



# Roof Drainage Technical Brochure




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Navigation button - Dark blue is the section you are in



## Aluminium Roof Outlets - AV Vertical Outlets


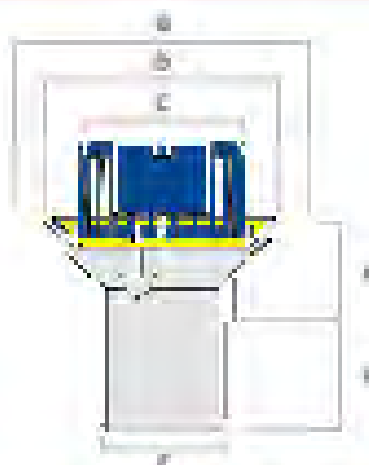
Harmer Roof AV Vertical rainwater outlets are designed for use with flat roof structures using either insitu cast concrete, timber or lightweight metal deck construction. Harmer Roof outlets are ideal for connection to continuous waterproofing systems using single ply membranes, mastic asphalt, high performance built-up felt, hot melt systems and wet-applied systems.



**A2**

### Vertical Spigot Outlet - Domical Grate


Vertical Spigot outlets are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipe to BS 4514 and BS EN 1329-1 (AV300, AV400 and AV600 outlets only). Please see Harmer couplings available (page 40).

Outlet Size	a	b	c	d	e	f	Flow Rate	Weight	Grate Height	Product Code
50	292	239	137	121	77	60	1.69	2.5	86	AV200
75	292	239	137	85	112	83	4.97	2.7	86	AV300
100	380	305	210	133	114	110	10.71	4.9	110	AV400
150	380	305	210	118	129	160	14.07	5.0	110	AV600

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity.


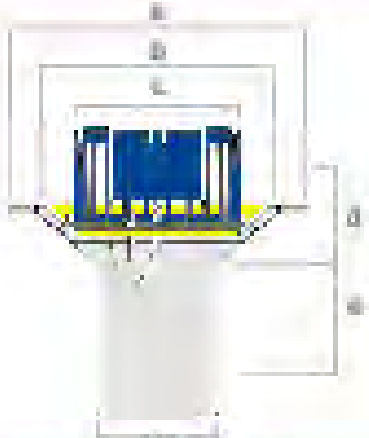
For flat grate versions add suffix /F to the product code (See page 20) A range of accessories is available for use with special detail requirements (See page 20)



**A2**

### Vertical Extended Spigot Outlet - Domical Grate

Vertical Extended Spigot outlets are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipe to BS 4514 and BS EN 1329-1 (AV300, AV400 and AV600 outlets only). Please see Harmer couplings available (page 40).

All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:

Spigot Length Required	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

Outlet Size	a	b	c	d	e	f	Flow Rate	Weight	Grate Height	Product Code
50	292	239	137	121	Up to 200	63	1.69	VAR	86	AV200/EXT/200
50	292	239	137	121	201 to 400	63	1.69	VAR	86	AV200/EXT/400
50	292	239	137	121	401 to 600	63	1.69	VAR	86	AV200/EXT/600
50	292	239	137	121	601 to 800	63	1.69	VAR	86	AV200/EXT/800
50	292	239	137	121	801 to 1000	63	1.69	VAR	86	AV200/EXT/1000
75	292	239	137	85	Up to 200	82	4.97	VAR	86	AV300/EXT/200
75	292	239	137	85	201 to 400	82	4.97	VAR	86	AV300/EXT/400
75	292	239	137	85	401 to 600	82	4.97	VAR	86	AV300/EXT/600
75	292	239	137	85	601 to 800	82	4.97	VAR	86	AV300/EXT/800
75	292	239	137	85	801 to 1000	82	4.97	VAR	86	AV300/EXT/1000
100	380	305	210	133	Up to 200	110	10.71	VAR	110	AV400/EXT/200
100	380	305	210	133	201 to 400	110	10.71	VAR	110	AV400/EXT/400
100	380	305	210	133	401 to 600	110	10.71	VAR	110	AV400/EXT/600
100	380	305	210	133	601 to 800	110	10.71	VAR	110	AV400/EXT/800
100	380	305	210	133	801 to 1000	110	10.71	VAR	110	AV400/EXT/1000
150	380	305	210	118	Up to 200	152	14.07	VAR	110	AV600/EXT/200
150	380	305	210	118	201 to 400	152	14.07	VAR	110	AV600/EXT/400
150	380	305	210	118	401 to 600	152	14.07	VAR	110	AV600/EXT/600
150	380	305	210	118	601 to 800	152	14.07	VAR	110	AV600/EXT/800
150	380	305	210	118	801 to 1000	152	14.07	VAR	110	AV600/EXT/1000

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## Recommended Viewing Settings

For optimum viewing please use Adobe Acrobat. This PDF contains clickable links and bookmarks that allow you to access the information faster. Some of these features will not work in other PDF readers.



# 90 years of manufacturing history

Alumasc has a rich history of manufacturing in Burton Latimer, having opened c.1942 for the war effort. By 1947, production had switched from domestic aluminium goods to cast aluminium guttering and downpipes.

Goods produced today include a wide range of drainage products for both interior and exterior building applications, offering a variety of sustainable water management solutions.

Our aim is to focus on high-quality, environmentally responsible building products, and to deliver first-class customer service, technical support, long-term solutions and lasting relationships.

## Services and Support

Alumasc leads the way in the manufacture of proven construction products and systems. This success is founded on four key areas:

### Premium Products

A constantly evolving range of world-class water management solutions, fully accredited to UK, European and North American standards.

### Technical Support

Comprehensive data for the specification and use of the entire product range is available online or in printed format. Specialist area managers lead our proactive support network on a project basis, using the latest CAD and calculation technology.

### Approved Stockists

Delivery of Alumasc products is controlled through a network of approved suppliers. This allows close control over all logistical matters to ensure first-class customer service.

### Warranties

All Alumasc products come with a company backed assurance for quality, life expectancy and suitability for purpose, ensuring long-term peace of mind for specifiers and end users.



Aluminium Roof Outlets

Aluminium Bespoke

Cast Iron Outlets

Roof Channel Drains

Raised Deck Supports

Design & Specification

## The Alumasc Water Management Solutions Family



Alumasc (AWMS) is a UK-based supplier of premium building products. The majority of the group's business focusses on sustainable building products which enable customers to manage energy and water use in the built environment.

They include: Skyline Architectural Aluminium; Alumasc Rainwater Gutters & Downpipes; Harmer Building Drainage; Wade Building Drainage and Gatic Drainage & Engineered Access Covers.





