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# ACO Water Management: Civils + Infrastucture

ACO Qmax®



*ACO Qmax® - slot drainage system*

## **Product Overview**



# ACO Qmax<sup>®</sup> System

## Product Overview

### Introduction to the ACO Qmax<sup>®</sup> system

ACO Qmax<sup>®</sup> has been developed to satisfy the demand for an economic, high capacity slot drainage system for applications involving large catchment areas. For economical system design and installation, ACO Qmax<sup>®</sup> can cater for a wide range of applications to any load class, whilst delivering an effective drainage solution.

In some large area applications such as car parks, distribution centres, highways and airport pavements, conventional point drainage and some linear drainage solutions are not viable or cost effective in reducing underground pipework or coping with the hydraulic loads. ACO Qmax<sup>®</sup> can provide the required drainage capacity.

ACO Qmax<sup>®</sup> has been designed to provide high hydraulic capacity and yet to be lightweight and robust to withstand the rigours of typical construction site handling practice. Manufactured from recycled Medium Density Polyethylene (MDPE), the lightweight material makes ACO Qmax<sup>®</sup> easy to handle and quick to install. The hot-dipped galvanised rail and MDPE body ensure a long service life in excess of 25 years.

The ACO Qmax<sup>®</sup> system is a patented design which is available in a range of depths and sizes. The channels can be used independently or together with other sizes in the range to provide an effective and economic drainage solution for a variety of catchment areas. By using the larger capacity units and optional ACO Q-Brake flow control device, ACO Qmax<sup>®</sup> can also provide genuine attenuation solutions for SUDS applications. Please see the ACO Qmax<sup>®</sup> hydraulics brochure for further information on the system's capacities.

Each size within the ACO Qmax<sup>®</sup> range is CE marked and certified to BS EN 1433: 2002 and can support Load Classes up to and including F 900. The unique patented inlet design provides a continuous pavement beam feature over the line of the channel, strengthening the pavement installation and minimizing the need for reinforcement.

A full range of accessories including chamber connectors and end caps, support the ACO Qmax<sup>®</sup> product portfolio for simple and convenient integration with conventional site practices.

This brochure overviews the ACO Qmax<sup>®</sup> system. For further information on technical, hydraulic and installation details, please refer to the full ACO Qmax<sup>®</sup> literature.

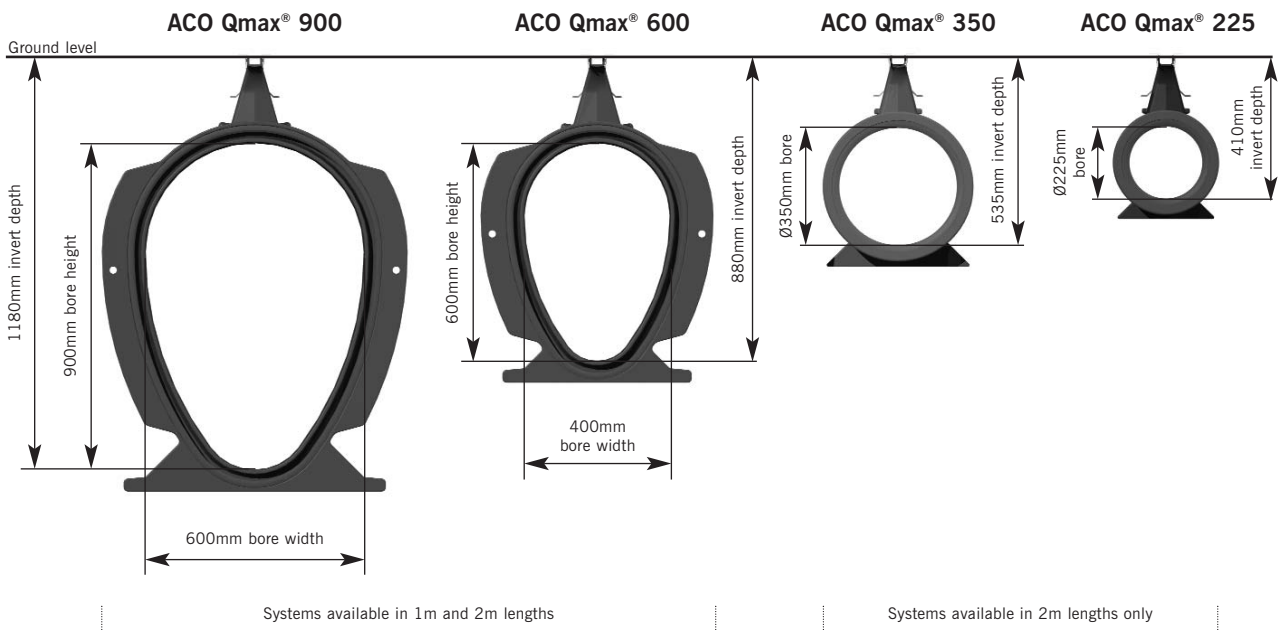
For information about suitability for specialist applications call ACO Water Management Design Services (See page 7).

