Precast Concrete Trench Drain Systems

## **INSTALLATION INSTRUCTIONS**



www.trenchdrainsupply.com





### **GENERAL INSTALLATION INSTRUCTIONS**

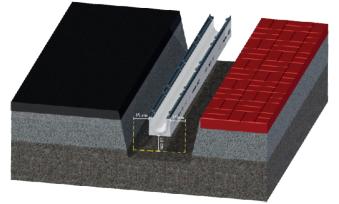
Ensure that the trench where the channels are going to be installed has enough room for the appropriate concrete encasement, depending on the Load Class and the installation materials. Lay the a concrete bed accroding to the instructions in this manual.

Unlock and remove the grates. Prior to laying the trench drains, please make sure that the concrete bed

The trench drains must be layed starting from the last piece, whether this is a catch basin or not, and in the

is strong enough as per this manual.

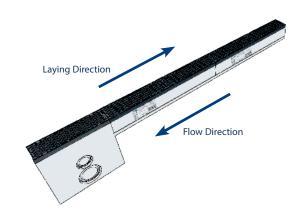
opposite direction than the flow of water.



Installation Example MAXI Load Class C

4 016162

111016



Each trench drain comes with directional arrows that indicate the direction of the flow of water. Trench drains Male Profile Female Profile adjust together thanks to their male and female profiles. Pre-sloped channels are marked with a number from 1 to 10 to indicate their place in a continous slope run. Highest frost-thaw resistance according to DIN EN 1433 **Concrete Encasement Required** Entwässerungsrinne Typ M+R Maxi 100 KI.: D 400 Gussros 1000 mm mit Gefälle Bauhöhe 11 CE U Art.-Nr. 61131011 EN 1433 DIN 19850 lfd. GefälleNr. NL BSB K23424 Prod. tag: Flow of Water TT.MM.YYYY





All HYDROTEC trench drains come with a precast knock out underneath to connect a pipe. Place the channel on two wooden pieces and use and carefully hammer out the proforma pipe connector from inside the channel. See manual for specific instructions.

Once the trench drains have been installed, end caps can be used to either close the channel or connect it to a pipe. See manual for specific instructions.

Place back the grates on top of the channels before finalizing the concrete encasement, as the grates will protect the channel against horizontal forces.

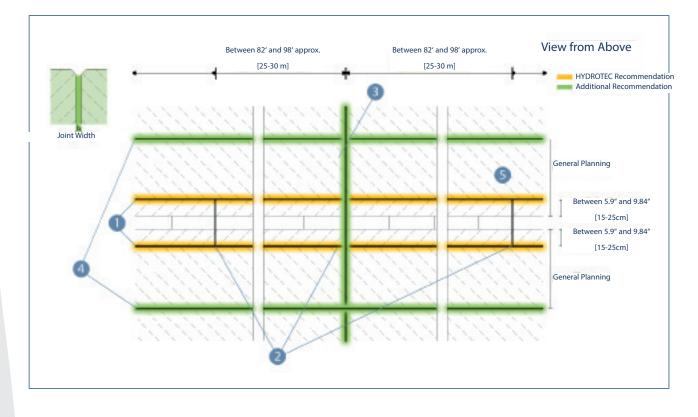
When laying the adjacent pavement is particularly important to ensure that the top of the drainage channel is between 0.12" and 0.20" [3-5 mm] lower than the adjacent surface,





## **EXPANSION JOINTS ARRENGEMENT**

If the project drawings do not specify any guidelines for expansion joints, we recommend the arrangement of expansion joints as shown in the following diagram:



The placement of expansion joints depends on the trench drain selected for each construction project. We recommend to place the seam on the outside edge of the concrete coating.

Expansion joints should always be placed perpendicular to the channel line. We recommend a distance of approximately 82' - 98' [25 - 30 m] between expansion joints. The joint width shall be determined by the engineer responsible of the plan.

In the arrangement of expansion joints in the concrete road surface, it is important to adhere exclusively to the guidelines of the project managers union planner or architect.

Further expansion joints may be placed parallel to the channel line according to the project's engineer.

Concrete road surface

С

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5







## TRENCH DRAIN RUNS LAYOUT

#### Flat Trench Drain Run (No Slope)

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000	000	000	000	000	000	000	000	000	000	000	000	000	000	000		
Stirnwand ge	schlossen														$\circ$	Einlaufkaster

The trench drain run is straight, the water flows helped by the ground fall. The water discharges through a catch basin.

Flat Trench Drain Run at Different Heights

000	000	000	050	050	050	100	100	100	150	150	150	200	200	200		1
Stirnwand g	eschlossen														0	Einlaufkasten

Through a combination of trench drains of different heights, a constant flow of water is possible. The trench drain run can be connected to a pipe through an open end cap.

Pre-Sloped Trench Drain Run

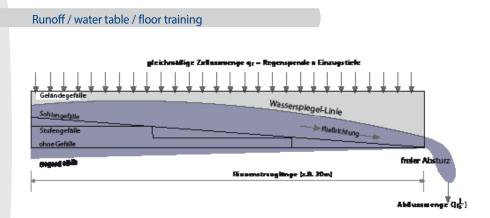


The water flow is affected by a continuous slope. The trench drains have an internal pre-slope between 0.5% and 1%, depending on the model. The trench drain run can be connected to a pipe through an open end cap.