# Harmer Roof Drainage Systems - Overview

The Harmer Roof range offers an unrivalled choice of rainwater outlets and channels which combine innovative engineering and high performance materials for use with all types of waterproofing systems and building construction.



## Introduction

Harmer is a leading brand in the building drainage market. Built on the philosophy of continual development and striving for excellence, the Harmer range continues to evolve to meet the changing needs of the construction industry and the environmental challenges of climate change. The extraordinary weather patterns that are being experienced around the world are putting extreme pressures on rainwater drainage systems. With over 50 years experience in the field of roof drainage, Harmer has an unrivalled track record in delivering technically sophisticated roof outlets that ensure trouble-free performance and ease of installation.

Architectural design, and advances in roofing materials, have transformed the use of flat roofs in recent years. Harmer's extensive range of rainwater outlets and raised deck supports offers great flexibility of choice for designers to optimise the spatial use of the building roof.

The Harmer Roof drainage range consists of aluminium and cast iron outlets and stainless steel and galvanised steel channels. This range of materials and innovative designs provides a comprehensive choice of rainwater outlets and channels that are suitable for all types of roof applications. Architects and specifiers can be confident in specifying Harmer. For complex design calculations where multiple roof designs and building use factors need to be considered, Harmer's Technical Services department is able to advise.





# Harmer Roof Drainage Systems - Overview

Architectural design, and advances in roofing materials, have transformed the use of flat roofs in recent years. Harmer's extensive range of rainwater outlets and raised deck supports offers great flexibility of choice for designers to optimise the spatial use of the building roof.

## Applications

Harmer offers a wide range of roof drainage products suited to different types of roof construction including structural concrete, metal deck, timber deck, warm roof, cold roof, green roof and inverted roof. A secure connection between the waterproofing membrane and rainwater outlet is critical. Harmer Roof outlets can be used with all types of membrane including asphalt, built-up felt, single ply, hot melt and wet-applied systems.

### Flat and Low Pitched Roofs

The Harmer Roof range is suitable for all types of flat and low pitch roofs. Harmer's patented AV aluminium range provides optimum flow performance minimising the number of outlets. The anti-vortex effect increases as the depth of water at the outlet, or rainfall intensity, increases ensuring effective water disposal even in extreme weather. Installations are covered to suit most applications. For copper or lead clad roof applications where the risk of bi-metallic corrosion is high, a comprehensive range of cast iron outlets is available in Medium Sump, Large Sump, Two-Way Parapet and Balcony configurations.

### Balconies

Adaptable solutions are available for drainage of balcony areas in aluminium, cast iron and stainless steel. The Harmer aluminium shallow sump balcony outlet provides an unobtrusive design solution in new and refurbishment projects. The extensive grate options further enhance the functionality and appearance of the drain for use with paving supports, sand or cement bedding and epoxy resin coverings. The Harmer Balcony range can be combined with Alumasc architectural rainwater pipework where colour matching and bespoke manufacture opens up endless design possibilities. The Harmer AV and Detail Aluminium Roof Outlets are now available with Extended Spigot options including connection onto the Alumasc Rainwater Flushjoint Aluminium downpipe range. This provides an A2 fire rated drainage solution for building envelope and balcony drainage.

### Car Parks, Factories and Workshops

Load bearing applications where rainwater outlets are exposed to vehicular traffic are catered for in both cast iron and aluminium. Ductile iron grates have a load rating up to 12.5 tonnes.

### Roof Terraces

A wide range of hard and soft landscaping materials can now be installed on roof areas to combine ecological benefits with strong visual enhancement and recreational use. Harmer provides a comprehensive range of drainage solutions for such applications by combining its traditional ranges with new innovative products. The Harmer Modulock system is an innovative solution for raised deck drainage on green roofs, terraces, walkways and ballasted flat roof construction. The range comprises raised paving supports and drainage channels that can be used in combination or individually to provide a versatile drainage system that provides level access as well as protecting the building from wind driven rain. The pedestals are available in both plastic and also steel which combined with the steel channels on offer, provides a completely non-combustible solution.

## Materials

The Harmer Roof range consists of premium quality materials chosen for their inherent strength, durability and fire classification\* for ease of installation, protection and long-life service.

### Aluminium

Aluminium is durable and strong. It is also weatherproof and unaffected by UV light, ensuring optimal performance over its lifetime. Renowned for high quality, the Harmer Roof aluminium range is manufactured from marine grade aluminium alloy which has excellent corrosion resistance and as a material is A1 fire rated.

Note: \*A1 fire rated product unless powder coated - it becomes A2 fire rated in this instance. Plastic gratings are not A1 fire rated.

### Cast Iron and Ductile Iron

Cast iron is strong, durable and widely used in drainage applications. Ductile iron is used for its tensile strength in load bearing applications. The Harmer Roof cast iron range combines both these materials to optimise product performance, both of which are A1 fire rated materials

Note: \*A1 fire rated product unless powder coated - it becomes A2 fire rated in this instance. Plastic gratings are not A1 fire rated.

### Stainless Steel and Galvanised Steel

Stainless steel is a corrosion-resistant metal that is both strong and aesthetically pleasing. Galvanised steel combines high performance and value engineering for use in many types of application. The Harmer Modulock Channel Drain system is available as A1 fire rated in both materials to suit individual project requirement.



# Quality and Sustainability

In addition to complying with environmental legislation, Alumasc is committed to developing its own measures to limit the adverse effects of its activities on the environment. To this end, Alumasc operates an environmental policy that fully integrates all aspects of company activities.



### Green Economy

The Alumasc Group plc are pleased to be recognised by London Stock Exchange as contributing to the global green economy.

The Mark is given to companies and funds that derive more than 50% of revenues from environmental solutions.

The Alumasc Group plc provides high-quality, low carbon, sustainable building products, systems and solutions which help manage the scarce resources of energy and water in the built environment and improve quality of life for the owner/occupier

Alumasc operates a series of quality assurance management systems which is independently audited. This quality management system extends to our network of Stockists, for single source accountability and peace of mind. Individual products and systems are certified by the British Board of Agrément.

### ISO 9001:2015

The ISO 9001 framework governs the management of many aspects of our support services, manufacturing and transport operations. Alumasc is committed to continual development and, along with the ISO 14001: 2004 Environmental Management Standard, ISO 9001 provides the tools to monitor and feed back information from all areas of the business to ensure a first class service is maintained.

### ISO 14001:2015

Alumasc's manufacturing sites at Burton Latimer and Dover are independently audited to the ISO 14001: 2004 Environmental Management Standard. Alumasc is committed to achieving improvements, not only as a good neighbour to the surroundings of their manufacturing plants, but in the responsible sourcing of raw materials and monitoring of the impact on the environment as a whole.