**Note: The Qmax<sup>®</sup> system is protected by patent and registered design rights. All intellectual rights are the property of ACO Technologies plc.**



**In 2006, the ACO Qmax<sup>®</sup> system was awarded the Queen's award for Enterprise: Innovation.**

### ACO Qmax<sup>®</sup> product range









## System benefits

- ▶ Unobtrusive continuous slot drainage system
- ▶ Fast, efficient removal of surface water eliminates carry over in storm conditions
- ▶ Can provide long distance to outfall
- ▶ Removes the need for additional carrier pipes
- ▶ Lightweight design for easy manual handling
- ▶ Simple and fast to install
- ▶ Improves on site efficiency
- ▶ High capacity storage provides effective peak storm flow containment
- ▶ Controlled discharge to downstream drainage network or watercourse
- ▶ On the larger channels an integral flow regulator can be added to control the output flow rate from the channel
- ▶ Caters for all Load Classes with minimal reinforcement
- ▶ Caters for all surface finishes
- ▶ Can be installed to provide a watertight drainage system
- ▶ Continuous flow of concrete through the product strengthens the concrete surround
- ▶ Tough, highly corrosion resistant, robust structure
- ▶ Fully CE marked and certificated to BS EN 1433: 2002



**ACO QMAX® IS SUITABLE FOR THE FOLLOWING APPLICATIONS:**

Installation group	Load Class	Maximum Test Load (kN)	Vehicle	Typical Uses
1	 A 15	15	Pedestrians and Cycles	Pedestrian and cycleways
2	 B 125	125	Cars and Vans	Pedestrian precincts, light vehicles, private car parks
3	 C 250	250	Light Commercial Vehicles	Large car parks, kerb-side carriageways, garage forecourts
4	 D 400	400	HGVs	Public highway, distribution warehouses
5	 E 600	600	High wheel loads	Ports and dock sides
6	 F 900	900	Especially high wheel loads	Aircraft pavements

# ACO Qmax® System

## Product Overview

### System overview

#### EDGE RAIL OPTIONS

##### ACO Qmax® 225 and 350 systems

Depending on the application requirement, ACO Qmax® 225 and 350 channels are available with a concrete edge (30mm slot) or a heelguard edge (10mm slot).

When requested, ACO Qmax® 225 and 350 channels can be supplied with car park edge or heavy duty edge (e.g. where required to match exactly to ACO Qmax® 600 and 900 channels). These edge rail options are shown on the opposite page.



Heelguard edge



Concrete edge

Two edge details available to suit any application

The patented Pavement Beam feature provides a unique 'continuous pavement' benefit, strengthening the pavement substantially when compared to traditional slot drainage solutions

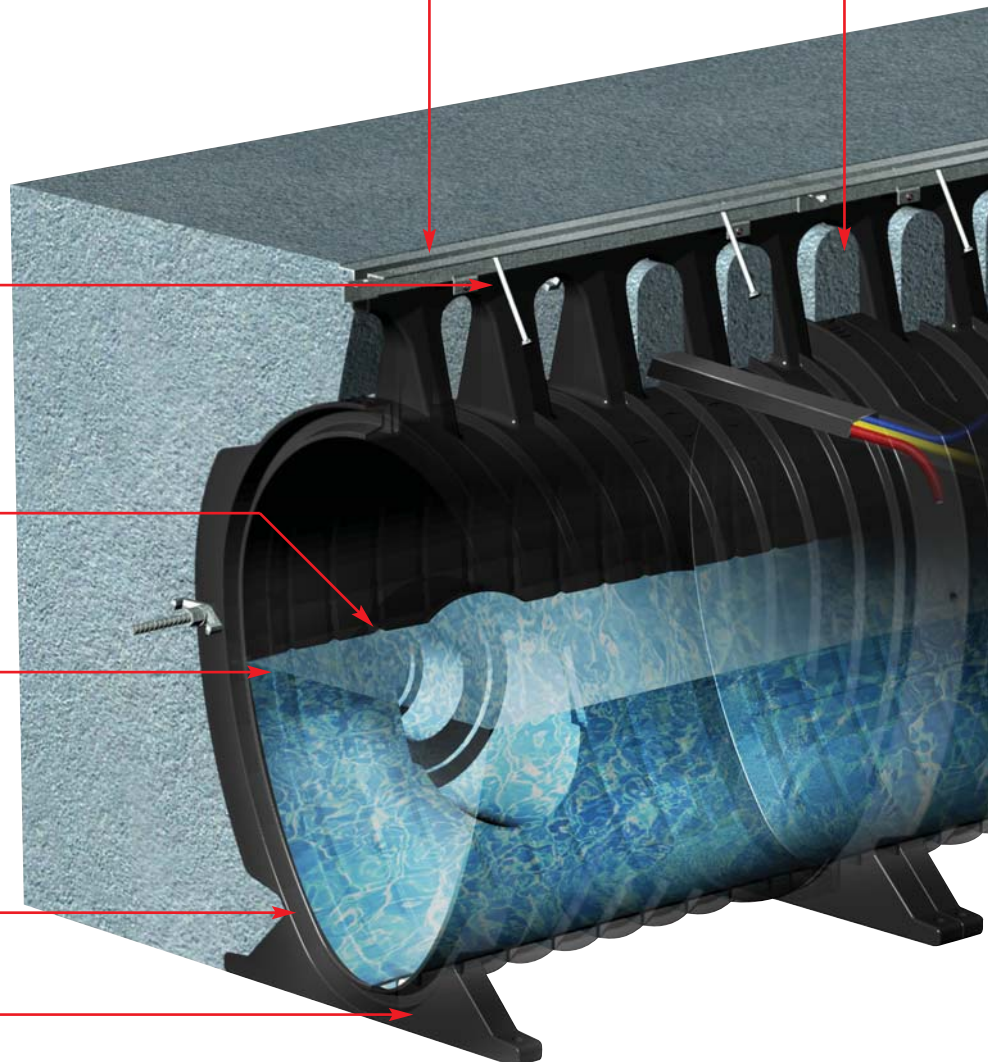
Anchors provided to securely fix the edge rail into the concrete surround

