ACO Water Management:
Civils + Infrastructure

Uniclass L7315 + L2123	EPIC J3413
CI/SfB (52.5) If9	

ACO H Range

NEW RANGE

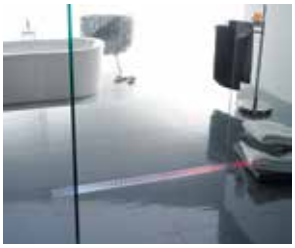
ACO H Range

Monocast heavy duty channel drainage systems

Introduction to the ACO Group

Throughout the world ACO branded drainage and surface water management systems are recognised for their innovative design, high quality manufacture, environmental excellence and industry leading performance.

Today the ACO Group has a research and production base that reaches across four continents. This unmatched resource pioneers the development of solutions that are tailored to individual applications, meeting the need for high performance, sustainable products that deliver optimum value throughout their operational life.



ACO Technologies plc

ACO operates as ACO Technologies plc in the United Kingdom. Founded over 30 years ago, the company has grown quickly on a reputation for design innovation and customer service.

There are now two core divisions, ACO Water management and ACO Building Drainage, that serve every sector of the construction industry, providing solutions for applications as diverse as rail, highways, airports, landscaping, retail, distribution centres and environmentally sensitive projects.

To help architects, designers and contractors meet the legal requirements that now tightly control the way surface water is managed, ACO has created its unique 'Surface Water Management Cycle' – Collect, Clean, Hold, Release – the four core processes now required for the complete and sustainable management of surface water drainage.

The ACO Group / www.aco.com

Contents

Introduction to ACO H Range

ACO H Range is a heavy duty drainage channel range specifically designed to withstand high dynamic forces experienced on motorways, ports, industrial and airport applications. Designed to intercept large volumes of water, with large inlets and high hydraulic capacity the range consists of the RD and SD systems. These are both long channel lengths, making them ideal for infrastructure projects where large lengths of drainage needs to be efficiently installed.

Superior Stability

H Range channels are the surface drainage solution for the high dynamic forces seen on highways, ports, industrial and airports applications. The side structure of the channels anchor the product within the surrounding installation for maximum stability. This is especially useful with the placement of longitudinal and transverse drainage of motorways.

Non Grated System

H Range RD and SD channels monocast design prevents the issue of dislodged grates as well as the theft of the gratings. The SD range is particularly suited for cross road installation, as the lack of grating and a smooth slot design, reduces the noise created by passing traffic which is of benefit to local residents. ACO H Range complies with Specification for Highway Works Clause 517 and is EN 1433:2002 certified

Load Class

ACO H Range monolithic design is recommended for installation in heavy-duty conditions; across traffic routes, before railway crossings or road intersections and in Airports and Port areas.

The RD range of channels are D 400 - F 900 depending on installation detail. The SD range are C250 up to D 400 depending on installation detail. All channels are compliant to EN 1433:2002

Typical applications

- Roads - highways, motorways and local roads (drainage across and along the roadway)
- Logistics centres and industrial areas - outdoor applications
- Airports
- Ports and container shipment areas
- Outdoor car parks
- Petrol forecourts and fuel terminals
- Warehouses
- Packing facilities
- Car washes

Why choose ACO H Range?

Why choose ACO H Range RD?

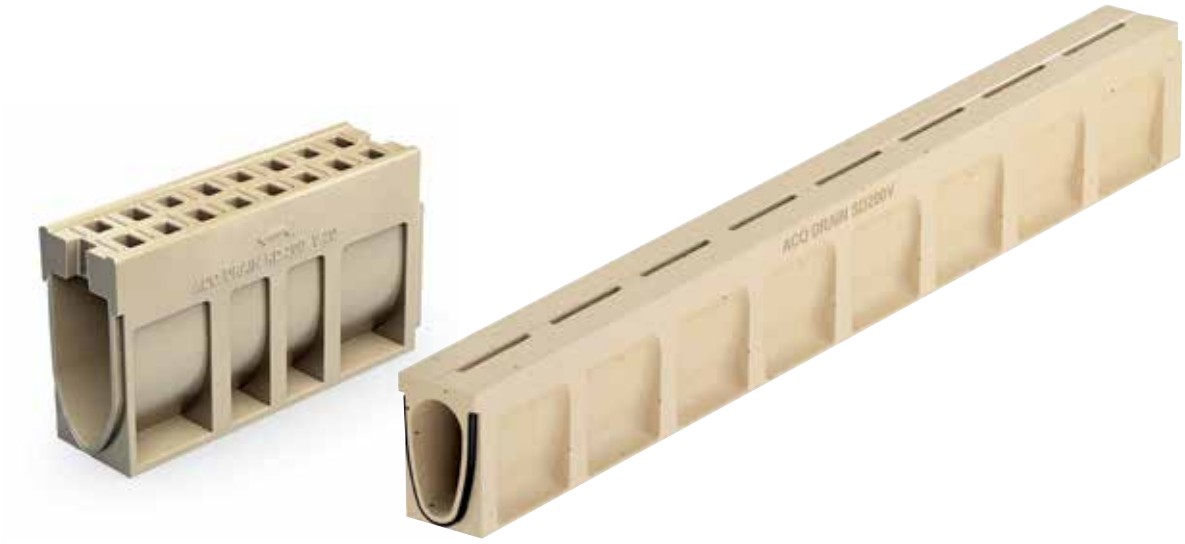
Channels up to 2m long: The RD range of channels with load classes up to F 900 depending on installation detail, means this is ideal for heavy-duty applications.

Why choose ACO H Range SD?

Channels up to 4m long: The SD range is particularly suited for cross road installation, as the lack of grating and smooth slot design, reduces the noise created by passing traffic which is of benefit to local residents.

Why choose both ranges?

H Range RD and SD comply with specification for Highways work clause 517 and are EN 1433:2002 certified.



Installation, maintenance and long term benefits

ACO H Range has been specifically designed for more efficient installation. With the longer length channels, especially when laying SD's 4m channel sections, it offers cost advantages to specifiers and contractors, for infrastructure projects.

Maintenance jetting is easy through lockable sump units and the smooth surface of the polymer concrete allows water and dirt particles to simply run off, while also making it easy to clean.

Polymer concrete needs no additional coatings to make it resistant to aggressive media, and can be used in the long term for many different purposes under extreme conditions.

Polymer concrete is waterproof and reduces the potential for damage due to frost.

ACO H RANGE FEATURES OVERVIEW

H Range RD

Large inlets and raised edges provides maximum water interception

Monolithic design means no dislodged or stolen grates

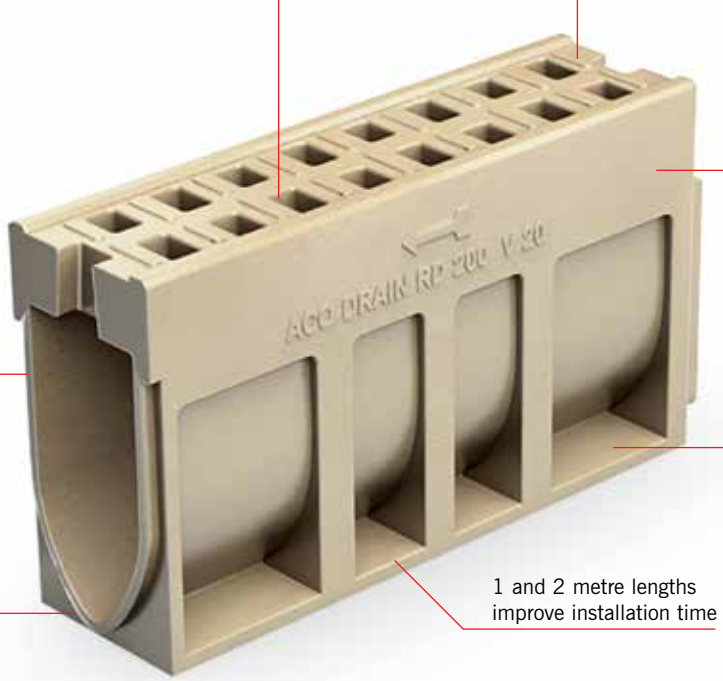
Four channel widths available

Male and female channel joints (RD 100V, RD 200V) Unisex joints (RD 150V)

External surface anchors channel securely into concrete surround for maximum stability

V shaped channel bore improves transition and improves speed of water flow and promotes self cleansing

1 and 2 metre lengths improve installation time



Half slots combine at channel joints for increased inlet area

Complies with specification for Highways work clause 517 and is EN 1433:2002 certified

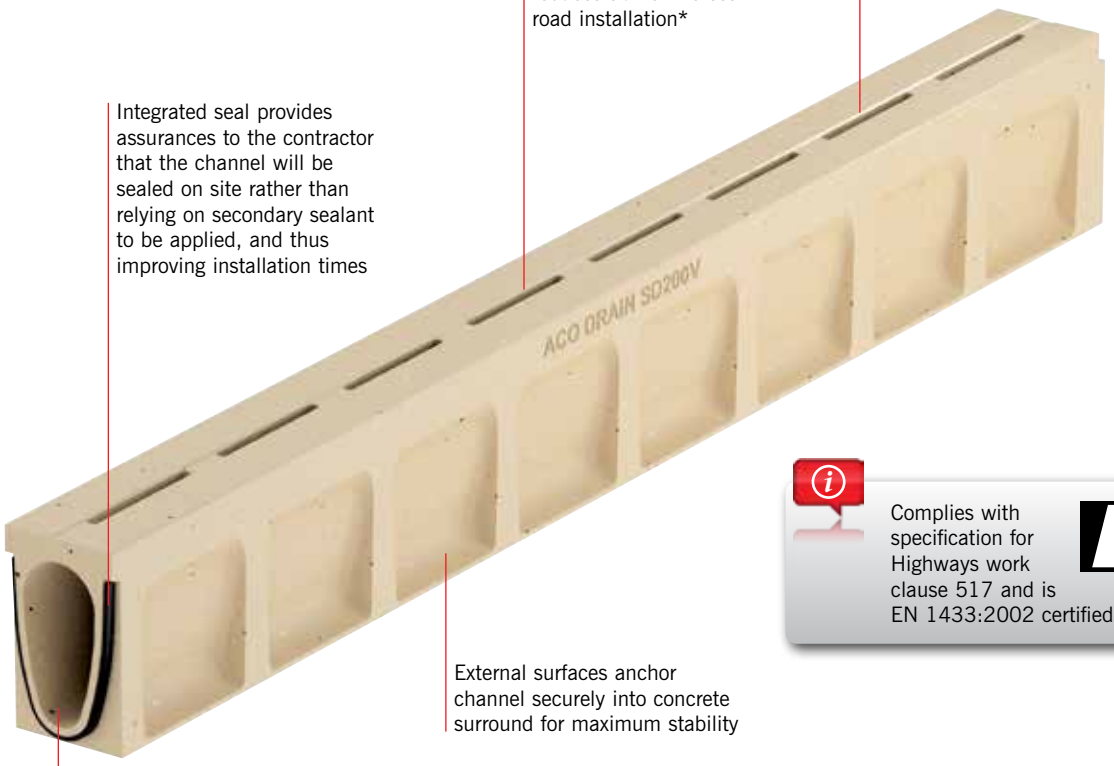
LOAD CLASSES

D 400
Public highways, parking areas for all types of vehicles, distribution yards.

E 600
Industrial areas, heavy wheel loads, slow-moving HGV's and forklifts, service stations.

F 900
Airport runways, very heavy industrial and military installations, service yards and lorry parks.

