

ACO Water Management:

Civils + Infrastructure

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

ACO S Range



ACO S Range

Heavy-duty channel drainage system



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 2 divisions within ACO Technologies 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 system chain that combines a 'Surface Water Management Cycle' – Collect, Clean, Hold, Release, with the service support of Train, Design, Support and Care.

These processes enable ACO to offer a combination of product and service expertise necessary for the complete and sustainable management of surface water drainage.



The ACO Group / www.aco.com

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Introduction to ACO S Range

ACO S Range is an accessible grated channel drainage system, specifically designed for surface water management in heavy-duty and industrial applications such as petrol station forecourts, HGV parking and warehousing.

What is ACO S Range?

ACO S Range delivers high performance drainage for heavy-duty and industrial applications and is fully certified to BS EN 1433:2002 load class F 900*.

Manufactured from Vienite®, ACO's sustainable high strength polymer concrete material the S Range channels are available in four widths, 100mm, 150mm, 200mm and 300mm in a variety of depths and slopes.

Where a higher capacity drainage system is required the S150, S200 or S300 constant depth units are ideal for dealing with larger volumes of water. This keeps the water closer to the surface and reduces the need for costly underground pipe networks.

Depending on the application and anticipated traffic the S100 range is available with a choice of ductile iron grating and cover designs including Slotted, Heelguard™, Intercept and Solid.

The S150, S200 and S300 ranges are supplied assembled with slotted ductile iron gratings. All gratings are fastened with a secure bolt locking system.



Typical applications

- ▶ Car parking
- ▶ HGV parking
- ▶ Petrol station forecourts
- ▶ Industrial
- ▶ Distribution and warehouses
- ▶ Ports and docks
- ▶ Aircraft pavements



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 or visit www.aco.co.uk.



Why Choose ACO S Range?

Heavy-duty

S Range is specifically designed for heavy-duty and industrial applications fully certified to BS EN 1433:2002 for applications up to and including F 900*.

The polymer concrete's high strength characteristics means the material is four times stronger than traditional concrete.

All S Range channels are supplied with integral cast iron rails for channel body protection. The rails not only provide strength and wear resistance to the channels for long service life, but also ensure each heavy-duty grating can be fully secured from movement by our proven and reliable four point, M10 high tensile bolt locking system.

Durability & water tightness

Manufactured from Vienite® the S Range channel bodies have many benefits including excellent resistance to dilute acids and alkalis, is unaffected by road salts, fuels and oils typically encountered during service.

Having a water absorption level of only 0.01% by weight, Vienite® ensures water tight installations can be achieved to prevent unwanted contamination of surrounding soil or ground water in applications such as petrol stations.

Accessibility

The S Range has a full range of sumps and gullies to provide a complete solution for efficient drainage and long term silt management with maintenance by standard jet washing techniques.

Each heavy-duty grating is accessible by our proven and reliable four point, M10 high tensile bolt locking system.



System benefits:

- ▶ Range of constant and sloped depth channels
- ▶ Caters for extreme wheel loads such as aircraft pavements, ports and docks
- ▶ Strong and robust design
- ▶ CE Marked and BS EN 1433:2002 certified to Load Class F 900*
- ▶ Caters for a range of catchment depths
- ▶ Choice of slotted, Heelguard™, intercept and solid cover gratings on the 100mm wide system
- ▶ All gratings come complete with locking bolts
- ▶ Sump and gully outlets available for connection to underground drainage



NEW ACO QuAD Hydraulic Design Software

Register online for our free, secure online design software:

- ▶ All designs are securely stored and easily accessed online
- ▶ Data always up-to-date
- ▶ Proven calculation methodology - more accurate and efficient designs
- ▶ Flexible catchment design
- ▶ Integrated rainfall data
- ▶ Automated product optimisation
- ▶ PDF summary documents



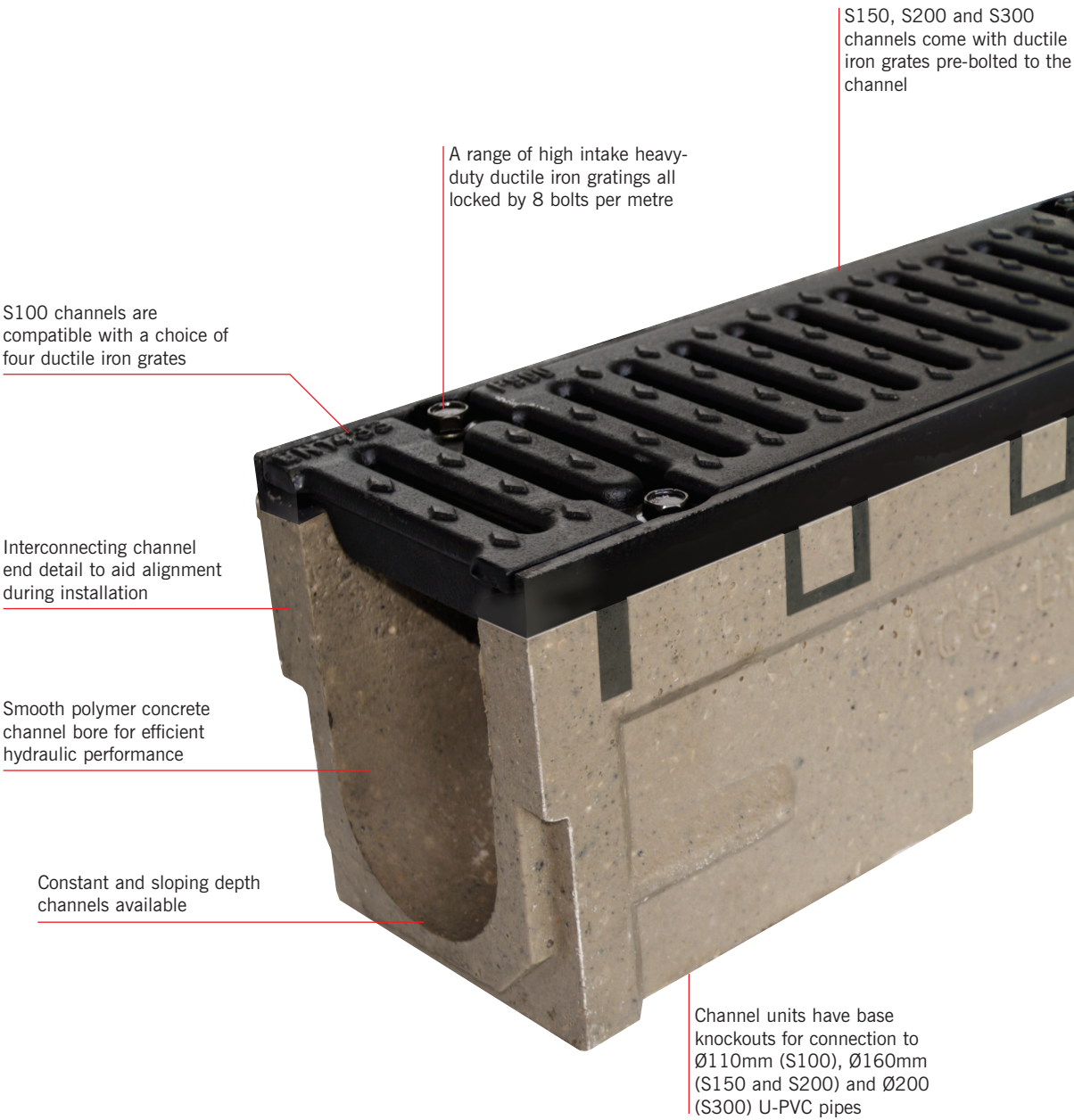
Register Now - It's Free

www.aco.co.uk/quad-hydraulic-design-2.0

*Not suitable for carriageways of public roads or motorways



ACO S RANGE FEATURES OVERVIEW



LOAD CLASSES



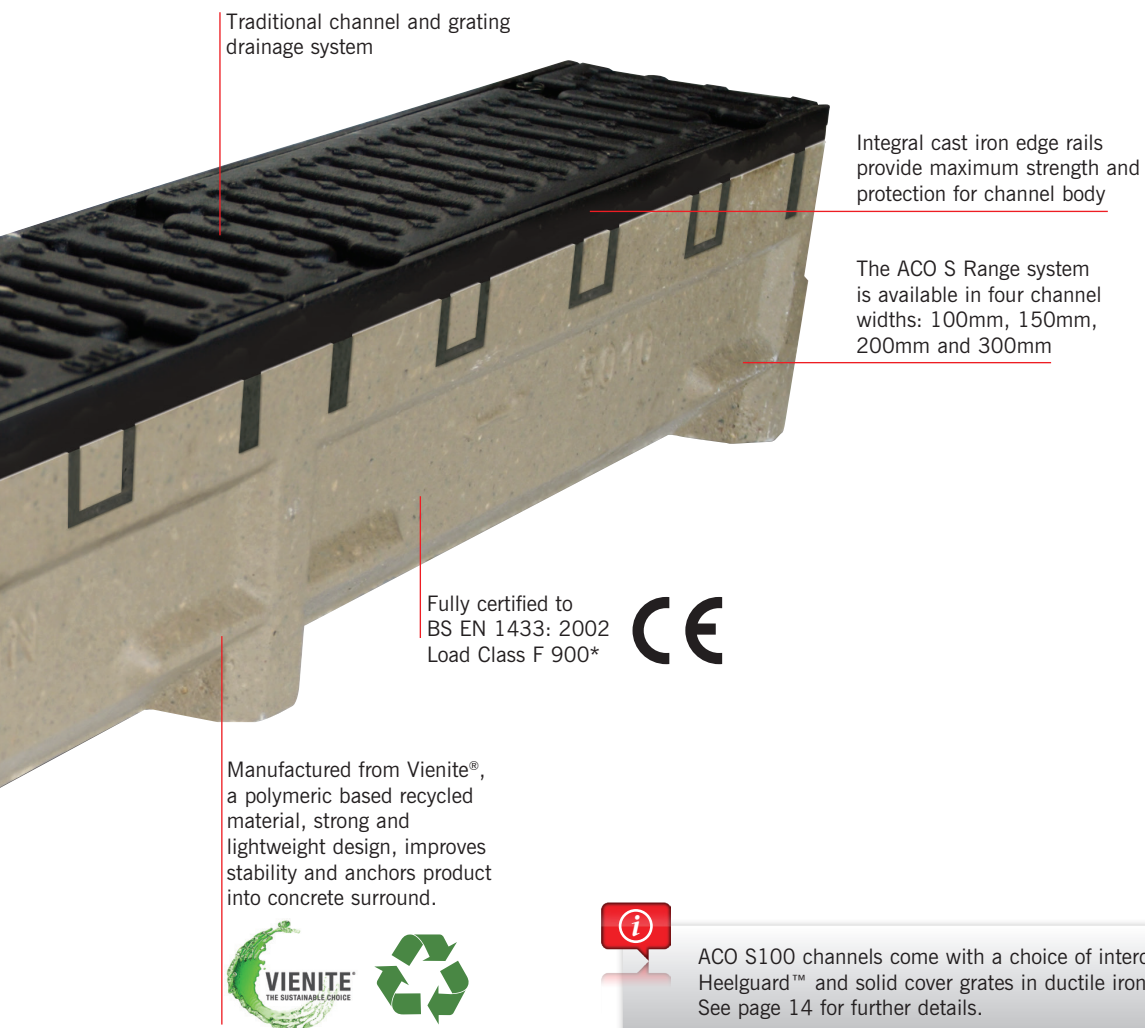
A 15
Pedestrian, cycleways, minimally trafficked area (light domestic vehicles only).



B 125
Pedestrian precincts, light vehicles, private car parks and drives.



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



Traditional channel and grating drainage system

Integral cast iron edge rails provide maximum strength and protection for channel body

The ACO S Range system is available in four channel widths: 100mm, 150mm, 200mm and 300mm

Fully certified to
BS EN 1433: 2002
Load Class F 900*



Manufactured from Vienite®, a polymeric based recycled material, strong and lightweight design, improves stability and anchors product into concrete surround.



ACO S100 channels come with a choice of intercept, slotted, Heelguard™ and solid cover grates in ductile iron. See page 14 for further details.



D 400*

Parking areas for all vehicle types, distribution yards.



