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# Swarm Aqua®

Linear Drainage System  
Installation, Handling &  
Maintenance Guide

SWARM  
AQUA

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Swarm Aqua® channels are designed to be installed within a concrete surround and completed at surface level with a range of finishes, be it pavement quality concrete, asphalt, block paving or landscaping. Swarm recommends using a two-pour installation method within a pre-formed trench to ensure the final load rating of the channel is in line with project specifications. When installed in concrete, Swarm Aqua® channels can cater for loadings of up to F900kN. For block paving and asphalt installations, Swarm Aqua® is rated for up to D400 loading as it is not recommended to surpass this loading due to the nature of the malleable or movable surface.



### Reinforcement

Swarm Water Management have engaged Clegg Associates to perform an independent design and loading check on Swarm Aqua® when it is installed in concrete, asphalt and Block Paving. Their recommendations for reinforcement can be requested from us and are represented by an installation drawing showing a reinforcement mesh where required for the relevant loadings. See Page 6 for more information on where reinforcement may be required.

### Handling & Storage

Swarm Aqua® channels can be heavy, as such it is important to observe all relevant site health and safety guidelines and regulations and use mechanical lifting methods where necessary. The channels themselves should be kept in their original packaging and stored in a location that will prevent damage on site.

Once installed in the ground if it is necessary for site equipment to traverse the trench, a protective bridge should be formed to protect the Swarm Aqua channel from unnecessary damage. It is important that Swarm Aqua® is never trafficked prior to the final stage of it's installation, as the strength of the drainage channel is dependent on it's concrete surround and any unnecessary loading will cause deformation and may affect the quality or length of the channel's lifespan.

### Trench Preparation

Swarm Aqua® channels are designed to be installed within a preformed trench before being set within concrete using a two-pour method. It is important to follow the instructions laid out within our recommended installation drawings SA-S-001 (Full Concrete Surround), SA-S-002 (Asphalt Surface Finish) & SA-S-003 (Paved Surface Finish) to achieve the required load rating for the project. The trench is required to be 150mm deeper than the base of the channel section and 200mm wide from either side of the channel to ensure the concrete can flow underneath the channel and provide suitable wall thickness.

### Trench Details

Channel	Width (mm)	Height (mm)
Swarm Aqua® 100mm Channel - 2m	512	412
Swarm Aqua® 150mm Channel - 2m	578	478
Swarm Aqua® 225mm Channel - 2m	665	565
Swarm Aqua® 300mm Channel - 2m	754	654
Swarm Aqua® 350mm Channel - 2m	826	726
Swarm Aqua® 475mm Channel - 2m	912	812
Swarm Aqua® 600mm Channel - 2m	1080	980



Handling Swarm Aqua Channels

Swarm Aqua® channels are generally 2m long and can be heavy, as such it is important to observe all relevant site health and safety guidelines and regulations and use mechanical lifting methods where necessary. Lifting straps should not be attached through the throat spacers or around the feet, they should be wrapped around the channel, between ribs where able to do so.

Swarm Aqua® accessories can be handled manually, however as they are primarily of cut steel construction it is important to take care that any burrs and sharp edges are avoided, and PPE considerations are made.



Delivery to Site

In most cases Swarm Aqua® channels are delivered to your site packaged in bundles as shown in the image to the right. The channels will be tessellated to protect them from movement during haulage, however care should be taken when separating the bundle on site to ensure components are not bent or broken during this process. Accessories will be bundled together the channel and should be easily separated. Delivery to site will be made on articulated flat bed lorries without hi-ab or off-loading facilities, so it is important that site off-loading facilities are provided on site.

Channel Weights

Channel	Weight (kg)
Swarm Aqua® 100mm Channel - 2m	24
Swarm Aqua® 150mm Channel - 2m	25
Swarm Aqua® 225mm Channel - 2m	28
Swarm Aqua® 300mm Channel - 2m	31
Swarm Aqua® 350mm Channel - 2m	37
Swarm Aqua® 475mm Channel - 2m	41
Swarm Aqua® 600mm Channel - 2m	56

These weights are approximate



PPE

Swarm Aqua® has laser cut steel parts and as such some parts of the channel and accessories may have sharp edges or burrs. Although every effort is taken to minimize these areas of risk, It is important when handling channels and accessories that relevant PPE is worn and site health and safety guidelines are followed.