H Range SD



Complies with specification for Highways work clause 517 and is EN 1433:2002 certified

LOAD CLASSES

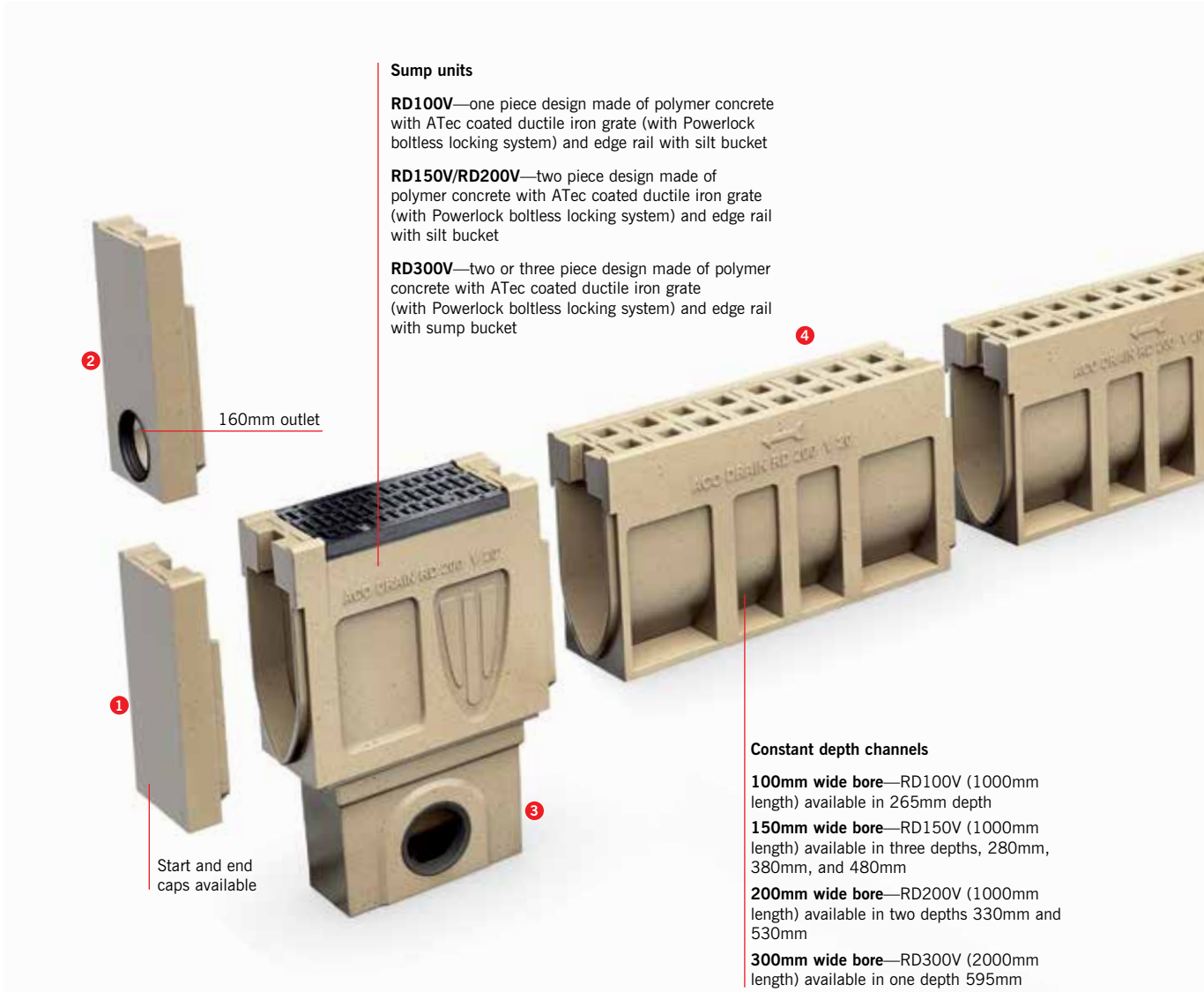
C 250*
Parking areas, service stations (cars) and slow-moving light commercial vehicles.

D 400*
Public highways, parking areas for all types of vehicles, distribution yards.

***H Range SD channels to be laid perpendicular to the direction of travel. Non-perpendicular layout permitted where traffic by bicycles is prohibited. The specifier is responsible for ensuring that the product is safe to use in the area intended.**

ACO H Range - RD range layout

1. End caps
2. End cap with seal
3. Sump units
4. Constant depth channels
5. Channel Access unit
6. Side connection adaptor
7. Reverse flow adaptor



Sump units

RD100V—one piece design made of polymer concrete with ATec coated ductile iron grate (with Powerlock boltless locking system) and edge rail with silt bucket

RD150V/RD200V—two piece design made of polymer concrete with ATec coated ductile iron grate (with Powerlock boltless locking system) and edge rail with silt bucket

RD300V—two or three piece design made of polymer concrete with ATec coated ductile iron grate (with Powerlock boltless locking system) and edge rail with sump bucket

Constant depth channels

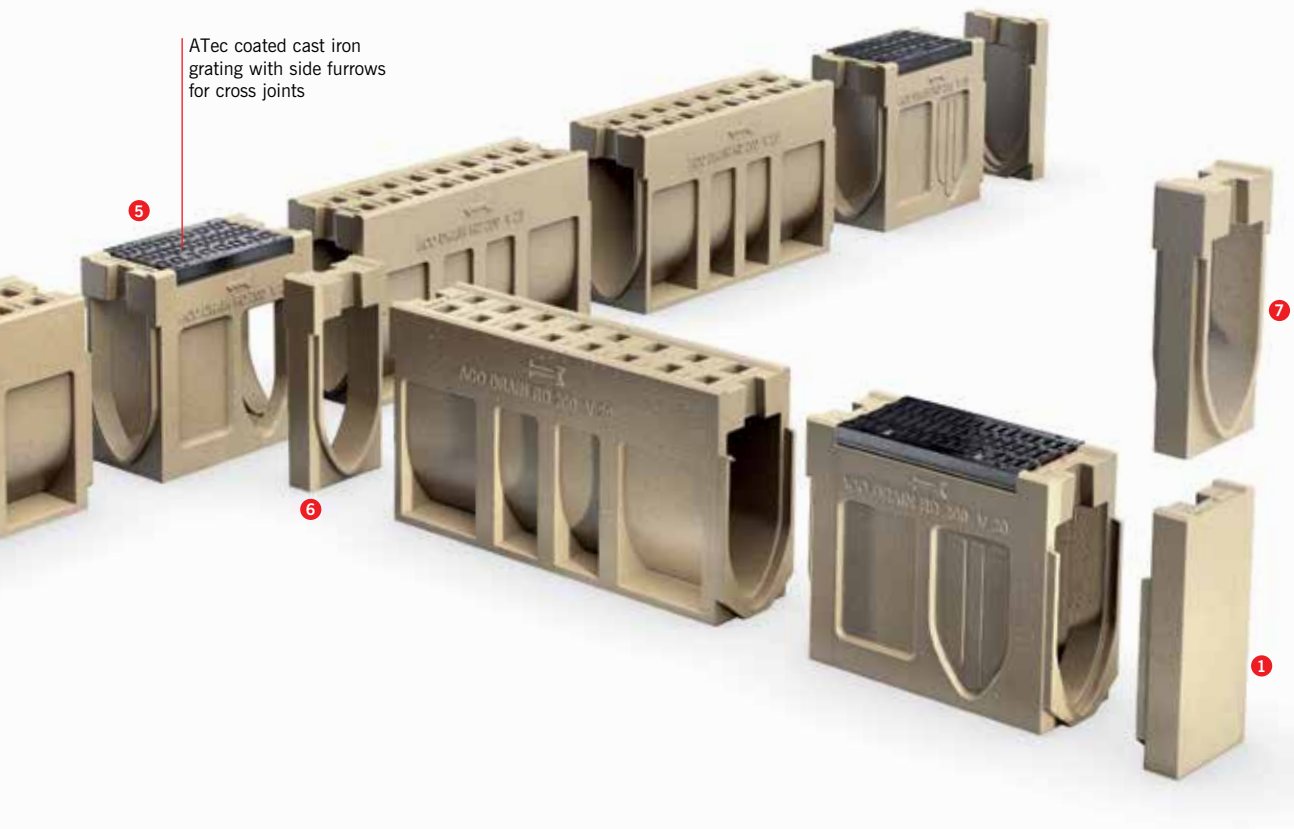
100mm wide bore—RD100V (1000mm length) available in 265mm depth

150mm wide bore—RD150V (1000mm length) available in three depths, 280mm, 380mm, and 480mm

200mm wide bore—RD200V (1000mm length) available in two depths 330mm and 530mm

300mm wide bore—RD300V (2000mm length) available in one depth 595mm

ACO ATec coating is a high performance finish designed for the most demanding of environments. The black corrosion resistant coating provides a strong durable finish which maintains the overall aesthetics of the grating. ACO ATec provides up to 10 times longer protection against corrosion than standard water-based surface coatings

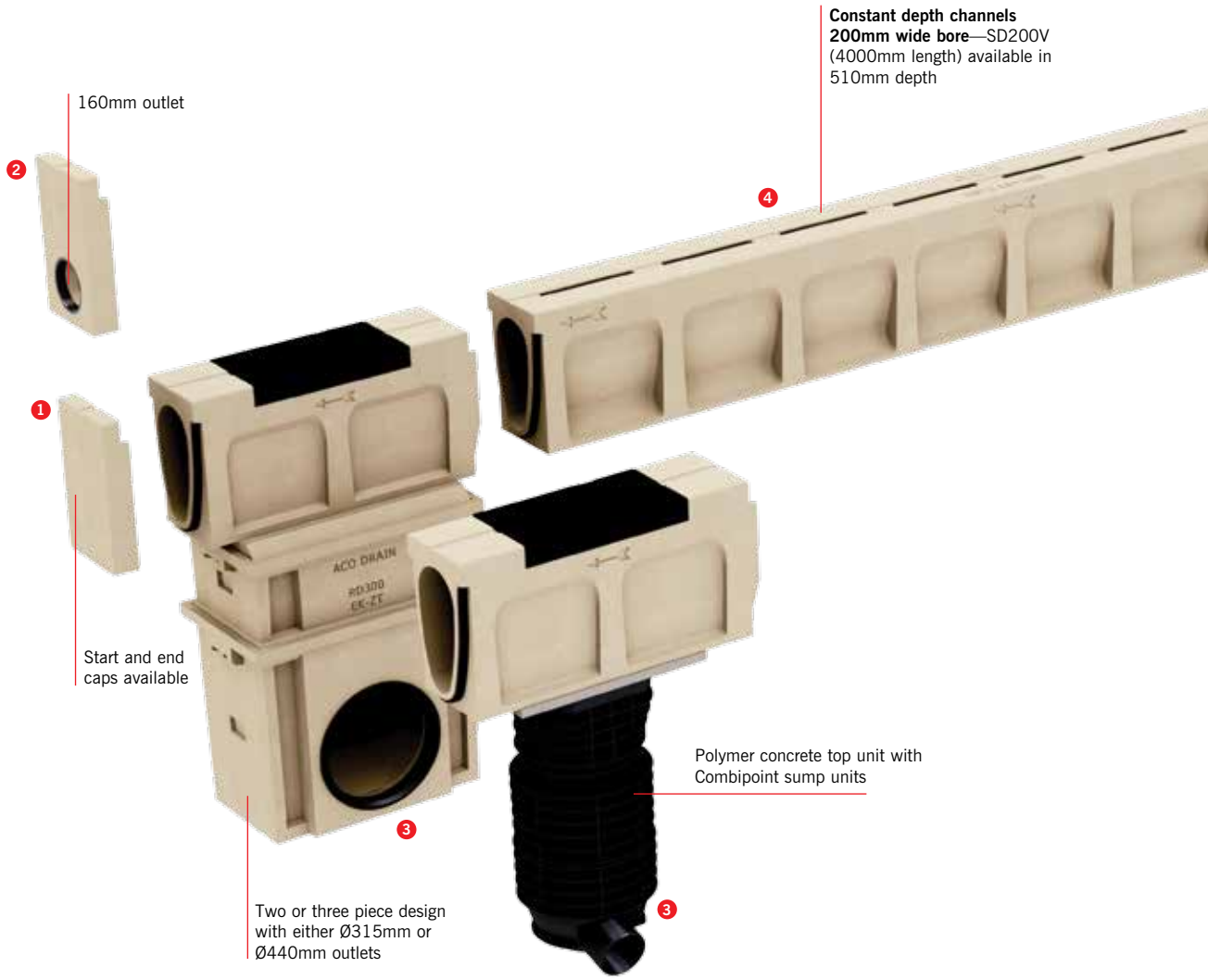


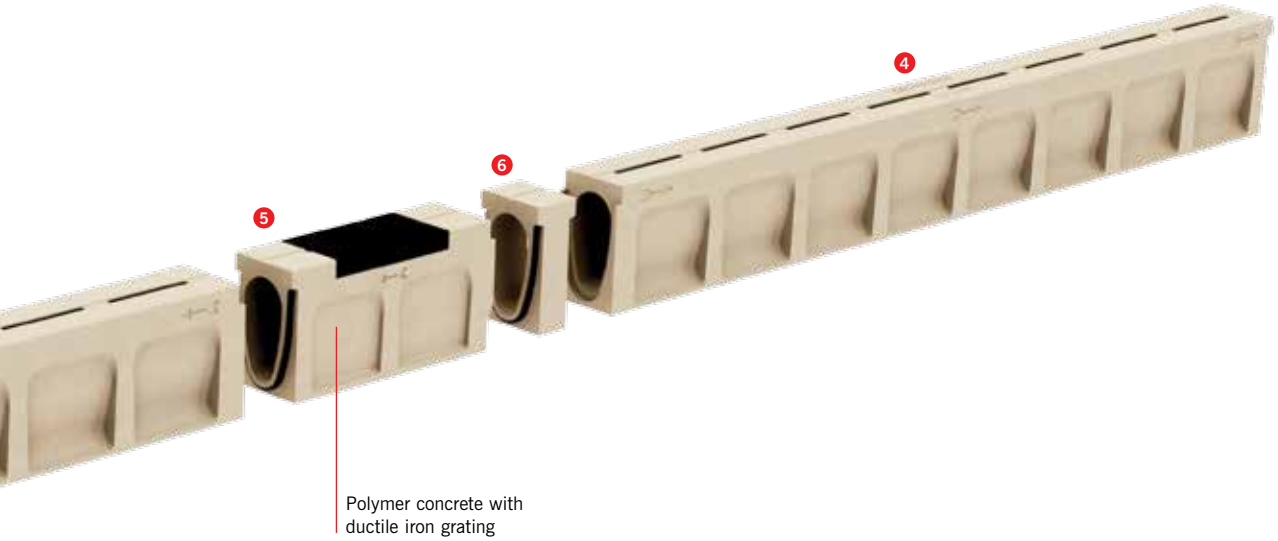
Material Benefits

ACO H Range is manufactured from polymer concrete with good compressive and flexural strength. For more information on the structural strengths of polymer concrete go to page 30.