### Professional Bodies





# Standards & Classifications

All Harmer floor, shower and roof outlets have been developed in accordance with current Building Regulations and British Standards to ensure that they are fit for purpose.

*The Roof Aluminium range is cast in aluminium silicon alloy LM6 to the following standards:*

## BS EN 1676:2010

This European Standard defines the requirements for grades of alloyed aluminium ingots intended for remelting. It specifies the classifications and designations applicable to these grades, the conditions in which they are produced, their properties and the marks by which they are identified.

## BS EN 1559

This standard shows the correct technical conditions for casting all metallic materials, except copper alloy. The European guidelines outline how to achieve best practice during the casting process, with specifications on the correct composition of cast metallic materials.

## BS EN 1706

This standard specifies the chemical composition limits for aluminium casting alloys and mechanical properties of separately cast test pieces for these alloys.

## BS EN 12056

This covers wastewater drainage systems which operate under gravity. It is applicable for drainage systems inside dwellings, commercial, institutional and industrial buildings.

## BS 8579:2020

A standard which provides guidance on the design of balconies and terraces. This standard is applicable to all balconies and terraces at any height above the lowest ground level. It offers information on construction, efficient drainage design and fire rating requirements of products.

## Summary

Aluminium as a standalone material is generically a non-combustible with a melting point starting from 650°C and as such does not have a specific fire rating. It is the application that constitutes the need for a fire rating for which we have achieved with the results as indicated above as either a single sheet or casting / extrusion with polyester powder coated surface.

## Building Safety Act 2022

The Act enforces compliance to Building Regulations restricting the use of combustible materials in the construction of buildings over 11m and reinforces the personal responsibility of all parties involved in the construction process.

## Fire Classification of AWMS Products

### UK Classification

The polyester powder coating used by AWMS has been tested in accordance to the protocols defined by BS476: Fire Tests on Building Materials & Structures. The Parts of BS476 applicable to PPC are:

- Part 6: This gives the Fire Propagation Index which is a measure of contribution to fire growth.
- Part 7: This is a method of measuring flame spread along a surface. The AWMS PPC achieves a Fire Propagation Index of <12 and a sub-index rating <6 (Part6) and a Class1 Rating for flame spread (Part7). Under UK Building Regulations - Fire Safety Approved Document B, these results meet the criteria for the highest safety performance level, Class 0.

### EU Classification

Fire testing and reports issued by external independent accredited laboratories certify that our range of PPC products are classified in the agreement with European Norm EN13501-1 as: A2L-s1, d0 This means: A2L - Non-combustible - no contribution to fire s1 - Lowest level for smoke emissions d0 - Lowest level for flaming droplet/particles

Therefore, we can state that AWMS products achieve Class 0, Class 1 and A2L - s1, d0 in regard to fire reaction specifications. Further Information For further assistance with fire ratings or any other aspect of product performance, please contact AWMS Technical Services on 01536 383 810 or [technical@alumascwms.co.uk](mailto:technical@alumascwms.co.uk)



# Fire Classification

Understanding product fire classifications within the construction industry is crucial to comply with current legislation and ensure products are suitable for their application.

With recent changes in legislation regarding the installation of products into the building envelope, such as BS 8579:2020 and the Building Safety Act 2022, identifying the combustibility of a product is a key factor in its specification. Products being installed should not provide a medium for spread of fire, nor should they propagate fire downwards by means of falling droplets or debris; ultimately, they should minimise the risk to the building and its occupants. Below is a table showing fire classifications in accordance with BS EN 13501-1:2018.

Fire Classification		Smoke Generation		Fire Generation	
Classification	Description	Classification	Description	Classification	Description
A1	Non-combustible	s1	Very limited smoke	d0	No burning droplets
A2	Limited combustibility	s2	Limited smoke	d1	Limited burning droplets
B	Combustible - Very limited contribution to fire	s3	A lot of smoke	d2	Unlimited burning droplets
C	Combustible - Limited contribution to fire				
D	Combustible - Medium contribution to fire				
E	Combustible - High contribution to fire				
F	Combustible - Easily flammable				



## A1 Fire Rating

A1 is the highest rating a product can achieve. This is classed as completely non-combustible with key characteristics being the total absence of smoke or burning droplets. Most products manufactured from metals are A1 rated unless they have been powder coated which will result in the second highest rating of A2-s1,d0.

Fire Classification

A1



## A2 Fire Rating

A2 is the second highest rating in terms of fire classification. This is classed as limited combustibility. Further explanation is provided by the suffixes s1, referring to very limited smoke, and d0 confirming that no burning droplets are produced. A2-s1,d0 products manufactured by Alumasc are generally A1 rated products which are powder coated; when this powder coating burns it emits very limited smoke. But the material beneath the powder coating is rated A1.

Smoke Generation

Fire Classification

Fire Generation

A2-s1,d0



# Technical and Customer Service Support

Alumasc Technical Services is a fully experienced team of drainage specialists who use the latest CAD technology and calculation tools to provide an unrivalled support service to Architects, Designers and Contractors.

## Alumasc offers a full technical and support service as standard for all projects:

- Drainage calculations
- Takeoffs from drawings
- BIM, CAD and NBS Specifications
- Detailed technical advice and quotes
- Site surveys
- Detailing advice
- Samples on request

Specialist knowledge across the water management cycle

## Recommended Installers

Alumasc Rainwater has a network of recommended installers covering the UK & Ireland. Visit the Alumasc WMS website to view.