Pre-sloped Trench Drain Runs in Opposite Directions

	7	6	5	4	3	2	1	1	2	3	4	5	6	7		
0							Stirnwand								0	Einlaufkasten

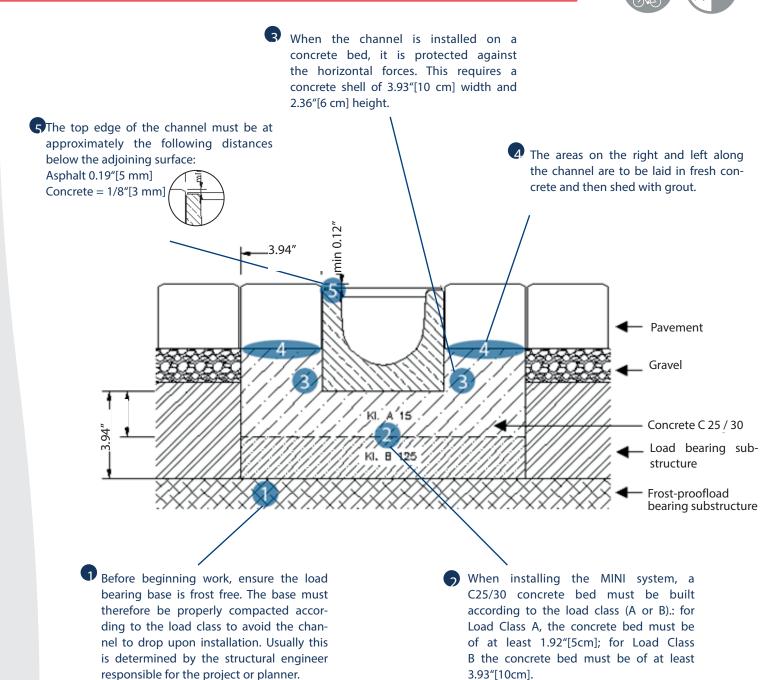
Two pre-sloped trench drain runs start in opposite directions from the middle of the section. To avoid a gap in the middle, remove the male profile of the first pieces or use closed end caps.



Whether the trench drains are flat or pre-sloped has not real effect on the water runoff. The water discharge rate is determined only by the channel crosssection at the end of the run.







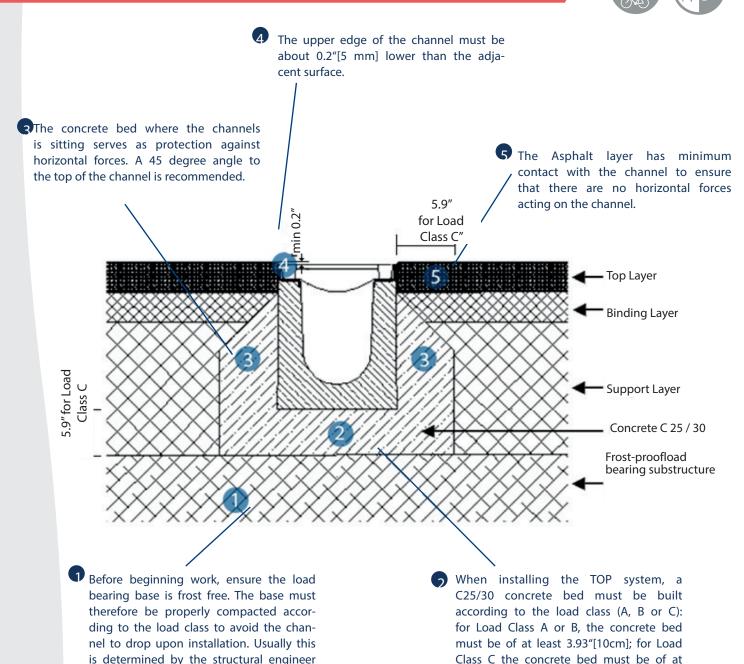




INSTALLATION INSTRUCTIONS



responsible for the project or planner.

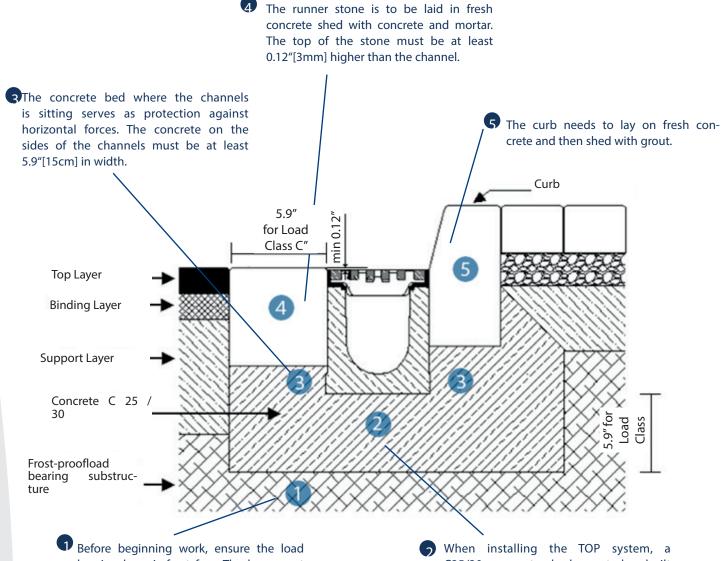


least 5.9"[15cm].