ACO H Range - SD range layout

1. End cap
2. End caps with seal
3. Sump units
4. Constant depth channels
5. Channel Access unit
6. Reverse flow adaptor





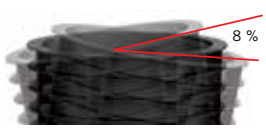
Infrastructure installations

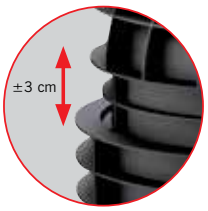
The H Range channels are designed for infrastructure installations where the large lengths can be efficiently installed with mechanical lifting equipment. For more information on this please go to page 30.

ACO COMBIPOINT SUMP UNITS

ACO Combipoint sump units are compatible with H Range SD 200V polymer concrete access unit.

This combination of inter-changeable parts gives superior flexibility for easy installation. Sections are rotatable and telescopic making installation easier and faster. For more information go to page 24.





ACO H Range project case studies

Federal Motorway 67, Gernsheim, Germany

With the expansion of the motorway to six lanes in Gernsheim, Germany, the road drainage also had to be adapted to the new conditions.

More than 3,500m of ACO H Range RD 200V drainage channels were chosen and installed by the Contractor for a number of reasons.

- The ACO H Range RD 200V channels were ideal for dealing with the increased drainage requirements from the larger surface area that the six lane expansion caused
- Installation was done efficiently along the 3,500m route without a great deal of man power required, due to the vehicle based hoisting system utilised
- The V-profile construction of the channels meant that the surface water would be quickly and reliably drained off and aquaplaning incidents would be substantially reduced
- The composition of the Polymer concrete with mineral fillers and resin, meant that ACO H Range RD 200V channels were watertight and resistant against aggressive substances, without any additional coating being necessary

If you need help with specification, design or installation, or just wish to learn more about this and other Surface Water Management products from ACO, contact our free, no obligation ACO Water Management Design Services Team who can provide advice and dedicated design support for your project – 01462 816666, email technical@aco.co.uk or visit www.aco.co.uk.

Project requirement: High capacity drainage

During the recent upgrade of J28-31 of the M1 UK, Costain and Serco approached ACO to provide a robust drainage solution with large hydraulic capacity.

This smart motorway has high volumes of traffic and a large surface area with eight lanes for surface water runoff.

H Range RD150V 10.0 was recommended and installed along the central reservation due to it's high capacity and proven strength characteristics.

Project requirement: Safety

The Circuit de Barcelona-Catalunya opted for ACO in its latest remodelling, with the installation of H Range RD100V and RD200V in 2008. The monocast design meant that there is no risk of dislodged grates when the circuit hosts such events as the F1 World Championship, European Le Mans Series and the FIA World Rallycross Championship.

H Range provides the best drainage solution in a sector where the demands of load, safety and ease of maintenance are very high.

Project requirement: Quick installation

In the Ingolstadt-Manching air base in Germany H Range was specified to be installed along the Hanger entrances for a number of reasons.

Firstly time restraints are a critical consideration for construction in airports and air bases in order to get back to full operational readiness. With ACO H Range efficient installation allowed the airbase to quickly achieve this, as well as meeting the high capacity demands from the large surface area, and the high load class demands that taxiing aircraft place on the channel drainage.

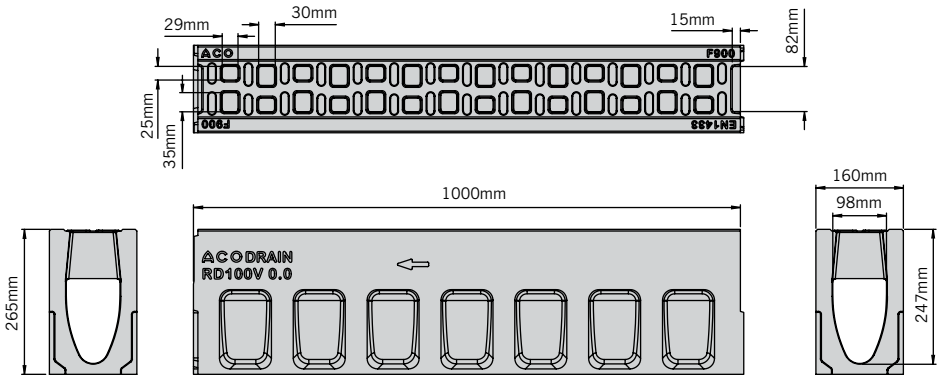
For the latest ACO case studies please visit www.aco.co.uk and go to the Media Centre

H Range RD 100V line drainage system

- Monocast polymer concrete channel natural
- V cross-section, Bore width 100mm
- Inlet area 30,800mm²/m
- Maximum load class D 400 - F 900, compliant with EN 1433:2002

H Range RD 100V channel

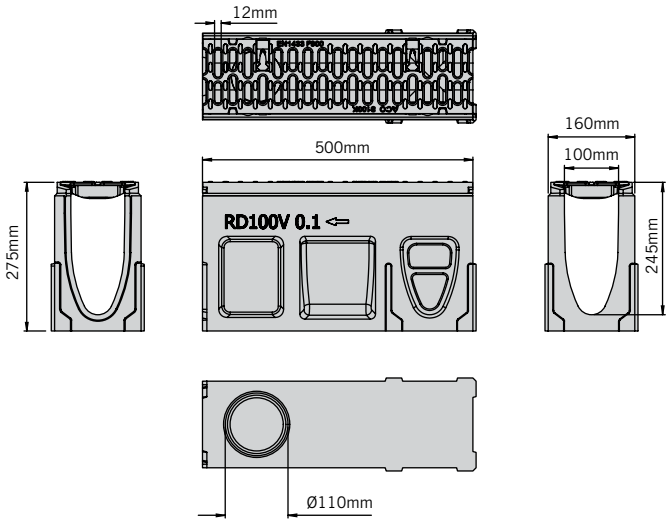
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
10763	H Range RD 100V channel	1000	160	265	245	50.5



H Range RD 100V, 1.0m

H Range RD 100V access unit with Ø110mm seal*

Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
10775	H Range RD 100V access unit with Ø110mm seal	500	160	275	245	25.3



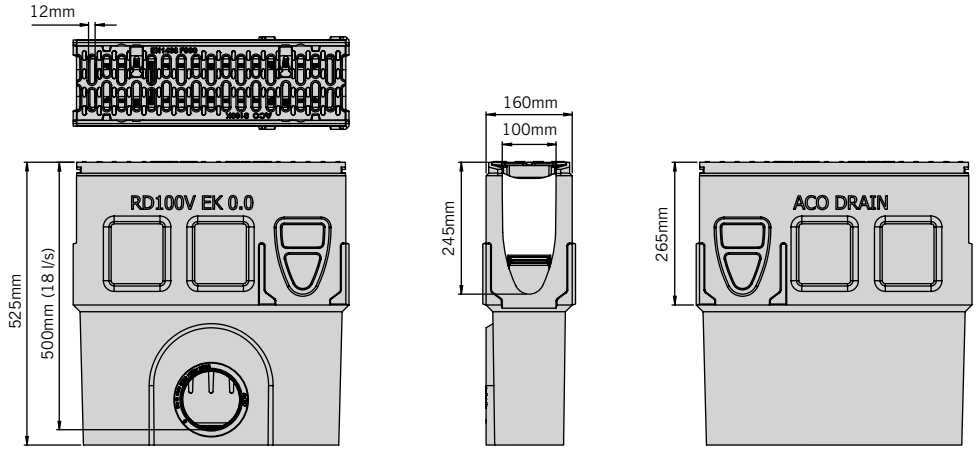
Access unit

***Access unit with side knockout to make angle joints, T-joints and cross-joints. Access unit with knockout in the bottom, to make a vertical connection to a Ø110 outlet.**

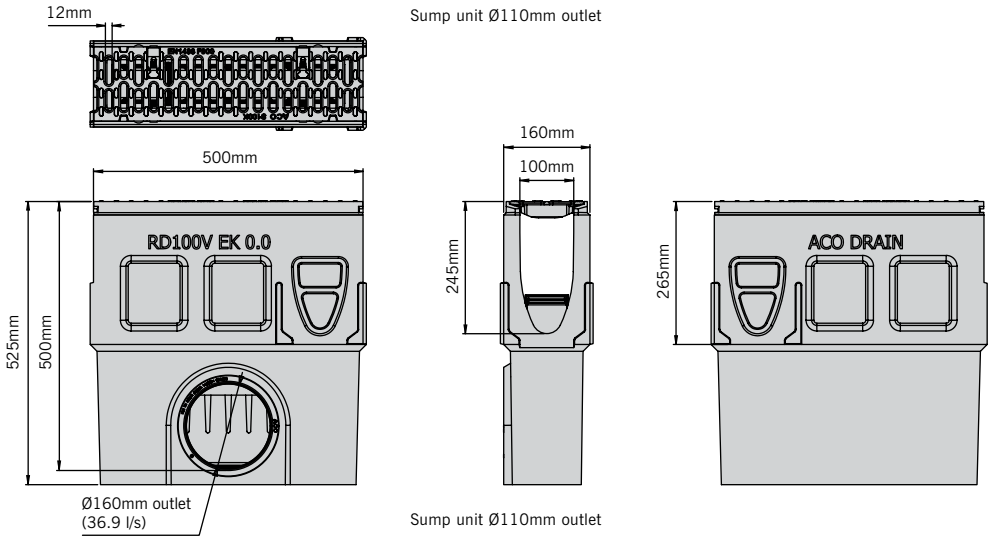
These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

H Range RD 100V sump units

Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
10769	H Range RD 100V sump unit - Ø110mm	500	160	525	500	55
10772	H Range RD 100V sump unit - Ø160mm	500	160	525	500	55



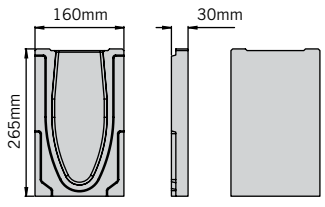
Sump unit Ø110mm outlet



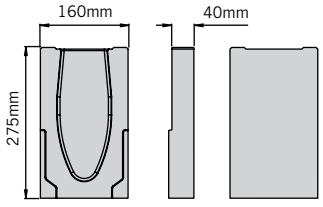
Sump unit Ø110mm outlet

Endcaps, outlets and adaptors

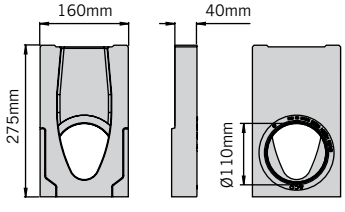
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
10781	Closing endcap to close the beginning of the channel	30	160	265	-	1.9
10784	Closing endcap to close the end of the channel	40	160	265	-	3.2
10787	Outlet endcap	40	160	265	-	2.8
10790	Reverse flow adaptor*	60	160	265	-	3.0