E 600*

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



F 900*

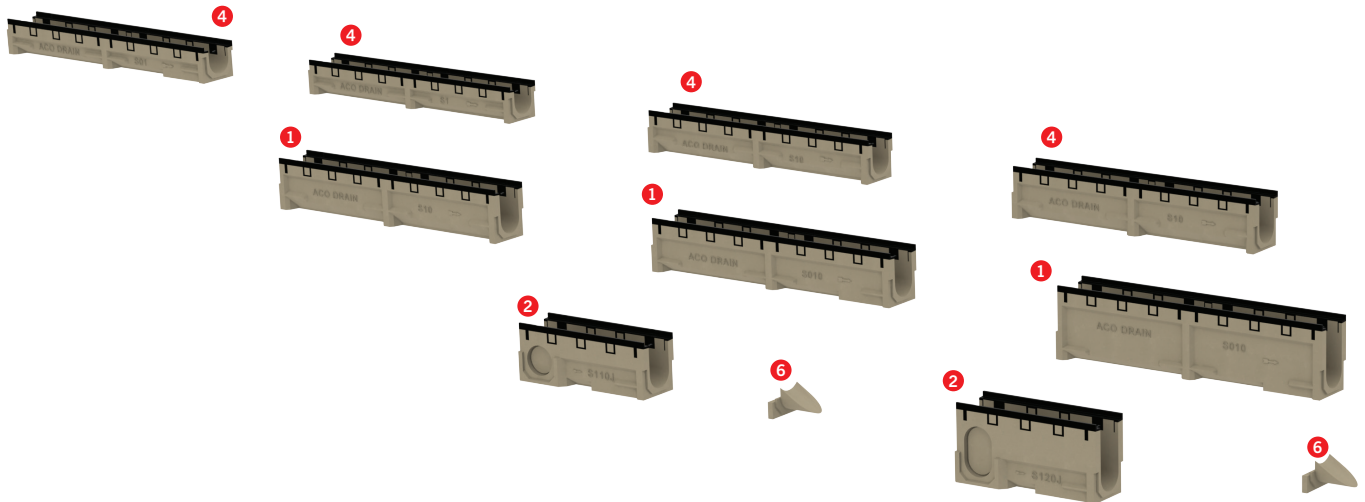
Airport runways, very heavy industrial and military installations, service yards and lorry parks.

ACO S Range Layout

To support a wide variety of catchment depths, hydraulic capacities and applications, the system is available in four channel widths, 100mm, 150mm, 200mm and 300mm and has a range of constant depths and sloping depth channels to suit the drainage design.

The layout below illustrates the channels and accessories available within the ACO S Range and to aid product selection, a summary of the function and feature of each component is provided.

All ACO S Range channels are supplied with ductile iron edge rails.



1 Constant depth channels – 1m



- ▶ **100mm wide bore:** Five constant depth channel units are available in 1m lengths with overall depths ranging from 137mm to 311mm.
- ▶ **150mm wide bore:** Three constant depth channel units are available in 1m lengths with overall depth ranging from 220mm to 320mm.
- ▶ **200mm wide bore:** One constant depth channel unit available in a 1m length with overall depth of 309mm.
- ▶ **300mm wide bore:** One constant depth channel unit available in a 1m length with overall depth of 390mm.

These channels include a vertical knockout for connection to Ø110mm (100mm wide bore channels), Ø160mm (150mm and 200mm wide bore channels) and Ø200mm (300mm wide bore channel) pipework.

2 Constant depth channels – 0.5m



- ▶ **100mm wide bore:** Three 0.5m constant depth channel units are available with overall depths ranging from 191mm to 311mm.
- ▶ **150mm wide bore:** Two 0.5m constant depth channels with overall depths ranging from 220mm to 270mm.
- ▶ **200mm wide bore:** One 0.5m constant depth channel with overall depth of 309mm.
- ▶ **300mm wide bore:** One constant depth channel unit available in a 1m length with overall depths of 390mm.

These channels include a vertical knockout for connection to Ø110mm (100mm wide bore channels), Ø160mm (150mm and 200mm wide bore channels) and Ø200mm (300mm wide bore channel) pipework and side knockout for 90° channel connections.

3 Sump



- ▶ **100mm wide bore:** One 0.5m sump for connection to each constant depth 0.5m channel.
- ▶ **150mm wide bore:** One 0.5m sump with a depth of 900mm.
- ▶ **200mm wide bore:** the Universal Gully is used with this range.
- ▶ **300mm wide bore:** One gully top with either shallow or deep base units with an overall depth of 655mm to 910mm.

Each system width has one 0.5m universal sump for connection to all channels. Outlet options for Ø110mm and Ø160mm pipes and foul air traps. Plastic silt bucket provided with each unit.

4 Sloping depth channels



- ▶ **100mm wide bore:** Thirty 1m sloping channels with 0.6% fall in depths from 137mm to 317mm.

5 Universal Gully

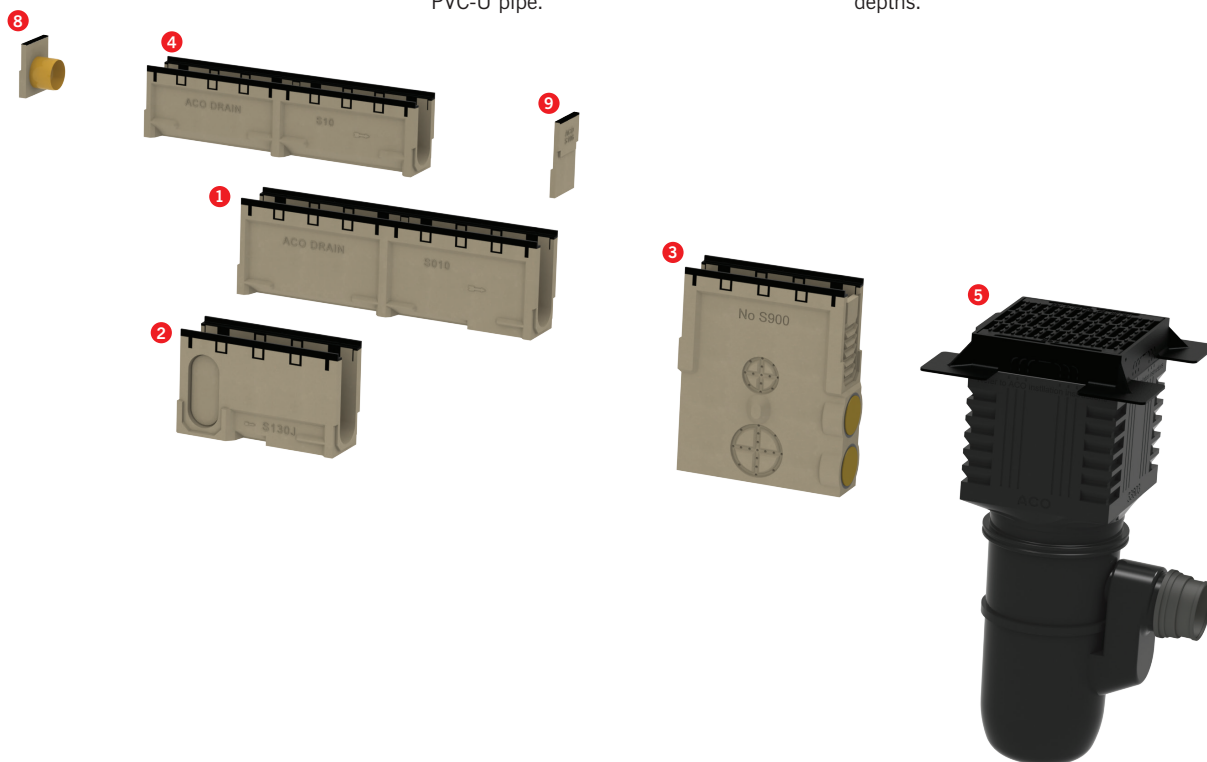


One universal gully for all applications compatible with S100, S150 and S200 ranges and certified up to Load Class F 900. Standard features include ductile cast iron cover, silt bucket and roddable foul air trap for connection to Ø160mm PVC-U pipe.

6 Step Connector



A polymer concrete unit which helps provide smooth water transition between constant depth channels when used in a stepped system design. The step connector is suitable for the 60mm step between each of the constant channel depths.



7 Inlet Endcap



Three depths of Polymer concrete Inlet Endcaps to be used at specific points in the channel run.

8 Outlet Endcap



Three depths of Polymer concrete Outlet Endcaps to be used at specific points in the channel run.

9 Closing Endcap



Three depths of Polymer concrete Closing Endcaps with integral cast iron edge to be used at specific points in the channel run.

ACO S100

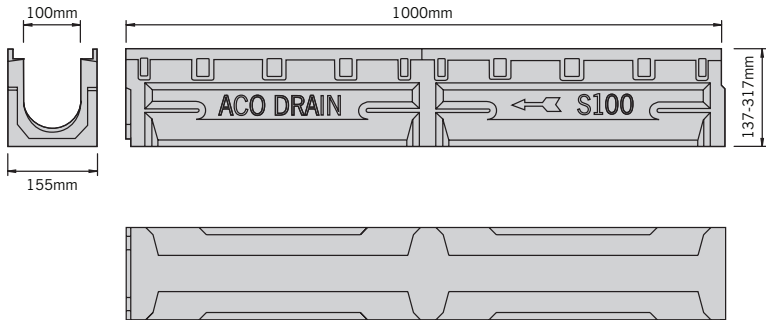
ACO S100 channels listed below are provided with integral cast iron edge rails.

Suitable for applications up to and including BS EN 1433:2002 load class F 900*. For the S100 range of gratings to suit these channels refer to page 14.

The ACO universal gully can be used with all S100 channels see page 18 for further details.

Sloping depth channels with cast iron edge rails

| Product code | Description | Length (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) | Sump | Gully unit | Closing endcap | Outlet endcap | Inlet endcap |
|--------------|-------------|-------------|--------------------|-------------------|-------------|------|-------------|----------------|---------------|--------------|
| 0270 | S1 | 1000 | 137/143 | 112/118 | 20.0 | - | 601/602/607 | S106 | - | - |
| 0271 | S2 | 1000 | 143/149 | 118/124 | 20.3 | - | 601/602/607 | S106 | - | - |
| 0272 | S3 | 1000 | 149/155 | 124/130 | 20.4 | - | 601/602/607 | S106 | - | - |
| 0273 | S4 | 1000 | 155/161 | 130/136 | 20.9 | S900 | 601/602/607 | S106 | - | - |
| 0275 | S5 | 1000 | 161/167 | 136/142 | 21.0 | - | 601/602/607 | S106 | - | - |
| 0276 | S6 | 1000 | 167/173 | 142/148 | 21.1 | - | 601/602/607 | S106 | - | - |
| 0277 | S7 | 1000 | 173/179 | 148/154 | 22.9 | - | 601/602/607 | S106 | - | - |
| 0278 | S8 | 1000 | 179/185 | 154/160 | 23.3 | - | 601/602/607 | S106 | - | - |
| 0279 | S9 | 1000 | 185/191 | 160/166 | 24.1 | S900 | 601/602/607 | S106 | S108 | - |
| 0281 | S10 | 1000 | 191/197 | 166/172 | 24.7 | - | 601/602/607 | S106 | - | S109 |
| 0282 | S11 | 1000 | 197/203 | 172/178 | 24.8 | - | 601/602/607 | S206 | - | - |
| 0283 | S12 | 1000 | 203/209 | 178/184 | 24.9 | - | 601/602/607 | S206 | - | - |
| 0284 | S13 | 1000 | 209/215 | 184/190 | 25.0 | - | 601/602/607 | S206 | - | - |
| 0285 | S14 | 1000 | 215/221 | 190/196 | 25.7 | S900 | 601/602/607 | S206 | - | - |
| 0286 | S15 | 1000 | 221/227 | 196/202 | 25.8 | - | 601/602/607 | S206 | - | - |
| 0287 | S16 | 1000 | 227/233 | 202/208 | 26.3 | - | 601/602/607 | S206 | - | - |
| 0288 | S17 | 1000 | 233/239 | 208/214 | 27.4 | - | 601/602/607 | S206 | - | - |
| 0289 | S18 | 1000 | 239/245 | 214/220 | 27.7 | - | 601/602/607 | S206 | - | - |
| 0290 | S19 | 1000 | 245/251 | 220/226 | 28.5 | S900 | 601/602/607 | S206 | S208 | - |
| 0292 | S20 | 1000 | 251/257 | 226/232 | 28.8 | - | 601/602/607 | S206 | - | S209 |
| 0293 | S21 | 1000 | 257/263 | 232/238 | 29.2 | - | 601/602/607 | S306 | - | - |
| 0294 | S22 | 1000 | 263/269 | 238/244 | 29.3 | - | 601/602/607 | S306 | - | - |
| 0295 | S23 | 1000 | 269/275 | 244/250 | 30.0 | - | 601/602/607 | S306 | - | - |
| 0296 | S24 | 1000 | 275/281 | 250/256 | 31.1 | S900 | 601/602/607 | S306 | - | - |
| 0297 | S25 | 1000 | 281/287 | 256/262 | 31.2 | - | 601/602/607 | S306 | - | - |
| 0298 | S26 | 1000 | 287/293 | 262/268 | 31.3 | - | 601/602/607 | S306 | - | - |
| 0299 | S27 | 1000 | 293/299 | 268/274 | 32.3 | - | 601/602/607 | S306 | - | - |
| 0300 | S28 | 1000 | 299/305 | 274/280 | 32.7 | - | 601/602/607 | S306 | - | - |
| 0301 | S29 | 1000 | 305/311 | 280/286 | 33.1 | S900 | 601/602/607 | S306 | S308 | - |
| 0303 | S30 | 1000 | 311/317 | 286/292 | 34.7 | - | 601/602/607 | S306 | - | S309 |