### TOP LOAD CLASS A-C WITH ASPHALT / STONE / BRICK

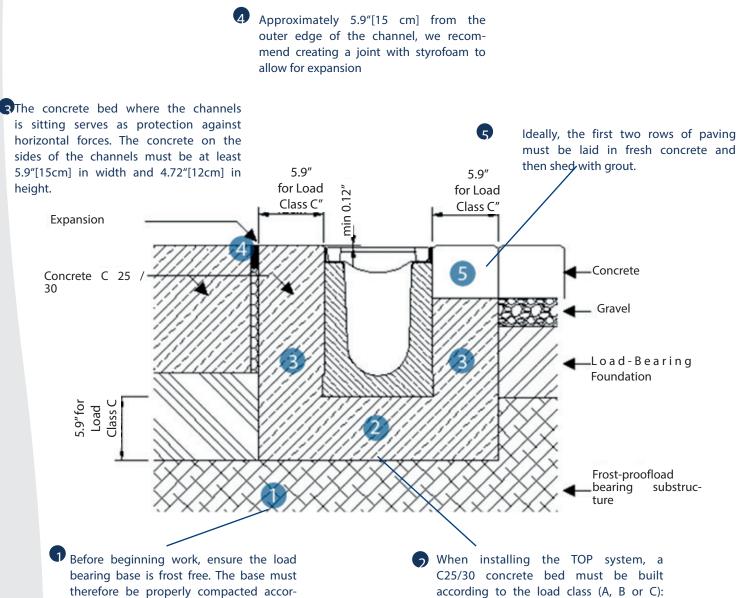


Before beginning work, ensure the load bearing base is frost free. The base must therefore be properly compacted according to the load class to avoid the channel to drop upon installation. Usually this is determined by the structural engineer responsible for the project or planner. When installing the TOP system, a C25/30 concrete bed must be built according to the load class (A, B or C): for Load Class A or B, the concrete bed must be of at least 3.93"[10cm]; for Load Class C the concrete bed must be of at least 5.9"[15cm].





TOP LOAD CLASS A-C WITH CONCRETE / PAVEMENT



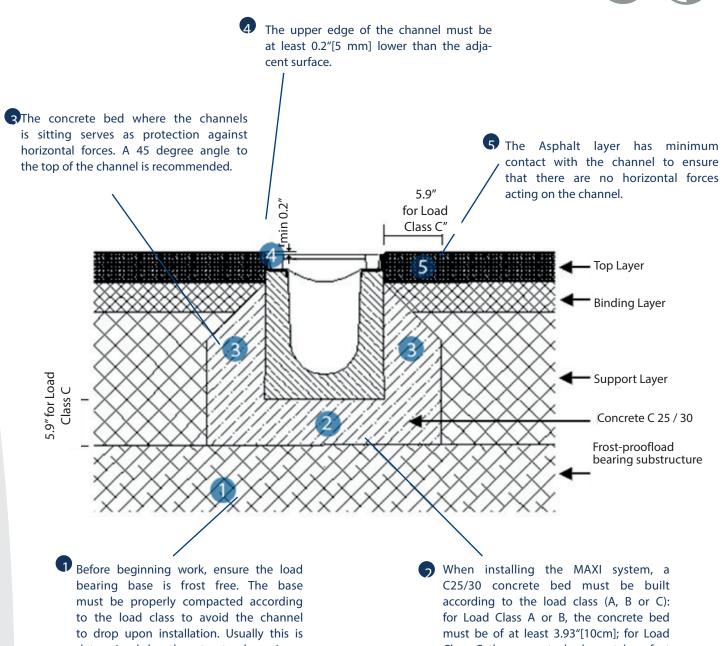
therefore be properly compacted according to the load class to avoid the channel to drop upon installation. Usually this is determined by the structural engineer responsible for the project or planner. When installing the TOP system, a C25/30 concrete bed must be built according to the load class (A, B or C): for Load Class A or B, the concrete bed must be of at least 3.93"[10cm]; for Load Class C the concrete bed must be of at least 5.9"[15cm].