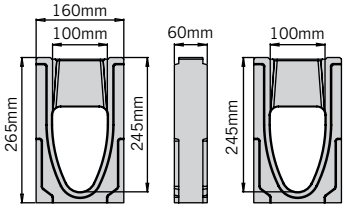
Closing endcap (beginning)



Closing endcap (end)



Outlet endcap



Reverse flow adaptor

***To reverse the flow, made of polymer concrete**

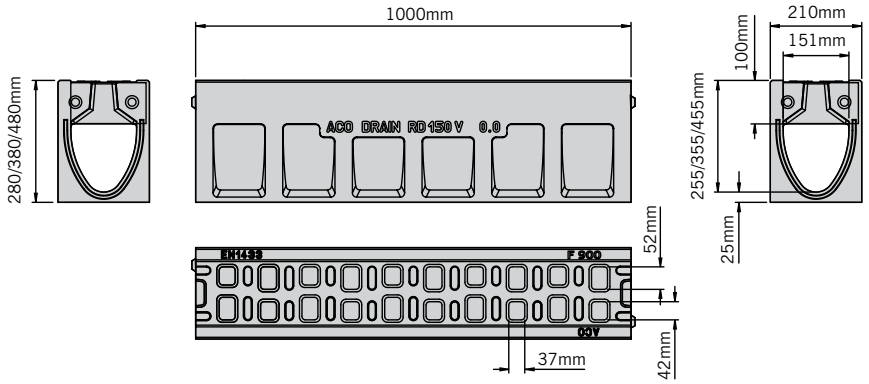
These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

H Range RD 150V line drainage system

- Monocast polymer concrete channel natural
- V cross-section, Bore width 150mm
- Inlet area 36,300mm²/m
- Maximum load class D 400 - F 900, compliant with EN 1433:2002

H Range RD 150V channels

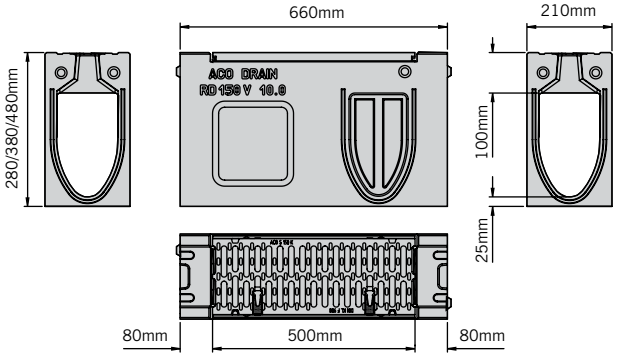
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130073	H Range RD 150V 0.0	1000	210	280	255	66.3
130074	H Range RD 150V 10.0	1000	210	380	355	74.9
130075	H Range RD 150V 20.0	1000	210	480	455	83.6



H Range RD 150V, type 0.0

H Range RD 150V access units

Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130076	H Range RD 150V access unit 0.0[1) 2)]	660	210	280	255	44.3
130077	H Range RD 150V access unit 10.0[1) 2)]	660	210	380	355	51.7
130078	H Range RD 150V access unit 20.0[1) 2)]	660	210	480	455	59.1

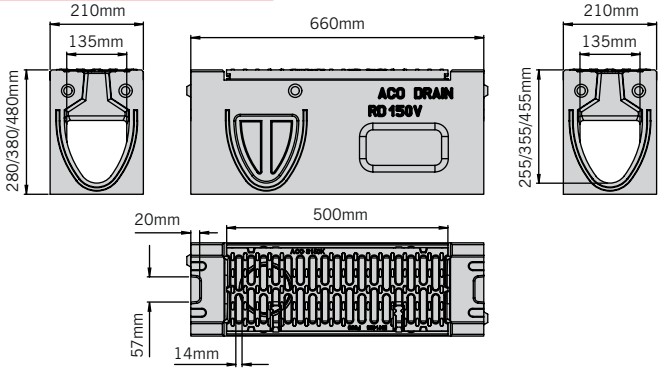


H Range RD 150V access unit

[1)] **With side knockout to make angle joints, T-joints and cross-joints.**
[2)] **With knockout in the bottom, to make a vertical connection to a Ø110mm outlet**
These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

H Range RD 150V access units with Ø110mm outlet

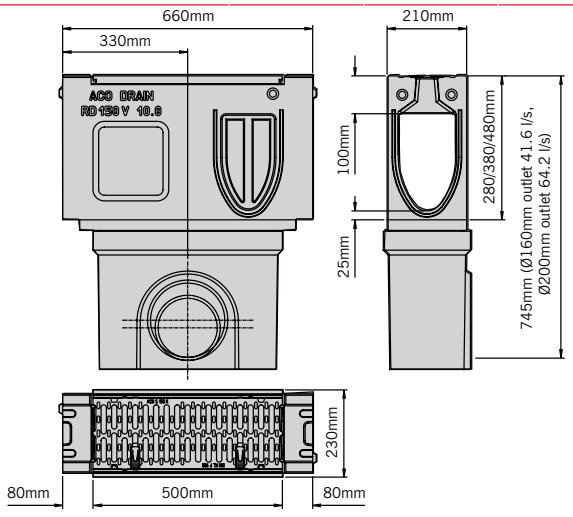
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130079	RD 150V access unit with Ø110mm seal 0.0[1)]	660	210	280	255	43.8
130080	RD 150V access unit with Ø110mm seal 10.0[1)]	660	210	380	355	51.1
130081	RD 150V access unit with Ø110mm seal 20.0[1)]	660	210	480	455	58.3



H Range RD 150V access unit with Ø110mm seal

H Range RD 150V sump units

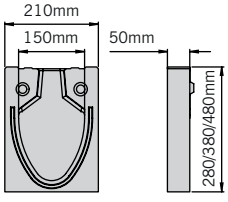
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130082	H Range RD 150V Top section 0.0	660	210	330	-	48.0
130083	H Range RD 150V Top section 10.0	660	210	430	-	53.0
130084	H Range RD 150V Top section 20.0	660	210	530	-	65.0
10935	H Range RD 150V Bottom section Ø160	500	230	366	-	26.5
10936	H Range RD 150V Bottom section Ø200	500	230	365	-	26.5
13999	H Range RD 150V Silt basket	-	-	-	-	-



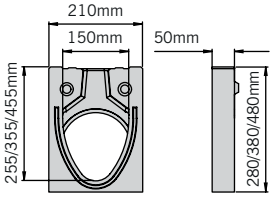
Sump unit

Endcaps and outlets

Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130085	Closing endcap 0.0	50	210	280	-	5.2
130086	Closing endcap 10.0	50	210	380	-	6.9
130087	Closing endcap 20.0	50	210	480	-	8.5
130088	Outlet endcap Ø160mm seal 0.0	50	210	280	255	3.8
130089	Outlet endcap Ø160mm seal 10.0	50	210	380	355	5.4
130090	Outlet endcap Ø160mm seal 20.0	50	210	480	455	7.9



Closing endcap



Outlet endcap

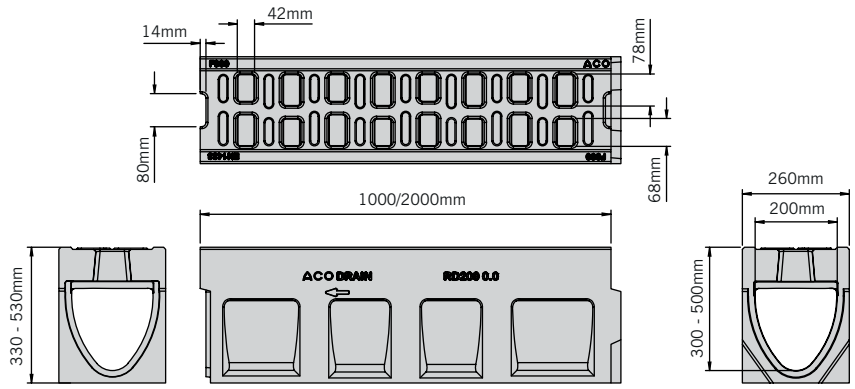
These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

H Range RD 200V line drainage system

- Monocast polymer concrete channel natural
- V cross-section, Bore width 200mm
- Inlet area 50,800 mm²/m
- Maximum load class D 400 - F 900, compliant with EN 1433:2002

H Range RD 200V channels

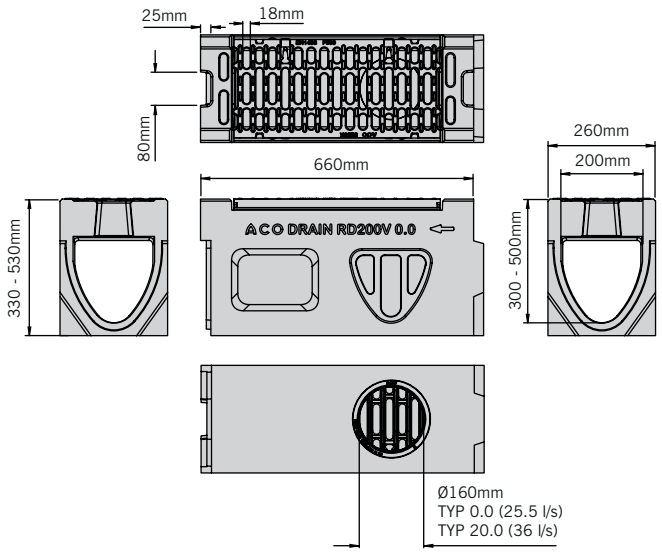
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130004	H Range RD 200V channel 0.0	1000	260	330	300	92.0
130005	H Range RD 200V channel 0.0	2000	260	330	300	184.0
130006	H Range RD 200V channel 20.0	1000	260	530	500	112.0
130007	H Range RD 200V channel 20.0	2000	260	530	500	228.0



H Range RD 200V channel size

H Range RD 200V access units

Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130016	H Range RD access unit 0.1[2) 3)]	660	260	330	300	51.5
130017	H Range RD access unit 20.1[2) 3)]	660	260	530	500	67.6
130018	H Range RD access unit 0.2[1) 2)]	660	260	330	300	51.0
130019	H Range RD access unit 20.2[1) 2)]	660	260	530	500	67.0



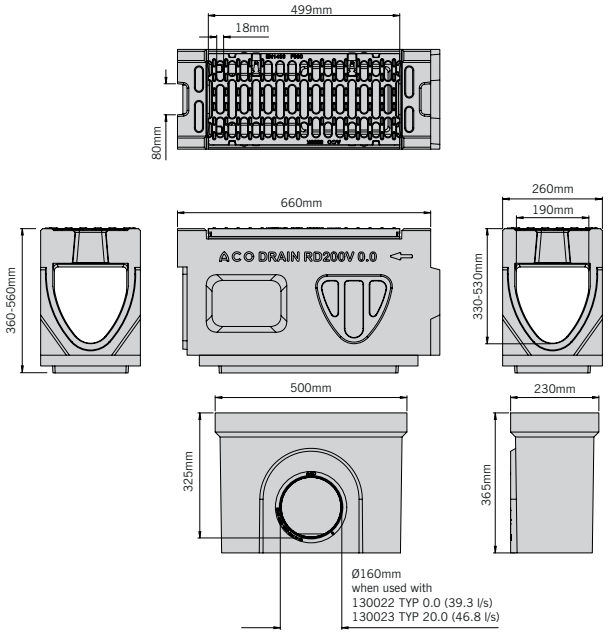
H Range RD 200V access unit size

[1)] **Access unit with an outlet Ø160mm in the bottom, with a seal for a watertight vertical connection to the sewerage.**
[2)] **Access unit with knockouts to make angle joints, T-joints and cross-joints.**
[3)] **Access unit with knockout in the bottom, to make a vertical connection to a Ø160mm outlet.**

These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

H Range RD 200V sump units

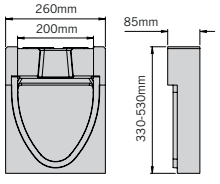
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130022	H Range RD 200V Top section 0.0	660	260	360	-	48.0
130023	H Range RD 200V Top section 20.0	660	260	560	-	65.0
10935	H Range RD 200V Bottom section Ø160	500	230	365	-	26.5
10936	H Range RD 200V Bottom section Ø200	500	230	365	-	26.5
13999	H Range RD 200V Silt basket	-	-	-	-	-