## Approved Stockists / Suppliers

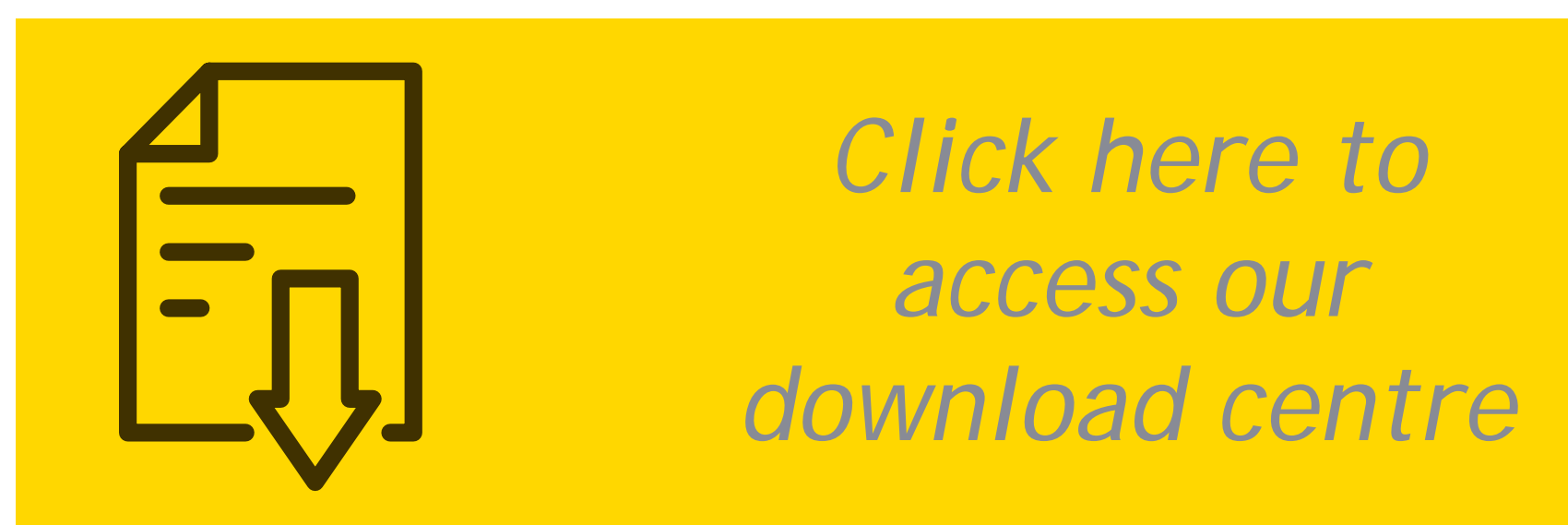
Our products are delivered by approved suppliers throughout the UK & Ireland. To find your nearest stockist, visit the 'Where to buy' section on our website.



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to arrange CPD*



*Click here to  
arrange BIM*



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## Disclaimer:

Due to continuous product development, descriptions and illustrations may be subject to change without notice. All prices are subject to VAT at the current rate. While every effort will be made to maintain prices at the published levels, Alumasc Building Products (The Company) reserves the right to amend those prices without notice should the need arise.

## Contact us:

For Project Quotations, Customer Service, Technical and Sales Orders call:

**Alumasc Rainwater, Harmer Drainage and Skyline:**

+44 (0)1536 383 810

Email: [info@alumascwms.co.uk](mailto:info@alumascwms.co.uk)

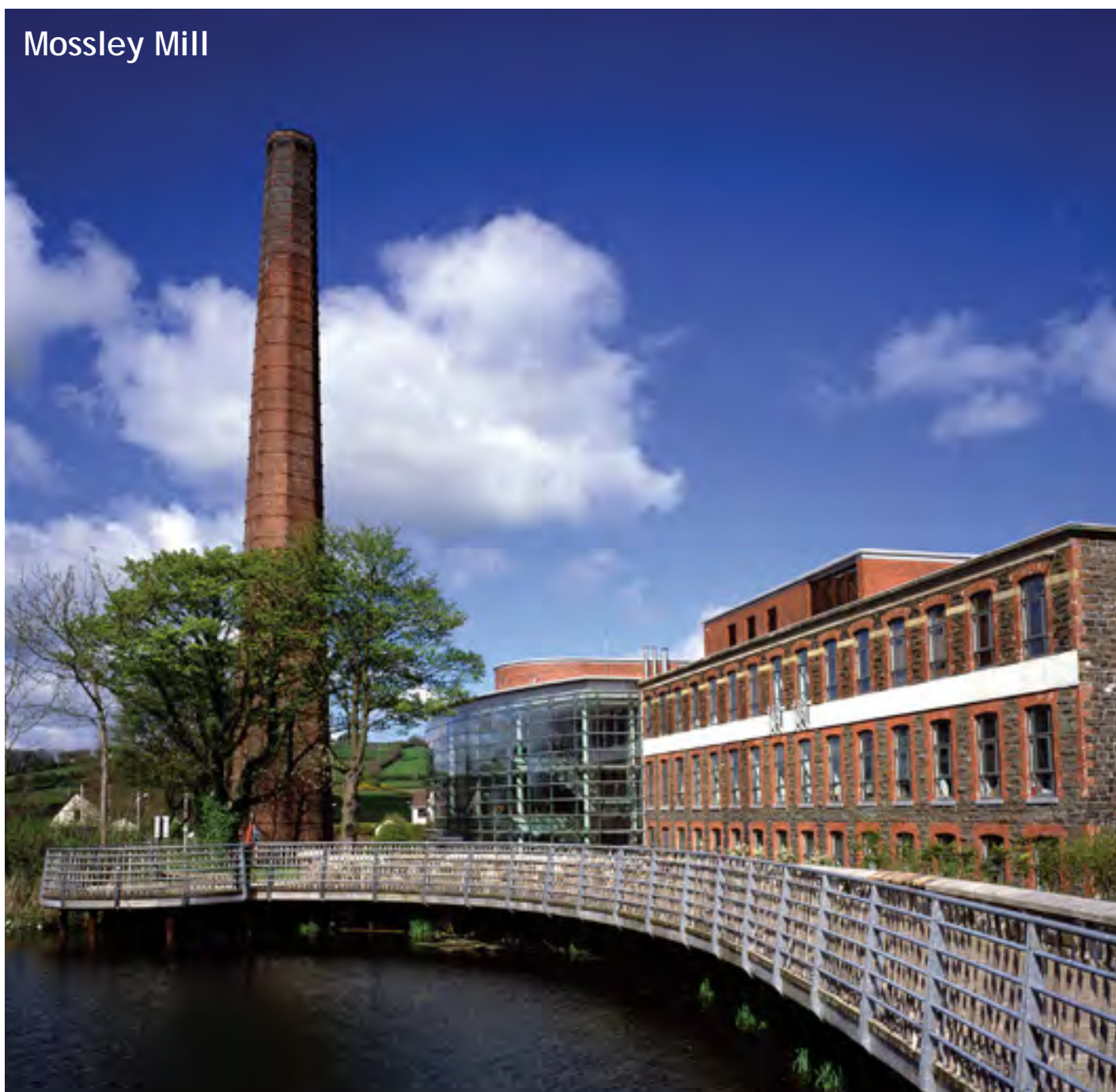
Website: [www.alumascwms.co.uk](http://www.alumascwms.co.uk)