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## MAXI LOAD CLASS A-C WITH ASPHALT



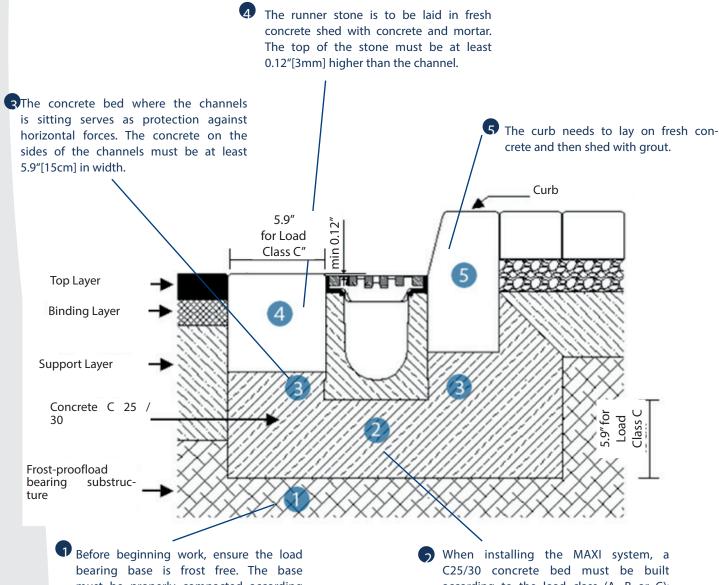
determined by the structural engineer responsible for the project or planner.

Class C the concrete bed must be of at least 5.9"[15cm].





## MAXI LOAD CLASS A-C WITH ASPHALT / STONE / BRICK



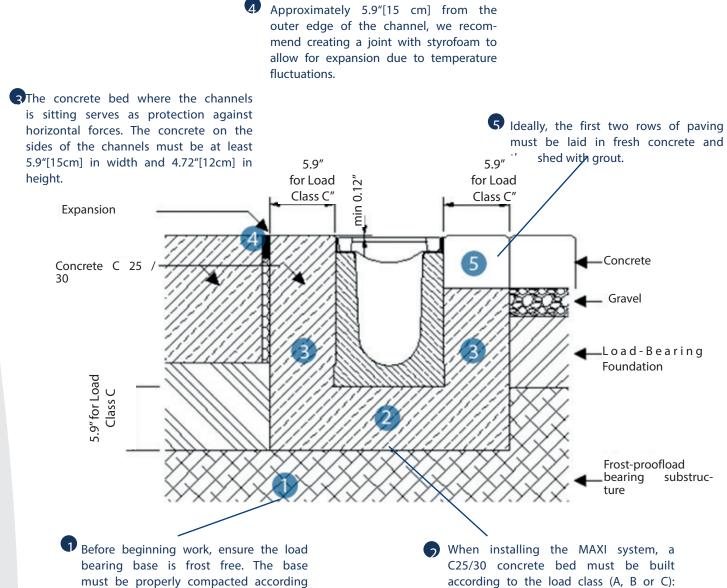
must be properly compacted according to the load class to avoid the channel to drop upon installation. Usually this is determined by the structural engineer responsible for the project or planner. When installing the MAXI system, a C25/30 concrete bed must be built according to the load class (A, B or C): for Load Class A or B, the concrete bed must be of at least 3.93"[10cm]; for Load Class C the concrete bed must be of at least 5.9"[15cm].







## MAXI LOAD CLASS A-C WITH CONCRETE / PAVEMENT

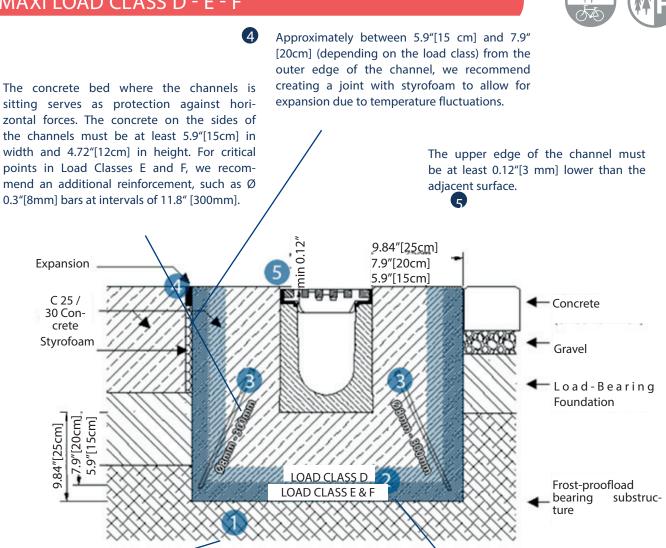


to the load class to avoid the channel to drop upon installation. Usually this is determined by the structural engineer responsible for the project or planner. When installing the MAXI system, a C25/30 concrete bed must be built according to the load class (A, B or C): for Load Class A or B, the concrete bed must be of at least 3.93"[10cm]; for Load Class C the concrete bed must be of at least 5.9"[15cm].