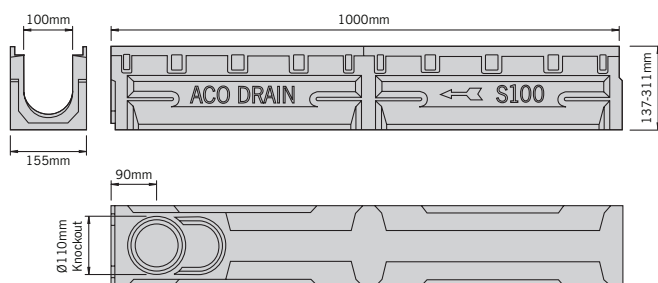
S100 1m sloping depth channel

*Not suitable for carriageways of public roads or motorways

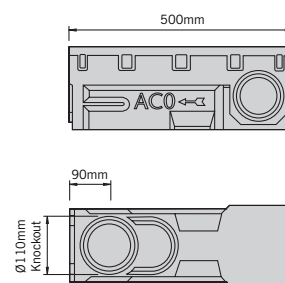
ACO S100

Constant depth channels with cast iron edge rails

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) | Knockout union | Sump | Gully unit | Closing endcap | Outlet endcap | Inlet endcap | Step connector |
|--------------|-------------|-------------|-----------------|--------------------|--------------------|-------------------|-------------|----------------|------|-------------|----------------|---------------|--------------|----------------|
| 0269 | S01* | 1000 | 100 | 155 | 137 | 112 | 20.4 | 820/821 | - | 601/602/607 | S106 | - | - | - |
| 0274 | S05* | 1000 | 100 | 155 | 161 | 136 | 21.9 | 820/821 | S900 | 601/602/607 | S106 | - | - | - |
| 0403 | S010* | 1000 | 100 | 155 | 191 | 166 | 25.3 | 820/821 | S900 | 601/602/607 | S106 | S108 | S109 | 123 |
| 0280 | S110J* | 500 | 100 | 155 | 191 | 166 | 13.7 | 820/821 | S900 | 601/602/607 | S106 | S108 | S109 | 123 |
| 0405 | S020* | 1000 | 100 | 155 | 251 | 226 | 28.9 | 820/821 | S900 | 601/602/607 | S206 | S208 | S209 | 123 |
| 0291 | S120J* | 500 | 100 | 155 | 251 | 226 | 17.4 | 820/821 | S900 | 601/602/607 | S206 | S208 | S209 | 123 |
| 0407 | S030* | 1000 | 100 | 155 | 311 | 286 | 33.3 | 820/821 | S900 | 601/602/607 | S306 | S308 | S309 | - |
| 0302 | S130J* | 500 | 100 | 155 | 311 | 286 | 19.7 | 820/821 | S900 | 601/602/607 | S306 | S308 | S309 | - |



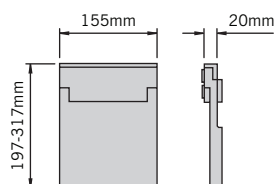
S100 1m constant depth channel



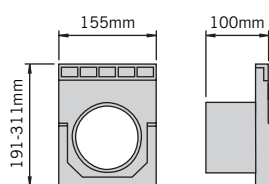
S100 0.5m constant depth channel

Closing outlet and inlet endcaps

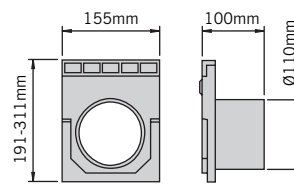
| Product code | Description | Length (mm) | Spigot length (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|----------------|-------------|--------------------|--------------------|--------------------|-------------------|-------------|
| 0411 | S106 - Closing | 20 | - | 155 | 197 | - | 1.0 |
| 0413 | S206 - Closing | 20 | - | 155 | 257 | - | 1.3 |
| 0414 | S306 - Closing | 20 | - | 155 | 317 | - | 1.7 |
| 0415 | S108 - Outlet | 100 | 80 | 155 | 191 | 166 | 1.2 |
| 0416 | S208 - Outlet | 100 | 80 | 155 | 251 | 226 | 1.5 |
| 0418 | S308 - Outlet | 100 | 80 | 155 | 311 | 286 | 1.9 |
| 0419 | S109 - Inlet | 100 | 80 | 155 | 191 | 166 | 1.1 |
| 0420 | S209 - Inlet | 100 | 80 | 155 | 251 | 226 | 1.5 |
| 0421 | S309 - Inlet | 100 | 80 | 155 | 311 | 286 | 1.9 |



Closing endcaps



Outlet endcaps



Inlet endcaps

* These level invert channels have a vertical Ø110mm knockout.
J Indicates availability of side junction for 90° bends.

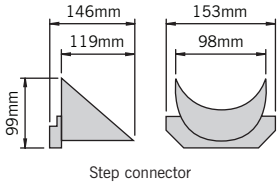
Note: Level invert channels can be inserted to extend a run. Please refer to the channel range layout on page 8. See channel parts table to match endcap with correct channel.

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

ACO S100

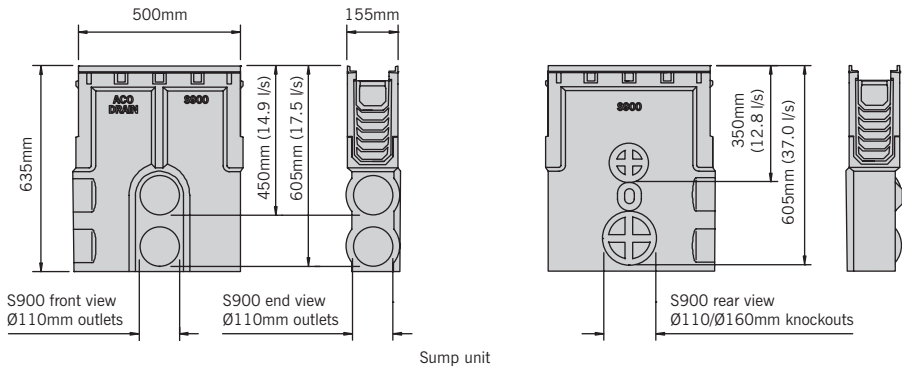
Step connector

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|----------------|-------------|-----------------|--------------------|--------------------|-------------------|-------------|
| 0858 | 60mm step S123 | 119 | 98 | 153 | 99 | 60 | 1.1 |



Sump unit with cast iron edge rails

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|--|-------------|-----------------|--------------------|--------------------|-------------------|-------------|
| 4223 | Sump unit and polypropylene bucket assembly S900 | 500 | 100 | 155 | 635 | 605 | 38.3 |

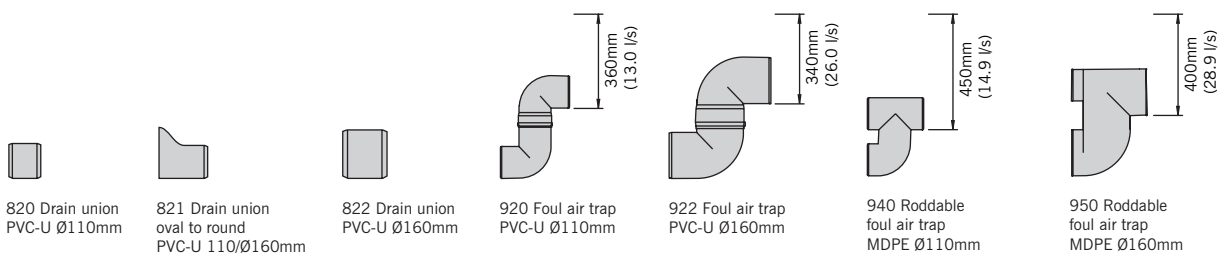


Note: For universal gully details please refer to page 18.

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

Drain unions and foul air traps

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|--|-------------|-----------------|--------------------|--------------------|-------------------|-------------|
| 0056 | 820 Drain union PVC-U Ø110mm | 100 | 100 | 110 | - | - | 0.1 |
| 0057 | 821 Drain union oval to round PVC-U 110/Ø160mm | 175 | 150 | 160 | - | - | 0.5 |
| 0058 | 822 Drain union PVC-U Ø160mm | 150 | 150 | 160 | - | - | 0.5 |
| 2640 | 920 Foul air trap PVC-U Ø110mm | - | 100 | 110 | - | 360 | 0.5 |
| 2638 | 922 Foul air trap PVC-U Ø160mm | - | 150 | 160 | - | 340 | 1.9 |
| 7931 | 940 Roddable foul air trap MDPE Ø110mm | - | 100 | 110 | - | 450 | 0.6 |
| 7932 | 950 Roddable foul air trap MDPE Ø160mm | - | 150 | 160 | - | 400 | 0.8 |



Polymer repair kit

| Product code | Description | Weight (kg) |
|--------------|-----------------------------|-------------|
| 32599 | Polymer concrete repair kit | 1kg† |



Polymer repair kit

Note: For universal gully details please refer to page 18.

†Repair kit includes 0.5kg tin of natural colour polyester concrete repair resin, grey and black pigment, hardener paste, mixing instructions and material safety data sheets.

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

Gratings for use with ACO S100 channels complete with four locking bolts

Gratings for Load Class E 600 applications



| Product code | Description | Length (mm) | Width overall (mm) | Depth overall (mm) | Slot width / hole dia (mm) | Intake area mm²/m | Anti-shunt feature | Weight (kg) |
|--------------|--|-------------|--------------------|--------------------|----------------------------|-------------------|--------------------|-------------|
| 0776 | Intercept heavy-duty ductile iron ref. 776 | 500 | 139 | 15 | 10 | 29000 | n/a | 6.8 |



Intercept heavy-duty ductile iron grating

Gratings for Load Class F 900 applications



| Product code | Description | Length (mm) | Width overall (mm) | Depth overall (mm) | Slot width / hole dia (mm) | Intake area mm²/m | Anti-shunt feature | Weight (kg) |
|--------------|--|-------------|--------------------|--------------------|----------------------------|-------------------|--------------------|-------------|
| 4604 | Slotted heavy-duty ductile iron ref 772 | 500 | 139 | 15 | 10 | 32000 | n/a | 5.6 |
| 0774 | Heelguard™ heavy-duty ductile iron ref 774 | 500 | 139 | 15 | 5 | 16100 | n/a | 6.7 |
| 7626 | Solid cover ductile iron ref 778 | 500 | 139 | 15 | n/a | n/a | n/a | 6.7 |



Slotted heavy-duty ductile iron grating



Solid cover ductile iron



Heelguard™ heavy-duty ductile iron grating

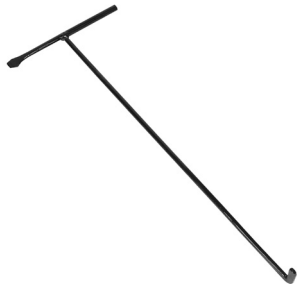
Note: All ACO S Range gratings come complete with bolts to ensure the system can be locked and accessed when required.

Grating accessories

| Product code | Description | Length (mm) | Width overall (mm) | Depth overall (mm) | Slot width / hole dia (mm) | Intake area mm²/m | Anti-shunt feature | Weight (kg) |
|--------------|--------------------------|-------------|--------------------|--------------------|----------------------------|-------------------|--------------------|-------------|
| 2324 | Spare S100 bolt | 30 | 10 | - | - | - | - | 0.03 |
| 1367 | Grating lifting tool 835 | n/a | n/a | n/a | n/a | n/a | n/a | 0.1 |



S100 bolt



835 grating lifting tool

ACO S150

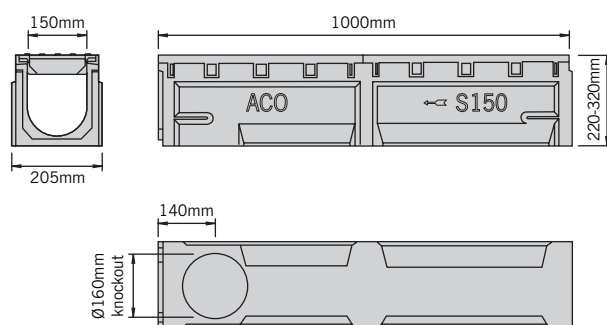
ACO S150 channels listed below are provided with integral cast iron edge rails complete with slotted ductile iron gratings and locking bolts.