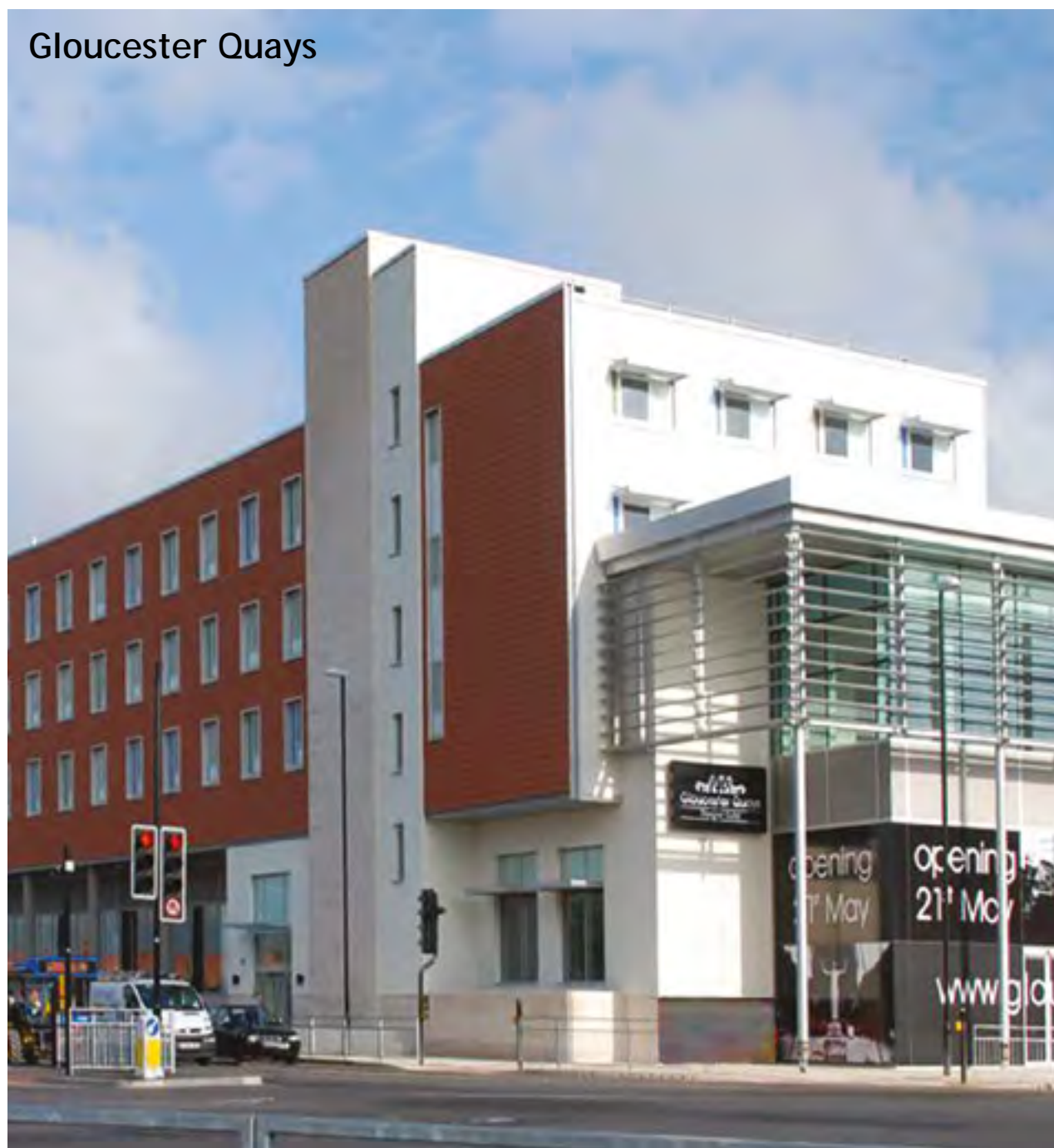
# Harmer Roof Drainage System - Project Gallery



Chelsea Bridge



Mossley Mill



Gloucester Quays



No.1 Bishops Square



Introduction

Aluminium  
Roof Outlets

Aluminium  
Bespoke

Cast Iron  
Outlets

Roof Channel  
Drains

Raised Deck  
Supports

Design &  
Specification



# Harmer Roof Drainage System - Range Summary

The Harmer Roof drainage system provides a single source for innovative drainage solutions that are designed for exceptional performance and engineered to last. The comprehensive range of materials and product permutations have been carefully selected to provide maximum flexibility of choice for architects and specifiers.

Modern construction demands an accurate selection of products which are fit for purpose. Peace of mind is always assured with Harmer where important design considerations such as rainfall intensity, building use and life cycle requirements are factored into the design parameters of the products to ensure trouble-free performance. The Harmer Roof range has 6 distinct product categories for ease of reference and selection.



**Aluminium Roof Outlets**

A high performance system suitable for all types of flat roof applications.


Pages 15-49



**Aluminium Extended Spigot Outlets**

Aluminium Roof Outlets are now available with Extended Spigot options including for the Flushjoint Aluminium downpipe range


Pages 18, 23, 26, 30, 33-38



**Aluminium Bespoke**

Non-standard pipe and rainwater outlet configurations to suit the most complicated of design requirements.

Pages 51-53





# Harmer Roof Drainage System - Range Summary

The Harmer Roof range offers an unrivalled choice of rainwater outlets which combine innovative engineering and high performance materials for use with all types of waterproofing systems and building construction, including commercial, residential, civil, health, transport and sport projects.

Modern construction demands an accurate selection of products which are fit for purpose. Peace of mind is always assured with Harmer where important design considerations such as rainfall intensity, building use and life cycle requirements are factored into the design parameters of the products to ensure trouble-free performance. The Harmer Roof range has 6 distinct product categories for ease of reference and selection.

Note: plastic gratings are not fire rated



## Cast iron Outlets

A wide variety of configurations for use in all types of drainage installations. Cast iron permits the use of copper or lead roofing materials and load bearing applications

Pages 55-70



## Roof Channel Drainage

The Modulock Channel Drainage system provides a versatile drainage solution in raised deck structures such as terraces, balconies and landscaped roofs.

Pages 72-83

Note plastic pedestal supports are not fire rated



## Raised Deck Supports

A fully engineered range of pedestal supports for paving slabs and timber decking in a variety of heights from the substrate.

Pages 85-101



# Aluminium Roof Outlets

*The premium, high performance Aluminium Roof Outlet range, featuring integral sump bodies and enhanced flow Anti-Vortex system.*





# Aluminium Roof Outlets - Benefits

Harmer Aluminium Roof Outlets are hydraulically engineered to ensure trouble-free performance in excess of building life, whilst offering versatility and choice for architects, specifiers and consultants.

## Compliances

The Harmer Roof Aluminium range is cast in aluminium silicon alloy LM6 to BS EN 1676, BS EN 1559 and BS EN 1706, and are suitable for most types of flat roof drainage applications. Drainage flow performance to BS EN 12056. A2 fire rated in accordance with BS EN 13501-1 and follows guidance from BS EN 8579.