## MAXI LOAD CLASS D - E - F

INSTALLATION INSTRUCTIONS

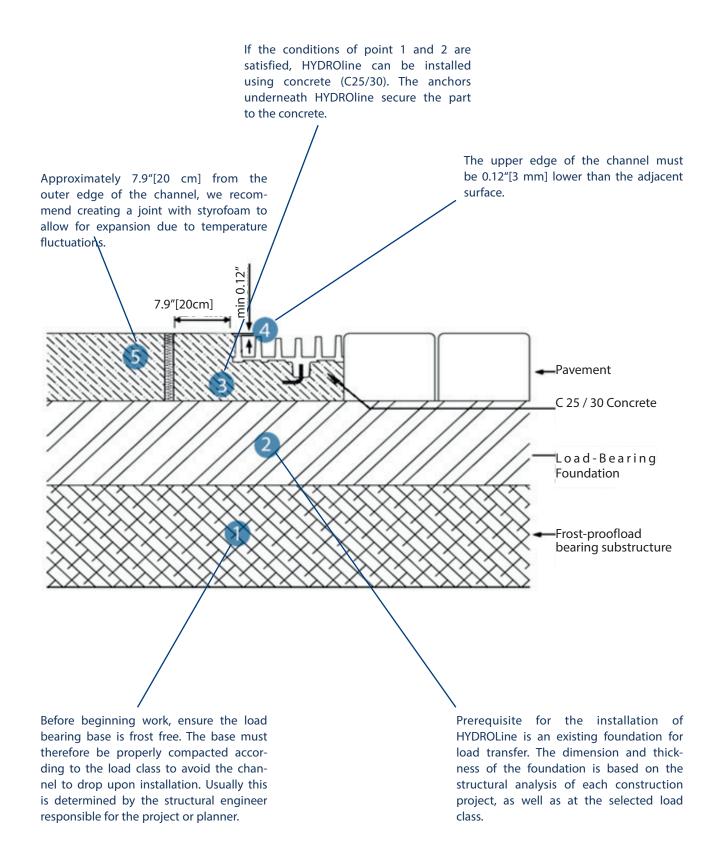


Before beginning work, ensure the load bearing base is frost free. The base must be properly compacted according to the load class to avoid the channel to drop upon installation. Usually this is determined by the structural engineer responsible for the project or planner. When installing the MAXI system, a C25/30 concrete bed must be built according to the load class (D, E or F): for Load Class D, the concrete bed must be of at least 7.9"[20cm]; for Load Class E or F the concrete bed must be of at least 9.84"[25cm]. For high stress points we recommend to reinforce the concrete bed.





#### **HYDROline**







#### **HYDROline**

The shallow HYDROline is suitable for installation into an existing opening (eg for renovation) or as a new trench drain installation run in concrete using the installation aids. Depending on the required load class the existing base course must be reviewed and approved by the architect / planner.

#### Installation on an Existing Trench

Fill the existing hole with fresh concrete and set the HYDROline on top of it. Add an end wall at the beginning and end of the run if needed.



Starting by the end of the run, the individual pieces are connected together using a connecting piece. Each HYDROline piece easily snaps onto the next piece.

#### Installation as a New Trench Drain Run

When installing HYDROline as a new trench drain run, we recommend using the built-in supports from HYDROTEC. The mounting bracket serves as connecting piece between parts, a perfect fit for installation on level.



The built-in supports need to be placed in between each HYDROline piece. Add an end wall at the beginning and end of the run if needed.



The channel line must be at least 0.12"[3mm] deeper than the adjacent surface.

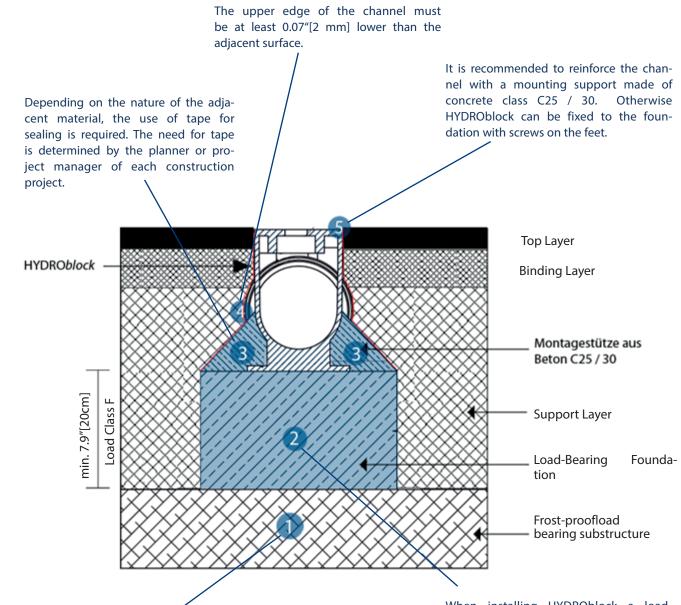


Prior to installation of the concrete layer, HYDROline should be covered and masked to prevent the entry of concrete. The upper edge of the channel must be 0.12" [3 mm] lower than the adjacent surface.





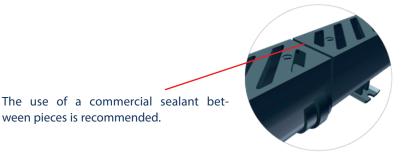
#### **HYDROblock**



ween pieces is recommended.

When installing HYDROblock a loadbearing foundation iof a minimum of 7.9" [20 cm] is required.