Suitable for applications up to and including BS EN 1433:2002 load class F 900*. Gratings have 14mm wide slots providing an intake area of 63400mm²/m.

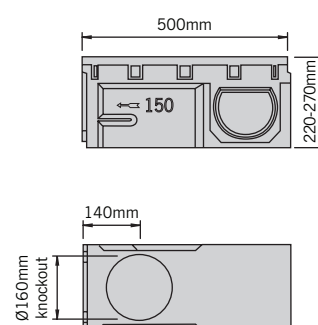
The ACO universal gully can be used with all S150 channels see page 18 for further details.

Constant depth channels complete with ductile iron gratings

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) | Knockout union | Sump | Gully unit | Closing endcap | Outlet endcap | Inlet endcap | Step connector |
|--------------|--------------|-------------|-----------------|--------------------|--------------------|-------------------|-------------|----------------|------|-------------|----------------|---------------|--------------|----------------|
| 1151 | S150 1501** | 1000 | 150 | 205 | 220 | 195 | 44.1 | 822 | 0875 | 601/602/607 | 1130 | 1131 | - | 1159 |
| 1152 | S150 1502** | 1000 | 150 | 205 | 270 | 245 | 52.8 | 822 | 0875 | 601/602/607 | 1130 | 1132 | - | 1159 |
| 1153 | S150 1503** | 1000 | 150 | 205 | 320 | 295 | 57.2 | 822 | 0875 | 601/602/607 | 1130 | 1133 | - | 1159 |
| 1176 | S150 1504J** | 500 | 150 | 205 | 220 | 195 | 26.1 | 822 | 0875 | 601/602/607 | 1130 | 1131 | - | 1159 |
| 1154 | S150 1505J** | 500 | 150 | 205 | 270 | 245 | 28.6 | 822 | 0875 | 601/602/607 | 1130 | 1132 | - | 1159 |



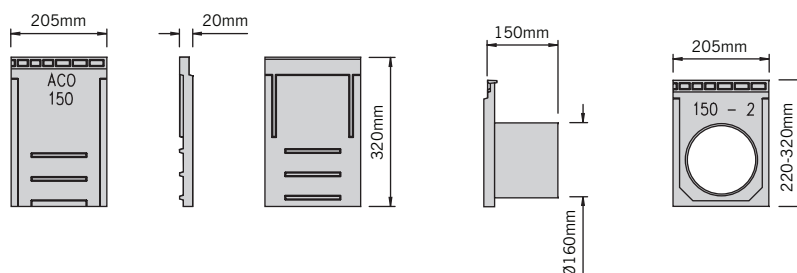
S150 1m constant depth channel



S150 0.5m constant depth channel

Endcaps

| Product code | Description | Length (mm) | Spigot length (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|------------------|-------------|--------------------|--------------------|--------------------|-------------------|-------------|
| 1130 | Closing S150**† | 20 | - | 205 | 320 | - | 2.6 |
| 1131 | Outlet S150 1131 | 150 | 130 | 205 | 220 | 195 | 2.4 |
| 1132 | Outlet S150 1132 | 150 | 130 | 205 | 270 | 245 | 2.7 |
| 1133 | Outlet S150 1133 | 150 | 130 | 205 | 320 | 295 | 3.0 |



Closing endcap

Outlet endcaps

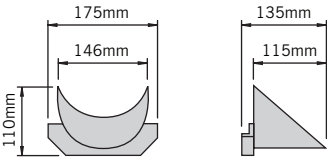
*Not suitable for carriageways of public roads or motorways
 **These Level Invert Channels have a vertical Ø160mm knockout
 J Indicates availability of side junction for 90° bends
 † Can be cut on site to suit invert depth

Note: As with all pre-cast products, polymer concrete units are subject to weight and dimensional tolerances.

ACO S150

Step connector

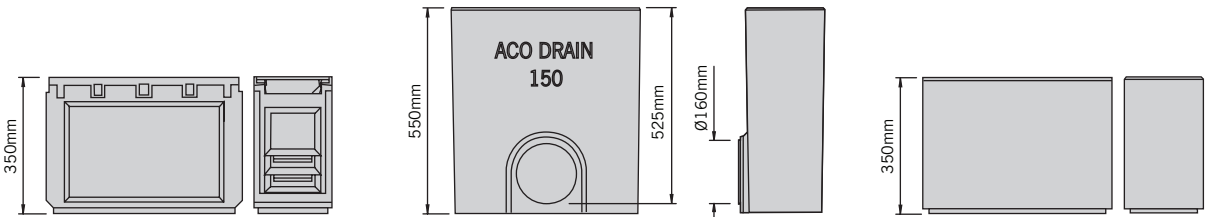
| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|---------------------|-------------|-----------------|--------------------|--------------------|-------------------|-------------|
| 1159 | 50mm step connector | 115 | 146 | 175 | 110 | 50 | 1.0 |



Step connector

Sump units

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|-----------------------------|-------------|-----------------|--------------------|--------------------|-------------------|-------------|
| 0875 | Sump assembly top and base* | 500 | 150 | 205 | 900 | 875 | 62.7 |
| 1168 | Raising piece | 500 | 150 | 205 | 350 | 240 | 18.5 |



Sump top unit

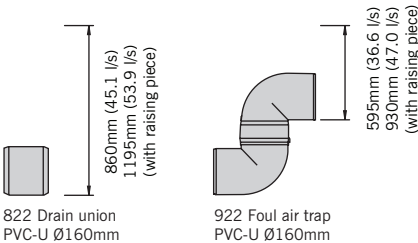
Sump base unit

Sump raising piece



Drain unions & foul air trap

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|--------------------------------|-------------|-----------------|--------------------|--------------------|-------------------|-------------|
| 0058 | 822 Drain union PVC-U Ø160mm | 150 | 150 | 160 | - | - | 0.5 |
| 2638 | 922 Foul air trap PVC-U Ø160mm | - | 150 | 160 | - | Varies | 1.9 |



822 Drain union
PVC-U Ø160mm

922 Foul air trap
PVC-U Ø160mm

*Note: For a deeper sump, the raising piece may be inserted between the top and base units. For universal gully details please refer to page 18. For repair kit information please see page 13. As with all pre-cast products, polymer concrete units are subject to weight and dimensional tolerances.

ACO S200

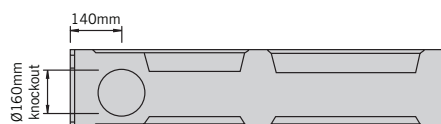
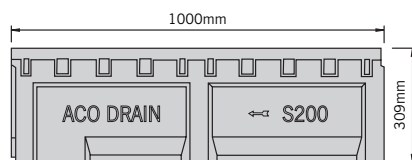
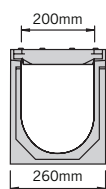
ACO S200 channels listed below are provided with integral cast iron edge rails complete with slotted ductile iron gratings and locking bolts.

Suitable for applications up to and including BS EN 1433:2002 load class F 900*. Gratings have 16mm wide slots providing an intake area of 90900mm²/m.

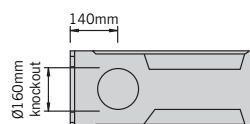
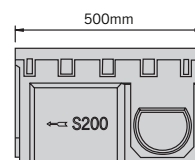
The ACO universal gully can be used with all S200 channels see page 18 for further details.

Constant depth channels with ductile iron gratings

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) | Knockout union | Sump | Gully unit | Closing endcap | Outlet endcap | Inlet endcap |
|--------------|--------------|-------------|-----------------|--------------------|--------------------|-------------------|-------------|----------------|------|-------------|----------------|---------------|--------------|
| 1427 | S200 2300** | 1000 | 200 | 260 | 309 | 279 | 82.5 | 822 | n/a | 601/602/607 | 1516 | 1517 | - |
| 2847 | S200 2310J** | 500 | 200 | 260 | 309 | 279 | 40.0 | 822 | n/a | 601/602/607 | 1516 | 1517 | - |



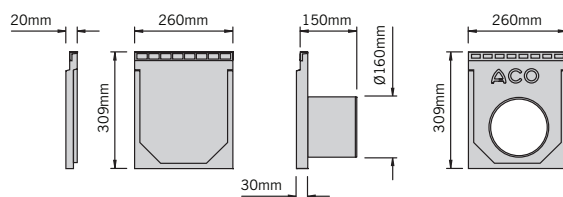
S200 1m constant depth channel



S200 0.5m constant depth channel

Endcaps

| Product code | Description | Length (mm) | Spigot length (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|--------------------|-------------|--------------------|--------------------|--------------------|-------------------|-------------|
| 1516 | Closing S200 | 20 | - | 260 | 309 | - | 3.7 |
| 1517 | Outlet S200 Ø160mm | 150 | 130 | 260 | 309 | 274 | 3.5 |



Closing endcap

Outlet endcap

Drain union

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|------------------------------|-------------|-----------------|--------------------|--------------------|-------------------|-------------|
| 0058 | 822 Drain union PVC-U Ø160mm | 150 | 150 | 160 | - | - | 0.5 |



822 Drain union PVC-U Ø160mm

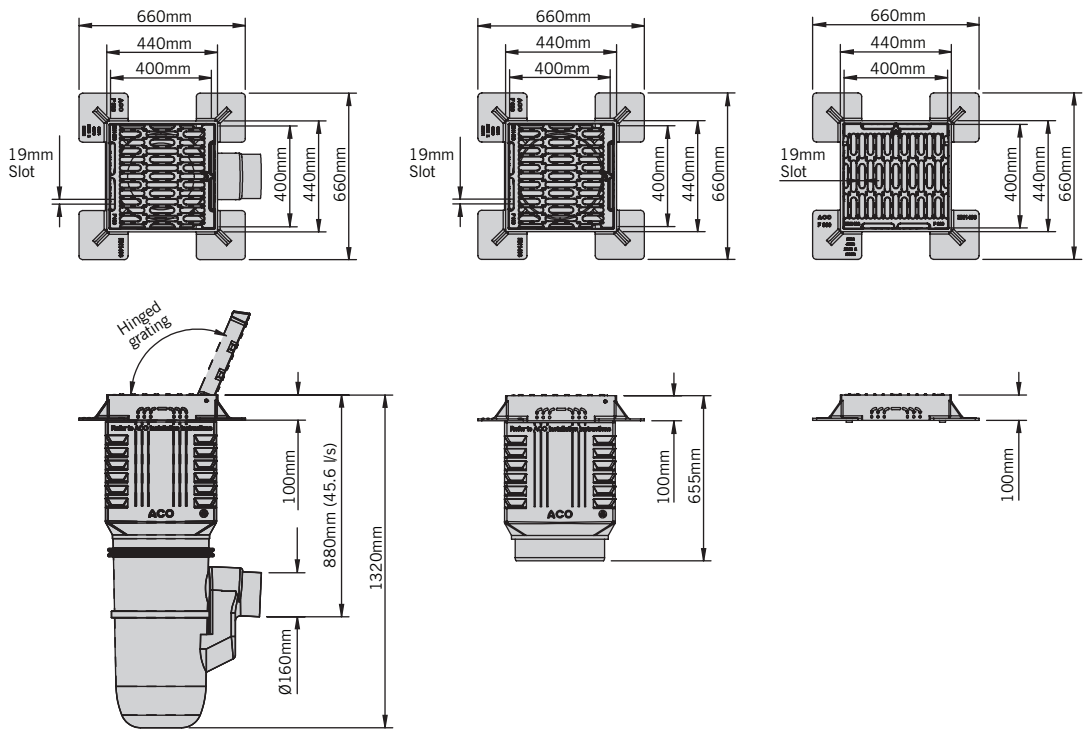
*Not suitable for carriageways of public roads or motorways
 **All Level Invert Channels have a vertical Ø160mm knockout.
 J Indicates availability of side junction for 90° bends.

For universal gully details please refer to page 18. For repair kit information please see page 13. These products are subject to weight and dimensional tolerances. The dimensions shown on this page are for guidance purposes only.