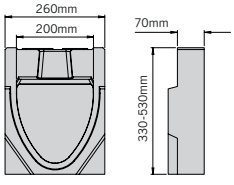
H Range RD 200V sump unit

Endcaps, outlets and adaptors

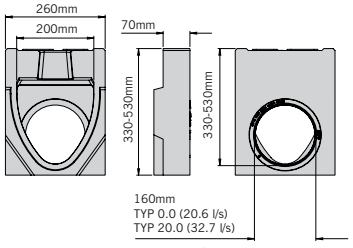
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130008	Closing endcap to close the beginning of the channel 0.0	70	260	330	-	9.0
130009	Closing endcap to close the beginning of the channel 20.0	70	260	530	-	12.4
130010	Closing endcap to close the end of the channel 0.0	70	260	330	-	10.0
130011	Closing endcap to close the end of the channel 20.0	70	260	530	-	14.9
130012	Outlet endcap with Ø160mm seal 0.0	70	260	330	300	8.5
130013	Outlet endcap with gasket Ø160mm seal 20.0	70	260	530	500	13.1
130014	Reverse flow adaptor 0.0	110	260	330	300	9.4
130015	Reverse flow adaptor 20.0	110	260	530	500	11.4
130020	Side connection adaptor 0.0	70	260	330	300	8.0
130021	Side connection adaptor 20.0	70	260	530	500	7.8



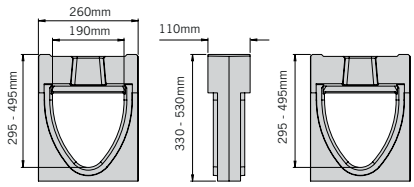
Closing endcap (beginning)



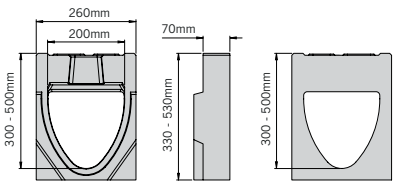
Closing endcap (end)



Outlet endcap with Ø160mm seal



Reverse flow adaptor



Side connection adaptor

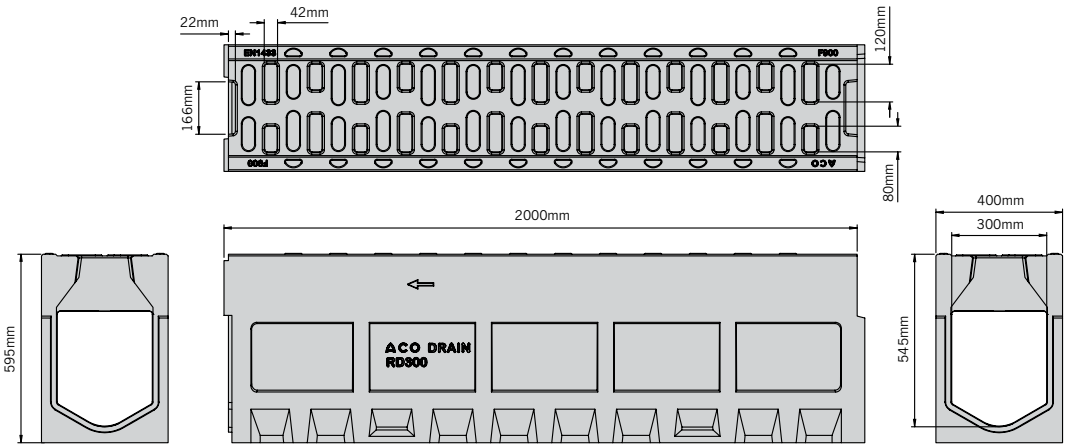
These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

H Range RD 300V line drainage system

- Monocast polymer concrete channel natural colour
- Bore width 300mm
- Inlet area 80,000 mm²/m
- Maximum load class D 400 - F 900, compliant with EN 1433:2002

H Range RD 300V channel

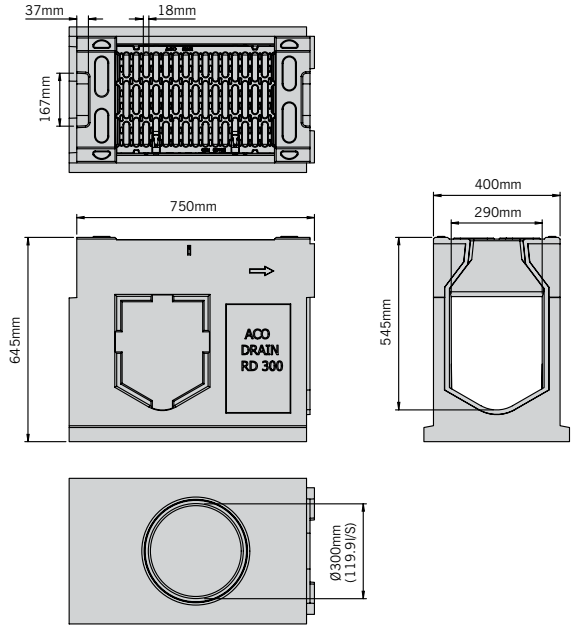
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
10820	H Range RD 300V channel	2000	400	595	545	484.0



H Range RD 300V channel

H Range RD 300V access unit

Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
10803	H Range RD 300V access unit 0.1	750	400	645	545	219.0

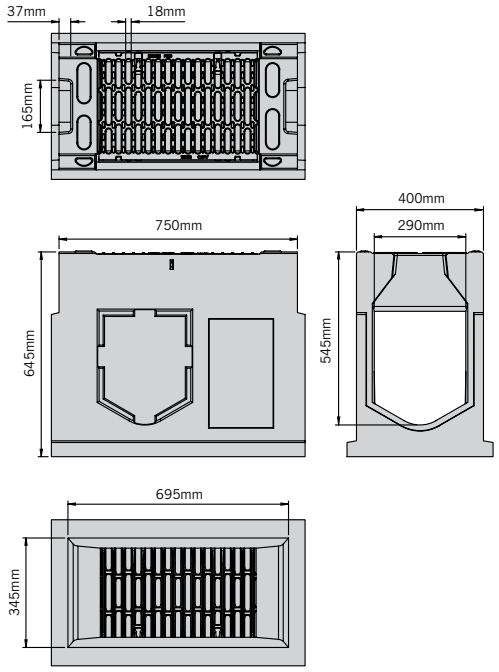


H Range RD 300V access unit

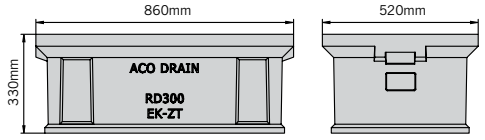
[1] **With side knockouts to connect the channel**
[2] **2 units per basket are needed**
These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

H Range RD 300V sump units

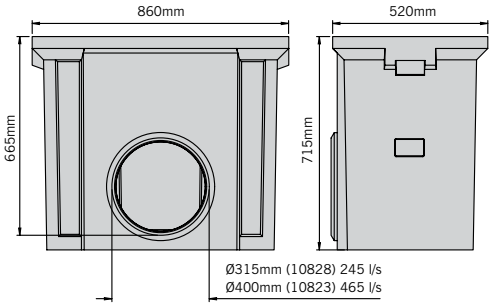
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
10821	H Range RD 300V sump unit - top section[1)]	750	400	625	-	214.0
10822	H Range RD 300V sump unit - mid section	860	520	330	-	72.0
10828	H Range RD 300V sump unit - bottom section Ø315mm	860	520	715	-	168.0
10823	H Range RD 300V sump unit - bottom section Ø400mm	860	520	715	-	168.0
10827	Adaptor to suspend the basket[2)]	-	-	-	-	3.4
01617	Basket for the sump	-	-	-	-	6.2



H Range RD 300V sump unit top section



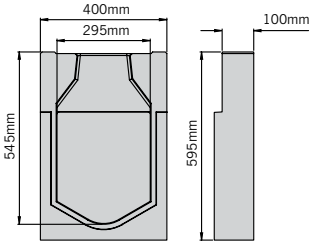
H Range RD 300V sump unit mid section



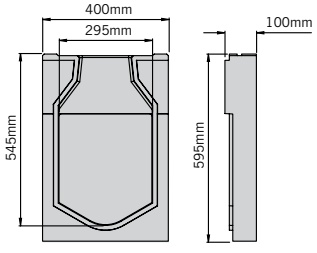
H Range RD 300V sump unit bottom section

Endcaps, outlets and adaptors

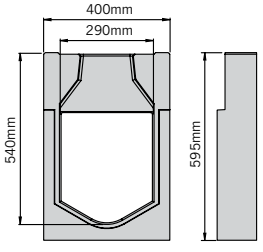
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
10801	Closing endcap to close the beginning of the channel	100	400	595	-	38.8
10802	Closing endcap to close the end of the channel	100	400	595	-	31.2
10805	Outlet endcap with Ø300mm seal	100	400	595	545	25.5
10806	Reverse flow adaptor	110	400	595	545	34.0
10804	Side connection adaptor	100	400	595	540	29.2



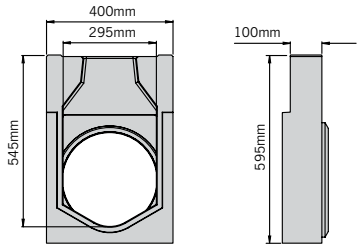
Closing endcap (beginning)



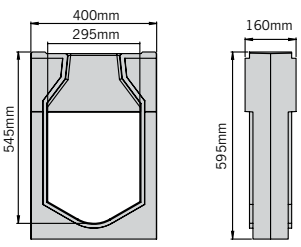
Closing endcap (end)



Side connection adaptor



Outlet endcap



Reverse flow adaptor

[1)] **With side knockouts to connect the channel**

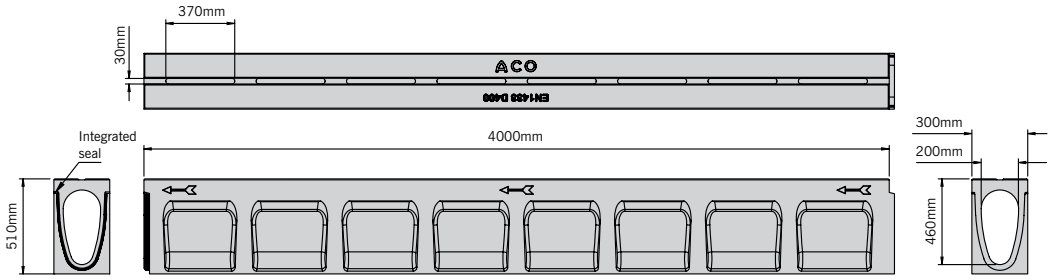
These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

H Range SD 200V slot drainage system

- Monocast polymer concrete channel natural
- V cross-section, Bore width 200mm
- Inlet area 21,800 mm²/m
- Maximum load class C 250 - D 400, compliant with EN 1433:2002

H Range SD 200V channel

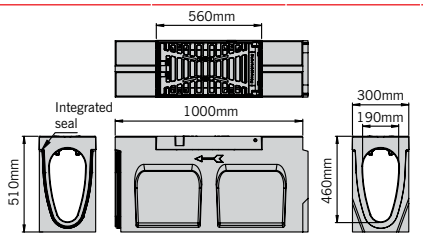
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130900	H Range SD 200V Channel	4000	300	510	460	571



H Range SD 200V Channel

H Range SD 200V access units

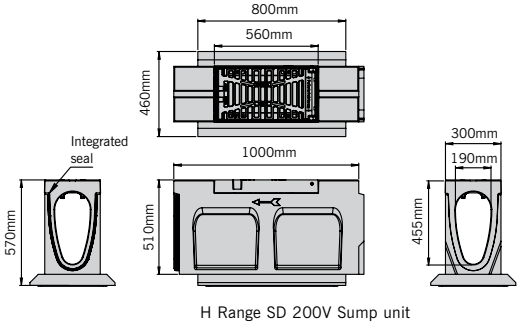
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130904	H Range SD 200V access unit	1000	300	510	460	153
130905	H Range SD 200V access unit*	1000	300	510	460	153
130925	H Range SD 200V access unit**	1000	300	510	460	153



H Range SD 200V access unit

H Range SD 200V Sump units

Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130907	Top section	1000	300	570	-	175
10822	Middle section	860	520	330	-	72
10828	Bottom section Ø315mm outlet	860	520	715	-	168
10823	Bottom section Ø400mm outlet	860	520	715	-	168
130915	Silt basket	-	-	-	-	2