Before beginning work, ensure the load bearing base is frost free. The base must be properly compacted according to the load class to avoid the channel to drop upon installation. Usually this is determined by the structural engineer responsible for the project or planner.





## **INSTALLATION INSTRUCTIONS**

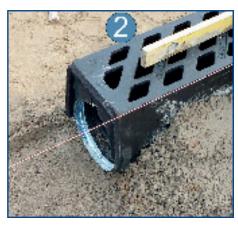
### HYDROblock



The concrete base is created according to the required load class to lay HYDROblock.



The HYDROblock parts are pushed one inside the other.



Before the parts can be joined together, sealant needs to be applied to the sleeve.



THe HYDROblock pieces are joined together easily thanks to their male / female profiles.



After the connecting the parts, they are set at the intended height.



Verify that the parts are flat as intended.







#### Installation Instructions

The trench drain type depends on the installation location, the corresponding traffic loads, and the decking planned. Installation locations are organized in classes A to F according to EN 1433 standard. As of class C all grates must be anchored to ensure traffic safety. The foundation of the trench drain must be suitable to bear the traffic load.

Horizontal loads arising from traffic or thermal behavior of the surface layer must be transferred by means of sufficiently dimensioned concrete encasement of the channel sections and by expansion joints running longitudinally to the channel, especially in case of adjoining concrete surfaces.

The laying direction of the channel is always opposite to the direction of flow and starts at the ground pipe joint. Subsequent surfaces must be executed to be approx. 0.11" (3mm) to 0.19" (5 mm) higher than the top edge of the grate or edge rail taking setting and compression into account.

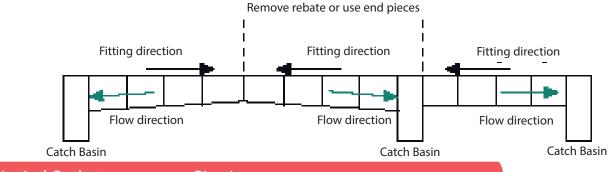
If extreme horizontal forces are expected at right angles to the trench drain, e.g. on railway crossings, ramps or highways, the trench drains should be secured laterally with reinforced decking concrete.

MINI / TOP / MAXI channel systems are manufactured to comply with EN 1433 Type M standard. This design requires a load bearing foundation and / or encasement to be able to absorb vertical and horizontal loads after installation. See installation instructions.

The HYDROblock channel system is manufactured in line with EN 1433 Type I. Concrete encasement is not required. This type requires a load-bearing foundation.

#### **Fitting Direction**

The laying direction of the channel is always opposite to the direction of flow (green arrows!) and starts at the ground pipe joint. If elements are laid in two directions it is necessary to join two counterfacing elements. To avoid a gap remove the profile rebate with an angle grinder or use end pieces.

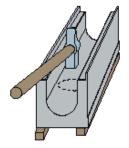


#### Precast Vertical Outlet to connect a Pipe in every

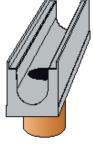
All MINI, TOP and MAXI trench drains have a precast outlet for a pipe connection in the base of every channel. The precast can be knocked out carefully using a hammer, after placing the channel on wooden supports leaving a space underneath. Matching PVC pipe connections are available and allow for an easy connection of the channel to the pipe systems.



Precast Outlet in the channel base for 4", 6" and 8" pipe connection: MINI/TOP/MAXI 100: 4" and 6" MAXI150 / MAXI 200: 6" MAXI300: 8"







Insert the PVC pipe connection so it does not go all the way through the channel



#### **End Cap Installation**

End Caps are available for all HYDROTEC Trench Drain systems. Depending on the model, the trench drain can be connected to a 4", 6" or 8" pipe. The PVC Connector is only needed to connect a pipe underneath the channel.

1. Remove the grate

 Take Part No. CHG70016-00, place the galvanized steel piece inside the channel so the round male side fits inside the channel.
Place back the grate on top of the channel and push it down to lock it.



1. Unlock and remove the grate using HYDROTEC's Grate Locking Tool (Part. No. CHG70099-00).

2. Take Part No. CHG70011-10: place the galvanized steel piece inside the channel so the round male side fits inside the channel.

3. Place the plastic piece against the galvanized steel piece so the hooks on top of the plastic piece rest on the edge rails of the channel.

4. Place back the grate on top of the channel and lock it.



Plastic Piece & Galvanized Steel Piece together form Part No. CHG70011-10



#### Connecting a 4" Pipe to an End Cap for MINI100 / TOP100

1. Unlock and remove the grate using HYDROTEC's Grate Locking Tool (Part. No. CHG70099-00).

2. Take Part No. CHG70011-20: place the galvanized steel piece against the channel so the round male side points outside the channel.

3. Cut the plastic piece following the pre-cut guides so it fits the size of the 4" round male galvanized steel part.

4. Place the plastic piece outside the galvanized steel piece so the hooks on the top of the plastic piece rest on the edge rails of the channel.