## High Flow Performance

An outlet body with a deep integral sump for controlled flow of water into pipe. Domical grates for Harmer AV outlets incorporate a patented baffle to prevent water swirl and air entrapment enabling the outlet to drain at optimum pipe capacity. The AV system provides complete reassurance which is critical to building drainage design.

## Robust and Secure

Aluminium has a light weight-to-strength ratio, which means it is strong yet economical. The reduced weight provides benefits in material transportation and application. Application of the waterproof membrane by a clamping ring ensures total integrity of seal. Optional flat grates are available for trafficked and terraced areas.

## A Choice of Body and Grates

A wide choice of standard drain body variations with standard and extended spigot options, as well as threaded outlet connections, for vertical, horizontal or 45° discharge. The shallow sump balcony outlets incorporate Stainless Steel grate options for enhanced appearance with alternative deck finishes

## Low Maintenance

Domical grates for Harmer outlets permit a free flow of rainwater while preventing loose chippings or debris from entering the outlet. The offset fixings of the clamping ring and domical grate to the outlet body, for both Detail and AV grates, ensures that the throat is completely unobstructed for optimised flow and to facilitate rodding.

## Easy and Quick to Install

The aluminium alloy is light in weight and therefore easy to handle on site and during installation. This lightness also makes aluminium outlets suitable for a wide range of lightweight roof decks. A selection of standard accessories such as extension pieces, pipe adaptors and grates is available to ensure successful installation of Harmer rainwater outlets in most types of roof construction.

## Value for Money

Diecast in LM6 aluminium alloy which has excellent resistance to corrosion under both atmospheric and marine conditions. Clamps and grates are polyester powder coated to BBA-approved standard to further increase protection and extend product life.

## Sustainable

Aluminium is 100% recyclable making it a cost effective, sustainable material. End of life Harmer Roof aluminium outlets can be recast into new aluminium products. Life expectancy of aluminium: 40 years for rural/suburban areas, up to 25 years for industrial/marine areas.





# Aluminium Roof Outlets - Product Range Summary

Harmer Aluminium Roof Outlets offer a wide choice of outlet designs that cater for most types of building drainage applications. Harmer AV rainwater outlets provide optimum flow performance even in extreme rainfall conditions. Additionally, non-standard pipe and rainwater outlet configurations can be made on a bespoke basis to suit complicated designs.

## AV Vertical Spigot, Threaded Outlets and Extended Spigot

Harmer AV Vertical Spigot, Threaded outlets and extended spigots provide anti-vortex performance within an economic range of general purpose outlets. Designed for connection to downpipes on a gravity system.

Page 18-38



## AV Retro-Gully Outlets

Harmer Roof AV Retro-Gully outlets incorporate anti-vortex performance and are designed for flat roof upgrading without necessitating removal of the old rainwater outlet. The Retro-Gully aluminium tail pipe connects directly into the existing pipework via the old outlet.

Page 21



## Detail Outlets

Harmer Roof Detail outlets are designed to solve problematic detailing requirements. The range includes standard threaded and spigot outlets in 45° and 90° and extended spigots, used with either domical or flat grates. Also included are two-way, balcony, car park and gully outlets.

Page 22-40



## Accessories and Pipe Connections

There is a range of accessories for Harmer aluminium AV and Detail systems to ensure the successful installation of Harmer rainwater outlets in most types of roof construction. The range includes threaded spigot adaptors, metal deck support plates, overflow outlets and couplings.

Page 41-42



The application illustrations shown in this brochure are typical generic guidance details. The specifier or contractor must ensure that all materials used for any buildings over 18m height meet the requirements for the Building Regulations Approved Document 7 in regards to Fire non-combustibility .



# Aluminium Roof Outlets - Intro to AV Outlets

The Harmer AV range offers unrivalled flow characteristics and has a proven track record for reliable performance.