ACO Qmax® 600 and 900 channels – side inlet and upstream end-inflow connections are easily accommodated through use of 1m long side-inlet channel units

High-flow capacity can eliminate the need for additional carrier drains

ACO Qmax® 225 & 350 channels come complete with Neoprene twin-lipped seals, which when installed appropriately, can provide a watertight system<sup>†</sup>. An EDPM seal can be added to the ACO Qmax® 600 & 900 channels to provide a sealed system

Levelling feet – for ease of installation



<sup>†</sup> See page 7 "Designing the scheme"



## ACO Qmax® 600 and 900 systems

Depending on the application requirement, ACO Qmax® 600 and 900 channels are available with a heavy duty edge (30mm slot) or a car park edge (10mm slot).

If an exact match is required, the smaller channels, ACO Qmax® 225 and 350 can be purchased with these edge rails.



Heavy duty edge



Car park edge

All channels within the ACO Qmax® range are fully certified and CE marked up to and including load class F 900 BS EN 1433:2002

Unobtrusive continuous slot channel for fast efficient removal of surface water, with no carry-over in storm conditions

Easy connection between each channel. ACO Qmax® 225 and 350 channel units simply plug together. ACO Qmax® 600 and 900 channel units are connected by two wingnuts

Simple connection to chambers or pipework

Lightweight design for easy handling and fast installation

ACO Qmax® 225 and 350 channels are available in 2m lengths. ACO Qmax® 600 and 900 channels are available in 1m and 2m lengths

ACO Qmax® 225 and 350 channels can be cut to suit application. Cutting guides at every 200mm along the channel

Manufactured from recycled MDPE – tough, highly corrosion resistant, light and robust material

### ACO Q - BRAKE™

The ACO Qmax® system is designed to offer attenuation control as an integrated part of a slot drainage solution. The ACO Q-Brake™ has no loose or moving parts, is compact and occupies no additional volume as it resides within the channel. Its performance is fully laboratory verified.

# ACO Qmax® System

## Product Overview

### Edge rail options

Two edge details are available for each size within the ACO Qmax® system to suit the application requirement; a wider slot for installation in concrete slabs or a narrow slot for installation where pedestrians will be present.

ACO Qmax® 225 and 350 channels are available with a concrete edge (30mm slot) or a heelguard edge (10mm slot). See page 4 for details. ACO Qmax® 600 and 900 channels can be supplied with a heavy duty edge (30mm slot) or a car park edge (10mm slot). See page 5 for details.

The ACO Qmax® 225 and 350 channels can also be purchased with the ACO Qmax® 600 and 900 channels where an exact match is required. See page 5 for details.