ACO Universal Gully

ACO Universal Gully for S100, S150 and S200 channels

| Product code | Description | Length (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Slot width (mm) | Weight (kg) |
|--------------|--------------------------------|-------------|--------------------|--------------------|-------------------|-----------------|-------------|
| 33601 | Gully assembly and bucket 601F | 440 | 440 | 1315 | 870 | 19 | 78.8 |
| 33602 | Gully assembly no bucket 602F | 440 | 440 | 1315 | 870 | 19 | 77.4 |
| 33607 | Gully top assembly only 607F | 440 | 440 | 655 | - | 19 | 73.1 |
| 33604 | Grating and frame 604F | 400* | 660†† | 100 | - | 19 | 69.5 |



Gully assembly No 601F and No 602F

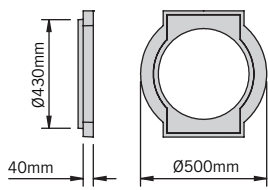
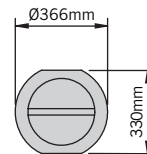
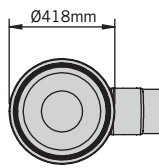
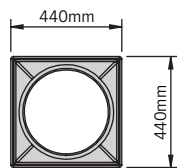
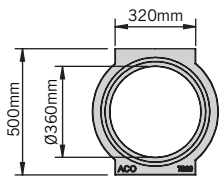
Gully top assembly No 607F
(Gully pot supplied by others)

Gully grating and frame only No 604F

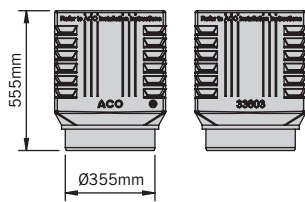
* Clear opening size
†† Over frame size

ACO Universal Gully components

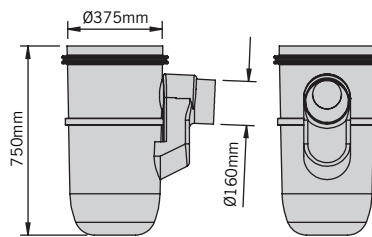
| Product code | Description | Length (mm) | Width overall (mm) | Depth overall (mm) | Invert (mm) | Weight (kg) |
|--------------|-----------------------------|-------------|--------------------|--------------------|-------------|-------------|
| 7060 | Gully connector 615 | 500 | Ø500 | 40 | - | 7.0 |
| 33603 | Gully intermediate unit 603 | 440 | 440 | 555 | - | 5.1 |
| 33605 | Gully base unit 605 | - | Ø375 | 750 | 310 | 4.3 |
| 33606 | Bucket polyethylene 606 | - | Ø275 | 245 | - | 1.4 |



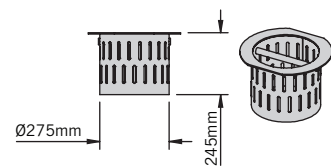
Gully connector No 615



Gully intermediate unit No 603



Gully base unit No 605



Gully bucket No 606

ACO S300

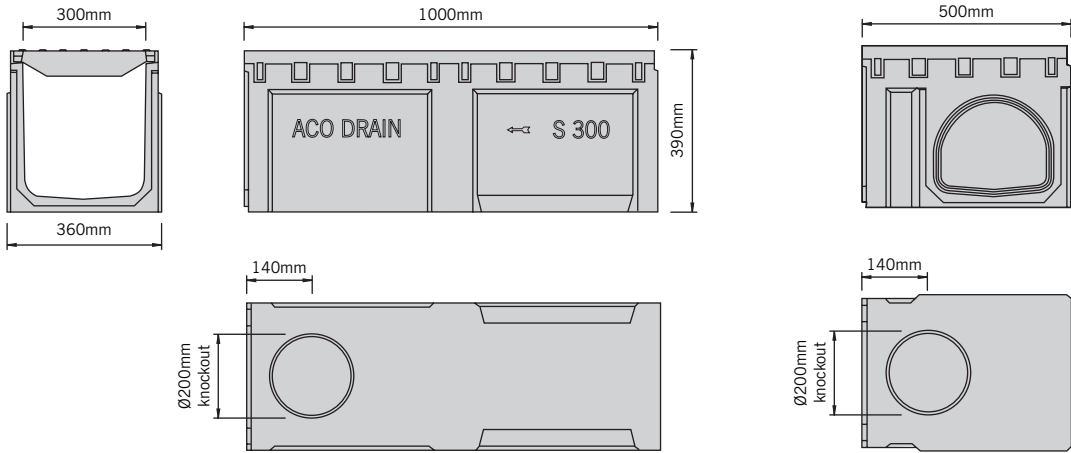
ACO S300 channels listed below are provided with integral cast iron edge rails complete with slotted ductile iron gratings and locking bolts.

Suitable for applications up to and including BS EN 1433:2002 load class F 900*.

Gratings have 16mm wide slots providing an intake area of 137100mm²/m.

Constant depth channels complete with ductile iron gratings

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) | Knockout union | Closing endcap | Outlet endcap | Inlet endcap |
|--------------|--------------|-------------|-----------------|--------------------|--------------------|-------------------|-------------|----------------|----------------|---------------|--------------|
| 2632 | S300 2400** | 1000 | 300 | 360 | 390 | 360 | 132.5 | 823 | 2573 | 2574 | - |
| 1766 | S300 1766J** | 500 | 300 | 360 | 390 | 360 | 62.83 | 823 | 2573 | 2574 | - |



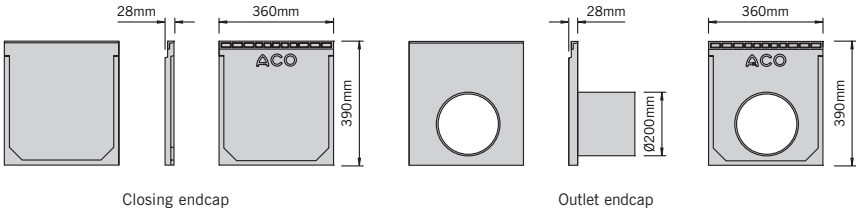
S300 1m constant depth channel

S300 0.5m constant depth channel



Endcaps

| Product code | Description | Length (mm) | Width bore (mm) | Width invert (mm) | Width overall (mm) | Depth overall (mm) | Weight (kg) |
|--------------|--------------------|-------------|-----------------|-------------------|--------------------|--------------------|-------------|
| 2573 | Closing S300 | 28 | - | - | 360 | 390 | 6.3 |
| 2574 | Outlet S300 Ø200mm | 205 | 190 | 358 | 360 | 390 | 3.0 |

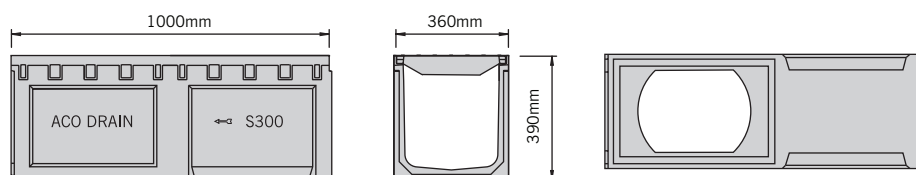


*Not suitable for carriageways of public roads or motorways
**All Level Invert Channels have a vertical Ø200mm knockout.
J indicates availability of side junction for 90° bends.

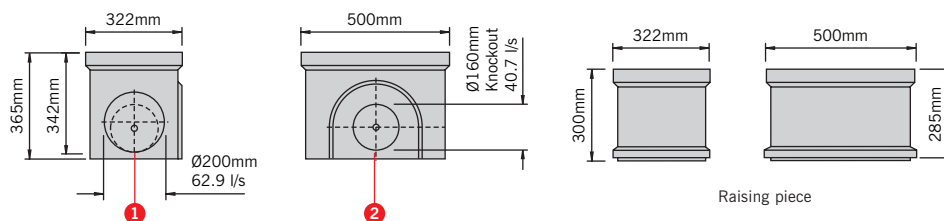
Note: As with all pre-cast products, polymer concrete units are subject to weight and dimensional tolerances.

ACO S300 gully units and accessories

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) | Knockout union | Closing endcap | Outlet endcap |
|--------------|---------------------|-------------|-----------------|--------------------|--------------------|-------------------|-------------|----------------|----------------|---------------|
| 3102 | S300 Gully top 2410 | 1000 | 300 | 360 | 390 | 360 | 133.2 | - | 2573 | 2574 |
| 1614 | Shallow base unit | 500 | - | 320 | 365 | - | 25.4 | 822/823 | - | - |
| 4520 | Deep base unit only | 500 | - | 320 | 520 | - | 37.2 | 822/823 | - | - |
| 1697 | Raising piece | 500 | - | 320 | 300 | - | 24.0 | 822 | - | - |
| 1616 | Silt bucket | - | - | - | - | - | 4.7 | - | - | - |



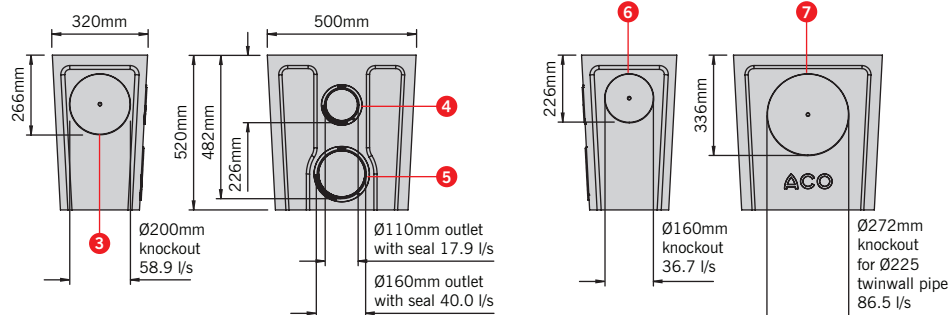
S100 Gully top 2410

Invert Depths
(without raising piece)

Shallow base unit

Raising piece

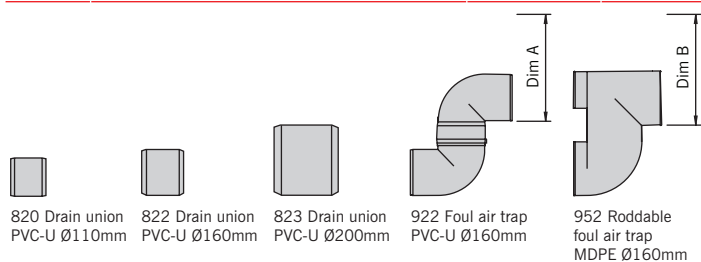
- 1 717mm
- 2 717mm
- 3 641mm
- 4 631mm
- 5 857mm
- 6 601mm
- 7 711mm



Deep base unit only

Drain unions and foul air traps

| Product code | Description | Length (mm) | Width bore (mm) | Width overall (mm) | Depth overall (mm) | Invert depth (mm) | Weight (kg) |
|--------------|---|-------------|-----------------|--------------------|--------------------|-------------------|-------------|
| 0056 | 820 Drain union PVC-U Ø110mm | 100 | - | - | - | - | 0.1 |
| 0058 | 822 Drain union PVC-U Ø160mm | 150 | 150 | 160 | - | - | 0.5 |
| 2723 | 823 Drain union PVC-U Ø200mm | 200 | 190 | 200 | - | - | 0.7 |
| 2638 | 922 Foul air trap PVC-U Ø160mm | - | 150 | 160 | - | Varies | 1.9 |
| 7932 | 950 Roddable foul air trap PVC-U Ø160mm | - | 160 | - | - | - | 0.8 |



| Units | Dim A | Dim B |
|----------------|-------------------|-------------------|
| 1614/3102 | 452mm (33.91 l/s) | 509mm (36.41 l/s) |
| 1614/1697/3102 | 737mm (45.11 l/s) | 660mm (42.31 l/s) |
| 4520/3102 | 592mm (39.81) | 649mm (41.91) |
| 4520/1697/3102 | 877mm (49.61 l/s) | 800mm (47.21 l/s) |

Note: Inverts shown are related to S300 grating level. For repair kit information please see page 13.
As with all pre-cast products, polymer concrete units are subject to weight and dimensional tolerances.

Designing an ACO S Range drainage system

ACO Technologies online Hydraulic Design Software has been developed to give specifying engineers the option of designing and selecting the most appropriate channel drainage system for themselves, or using the tool in partnership with our dedicated Technical and Design Service. Using differential equations for spatially varied flow, this free online tool calculates the hydraulic capacity of channels accepting flow along their entire length. The software accurately analyses flow in the selected channel to check it has sufficient capacity. Furthermore it can optimise the selection and potentially downsize all or part of a channel run if it is oversized.