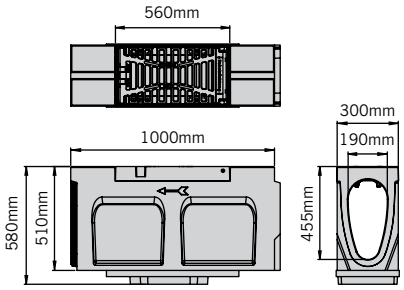


H Range SD 200V Sump unit

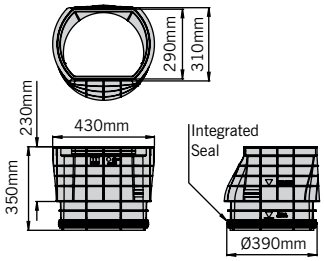
***Access unit with an outlet Ø160 in the bottom, with a seal for a watertight vertical connection to the sewerage.**
****Access unit with an outlet Ø200 in the bottom, with a seal for a watertight vertical connection to the sewerage.**
These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

Combipoint sump units

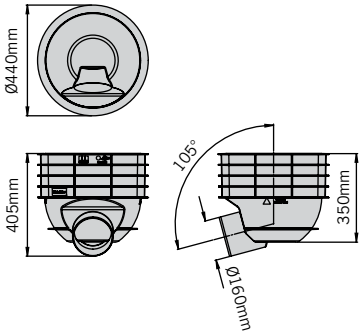
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130906	Combipoint upper section polymer concrete	1000	300	540	-	156
89010	Combipoint 1a base Ø160mm outlet	-	-	350	-	2.6
89011	Combipoint 2a base without outlet	-	-	350	-	2.5
89012	Combipoint cone 11	-	-	350	-	2.6
89013	Combipoint middle/upper part 5b/6a	-	-	350	-	2.6
89014	Combipoint middle/upper part 3 with Ø160mm outlet	-	-	350	-	2.8
130922	Combipoint PP lower part silt basket	-	-	-	-	2.0



Combipoint upper section



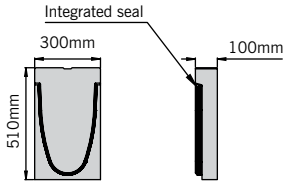
Combipoint cone 11



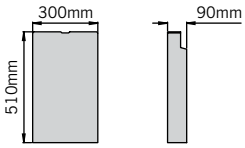
Combipoint 1a base

Endcaps, outlets and adaptors

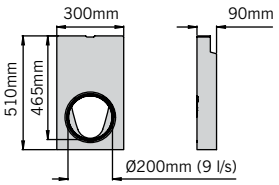
Product code	Description	Length (mm)	Width overall (mm)	Height (mm)	Invert depth (mm)	Weight (kg)
130908	Closing endcap to close the beginning of the channel	100	300	510	-	30
130909	Closing endcap to close the end of the channel	60	300	510	-	22.5
130910	Outlet endcap with Ø200mm seal	60	300	510	465	19
130914	Reverse flow adaptor	140	300	510	465	34



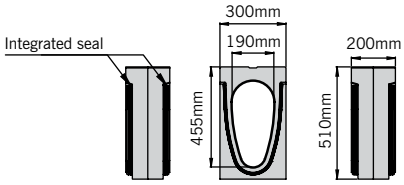
Closing endcap (beginning)



Closing endcap (end)



Outlet endcap with Ø200mm seal



Reverse flow adaptor

These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

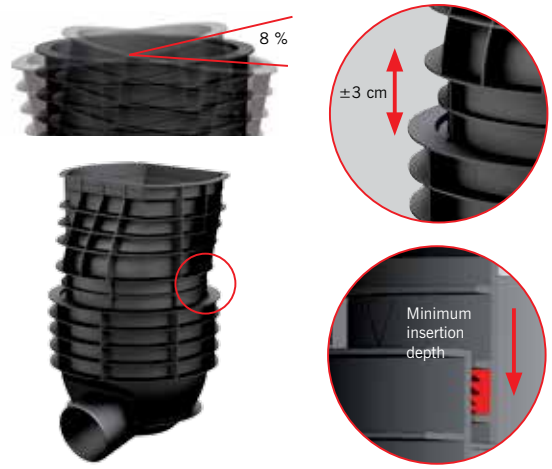
H Range SD 200V compatible sump units

ACO Combipoint sump units

ACO Combipoint sump units are compatible with H Range SD 200V polymer concrete access unit.

This combination of inter-changeable parts gives superior flexibility for easy installation. Sections are rotatable and telescopic making installation easier and faster.

ACO Combipoint is manufactured in Polypropylene, and achieved a load class of C 250 – D 400. Not only is the material robust, but the light-weight high-strength material weighs only 2.5 to 2.8kg giving an advantage for installation.



ACO Combipoint units can be arranged in various combinations, depending on the space available and where pipe connections are located. They can also be arranged so that the unit collects silt at the base of the sump. Combipoint sump units are compatible with sump access units part number 130906

Combipoint benefits

- Rotatable outlet
- Telescopic sections
- Inter-connectable sections for various site requirements
- Light weight sections for faster installation

89010	89011	89012	89013	89014
Combipoint PP Base 1a Weight: 2.6kg	Combipoint PP Base 2a Weight: 2.5kg	Combipoint PP Cone 11 Weight: 2.6kg	Combipoint PP Middle/upper 5b/6a Weight: 2.6kg	Combipoint PP Middle/upper 3 Weight: 2.8kg

300 x 500

Short form

89012
89010

Long form

89012
89013
89010

Silt trap

89012
89014
89011

Designing an ACO H Range drainage system

ACO Hydraulic Design Software is designed to aid engineers in selecting the appropriate channel to suit the area to be drained.

This free online tool calculates the hydraulic capacity of channels accepting flow along their entire length using differential equations for spatially varied flow.

The software accurately analyses the selected channel to check it has suitable capacity. Furthermore it can optimise the selection and potentially downsize all or part of a channel run if it is oversized.

ACO has embraced the concept of value engineering as an 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 the ACO H Range water can be contained and conveyed close to the surface conforming to the National Standards of Sustainable Drainage Systems.

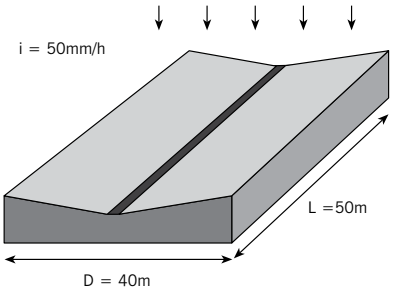
For detailed designs using the ACO Hydraulic Design Software, please contact the ACO Water Management Design Services Team. The team should also be consulted for advice where the inflow is not uniformly distributed along the channel.

The hydraulic performance tables within the relevant sections have been produced from the ACO hydraulic Design Software to facilitate a quick manual design method for the determination of the drainage requirements.

ACO Water Management Design Services Team

Tel: 01462 816666
Email: technical@aco.co.uk

DESIGN EXAMPLE



For a design of ACO H Range RD 150V, assume the following figures:

D = 40m (depth of catchment area)

L = 50m (length of channel run = length of catchment)

i = 50mm/h (design rainfall intensity)

Ground slope = 0%

Note that any other rainfall intensity may be used. Typical intensities (from BS EN 752) are 50mm/h for areas where some ponding could be tolerated for a few minutes after heavy rainfall, or 75mm/h where ponding cannot normally be tolerated.

1. Determine the area

Area = L x D = 40 x 50 = 2000m²

For a quick analysis, see the tables and the columns for Area.
2000m² is too large for one 50m run of ACO H Range RD 150V 10.0
Try 2000 x 1/2 = 1000m²
L x 1/2 = 25m

Estimating between the rows for 20m and 30m lengths

One 25m run of ACO H Range RD 150V 10.0 can drain 1,380m²
Hence two runs can drain the 2000m²

Or for a more detailed analysis, determine the total flow rate, as follows

2. Determine total flow (Q)

Q = (Area x i) / 3600 = (2000 x 50) / 3600 = 27.7 l/s

3. Determine lateral inflow (q)

q = Q / L = 27.7 / 50 = 0.554 l/s/m

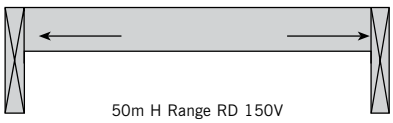
4. Check Outlet capacity

Ensure that the proposed outlet has sufficient hydraulic capacity by reference to the product technical pages.

5. Solutions

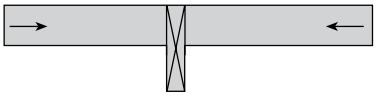
Two options are sketched (right). There are other options, including wider H Range channels or a 50m length run to an outfall using RD 150V 20.0 channels.

Option 1



50m H Range RD 150V
10.0 with 2 sumps

Option 2



50m H Range RD 150V
10.0 with 1 sump

ACO H Range hydraulic performance tables

Hydraulic capacities

The tables opposite show the maximum capacity of the channel, assuming uniform lateral inflow to the channel. The capacity will depend on the length of channel to the outlet and on any slope along the channel.

Q (l/s) is the maximum total flow that the channel can carry.

q (l/s/m) is the maximum possible lateral inflow.

A (m^2) is the maximum area that can be drained and will depend on the design rainfall intensity chosen. The tabulated areas are for a rainfall intensity of 50 mm/h (0.014 l/s/m^2).

At other rainfall intensities, the area can be determined by proportion, e.g. at 75mm/h, the maximum area drained will be the tabulated area x 50/75.

ACO Water Management Design Services Team

Please contact the ACO Water Management Design Services Team on 01462 816666 for advice on channels with non-uniform inflow, or channels receiving point inflows at the end or at intermediate locations.

The ACO Water Management Design Services Team will be pleased to assist with any technical queries, scheme designs or parts schedules.

Designing a drainage system

An example design method is provided on page 25 to help determine your drainage requirements.

This example will enable you to use the hydraulic performance tables on these pages.

RD 100V

Length to Outlet (m)	0%			0.5%			1%		
	Q (l/s)	q (l/s/m)	A (m^2)	Q (l/s)	q (l/s/m)	A (m^2)	Q (l/s)	q (l/s/m)	A (m^2)
5	6.30	1.26	450	7.56	1.51	540	8.60	1.72	614
10	5.98	0.60	427	7.91	0.79	565	9.31	0.93	665
15	5.68	0.38	406	8.27	0.55	590	9.95	0.66	710
20	5.40	0.27	386	8.62	0.43	615	10.58	0.53	755
25	5.20	0.21	371	8.75	0.35	626	10.90	0.44	780
30	5.04	0.17	360	8.88	0.30	635	11.13	0.37	795
35	4.87	0.14	348	8.96	0.26	641	11.34	0.32	810
40	4.68	0.12	335	9.04	0.23	646	11.52	0.29	814
45	4.59	0.10	329	9.09	0.20	650	11.57	0.26	825
50	4.49	0.09	321	9.17	0.18	655	11.69	0.23	835
55	4.37	0.08	312	9.21	0.17	658	11.81	0.21	844
60	4.27	0.07	305	9.24	0.15	660	11.93	0.20	852

RD 150 V 0.0

Length to Outlet (m)	0%			0.5%			1%		
	Q (l/s)	q (l/s/m)	A (m^2)	Q (l/s)	q (l/s/m)	A (m^2)	Q (l/s)	q (l/s/m)	A (m^2)
10	8.89	0.89	635	12.00	1.20	857	14.30	1.43	1021
20	8.30	0.42	593	13.00	0.65	929	16.38	0.82	1170
30	7.77	0.26	555	13.89	0.46	992	17.46	0.58	1247
40	7.40	0.19	529	14.44	0.36	1031	18.36	0.46	1311
50	7.10	0.14	507	14.60	0.29	1043	18.80	0.38	1343
60	6.78	0.11	484	14.94	0.25	1067	19.44	0.32	1389
70	6.51	0.09	465	15.05	0.22	1075	19.67	0.28	1405
80	6.28	0.08	449	15.36	0.19	1097	20.00	0.25	1429
90	6.12	0.07	437	15.48	0.17	1106	20.25	0.23	1446
100	6.00	0.06	429	15.60	0.16	1114	20.35	0.20	1454

