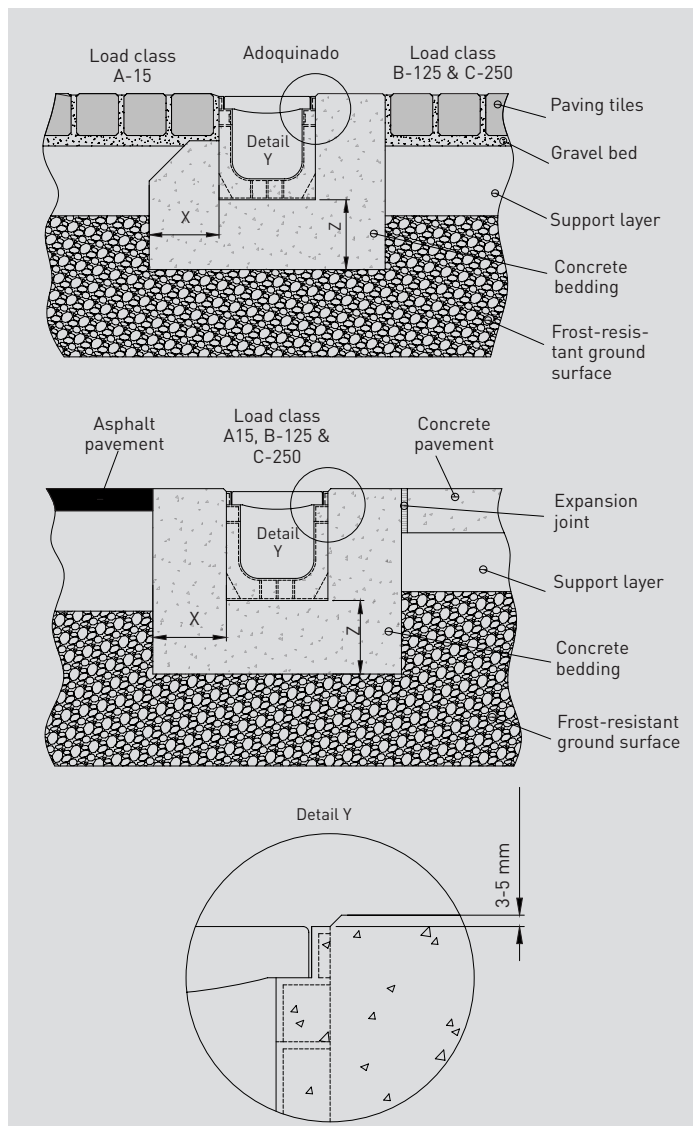
8. If the adjacent sill is made of concrete, you must install elastic expansion joints (polyspan, neoprene, etc.) These joints must be properly dimensioned in order to prevent pressure being applied on the side of the channels.

Table 1.

| Load according to standard EN-1433 | X Minimum side thickness (mm) | Y Minimum side thickness (mm) | Type of concrete (kg/cm ²) |
|------------------------------------|-------------------------------|-------------------------------|--|
| A-15 | 100 | 100 | 150 |
| B-125 | 100 | 100 | 250 |
| C-250 | 150 | 150 | 250 |

WORK DISPOSITION

1. Never pass the compacting machine over the channel when compacting the surrounding ground surface.
2. If any of the layers adjacent to the concrete footing is also concrete, always place an expansion joint between the footing and this concrete layer.
3. The upper edge or profile must not protrude above the level of the surrounding ground surface.
4. For channels without profiles, take the thickness of the grating into account when trimming the ground surface. The grating must not protrude above the level of the surrounding ground surface.





CE Declaration of Conformity

| | |
|---------------------|--|
| Manufacturer | ULMA Architectural Solutions |
| Address | Barrio Zubillaga, 89 Apdo.20 - 20560 Oñati - Gipuzkoa - SPAIN |
| Product | HYDROKIT, HYDROMINI, HYDROMINI PLUS, HYDRO, HYDROPLUS, HYDRO250, HYDRO250 PLUS |
| Description | Drainage Channel Type M to collect and conduct surface water in pedestrian areas and / or areas with vehicle traffic. |
| Load class | A15 to C250, providing the manufacturer's installation instructions are followed |
| Dimensions | L=1000 mm b=130-266 mm h=65-185 mm |
| Channel material | Polypropylene (PP) High-Density Polyethylene (PE-HD) |
| Grating material | Ductile iron, galvanized steel, stainless steel, composite |
| Applicable Standard | Construction Products Directive 89/106/CEE Standard EN 1433:2002, Appendix ZA |
| Notified Body | LGAI, laboratori General d'Assaigs i Investigacions Campus de la U.A.B Apartado 18 - 08193 BARCELONA  |
| File No. | 07/32300936 |

Oñati, October 2012

Mikel Izurieta
General Manager
ULMA Architectural Solutions



The image features a solid blue background with several white, stylized lines that resemble circuit traces or paths. These lines are horizontal and feature diagonal segments at their ends, each terminating in a small grey circular dot. The lines are arranged in a way that they appear to be interconnected or part of a larger network. The text 'IDEAS MOVE THE WORLD' is centered in the middle of the image, with 'IDEAS MOVE' in white and 'THE WORLD' in a lighter shade of grey.

IDEAS MOVE
THE WORLD



ulmaarchitectural.com

ULMA ARCHITECTURAL SOLUTIONS

Bº Zubillaga, 89 - Apdo. 20
20560 Oiñati (Gipuzkoa) Spain
Tel.: 00 34 943 78 06 00
info@ulmaarchitectural.com