5. Insert the 4" pipe into the galvanized steel piece.



Plastic Piece & Galvanized Steel Piece together form Part No. CHG70011-20





### Closing or Connecting a 6" Pipe to an End Cap for

1. Unlock and remove the grate using HYDROTEC's Grate Locking Tool (Part. No. CHG70099-00).

2. Take Part. No. CHG70011-51: place the plastic piece outside the galvanized steel piece so the hooks on the top of the plastic piece rest on the edge rails of the channel.

3a. To Close the Trench Drain: cut the plastic piece following the pre-cut guides so it fits the height of the channel. Place the grate on top of the channel and lock it.

3b. To Connect a 6" pipe to the end of the Trench Drain: Cut the plastic piece following the pre-cut guides so it fits the size of the 6" Pipe.

4. Insert the 6" Pipe into the plastic piece.

5. Place the grate on top of the channel and lock it.

#### Closing or Connecting a 8" Pipe to an End Cap for

1. Unlock and remove the grate using HYDROTEC's Grate Locking Tool (Part. No. CHG70099-00).

2. Take Part No. CHG70012-00, and place it against the channel so the hooks on the top of the plastic piece rest on the edge rails of the channel.

3a. To Close the Trench Drain: Place the grate on top of the channel and lock it.

3b. To Connect a 8" pipe to the end of the Trench Drain: Cut the plastic piece following the pre-cut guides so it fits the size of the 8" Pipe.

4. Insert the 8" Pipe into the plastic piece.

5. Place the grate on top of the channel and lock it.

End Cap for MAXI200 (Open & Closed) Part No. CHG70012-00

#### Closing the MAXI300

- 1. Unlock and remove the grate using HYDROTEC's Grate Locking Tool (Part. No. CHG70099-00).
- 2. Take Part No. CHG70031-11, and place it against the channel so the channel is closed.
- 3. Place the grate on top of the channel and lock it.



End Cap for MAXI300 Part No. CHG70031-11

#### Connecting a Pipe to a Catch Basin





End Cap for MAXI150 (Open & Closed) Part No. CHG70011-51





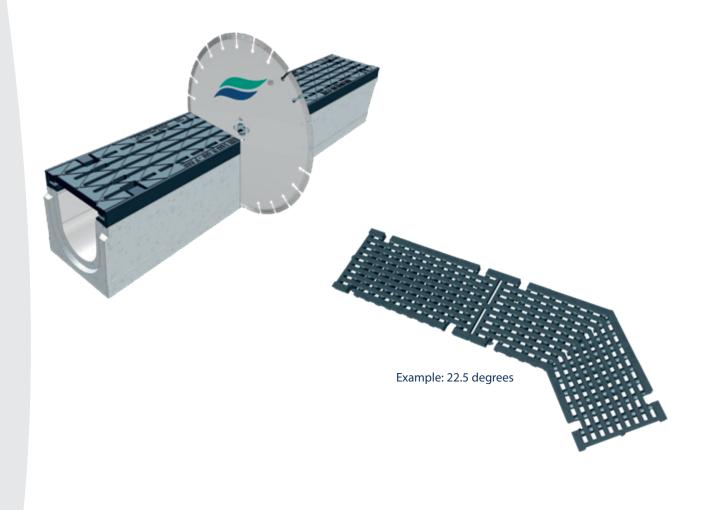
#### Installing HYDROTEC Trench Drain in a 90 Degree Angle

The TOP and MAXI lines include a 19.69" (0.5m) parts with a hole on the side. These pieces can be used to create a 90 degree angle or a 4 way cross.



## Installing HYDROTEC Trench Drain in a Different Angle

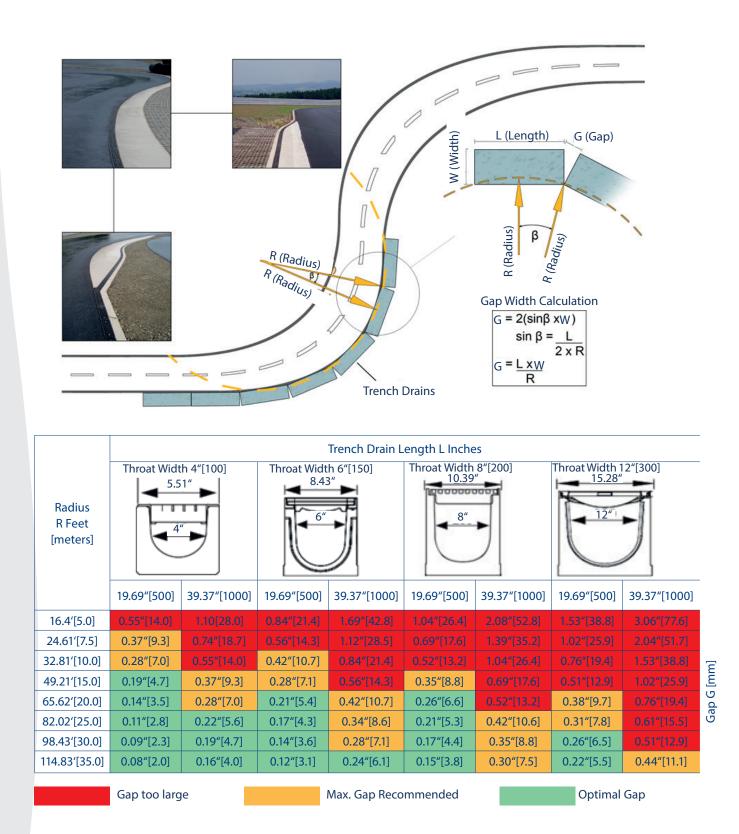
HYDROTEC's fiber reinforced channels and Galvanized Steel and Ductlie Iron grates can be cut onsite to create the appropriate angle..