### Airport Pavement, Distribution Centre and Highways applications

- ACO Qmax® concrete edge detail for ACO Qmax® 225 and 350 channels
- ACO Qmax® heavy duty edge detail for ACO Qmax® 600 and 900 channels
- No loose gratings
- Certified for the following Load Classes:

*D 400 Public highways and distribution warehouse*

*E 600 Ports and dock sides*

*F 900 Aircraft pavements*

### Car Park applications

- ACO Qmax® heelguard edge detail for ACO Qmax® 225 and 350 channels
- ACO Qmax® car park edge detail for ACO Qmax® 600 and 900 channels
- Suitable for asphalt, block paviour and concrete pavements
- Discreet waterway intercept slots for pedestrian crossing
- Certified for the following Load Classes
  - C 250 Car parks and garage forecourts*
  - D 400 Public highways and distribution warehouse*
  - E 600 Ports and dock sides*
  - F 900 Aircraft pavements*



## CHANNEL RANGE OVERVIEW

### ACO Qmax® 225 and 350 systems

- ▶ 2m constant depth channels in Ø225mm and Ø350mm complete with neoprene twin lipped seal.
- ▶ 2 edge rails options; concrete edge (30mm slot) and heelguard edge (10mm slot).
- ▶ One multifunctional end cap for each channel size which provides a closing or outlet option. Outlet connection to Ø225mm and Ø375mm pipe.
- ▶ One universal gully for all applications from load class A 15 to F 900.

### ACO Qmax® 600 and 900 systems

- ▶ 2m constant depth channels in 600mm x 400mm and 900mm x 600 ovoid sections.
- ▶ 1m constant depth channels in 600mm x 400mm and 900mm x 600 ovoid sections complete with side inlets.
- ▶ Optional EDPM seal for channels.
- ▶ 2 edge rails options; heavy duty edge (30mm slot) and car park edge (10mm slot).
- ▶ One universal stop end for both channel sizes which provide closing or outlet option.
- ▶ Optional EDPM seal for universal stop end.
- ▶ Access chamber connector set for male and female channel ends. Can provide inlet and outlet connections.

## Accessories overview

### ACO Qmax® 225 and 350 systems

#### Multifunctional end cap

ACO Qmax® 225 and 350 end caps can be used for outlet connectors to Ø225mm and Ø375mm twin wall pipes, or for closing of the channel system. By simply cutting these components both male and female connections can be achieved.



#### Outlet and access points

The ACO Universal Gully can be used with ACO Qmax® 225 and 350 channels to provide an outfall. The Universal Gully top unit can be used to provide access for rodding/jetting.



### ACO Qmax® 600 and 900 systems

#### Access chamber connector

The ACO Qmax® access chamber connector set can be used with ACO Qmax® 600 and 900 channels to provide inlet and outlet connection to access chambers. The set comes complete with male and female unit each with a circular outlet which can be used for connection to twin-wall pipes. Depending on the requirement, the set can be purchased with or without a seal.



#### Universal stop end

The ACO Qmax® universal channel stop end can be used on both male and female ends of ACO Qmax® 600 and 900 channels. A cutting guide is provided for end connection to pipe inlet or outlets. Depending on the requirement, the set can be purchased with or without a seal.



## DESIGNING THE SCHEME

Getting the drainage specification right is crucial and with many issues to consider, it is important to assess all the different variables in order to reduce any potential risk.

#### Design support

At ACO, we recognise these challenges and offer a free of charge technical and design advice service to assist the Specifier and Contractor in designing and installing any ACO product.

#### Installation guidelines

ACO can give guidance with respect to the most suitable methods of installation for each of the products in the ACO Qmax® range. ACO Qmax® should be installed using acceptable levels of workmanship and according to the National Code of Practice (UK: BS8000: Part 14: 1989) in keeping with EN 1433:2002 (Drainage channels for vehicular and pedestrian areas).

Detailed installation statements and methodologies will vary for all sites as each will have different aspects deserving particular consideration, consequently the relevant approvals should be sought from the consulting engineer and/or the installer.

ACO has embraced the concept of 'value-engineering' – a totally new approach to on-site construction that saves both time and money. ACO will review any design to minimise the total scheme and life cost of a proposal. By using ACO Qmax®, it is often possible to remove the need for any conventional underground drainage.

ACO Design Services team utilise powerful new bespoke software to offer state of the art computer aided scheme design and hydraulic performance calculations, along with an installation advice service, without obligation.

#### Fibre reinforcement

As an alternative to traditional steel reinforcement, fibre reinforced concrete may be used. Fibre reinforcement can offer significant savings in time, avoiding the need for steel fixing which is particularly relevant to the larger Qmax® channels at F 900 loadings. ACO have carried out a successful load test to F 900 using 5kg Barchip Shogun 48mm Fibres per cubic metre of concrete. Further details of the required reinforcement may be obtained from ACO.

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Civils + Infrastructure  
Urban + Landscape
- ACO Building Drainage
- ACO Technic
- ACO Sport
- ACO Wildlife



ISO 9001  
FM 13502



ISO 14001  
EMS 538781



OHSAS 18001  
OHS 524145



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**The ACO Group: A strong family you can depend on.**

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