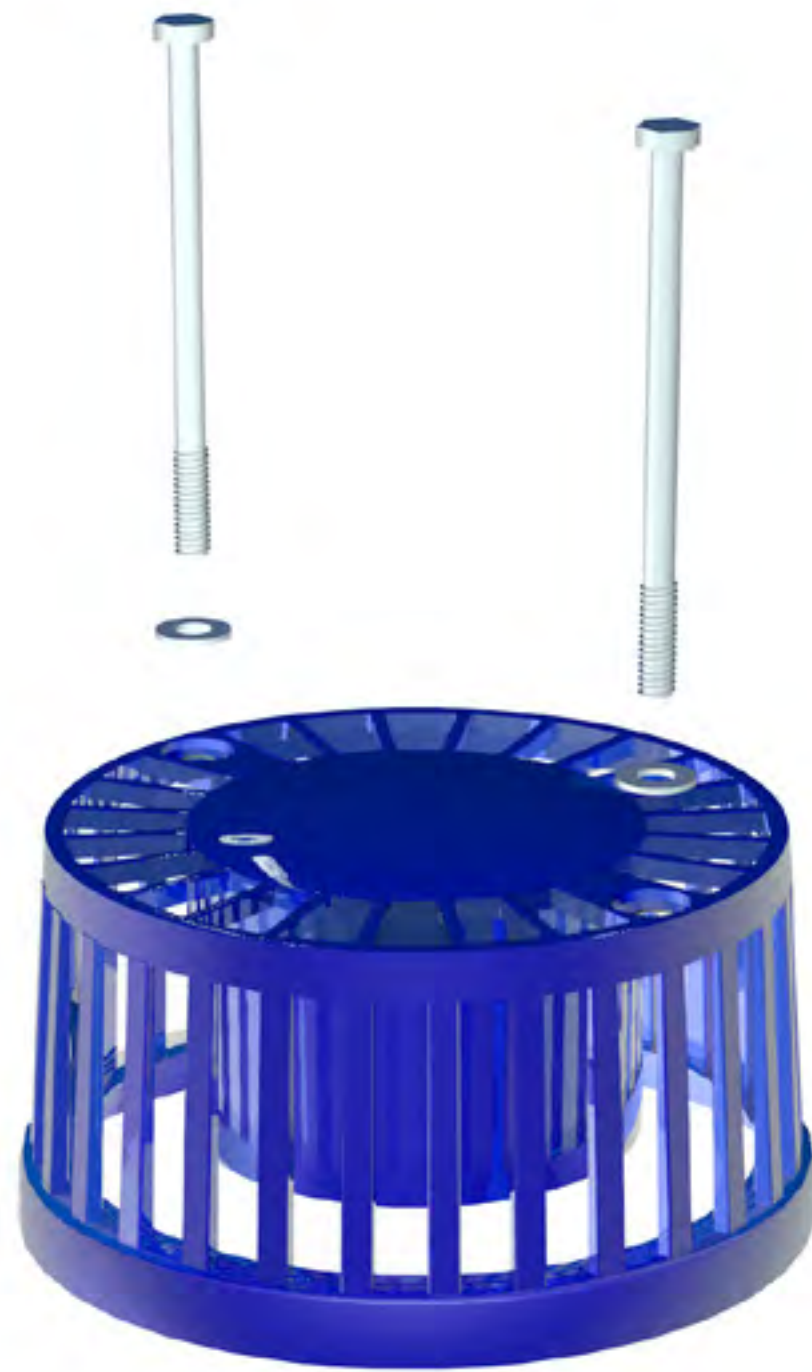
## Main Characteristics

### Enhanced Performance

Harmer rainwater outlets provide, with the Harmer Roof AV range, anti-vortex performance from an economic, general purpose range of outlets. Harmer Roof AV incorporates a patented baffle within the grating, to prevent water swirl and air entrapment, enabling the outlet to drain at optimum pipe capacity.



The performance of AV outlets increases as the depth of water at the outlet or rainfall intensity increases. The unique high flow performance of Harmer Roof AV outlets demands that each outlet is connected to a dedicated or individual rainwater stack. AV outlets should be used for securing optimum performance when connected to downpipes on a gravity system.

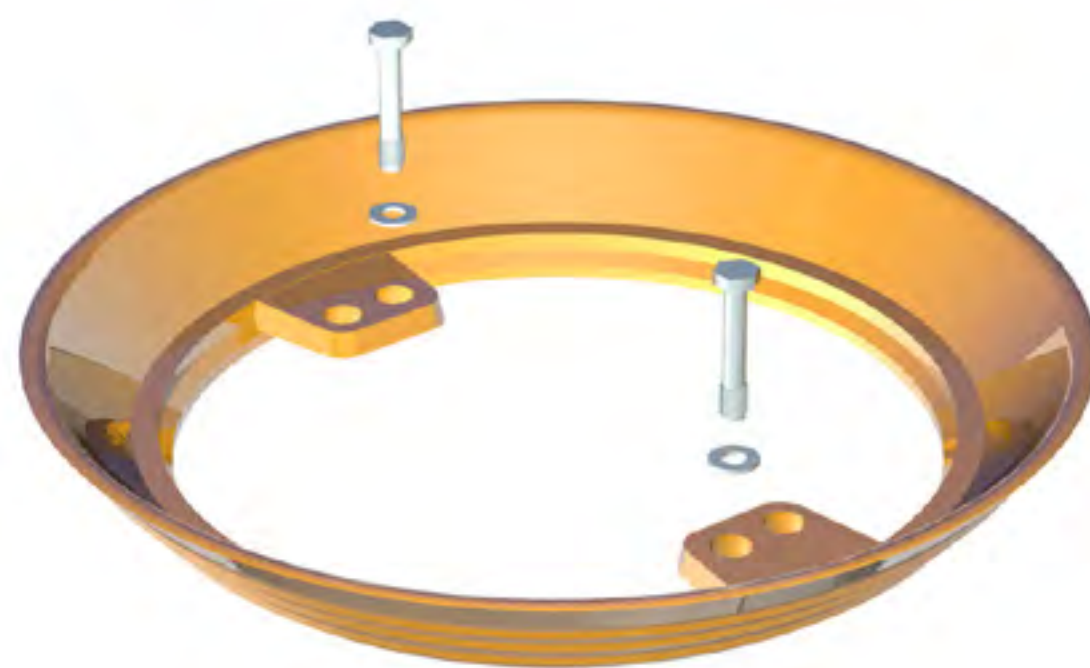


### Bolts and Washers

Stainless steel

### Patented Anti-Vortex Grating

Tamper proof, secured to clamping ring by two pocketed stainless steel bolts



### Clamping Ring

Designed to secure the waterproof membrane to the outlet body, the clamping ring is fixed to the outlet body with two stainless steel fixings studs



### Outlet Body

Deep sump body is secured through flange to supporting structure

## Key Benefits of the Harmer AV Roof Outlet Range

- Drains more roof area than conventional gravity outlet.
- Harmer AV can be used with any connecting pipework material, and all popular pipework sizes.
- Easy installation into roofs and internal gutters using hot melt and bitumenous membranes, single ply and wet-applied waterproofing systems, as well as built up felt.
- High flow performance with increasing head of water at the outlet.
- Ensures optimum efficiency of outlet capacity.
- Special retro-gully for flat roof refurbishment is also available.



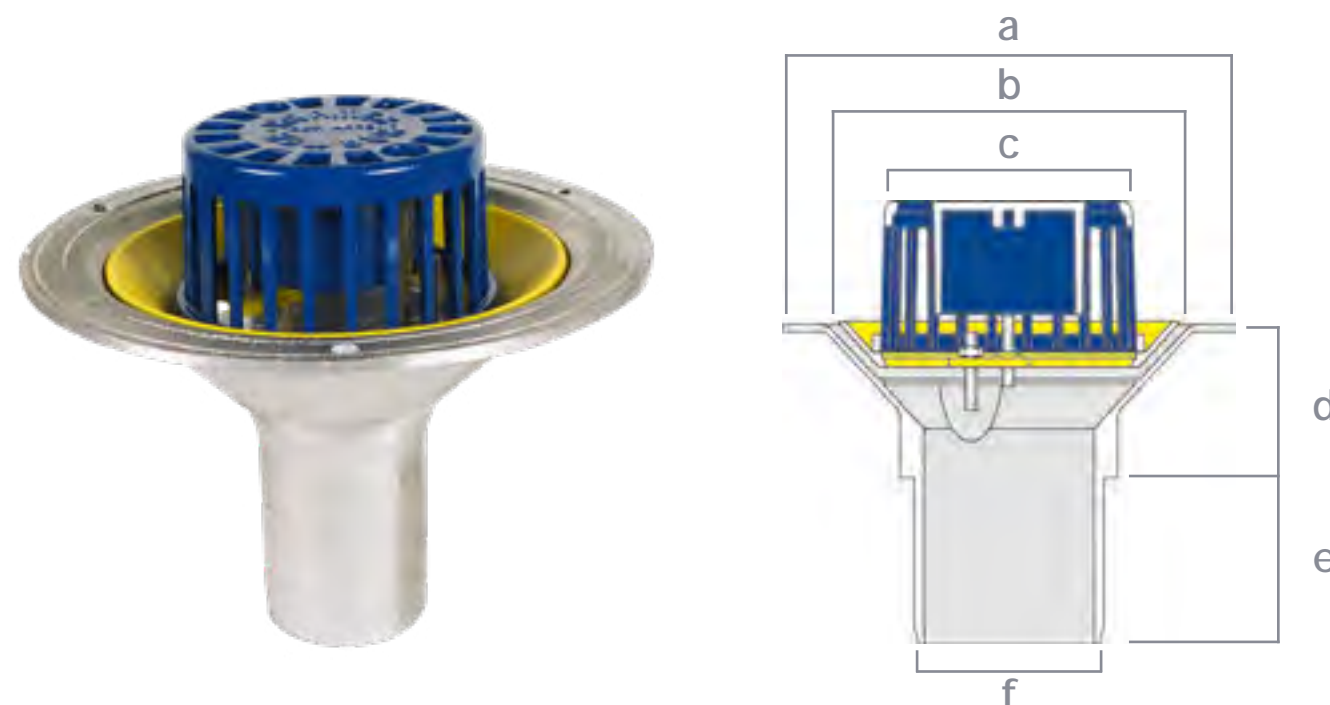
# Aluminium Roof Outlets - AV Vertical Outlets