RD 150 V 10.0

Length to Outlet (m)	0%			0.5%			1%		
	Q (l/s)	q (l/s/m)	A (m^2)	Q (l/s)	q (l/s/m)	A (m^2)	Q (l/s)	q (l/s/m)	A (m^2)
10	21.30	2.13	1521	26.30	2.63	1879	29.90	2.99	2136
20	19.80	0.99	1414	28.00	1.40	2000	33.40	1.67	2386
30	18.84	0.63	1346	29.10	0.97	2079	35.55	1.19	2539
40	18.00	0.45	1286	29.80	0.75	2128	36.76	0.92	2626
50	17.40	0.35	1243	30.35	0.61	2168	38.00	0.76	2714
60	16.80	0.28	1204	30.90	0.52	2207	38.76	0.65	2769
70	16.17	0.23	1155	31.15	0.45	2225	39.62	0.57	2830
80	15.60	0.20	1115	31.44	0.39	2246	40.00	0.50	2857
90	15.12	0.17	1080	31.50	0.35	2264	40.50	0.45	2893
100	14.70	0.15	1050	31.85	0.32	2275	40.80	0.41	2914

RD 150 V 20.0

Length to Outlet (m)	0%			0.5%			1%		
	Q (l/s)	q (l/s/m)	A (m^2)	Q (l/s)	q (l/s/m)	A (m^2)	Q (l/s)	q (l/s/m)	A (m^2)
10	38.50	3.85	2750	45.00	4.50	3214	50.20	5.02	3586
20	36.00	1.80	2571	46.80	2.34	3343	54.42	2.72	3887
30	34.29	1.14	2449	48.00	1.60	3429	57.60	1.92	4114
40	32.84	0.82	2346	49.20	1.23	3514	59.60	1.49	4257
50	31.45	0.63	2246	49.90	1.00	3564	61.00	1.22	4358
60	30.60	0.51	2186	50.40	0.84	3600	62.40	1.04	4457
70	29.40	0.42	2100	50.89	0.73	3635	63.28	0.90	4520
80	28.72	0.36	2051	51.20	0.64	3657	64.24	0.80	4589
90	27.90	0.31	1993	51.48	0.57	3677	65.25	0.73	4661
100	27.22	0.27	1944	51.50	0.52	3679	65.70	0.66	4693

RD 200 V 0.0									
Length to Outlet (m)	0%			0.5%			1%		
	Q (l/s)	q (l/s/m)	A (m²)	Q (l/s)	q (l/s/m)	A (m²)	Q (l/s)	q (l/s/m)	A (m²)
10	17.50	1.75	1250	22.70	2.27	1621	26.50	2.65	1893
20	16.38	0.82	1170	25.00	1.25	1786	30.40	1.52	2171
30	15.72	0.52	1123	26.43	0.88	1888	32.70	1.09	2336
40	15.08	0.38	1077	27.56	0.69	1969	34.52	0.86	2466
50	14.55	0.29	1039	28.10	0.56	2007	36.00	0.72	2572
60	14.10	0.24	1007	28.86	0.48	2061	36.90	0.62	2636
70	13.65	0.20	975	29.33	0.42	2095	37.80	0.54	2700
80	13.28	0.17	949	29.76	0.37	2126	38.24	0.48	2731
90	12.78	0.14	913	30.06	0.33	2147	38.61	0.43	2758
100	12.50	0.13	893	30.40	0.30	2171	38.75	0.39	2769

RD 200 V 20.0									
Length to Outlet (m)	0%			0.5%			1%		
	Q (l/s)	q (l/s/m)	A (m²)	Q (l/s)	q (l/s/m)	A (m²)	Q (l/s)	q (l/s/m)	A (m²)
10	60.90	6.09	4350	70.30	7.03	5021	78.10	7.81	5579
20	57.20	2.86	4086	73.00	3.65	5214	85.20	4.26	6086
30	54.90	1.83	3921	75.90	2.53	5421	90.00	3.00	6429
40	53.28	1.33	3836	78.40	1.96	5645	94.68	2.37	6817
50	51.68	1.03	3721	80.05	1.60	5764	98.00	1.96	7056
60	50.24	0.84	3618	81.39	1.36	5860	100.52	1.68	7237
70	48.94	0.70	3524	82.46	1.18	5937	102.62	1.47	7389
80	47.74	0.60	3438	83.34	1.04	6000	104.40	1.31	7517
90	46.63	0.52	3357	84.06	0.93	6052	105.89	1.18	7624
100	45.61	0.46	3284	84.75	0.85	6102	107.13	1.07	7713

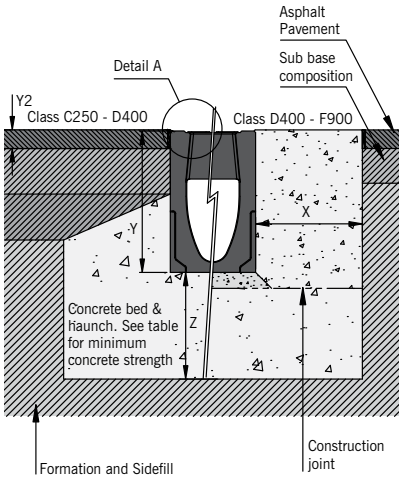
RD 300 V									
Length to Outlet (m)	0%			0.5%			1%		
	Q (l/s)	q (l/s/m)	A (m²)	Q (l/s)	q (l/s/m)	A (m²)	Q (l/s)	q (l/s/m)	A (m²)
10	87.50	8.75	6250	102.11	10.21	7294	113.86	11.39	8133
20	83.74	4.19	5981	108.58	5.43	7756	126.62	6.33	9044
30	81.36	2.71	5811	114.54	3.82	8181	136.68	4.56	9763
40	79.24	1.98	5660	118.84	2.97	8489	144.80	3.62	10343
50	77.60	1.55	5542	122.50	2.45	8750	151.75	3.04	10839
60	75.90	1.27	5421	126.12	2.10	9009	157.20	2.62	11229
70	74.55	1.07	5325	129.15	1.85	9225	161.98	2.31	11570
80	73.12	0.91	5222	131.76	1.65	9411	165.60	2.07	11829
90	71.82	0.80	5130	133.65	1.49	9546	169.20	1.88	12086
100	70.00	0.70	5000	135.70	1.36	9693	172.20	1.72	12300

SD 200 V									
Length to Outlet (m)	0%			0.5%			1%		
	Q (l/s)	q (l/s/m)	A (m²)	Q (l/s)	q (l/s/m)	A (m²)	Q (l/s)	q (l/s/m)	A (m²)
10	45.20	4.52	3229	53.50	5.35	3821	59.80	5.98	4271
20	42.60	2.13	3043	56.20	2.81	4014	65.80	3.29	4700
30	40.74	1.36	2910	58.62	1.95	4187	70.47	2.35	5033
40	39.40	0.99	2814	60.16	1.50	4311	73.60	1.84	5257
50	38.05	0.76	2717	61.55	1.23	4396	76.05	1.52	5432
60	37.02	0.62	2644	62.70	1.05	4479	78.30	1.31	5593
70	35.91	0.51	2565	63.70	0.91	4550	79.80	1.14	5700
80	34.96	0.44	2497	64.40	0.81	4600	81.20	1.02	5800
90	34.11	0.38	2436	64.89	0.72	4635	82.44	0.92	5876
100	33.40	0.33	2386	65.40	0.65	4671	83.30	0.83	5950

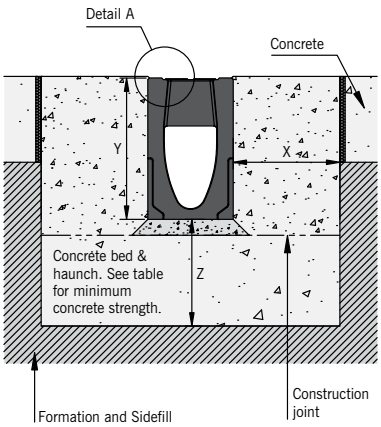
Installation detail

ACO H RANGE RD

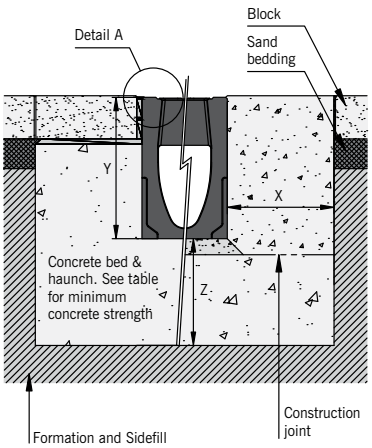
Asphalt pavement



Concrete pavement



Block pavement



1.0 Load Class

Installation recommendations shown are ACO minimum recommendations for BS EN 1433:2002 load class requirements.

2.0 Ground Conditions

The long term performance of a channel installation to sustain vertical and lateral loads depends upon A) ground conditions B) stability of the adjacent pavement and C) a durable concrete bed and surround. The recommended installation detail may require the minimum dimensions to be revised to achieve site specific load class requirements (referred to in 1.0 above).

3.0 Cutting and Jointing

Mitre joints are formed by cutting the channels to the required angle and butting them together with appropriate sealant (e.g. Sikaflex 11FC or similar) or ACO Repair Kit. Where possible 90° joints and T's should be formed so that gratings do not have to be cut. Angles can be formed by connecting them using proprietary PVCu pipework attached to ACO inlet/ outlet endcaps. For further details please contact ACO Design Services Team.

Note: For Load Classes higher than C 250, mitred joints are not recommended in vehicular areas. Where requested ACO can custom manufacture angled junctions to order.

4.0 Isolation Joints

The channel must be isolated from the surrounding environment. An isolation joint must be positioned up to 1500mm from the channel wall. Any dowel bars must be located no nearer than 150mm from the channel wall. Other isolation joints in surrounding slab must be continued through the channel.

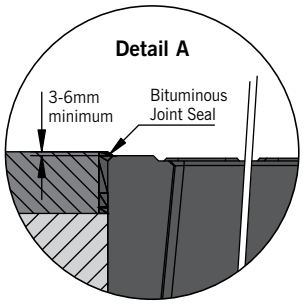
Additional crack control may be required to comply with specifier requirements.

5.0 Installation into in-situ Slab

Where a channel is to be installed into an existing concrete slab it is necessary to cut a suitably sized pocket in the slab. The channel will then need to be bedded in polymer modified mortar of 25mm minimum thickness (this may vary depending on the type of mortar used). Engineering advice may be necessary.

6.0 Temporary Installation

A channel installation is not complete until the final surfacing is laid. In any temporary condition, i.e. with the channel walls projecting above adjacent ground, site traffic should not cross channels. Loose boards, stone fill or cover plates will not protect the channel walls or grating. A temporary channel crossing should be formed by raising the ground level locally, to 3 - 6mm above top of edge rail, either side of a channel for a distance of 750 to 1000mm, to form ramps. Note that the channel load class should be adequate to carry the site traffic.



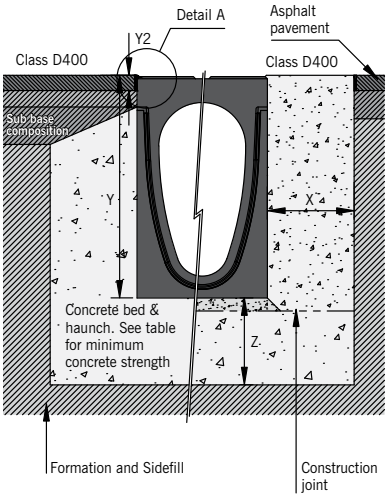
7.0 Block Pavements

The channel must be supported laterally. Blocks laid directly against a channel must be laid as a soldier course and restrained from movement by bedding securely on the concrete haunch e.g. by using a polymer modified mortar for bed and perpendicular joints (e.g. RONAFIX mortar mix C or similar). Blocks or slabs bedded on sand remote from the channel should be set at a higher level to compensate for possible settlement of the paving in service.

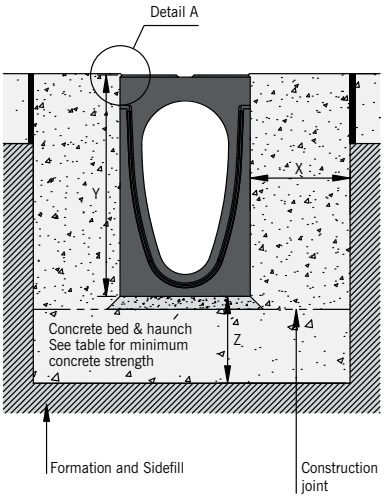
8.0 Grate Locking System

Gratings should be securely fixed to the channel, where required, using an appropriate grate lock system (where available).