Transporting Swarm Aqua Channels

Swarm Aqua® channels are delivered in tessellated 2m bundles no more than 1.2m wide. When arriving on site it is recommended that the bundles are kept together and a forklift is used to move the bundle to a safe area where the channels can be stored until they are ready to be installed. Preferably this area is covered and in an area where possible damage to the channels is minimal.



Site Off-loading Facilities

Swarm Aqua® channels are delivered on flat lorries without hi-ab or off-loading facilities. It is the responsibility of the site receiving delivery to arrange for mechanical site off-loading facilities.



### Full concrete surround

When installed within a full concrete surround, Swarm Aqua® channels are capable of achieving load ratings of up to F900kN. The details provided are a guideline and must be signed-off by the project specific engineer. Concrete reinforcement may be necessary to achieve F900kN loadings. Reinforcement details are the responsibility of the project engineer.

For full and up to date drawings in both DWG and PDF formats please feel free to contact us on [info@swarmwm.co.uk](mailto:info@swarmwm.co.uk) or visit [www.swarmwm.co.uk](http://www.swarmwm.co.uk)



### Asphalt surface finish

When installed with an asphalt surface finish, Swarm Aqua® channels are capable of achieving load ratings of up to D400kN and as with all installation details, they are provided as a guideline and must be signed-off by the project specific engineer.

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### Block paving surface finish

When installed with a block paving surface finish, Swarm Aqua® channels are capable of achieving load ratings of up to D400kN. The blocks closest the channel line should be affixed with a polymer modified mortar to prevent excessive movement. Both open sand jointed, and cement jointed paving installation methods can be used, and loading depending on each type should be specified by the project engineer.

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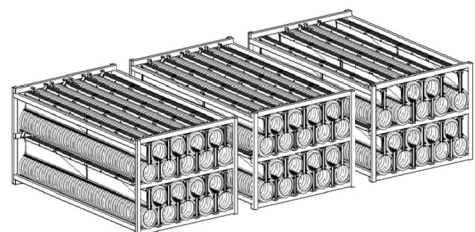


# Installation Guide

## Swarm Aqua® Installation Guide

1

Safely remove the Swarm Aqua® channels from their bundles and place them alongside the trench. Channels have male and female ends that interlock with each other.



Drill & Bit



soft mallet



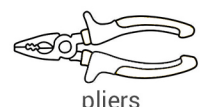
small angle grinder



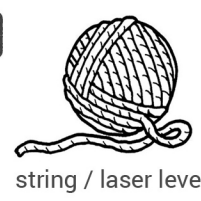
construction tape



spirit level



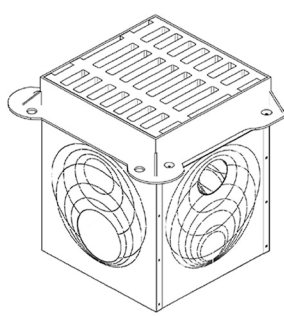
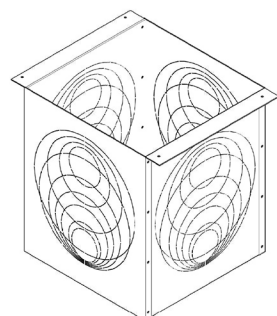
pliers



string / laser level

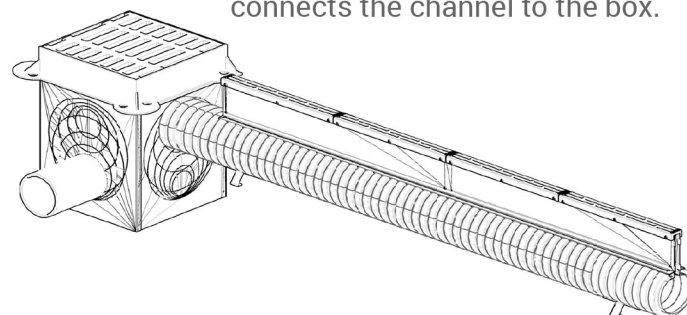
2

The combined boxes have perforations to suit both the channel and any outlets that will be connected. Use a small grinding disc to remove the relevant sections from the box.