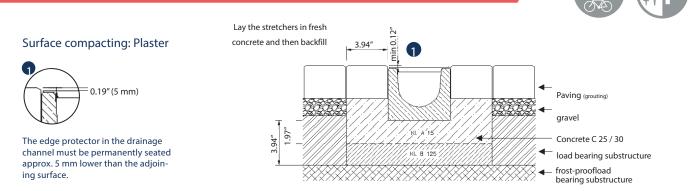
#### Installing HYDROTEC's Trench Drains in a Radius

HYDROTEC Trench Drains can be installed in a radius by following the following instructions.





#### MINI - Load Class A - B with Plaster



### TOP / MAXI – Load Class A - B - C with Asphalt / Kerb / Concrete / Paving

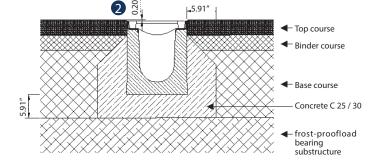


substructure

Surface compacting: Asphalt



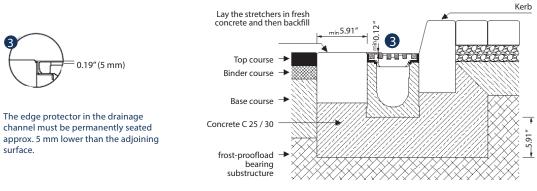
The edge protector in the drainage channel must be permanently seated approx. 5 mm lower than the adjoining surface.



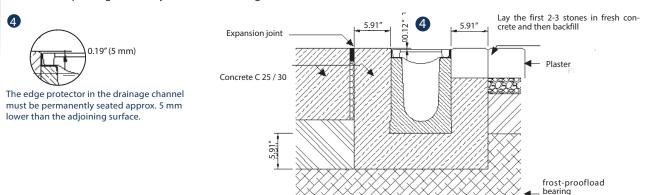
Surface compacting: Asphalt / Kerb

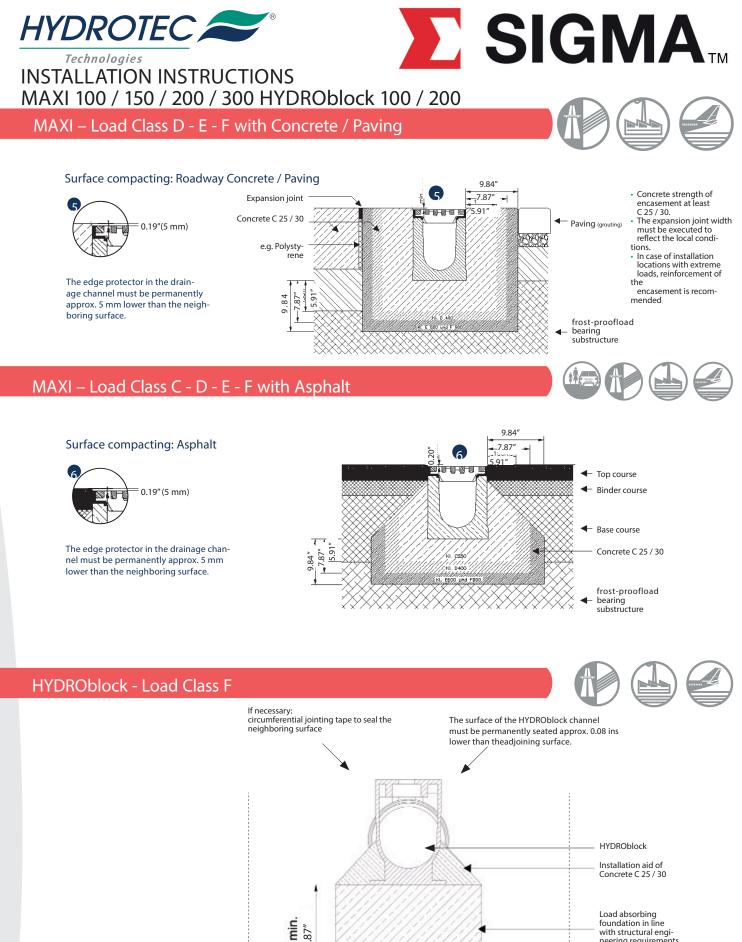
0.19" (5 mm)

surface.



#### Surface compacting: Roadway Concrete / Paving





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SUP

TRENCH

foundation in line with structural engineering requirements

Load bearing substrate