Designing a drainage system

The designer must input the rainfall intensity and total catchment area draining to each run of channel to calculate inflow to that channel system.

For normal situations Building Regulations (Approved Document Part H, 2015) suggests a default value of 50 mm/hour rainfall intensity should be an appropriate for catchments <4,000m². For larger drainage areas the designer should refer to BS 752

Where a specifier seeks to design their project in accordance with National Planning Policy Framework, the requirements of a Sustainable Drainage System and to Sewers for Adoption (7th edition) criteria, rainfall runoff will need to be managed at source and an allowance made for the effects of climate change over the lifetime of the development.



It should be noted that other calculation methods will not give the correct results for channel drainage systems. In particular the use of equations of steady uniform flow, such as Manning's equation, is not appropriate for channel drainage design. They will not work with level channels and give grossly inaccurate results at shallow gradients.

Using Flood Studies Report procedures to analyse rainfall frequency, intensity and duration, the Design Software allows the specifier to change the selected storm intensity and duration to the required standard (e.g. to the 1 in 30 and 1 in 100 year return periods), and to make allowance for the effects of climate change on rainfall over the lifetime of the development.

The design software also allows the end user to estimate alternative storage requirements.

ACO can also provide specifiers with conduit files for use in proprietary software like QuAD Hydraulic Design 2.0. Please contact the Design Services Team if you require any further information.

ACO Water Management Design Services Team

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 ACO S 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 QuAD Hydraulic Design 2.0 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



NEW ACO QuAD Hydraulic Design Software

Register online for our free, secure online design software:

- ▶ All designs are securely stored and easily accessed online
- ▶ Data always up-to-date
- ▶ Proven calculation methodology - more accurate and efficient designs
- ▶ Flexible catchment design
- ▶ Integrated rainfall data
- ▶ Automated product optimisation
- ▶ PDF summary documents



Register Now - It's Free

www.aco.co.uk/quad-hydraulic-design-2.0

Design method

ACO S Range channels are available in four widths (100mm, 150mm, 200mm and 300mm). Whilst channel can be laid flat, where longitudinal falls exist the hydraulic capacity of the system will be increased, allowing greater spacing between outfalls.

Channel systems can be provided with constant invert depth (Type 1) as a series or stepped invert depths (Type 3) or for the 100mm wide system as a pre-sloped channel invert system able to provide a fall of 0.6% over a 30m length (Type 2). The extent of pre-sloped invert systems can be extended further by incorporating lengths of constant invert channel.

Analysis of channel hydraulic capacity requires the use of a proprietary software programme like ACO Technologies QuAD Hydraulic Design 2.0 Software. Our design software enables users to develop an optimised design of stepped sizes of channels, increasing in size down the run of the channel. For more information visit www.aco.co.uk

For detailed designs using ACO Technologies QuAD Hydraulic Design 2.0 Software, please contact the ACO Water Management Design Services team. The team may also be consulted for advice where the inflow is not uniformly distributed along the channel.

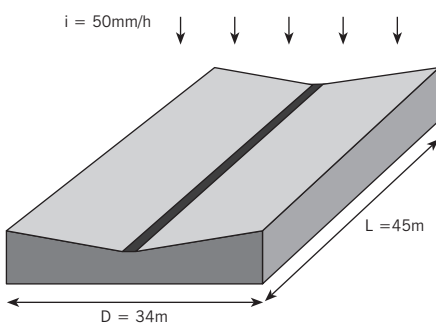
The tables on the following page have been produced from the ACO Hydro software to facilitate a quick manual design method for the determination of the drainage requirements.

The columns of drainage catchment area (A m²) are based on a rainfall intensity of 50mm/h, but can be adapted for use at any rainfall intensity. The columns of maximum flow rate (Q l/s) and maximum lateral inflow (q l/s/m) can be used at any rainfall intensity. The table of sloping invert channel capacities can be used for the design of ACO S100 sloping invert channels.

**ACO Water Management
Design Services Team**

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

DESIGN EXAMPLE



For a design of ACO S Range S100, assume the following figures:

D = 34m (depth of catchment area)

L = 45m (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

$$\text{Area} = L \times D = 45 \times 34 = 1530\text{m}^2$$

For a quick analysis, see the tables and the columns for Area.

1530m² is too large for one 45m run of ACO S Range S100 (S020)

$$\text{Try } 1530 \times 1/2 = 765\text{m}^2$$

$$L \times 1/2 = 22.5\text{m}$$

Estimating between the rows for 20m and 30m lengths

One 22.5m run of ACO S Range S100 (S020) can drain approx 765m²

Hence two runs can drain the 1530m²

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

2. Determine total flow (Q)

$$Q = (\text{Area} \times i) / 3600 = (1530 \times 50) / 3600 = 21.3 \text{ l/s}$$

3. Determine lateral inflow (q)

$$q = Q / L = 21.3 / 45 = 0.473 \text{ l/s/m}$$

4. Determine suitable channel sizes and lengths

For example, would a sump at 1/3 length work with a lateral inflow of 0.473 l/s/m²

1/3 L = 15m, ACO S Range S100 (S010) will be adequate

2/3 L = 30m, ACO S Range S100 (S030) will be adequate

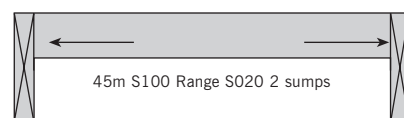
5. Check Outlet capacity

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

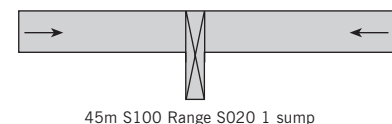
6. Solutions

Three options are sketched (right). There are other options, including S100 sloping invert channels or a 45m length run to an outfall using S150 (S1503) channels.

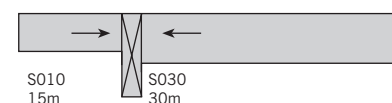
Option 1



Option 2



Option 3



ACO S100 Range hydraulic performance tables

Notes for ACO S100 hydraulic tables

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

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

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

A (m²) is the maximum area that can be drained and will depend on the design rainfall intensity chosen.

The tabulated areas are for a rainfall of 50mm/hr (0.014 l/s/m²) and will generally comply with the requirements stated in guidance to The Building Regulations (Part H 2002). Where the project must comply with the National Standards for Sustainable Drainage Systems, multiple rainfall events using design rainfall specific to the geographical location of the site must be analysed. The ACO Water Management Design Services Team will be able to assist with this process.

At other rainfall intensities, the area can be determined by proportion, e.g. at 75mm/hr, 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 23 to help determine your drainage requirements.

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

ACO S100 constant depth channels

| ACO S100 S01 | | | | | | | | | |
|----------------------------|----------|-----------|--------|---------|-----------|--------|---------|-----------|--------|
| Length to Outlet (m) | Slope 0% | | | | | | | | |
| | 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 | 3.2 | 0.32 | 230 | 4.8 | 0.48 | 346 | 5.8 | 0.58 | 420 |
| 20 | 2.9 | 0.15 | 210 | 5.2 | 0.26 | 377 | 6.6 | 0.33 | 476 |
| 30 | 2.7 | 0.09 | 194 | 5.5 | 0.18 | 394 | 7.0 | 0.23 | 506 |
| 40 | 2.5 | 0.06 | 182 | 5.6 | 0.14 | 404 | 7.3 | 0.18 | 525 |
| 50 | 2.4 | 0.05 | 172 | 5.7 | 0.11 | 411 | 7.5 | 0.15 | 539 |
| 60 | 2.3 | 0.04 | 164 | 5.8 | 0.10 | 416 | 7.6 | 0.13 | 548 |
| 70 | 2.2 | 0.03 | 156 | 5.8 | 0.08 | 420 | 7.7 | 0.11 | 556 |
| 80 | 2.1 | 0.03 | 150 | 5.9 | 0.07 | 423 | 7.8 | 0.10 | 562 |
| 90 | 2.0 | 0.02 | 144 | 5.9 | 0.07 | 426 | 7.9 | 0.09 | 567 |
| 100 | 1.9 | 0.02 | 139 | 5.9 | 0.06 | 427 | 7.9 | 0.08 | 571 |

| ACO S100 S05 | | | | | | | | | |
|----------------------------|----------|-----------|--------|---------|-----------|--------|---------|-----------|--------|
| Length to Outlet (m) | Slope 0% | | | | | | | | |
| | 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 | 4.7 | 0.47 | 336 | 6.6 | 0.66 | 477 | 7.9 | 0.79 | 571 |
| 20 | 4.3 | 0.21 | 308 | 7.2 | 0.36 | 516 | 8.9 | 0.45 | 642 |
| 30 | 4.0 | 0.13 | 287 | 7.5 | 0.25 | 538 | 9.5 | 0.32 | 683 |
| 40 | 3.7 | 0.09 | 270 | 7.7 | 0.19 | 552 | 9.8 | 0.25 | 709 |
| 50 | 3.6 | 0.07 | 256 | 7.8 | 0.16 | 561 | 10.1 | 0.20 | 727 |
| 60 | 3.4 | 0.06 | 244 | 7.9 | 0.13 | 567 | 10.3 | 0.17 | 741 |
| 70 | 3.2 | 0.05 | 233 | 7.9 | 0.11 | 572 | 10.4 | 0.15 | 751 |
| 80 | 3.1 | 0.04 | 224 | 8.0 | 0.10 | 576 | 10.6 | 0.13 | 760 |
| 90 | 3.0 | 0.03 | 216 | 8.0 | 0.09 | 579 | 10.7 | 0.12 | 768 |
| 100 | 2.9 | 0.03 | 209 | 8.1 | 0.08 | 582 | 10.7 | 0.11 | 772 |

| ACO S100 S010 | | | | | | | | | |
|----------------------------|----------|-----------|--------|---------|-----------|--------|---------|-----------|--------|
| Length to Outlet (m) | Slope 0% | | | | | | | | |
| | 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 | 6.8 | 0.68 | 487 | 9.1 | 0.91 | 657 | 10.8 | 1.08 | 775 |
| 20 | 6.2 | 0.31 | 448 | 9.8 | 0.49 | 704 | 12.0 | 0.60 | 863 |
| 30 | 5.8 | 0.19 | 419 | 10.1 | 0.34 | 730 | 12.7 | 0.42 | 914 |
| 40 | 5.5 | 0.14 | 395 | 10.4 | 0.26 | 747 | 13.2 | 0.33 | 947 |
| 50 | 5.2 | 0.10 | 375 | 10.5 | 0.21 | 758 | 13.5 | 0.27 | 972 |
| 60 | 5.0 | 0.08 | 359 | 10.6 | 0.18 | 766 | 13.7 | 0.23 | 990 |
| 70 | 4.8 | 0.07 | 344 | 10.7 | 0.15 | 771 | 13.9 | 0.20 | 1003 |
| 80 | 4.6 | 0.06 | 331 | 10.8 | 0.13 | 776 | 14.1 | 0.18 | 1014 |
| 90 | 4.4 | 0.05 | 319 | 10.8 | 0.12 | 779 | 14.2 | 0.16 | 1023 |
| 100 | 4.3 | 0.04 | 309 | 10.9 | 0.11 | 782 | 14.3 | 0.14 | 1030 |