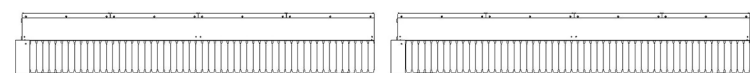
3

Place the box so that the grating is at the finished surface level. Connect any outlets and the first Swarm Aqua® channel, using construction tape to protect the joints. A Chamber Connector connects the channel to the box.



4

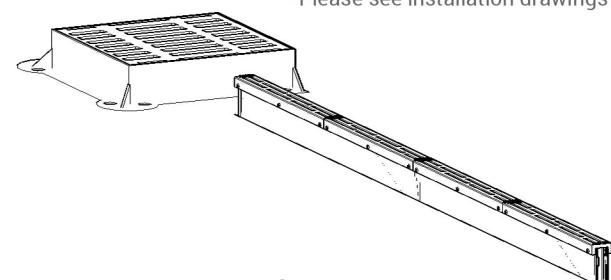
Use a soft mallet to raise or lower the channels as required to keep the line of drainage straight and level. Ensure all joints are taped. Connection Sleeves are connected to the channel body. To ensure a positive connection of Swarm Aqua®, these must be removed by removing the rivet heads on this item when using some accessories. Pliers may be required to adjust the castellations.



5

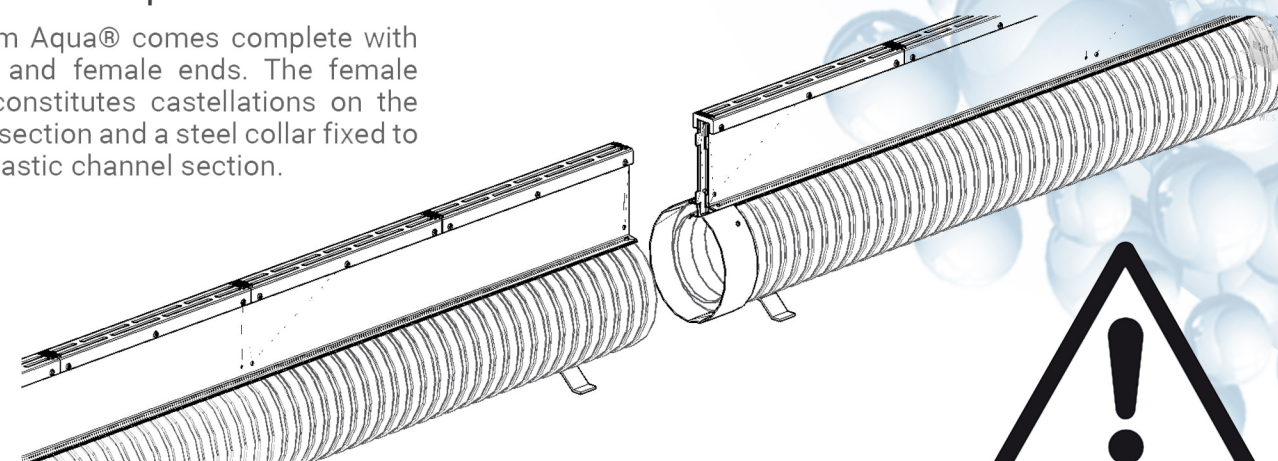
Concrete should be poured in two stages, the first to bed the feet to anchor the channel. The second pour will be to either finished surface level or as a base for block paving or asphalt where required.