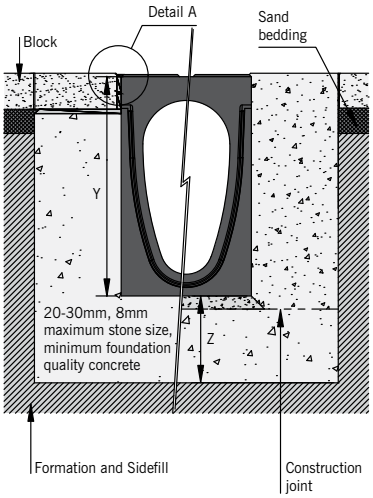
Asphalt pavement



Concrete pavement



Block pavement



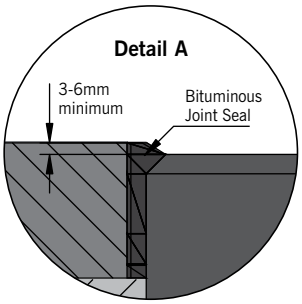
9.0 Channel Protection

Avoid contact between compaction equipment and top of ACO channel. The installer must ensure that the finished surface level lies above the top of the edge rail (by at least 3-6mm). Covering or protecting the grating, before concreting the haunch or laying blocks, removes the time and cost associated with cleaning the channel and grating of cement material and embedded stones. (Please note that ACO channels must be installed with the grating in place to prevent deformation of the channel).

10.0 Watertight Installation to BS EN 1433:2002

ACO channels should be installed without any gaps on a compacted channel foundation, taking into account the moulded arrow direction on the channel body and the sequence of channel types in the case of sloping channels. Installation must always begin at the lowest point.

Note: Iron products have good corrosion resistance to concrete and mortar products but may experience corrosion if high chloride and/or sulphate content is present. Use only good quality concrete and consider using corrosion inhibitors where necessary. The use of protective coatings, such as paint, can minimise the risk of corrosion.



11.0 Site Location

H Range SD Channels to be laid perpendicular to the direction of travel. Non Perpendicular layout permitted where traffic by bicycles is prohibited.

The specifier is responsible for ensuring that the product is safe to use in the area intended.

These details are available to download in DWG or PDF format from the ACO website. Please go to www.aco.co.uk and sign in or register to access this information.

12.0 Minimum Dimensions of Concrete Surround - H Range RD

Load Class		C 250	D 400	E 600	F 900
Minimum Dimensions (mm)	X	150	200	200	250
	Y	Full Channel Height			
	Z	150	200	200	250
Maximum Dimensions (mm)	Y2	35	35	35	n/a
Minimum compressive concrete strength (To BS EN-206:2013)		C20/25	C25/30	C25/30	C30/37

Minimum Dimensions of Concrete Surround - H Range SD

Load Class		D 400
Minimum Dimensions (mm)	X	200
	Y	Full Channel Height
	Z	200
Maximum Dimensions (mm)	Y2	35
Minimum compressive concrete strength (To BS EN-206:2013)		C25/30

H Range Handling Advice

H Range will require mechanical lifting equipment to load/unload the channels and during the installation phase. The following information is given as general recommendations, and advice should be sought for site specific requirements. It is advised that the lifting of H Range products are carried out by an appropriate specialist, taking into account the applicable standards and regulations. Relevant accident prevention regulations must be observed on site.

Both lifting equipment (for example an excavator or crane) and the hoist must be suitable and able to withstand the weight/size of the product. Please contact the appropriate manufacturer with regard to hoists and lifting equipment to ensure the specification is appropriate to the channel.

Equipment needed:

- 2 x belt loop

Length of loop

- 1500mm belt loop for 1000mm channels
- 2000mm belt loop for 2000m or 4000m channels

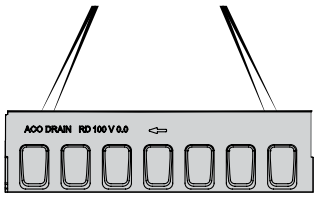
Requirements

- According to EN1492-1/2
- Load capacity of belt loop: minimum 1000 kg
- Permissible diagonal pull: Max 60˚

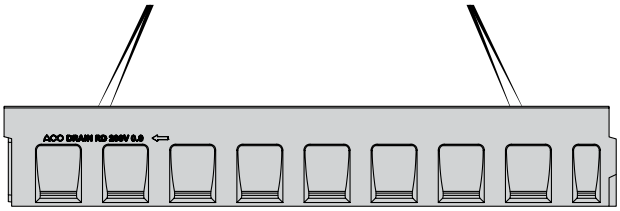
Lifting and moving the channel

For safe lifting and moving always use 2 slings/belt loops per channel body. The lifting straps must be properly inserted through the respective outermost pairs of holes, so that the loops can be attached twice (see examples below).

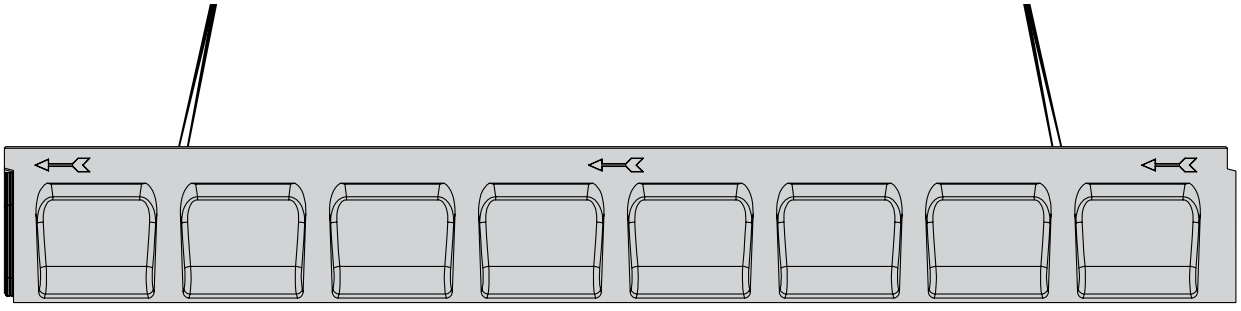
The double-suspended lifting shoes must be attached at 90 ° to the trough on a traverse, or alternatively (taking into account the maximum diagonal pull of 60 °) on a chain suspension. A pivot-free movement must be ensured. Attachment of the channel with only one belt loop may cause damage or injury and is not recommended.



RD100 0.0



RD200 0.0



SD200 0.0

H Range Installation Guide

H Range channels are installed in the same way as smaller drainage channels. Installation begins at the outlet and channels are subsequently installed from above.

SD channels comes with an integral seal whilst other channels can be sealed on site with a proprietary sealant if required.

For more information on installation advice please email technical@aco.co.uk or phone: 01462 816666

Material benefits

The correct material selection for products installed in permanent works is extremely important to assure optimum performance throughout its design life.

ACO H Range is manufactured from polymer concrete, ACO's sustainable high strength material. This material offers distinct advantages over other products and materials, addressing key specification and performance requirements for engineers and designers.

Sustainable use of materials

Efficient use of material resources is a key contributor to sustainability in construction. ACO H Range has been carefully designed to maximise strength while minimising material use.

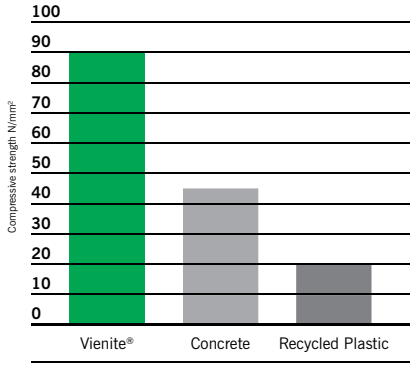
- Polymer concrete combines the mechanical and performance benefits of synthetic resin concrete with high levels of recycled fillers.
- Polymer concrete fully conforms to and exceeds all performance requirements as specified by BS EN 1433:2002 for combined drainage channels.
- Polymer concrete is recyclable, i.e. it can be collected, processed and returned for re-use as a raw material.

The ACO H Range range also includes components manufactured from ductile iron and steel which contain between 25% and 90% recycled material.

H RANGE CHANNELS

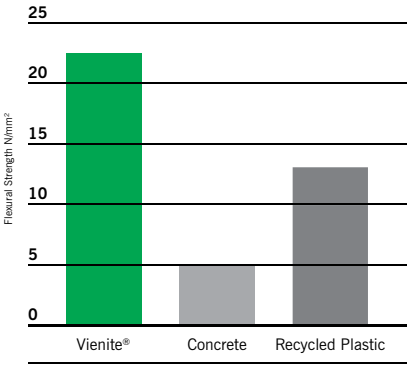
Compressive strength

Polymer concrete has high compressive strength is therefore extremely resistant to service loads.



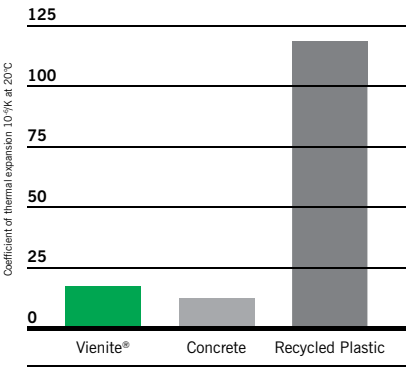
Flexural Strength

Polymer concrete has excellent flexural strength making the product resistant to side loads typically encountered during surfacing and installation.



Coefficient of Thermal Expansion

Polymer concrete has a low coefficient of thermal expansion making it extremely stable, and unlike some materials it will not buckle or distort if subjected to high or low temperatures during service.



Coefficient of Friction (Mannings)

Polymer concrete is extremely smooth having a Mannings coefficient of 0.011 giving enhanced hydraulic performance and resisting the build up of silt and debris.

Water absorption

Polymer concrete has low water absorption of only 0.01% by weight which means surface water or liquids are contained within the product until discharge without contaminating surrounding soil or groundwater.

Chemical Resistance

Polymer concrete has high resistance to dilute acids and alkalis and is unaffected by road salts, fuels and oils which are typically encountered during service. For a copy of our full chemical resistance chart for Polymer concrete please contact our ACO Water Management Design Services Team.

Model specification clause

The surface drainage system shall be ACO H Range (insert channel description as appropriate e.g. ACO RD or SD) as supplied by ACO Technologies plc. All materials and components within the scope of the system shall be supplied by this manufacturer. The system shall be fully compliant with BS EN 1433:2002 with initial Type Test certification issued by a notified body independent of the manufacturer and shall comply with the Manual of Contract Documents for Highway Works: Specification of Highway Works, Clause 516. The system shall be CE marked and fully compliant to BS EN 1433:2002, certified to Load Class (*) as defined in BS EN 1433:2002.

Declarations of Performance (DoP) shall be supplied to the Supervising Officer upon request.

All units shall be of one piece manufacture from polymer concrete with integral resin concrete grating or slots.

The standard units shall be installed with the manufacturer's access units, sumps and accessories as required for the scheme. The system shall be installed in accordance with the manufacturer's printed recommendations, and the works carried out as specified on drawings (**) and in accordance with recognised good practice. Standards of workmanship shall generally be as specified in BS EN 752 and BS8000:Part 14:1989.

*Insert information e.g. D 400 or F 900 as appropriate.

****Please insert drawing no. relevant to the project.**

Highways Specification – Appendix 5/6

The Appendix 5/6 will need to be completed for each project. A model Appendix 5/6 for ACO H Range is available from the ACO Water Management Design Services Team.

NBS Specification

ACO H Range should be specified in section Q10:190. Assistance in completing this clause can be found in ACO Technologies product entries in NBS Plus or a model specification can be downloaded from www.aco.co.uk. For further assistance, contact the ACO Water Management Design Services Team.

Conformity

The ACO H Range system is CE marked in accordance with the Construction Products Regulation.

Declarations of Performance are available via the CPR Zone on our website (www.aco.co.uk/DoP.php), or on request. Please contact ACO Water Management Design Services Team on 01462 816666 for further assistance.

BS EN 1433:2002

CE

General information
ACO products are subject to weight and dimensional tolerances. The weights and dimensions shown in this document are for guidance purposes only. ACO products are made from naturally occurring materials and may be subject to variations in colour, texture and marking. These aesthetic variations do not affect the performance or functionality of our Goods. The appearance of products shown in our company documentation are for illustration purposes only.

Notes

Notes

ACO Technologies plc

- ACO Water Management
  Civils + Infrastructure
  Building + Landscape
- ACO Building Drainage
- ACO Sport
- ACO Wildlife

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website: www.aco.co.uk

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

ISO 9001
FM 13502

ISO 14001
EMS 538781

OHSAS 18001
OHS 524145

PC21801