ACO S100 Range hydraulic performance tables

| ACO S100 S020 | | | | | | | | | |
|----------------------|----------|-----------|--------|---------|-----------|--------|---------|-----------|--------|
| Length to Outlet (m) | Slope 0% | | | | | | | | |
| | 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 | 11.7 | 1.17 | 843 | 14.8 | 1.48 | 1064 | 17.0 | 1.70 | 1225 |
| 20 | 10.8 | 0.54 | 777 | 15.5 | 0.78 | 1119 | 18.6 | 0.93 | 1343 |
| 30 | 10.1 | 0.34 | 729 | 16.0 | 0.53 | 1151 | 19.6 | 0.65 | 1411 |
| 40 | 9.6 | 0.24 | 690 | 16.3 | 0.41 | 1171 | 20.2 | 0.51 | 1456 |
| 50 | 9.1 | 0.18 | 657 | 16.4 | 0.33 | 1183 | 20.7 | 0.41 | 1488 |
| 60 | 8.7 | 0.15 | 629 | 16.5 | 0.28 | 1191 | 21.0 | 0.35 | 1512 |
| 70 | 8.4 | 0.12 | 604 | 16.6 | 0.24 | 1198 | 21.2 | 0.30 | 1530 |
| 80 | 8.1 | 0.10 | 582 | 16.7 | 0.21 | 1202 | 21.4 | 0.27 | 1544 |
| 90 | 7.8 | 0.09 | 563 | 16.7 | 0.19 | 1205 | 21.6 | 0.24 | 1556 |
| 100 | 7.6 | 0.08 | 545 | 16.8 | 0.17 | 1207 | 21.8 | 0.22 | 1566 |

| ACO S100 S030 | | | | | | | | | |
|----------------------|----------|-----------|--------|---------|-----------|--------|---------|-----------|--------|
| Length to Outlet (m) | Slope 0% | | | | | | | | |
| | 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 | 17.5 | 1.75 | 1262 | 21.2 | 2.12 | 1528 | 24.0 | 2.40 | 1730 |
| 20 | 16.1 | 0.81 | 1162 | 22.0 | 1.10 | 1582 | 25.9 | 1.30 | 1866 |
| 30 | 15.2 | 0.51 | 1092 | 22.4 | 0.75 | 1614 | 27.1 | 0.90 | 1948 |
| 40 | 14.4 | 0.36 | 1034 | 22.7 | 0.57 | 1634 | 27.8 | 0.70 | 2002 |
| 50 | 13.7 | 0.27 | 987 | 22.9 | 0.46 | 1646 | 28.3 | 0.57 | 2040 |
| 60 | 13.1 | 0.22 | 945 | 23.0 | 0.38 | 1653 | 28.7 | 0.48 | 2068 |
| 70 | 12.6 | 0.18 | 909 | 23.0 | 0.33 | 1658 | 29.0 | 0.41 | 2089 |
| 80 | 12.2 | 0.15 | 877 | 23.1 | 0.29 | 1661 | 29.3 | 0.37 | 2106 |
| 90 | 11.8 | 0.13 | 848 | 23.1 | 0.26 | 1662 | 29.4 | 0.33 | 2120 |
| 100 | 11.4 | 0.11 | 822 | 23.1 | 0.23 | 1663 | 29.6 | 0.30 | 2131 |

Hydraulic performance table

ACO S100 sloping invert channel systems

Total Flow Rate (litres/sec), site fall 0%

| Total Flow Rate (litres / sec) | | | | | | |
|--------------------------------|----------------------|------|------|------|------|------|
| Length to outlet (m) | Start channel number | | | | | |
| | 1 | 6 | 11 | 16 | 21 | 26 |
| 4 | 4.3 | 6.2 | 8.5 | 10.8 | 13.6 | 16.6 |
| 9 | 5.5 | 8.0 | 10.5 | 13.0 | 16.5 | |
| 14 | 7.8 | 9.6 | 12.0 | 16.1 | | |
| 19 | 9.6 | 11.0 | 13.8 | | | |
| 24 | 11.0 | 13.8 | | | | |
| 29 | 12.9 | | | | | |

NB Constant invert depth channels can be used to extend the channel length. Please contact ACO Design Services Team for further advice.

Notes on table usage.

This table may be used for ACO S100 sloping invert channels.

It is assumed that the gratings are laid level and that a constant invert fall of 0.6% is maintained for the full length of the channel.

Laid with a longitudinal ground slope, the Total Flow Rates can be considerably increased or alternatively, the length of the channel to an outlet can be greatly extended. Please contact the ACO Water Management Design Services Team for further guidance.



ACO S150 Range hydraulic performance tables

Notes for ACO S150 hydraulic tables

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

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

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

A (m²) is the maximum area that can be drained and will depend on the design rainfall intensity chosen.

The tabulated areas are for a rainfall of 50mm/hr (0.014 l/s/m²) and will generally comply with the requirements stated in guidance to The Building Regulations (Part H 2002). Where the project must comply with the National Standards for Sustainable Drainage Systems, multiple rainfall events using design rainfall specific to the geographical location of the site must be analysed. The ACO Water Management Design Services Team will be able to assist with this process.

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

ACO S150 constant depth channels

| ACO S150 S1501 | | | | | | | | | |
|----------------------|----------|-----------|--------|---------|-----------|--------|---------|-----------|--------|
| Length to Outlet (m) | Slope 0% | | | | | | | | |
| | 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 | 13.2 | 1.32 | 952 | 17.3 | 1.73 | 1249 | 20.3 | 2.03 | 1461 |
| 20 | 12.4 | 0.62 | 894 | 18.9 | 0.94 | 1360 | 23.0 | 1.15 | 1657 |
| 30 | 11.8 | 0.39 | 849 | 19.9 | 0.66 | 1432 | 24.8 | 0.83 | 1785 |
| 40 | 11.3 | 0.28 | 812 | 20.6 | 0.51 | 1481 | 26.0 | 0.65 | 1871 |
| 50 | 10.8 | 0.22 | 780 | 21.1 | 0.42 | 1517 | 26.9 | 0.54 | 1936 |
| 60 | 10.4 | 0.17 | 751 | 21.5 | 0.36 | 1545 | 27.6 | 0.46 | 1986 |
| 70 | 10.1 | 0.14 | 726 | 21.8 | 0.31 | 1567 | 28.1 | 0.40 | 2024 |
| 80 | 9.8 | 0.12 | 703 | 22.0 | 0.28 | 1585 | 28.6 | 0.36 | 2057 |
| 90 | 9.5 | 0.11 | 682 | 22.2 | 0.25 | 1598 | 29.0 | 0.32 | 2085 |
| 100 | 9.2 | 0.09 | 663 | 22.4 | 0.22 | 1610 | 29.3 | 0.29 | 2109 |

| ACO S150 S1502 | | | | | | | | | |
|----------------------------|----------|-----------|--------|---------|-----------|--------|---------|-----------|--------|
| Length to Outlet (m) | Slope 0% | | | | | | | | |
| | 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 | 19.9 | 1.99 | 1429 | 24.8 | 2.48 | 1787 | 28.5 | 2.85 | 2054 |
| 20 | 18.6 | 0.93 | 1342 | 26.6 | 1.33 | 1917 | 31.9 | 1.60 | 2298 |
| 30 | 17.8 | 0.59 | 1279 | 27.8 | 0.93 | 2005 | 34.1 | 1.14 | 2458 |
| 40 | 17.0 | 0.43 | 1225 | 28.7 | 0.72 | 2066 | 35.7 | 0.89 | 2570 |
| 50 | 16.4 | 0.33 | 1179 | 29.3 | 0.59 | 2111 | 36.9 | 0.74 | 2658 |
| 60 | 15.8 | 0.26 | 1138 | 29.8 | 0.50 | 2145 | 37.8 | 0.63 | 2722 |
| 70 | 15.3 | 0.22 | 1101 | 30.2 | 0.43 | 2172 | 38.5 | 0.55 | 2776 |
| 80 | 14.8 | 0.19 | 1068 | 30.5 | 0.38 | 2193 | 39.1 | 0.49 | 2818 |
| 90 | 14.4 | 0.16 | 1038 | 30.7 | 0.34 | 2211 | 39.6 | 0.44 | 2855 |
| 100 | 14.0 | 0.14 | 1011 | 30.9 | 0.31 | 2225 | 40.0 | 0.40 | 2883 |

| ACO S150 S1503 | | | | | | | | | |
|----------------------------|----------|-----------|--------|---------|-----------|--------|---------|-----------|--------|
| Length to Outlet (m) | Slope 0% | | | | | | | | |
| | 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 | 27.4 | 2.74 | 1970 | 33.1 | 3.31 | 2384 | 37.5 | 3.75 | 2702 |
| 20 | 25.7 | 1.28 | 1850 | 35.1 | 1.75 | 2524 | 41.5 | 2.07 | 2986 |
| 30 | 24.5 | 0.82 | 1764 | 36.4 | 1.21 | 2624 | 44.1 | 1.47 | 3177 |
| 40 | 23.5 | 0.59 | 1692 | 37.4 | 0.94 | 2695 | 46.0 | 1.15 | 3313 |
| 50 | 22.6 | 0.45 | 1630 | 38.1 | 0.76 | 2746 | 47.4 | 0.95 | 3415 |
| 60 | 21.9 | 0.36 | 1576 | 38.7 | 0.64 | 2786 | 48.6 | 0.81 | 3499 |
| 70 | 21.2 | 0.30 | 1527 | 39.1 | 0.56 | 2817 | 49.5 | 0.71 | 3563 |
| 80 | 20.6 | 0.26 | 1482 | 39.5 | 0.49 | 2841 | 50.2 | 0.63 | 3616 |
| 90 | 20.0 | 0.22 | 1441 | 39.7 | 0.44 | 2861 | 50.8 | 0.56 | 3660 |
| 100 | 19.5 | 0.20 | 1404 | 40.0 | 0.40 | 2877 | 51.3 | 0.51 | 3696 |

ACO S200 and S300 hydraulic performance tables

Notes for ACO S200 and S300 hydraulic tables

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

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

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

A (m²) is the maximum area that can be drained and will depend on the design rainfall intensity chosen.

The tabulated areas are for a rainfall of 50mm/hr (0.014 l/s/m²) and will generally comply with the requirements stated in guidance to The Building Regulations (Part H 2002). Where the project must comply with the National Standards for Sustainable Drainage Systems, multiple rainfall events using design rainfall specific to the geographical location of the site must be analysed. The ACO Water Management Design Services Team will be able to assist with this process.

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

ACO S200 constant depth channels

| ACO S200 | | | | | | | | |
|----------------------|----------|-----------|---------------------|---------|-----------|---------------------|---------|-----------|
| Length to Outlet (m) | Slope 0% | | | | | | | |
| | 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) |
| 10 | 30.9 | 3.09 | 2228 | 38.2 | 3.82 | 2749 | 43.7 | 4.37 |
| 20 | 29.4 | 1.47 | 2115 | 41.3 | 2.06 | 2971 | 49.3 | 2.46 |
| 30 | 28.2 | 0.94 | 2034 | 43.5 | 1.45 | 3133 | 53.2 | 1.77 |
| 40 | 27.3 | 0.68 | 1964 | 45.2 | 1.13 | 3255 | 56.2 | 1.40 |
| 50 | 26.4 | 0.53 | 1903 | 46.5 | 0.93 | 3348 | 58.4 | 1.17 |
| 60 | 25.7 | 0.43 | 1848 | 47.6 | 0.79 | 3425 | 60.2 | 1.00 |
| 70 | 25.0 | 0.36 | 1798 | 48.4 | 0.69 | 3484 | 61.6 | 0.88 |
| 80 | 24.3 | 0.30 | 1752 | 49.1 | 0.61 | 3534 | 62.8 | 0.79 |
| 90 | 23.8 | 0.26 | 1710 | 49.7 | 0.55 | 3575 | 63.9 | 0.71 |
| 100 | 23.2 | 0.23 | 1671 | 50.2 | 0.50 | 3611 | 64.8 | 0.65 |
| 120 | 22.2 | 0.19 | 1601 | 51.0 | 0.42 | 3669 | 66.3 | 0.55 |
| 140 | 21.4 | 0.15 | 1540 | 51.6 | 0.37 | 3713 | 67.5 | 0.48 |
| 160 | 20.6 | 0.13 | 1485 | 52.1 | 0.33 | 3748 | 68.4 | 0.43 |
| 180 | 19.9 | 0.11 | 1436 | 52.5 | 0.29 | 3777 | 69.2 | 0.38 |
| 200 | 19.3 | 0.10 | 1391 | 52.8 | 0.26 | 3801 | 69.8 | 0.35 |