\*Please see installation drawings



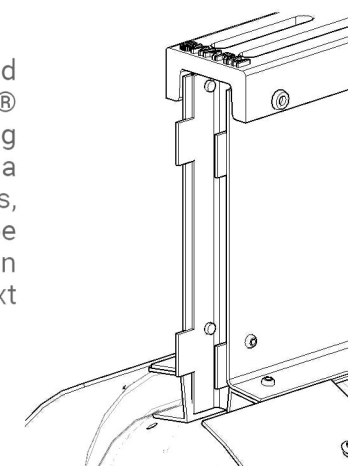
## Swarm Aqua® Collars

Swarm Aqua® comes complete with male and female ends. The female end constitutes castellations on the steel section and a steel collar fixed to the plastic channel section.



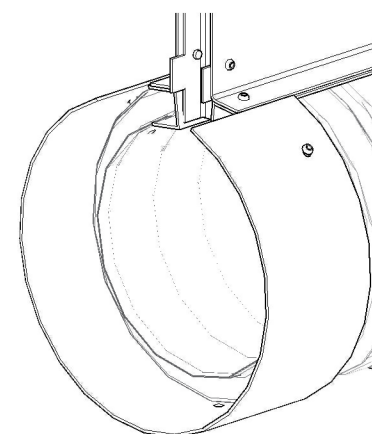
PPE

The steel castellations are used to keep the Swarm Aqua® channel in-line during installation. These may create a tight fit between channels, using pliers these can be pinched slightly to allow for an easier connection to the next channel unit.



Swarm Aqua® channels have a steel collar fixed to the female end. This is used to connect the plastic channel sections together creating a positive connection between units.

In some cases, such as when using a transition piece, end cap or chamber connector, this collar must be removed. To achieve this it is a simple operation to remove the three rivet heads from the collar with either a drill or small angle grinder.



## Transporting Swarm Aqua® Channels

Swarm Aqua® channels are delivered in tessellated 2m bundles no more than 1.2m wide. When arriving on site it is recommended that the bundles are kept together and a forklift is used to move the bundle to a safe area where the channels can be stored until they are ready to be installed. Preferably this area is covered and in an area where possible damage to the channels is minimal.

For more information relating to your Swarm Aqua® system, please visit us online at:

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Swarm Aqua® channels require regular maintenance at least once every twelve months, although this interval may become shorter depending upon environmental factors.

There are three areas to address when cleaning and maintaining the Swarm Aqua® channel, these are the surface, the combined box, and the channel body.

### Surface Maintenance

The cast/slot portion of the system can be cleaned by a normal pressure washer. Removing any surface debris, this ensures that the openings remain clear to allow water to enter the system. If there is a larger build up of debris in the slot itself, it is possible to use a slot drain cleaning paddle, or other suitable tool to fit into the 9mm slotted openings.



### The Combined Box

If using the recommended Swarm Combined Box, this is used as an access point for cleaning. For channel sizes up to 300mm a small box with a hinged D400 grating is used (as shown), this can be opened without any specialized tools. For channels 375mm and 450mm, a large box with double triangular solid top cover is used.

Once the cover is open, silt and debris that may have collected in the combined box can be removed by hand, making sure to follow your site's standard health and safety, and PPE guidelines.

### Cleaning the Channel & Blockages

Swarm Aqua® channels will achieve a self-cleansing velocity, however in some cases blockages can occur.

The channel can be rodded from the head of the run if a combined box was installed, pushing debris towards the outlet. If the system has a transition piece and therefore has different size pipes in the same run, the system should be rodded downstream to where the pipes change diameter and then rodded from the up-stream combined box to where the system changes size.

The channel can also be jet washed through the surface openings in order to aid the flow of debris to the outlet chamber.





Find out how using Swarm Aqua® can save you time and money, visit: [www.swarmwm.co.uk](http://www.swarmwm.co.uk)

**SWARM**  
WATER MANAGEMENT

Swarm Aqua® is a hybrid surface water drainage system that combines the benefits of proven materials and robust manufacturing techniques to create an exceptional surface water drainage product for external use. With a focus on strength, rigidity and lighter weight, Swarm Aqua® provides the perfect solution.