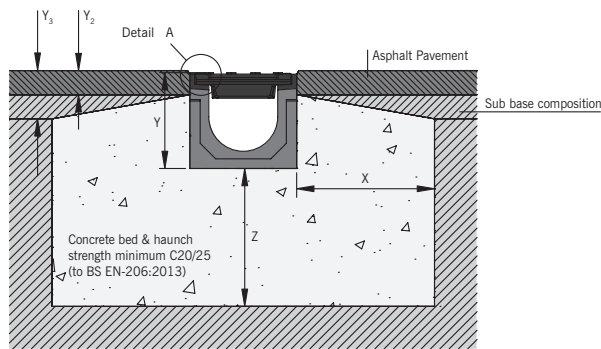
ACO S300 constant depth channels

| ACO S300 | | | | | | | | |
|----------------------|----------|-----------|---------------------|---------|-----------|---------------------|---------|-----------|
| Length to Outlet (m) | Slope 0% | | | | | | | |
| | 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) |
| 10 | 76.5 | 7.65 | 5505 | 90.1 | 9.01 | 6488 | 101.0 | 10.10 |
| 20 | 73.1 | 3.66 | 5264 | 96.4 | 4.82 | 6942 | 113.0 | 5.65 |
| 30 | 71.0 | 2.37 | 5109 | 101.8 | 3.39 | 7327 | 122.3 | 4.08 |
| 40 | 69.1 | 1.73 | 4978 | 106.1 | 2.65 | 7636 | 129.5 | 3.24 |
| 50 | 67.5 | 1.35 | 4863 | 109.6 | 2.19 | 7889 | 135.6 | 2.71 |
| 60 | 66.1 | 1.10 | 4759 | 112.5 | 1.88 | 8101 | 140.6 | 2.34 |
| 70 | 64.7 | 0.92 | 4661 | 115.0 | 1.64 | 8278 | 144.7 | 2.07 |
| 80 | 63.5 | 0.79 | 4571 | 117.1 | 1.46 | 8431 | 148.1 | 1.85 |
| 90 | 62.3 | 0.69 | 4486 | 119.0 | 1.32 | 8571 | 151.2 | 1.68 |
| 100 | 61.2 | 0.61 | 4407 | 120.6 | 1.21 | 8686 | 154.0 | 1.54 |
| 120 | 59.2 | 0.49 | 4261 | 123.3 | 1.03 | 8878 | 158.6 | 1.32 |
| 140 | 57.4 | 0.41 | 4130 | 125.5 | 0.90 | 9034 | 162.4 | 1.16 |
| 160 | 55.7 | 0.35 | 4010 | 127.2 | 0.80 | 9161 | 165.5 | 1.03 |
| 180 | 54.2 | 0.30 | 3902 | 128.7 | 0.71 | 9266 | 168.1 | 0.93 |
| 200 | 52.8 | 0.26 | 3802 | 129.9 | 0.65 | 9356 | 170.1 | 0.85 |

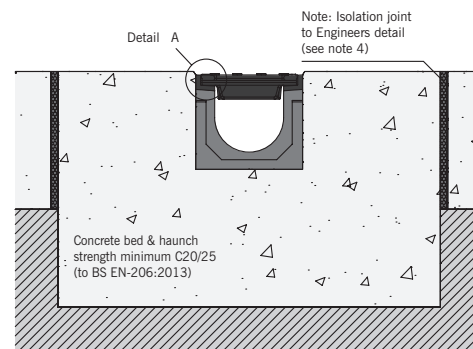
Installation detail

ACO S RANGE LOAD CLASS F 900

Asphalt pavement



Concrete 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

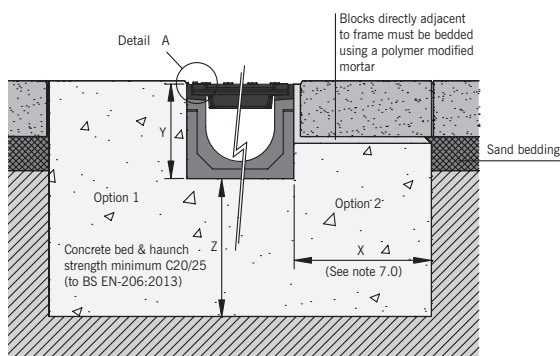
The channel must be supported laterally. Blocks laid directly against a channel must be laid as a soldier course and restrained from movement by bedding securely on the concrete haunch e.g. by using a polymer modified mortar for bed and perpendicular joints (e.g. RONAFIX mortar mix C or similar). Blocks 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

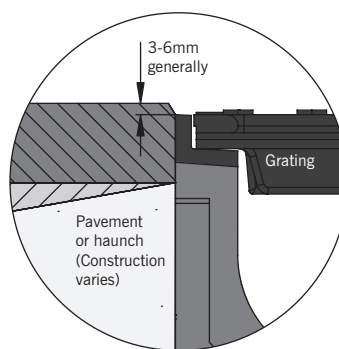
Gratings should be securely fixed to the channel, where required, using an appropriate grate lock system (where available).

Where the grate locking system incorporates fixing bolts, these should be tightened to the torque of 40Nm.

Block pavement options 1 and 2



Detail A



9.0 Channel Protection

Avoid contact between compaction equipment and top of ACO channel edge rail. 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

Where ACO channel joints/fittings and channel/pavement interfaces are to be sealed, an appropriate sealant must be used (e.g., Silkaflex 11FC or similar).

Guidance on the necessary surface preparation and/or priming should be sought from the sealant manufacturer.

Best practice and workmanship

ACO can give guidance with respect to the most suitable methods of installation for each of the products in the ACO S Range. ACO S Range 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.

For further information please contact our Design Services Team (technical@aco.co.uk) or the ACO website www.aco.co.uk

11.0 Minimum dimensions of concrete surround

| Load Class | | F 900* |
|-------------------------|----|--|
| Minimum dimensions (mm) | x | 200 |
| | y | Full depth of channel (Less Y2 if necessary) |
| | z | 200 |
| Maximum dimensions (mm) | Y2 | 35 |
| Asphalt pavement only | Y3 | 70 |

*Not suitable for carriageways or roads or motorways



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.

Chemical resistance chart

Vienite®, ACO's sustainable high strength material, has a high resistance to dilute acids and alkalis, and are unaffected by road salt, fuel and oil, and other commonly encountered chemicals. Further details of the chemical resistance can be obtained from the ACO Water Management Design Services team or, for particular chemicals, samples of the polymer concrete can be supplied to customers for their own testing. The chemical resistance will also depend on the temperature of the effluent. Clean water should not exceed 80°C.

The resistance of the gratings and edge rails should also be considered.

This chemical resistance chart refers to chemicals at ambient temperatures (20°C) and the results are for general guidance only.

| Chemical medium | % conc | Resistance: Polyester concrete | Chemical medium | % conc | Resistance: Polyester concrete |
|--------------------------------|-----------|--------------------------------|--|-----------|--------------------------------|
| Acetic acid, glacial | 100 | No | Hydrobromic acid | 48 | Yes |
| Acetic acid | 10 | Yes | Hydrochloric acid | 10 | Yes |
| Acetic anhydride | 100 | No | Hydrofluoric acid | 10 | No |
| Acetone | 10 | No | Hydrogen peroxide | 30 | Yes |
| Acetone | 100 | No | Lactic acid | 100 | Yes |
| Alum | 100 | Yes | Lead acetate | 100 | Yes |
| Aluminium sulphate | 100 | Yes | Magnesium chloride | 100 | Yes |
| Ammonium chloride | 100 | Yes | Magnesium sulphate | 100 | Yes |
| Ammonium nitrate | 100 | Yes | Maleic acid | 100 | Yes |
| Ammonium phosphate | 65 | Yes | Methyl ethyl ketone (MEK) | 100 | No |
| Ammonium sulphate | 100 | Yes | Motor oil | 100 | Yes |
| Aniline (aminobenzene) | 100 | No | Nickel chloride | 100 | Yes |
| Barium chloride | 100 | Yes | Nickel sulphate | 100 | Yes |
| Benzaldehyde | 100 | No | Nitric acid | 5 | No |
| Benzene | 100 | No | Nitrobenzene | 100 | No |
| Benzyl alcohol | 100 | Yes | Oleic acid | 100 | Yes |
| Benzyl chloride | 100 | No | Oxalic acid | 100 | Yes |
| Borax | 100 | Yes | Perchloric acid | 10 | Yes |
| Boric acid | 100 | Yes | Perchloroethylene | 100 | Yes |
| Bromine | 100 | No | Phosphoric acid | 20 | Yes |
| Bromine water | Saturated | No | Phosphorus trichloride | 100 | No |
| Butyl acetate | 100 | No | Potassium carbonate | 50 | Yes |
| Butyric acid | 100 | Yes | Potassium chloride | 100 | Yes |
| Calcium carbonate | 100 | Yes | Potassium dichromate | 100 | Yes |
| Calcium chloride | 100 | Yes | Potassium hydroxide | 10 | Yes |
| Calcium chlorate | 8 | Yes | Potassium nitrate | 100 | Yes |
| Calcium hydroxide | 100 | Yes | Potassium permanganate | 10 | No |
| Calcium nitrate | 100 | Yes | Potassium sulphate | 100 | Yes |
| Carbon disulphide | 100 | No | Pyridine | 100 | No |
| Carbon tetrachloride | 100 | Yes | Sodium acetate | 100 | Yes |
| Castor oil | 100 | Yes | Sodium bromide | 100 | Yes |
| Chlorine gas, wet | 100 | No | Sodium carbonate | 35 | Yes |
| Chlorine water | Saturated | No | Sodium chlorate | 100 | Yes |
| Chlorobenzene | 100 | Yes | Sodium chloride | 100 | Yes |
| Chloroform (trichloro-methane) | 100 | No | Sodium hydroxide (caustic soda) | 50 | No |
| Chromic acid | 12 | Yes | Sodium hypochlorite | 18 | No |
| Citric acid | 100 | Yes | Sodium nitrate | 100 | Yes |
| Copper chloride | 100 | Yes | Sodium nitrite | 100 | Yes |
| Copper nitrate | 100 | Yes | Sodium phosphate | 10 | Yes |
| Cyclohexane | 100 | Yes | Sodium sulphate | 100 | Yes |
| Diesel fuel (DERV) | 100 | Yes | Sodium sulphide | 100 | Yes |
| Dimethyl formamide | 100 | No | Sodium sulphite | 100 | Yes |
| Dimethyl phthalate | 100 | Yes | Sodium thiosulphate | 100 | Yes |
| Diethyl phthalate | 100 | Yes | Stearic acid | 100 | Yes |
| Ethanol | 95 | No | Styrene | 100 | No |
| Ethanolamine | 100 | Yes | Sulphuric acid | 75 | No |
| Ethyl acetate | 100 | No | Sulphuric acid | 50 | Yes |
| Ethylene glycol | 100 | Yes | Sulphuric acid at up to 40°C | 10 | Yes |
| Ferrous chloride | 100 | Yes | Tetrachloroethylene | 100 | Yes |
| Ferric chloride | 100 | Yes | Thioglycolic acid | 80 | Yes |
| Ferrous sulphate | 100 | Yes | Thionyl chloride | 100 | No |
| Formaldehyde | 30 | Yes | Toluene | 100 | Yes |
| Formic acid | 10 | Yes | Toluene sulphonc acid (aqueous solution) | Saturated | Yes |
| Formic acid | 100 | No | Trichloroacetic acid | 50 | Yes |
| Fuel oil | 100 | Yes | Turpentine | 100 | Yes |
| Gasoline | 100 | Yes | Water | 100 | Yes |
| Glycerine | 100 | Yes | Xylene | 100 | Yes |
| Hydrazine | 50 | No | Zinc sulphate | 100 | Yes |

Specification clause

The surface drainage system shall be ACO Drain S100/S150/S200/S300† channel system as supplied by ACO Technologies plc; all materials and components within the scope of this channel system shall be obtained from this manufacturer. The system shall be certificated to Load Class F 900 as defined in BS EN 1433:2002; load test certificates shall be supplied to the Supervising Officer.

Declarations of Performance (DoP) shall be supplied to the Supervising Officer upon request. The system shall be of 100mm/150mm/200mm/ 300mm† nominal internal width, manufactured in polyester resin concrete with cast-in grey iron edge rails. The channels shall be installed with manufacturer's grating appropriate to the Load Class of the place of installation and locked securely in place using 4 bolts per half metre.

The system shall be installed in accordance with the manufacturer's printed instructions, and the work carried out as specified in drawing no. (*) and in accordance with recognised good practice. Standards of workmanship shall generally be as specified in BS EN 752:2008 and BS 8000:Part 14:1989.

* insert appropriate information
† delete non-appropriate information

Recycled content

ACO Technologies aim to incorporate as much recycled material or waste material as is practicable in their manufactured products. Typically, cast iron materials contain 40% to 90% recycled iron. The total recycled content of each product in the ACO S Range system will vary as the proportion of the different materials (in channels, edge rails, gratings etc.) varies.

The ACO S Range products are themselves intended for a long life with low maintenance, to reduce the need to recycle, but when eventually they are no longer needed, much of their content can be readily recycled with a very low risk of pollution to the environment.

NBS Specifications

ACO S Range should be specified in section Q10:180. Assistance in completing this clause can be found in the ACO Water Management entry in NBS Plus, or please contact the ACO Water Management Design Services Team.

Note: A specification in NBS format is available to download from www.thenbs.com or www.aco.co.uk

Conformity

The ACO S Range system is fully certified to BS EN 1433:2002 and CE marked in accordance with the Construction Products Regulation.

Declarations of Performance are available on the side bar via the product page on our website (www.aco.co.uk/products/s-range), or on request. Please contact ACO Water Management Design Services Team on 01462 816666 for further information.

BS EN 1433:2002



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.

ACO Technologies plc

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

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