Harmer Roof AV Vertical rainwater outlets are designed for use with flat roof structures using either insitu cast concrete, timber or lightweight metal deck construction. Harmer Roof outlets are ideal for connection to continuous waterproofing systems using single ply membranes, mastic asphalt, high performance built-up felt, hot melt systems and wet-applied systems.



## Vertical Spigot Outlet - Domical Grate

Vertical Spigot outlets are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipe to BS 4514 and BS EN 1329-1 (AV300, AV400 and AV600 outlets only). Please see Harmer couplings available (page 41).



Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

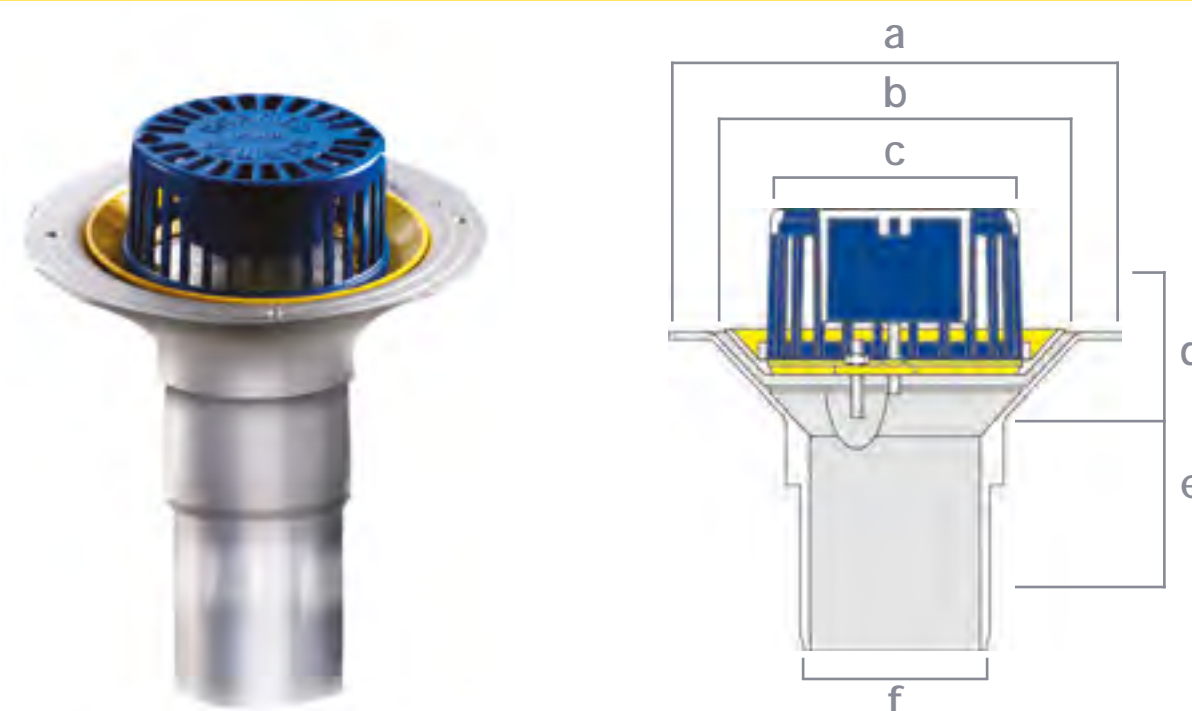
Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	292	239	137	121	77	60	1.69	2.5	86	AV200
75	292	239	137	85	112	83	4.97	2.7	86	AV300
100	380	305	210	133	114	110	10.71	4.9	110	AV400
150	380	305	210	118	129	160	14.07	5.0	110	AV600

For flat grate versions add suffix /F to the product code (See page 20) A range of accessories is available for use with special detail requirements (See page 20)



## Vertical Extended Spigot Outlet - Domical Grate

Vertical Extended Spigot outlets are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipe to BS 4514 and BS EN 1329-1 (AV300, AV400 and AV600 outlets only). Please see Harmer couplings available (page 41).



All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:

Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	292	239	137	121	Up to 200	63	1.69	VAR	86	AV200/EXT/200
50	292	239	137	121	201 to 400	63	1.69	VAR	86	AV200/EXT/400
50	292	239	137	121	401 to 600	63	1.69	VAR	86	AV200/EXT/600
50	292	239	137	121	601 to 800	63	1.69	VAR	86	AV200/EXT/800
50	292	239	137	121	801 to 1000	63	1.69	VAR	86	AV200/EXT/1000
75	292	239	137	85	Up to 200	82	4.97	VAR	86	AV300/EXT/200
75	292	239	137	85	201 to 400	82	4.97	VAR	86	AV300/EXT/400
75	292	239	137	85	401 to 600	82	4.97	VAR	86	AV300/EXT/600
75	292	239	137	85	601 to 800	82	4.97	VAR	86	AV300/EXT/800
75	292	239	137	85	801 to 1000	82	4.97	VAR	86	AV300/EXT/1000
100	380	305	210	133	Up to 200	110	10.71	VAR	110	AV400/EXT/200
100	380	305	210	133	201 to 400	110	10.71	VAR	110	AV400/EXT/400
100	380	305	210	133	401 to 600	110	10.71	VAR	110	AV400/EXT/600
100	380	305	210	133	601 to 800	110	10.71	VAR	110	AV400/EXT/800
100	380	305	210	133	801 to 1000	110	10.71	VAR	110	AV400/EXT/1000
150	380	305	210	118	Up to 200	152	14.07	VAR	110	AV600/EXT/200
150	380	305	210	118	201 to 400	152	14.07	VAR	110	AV600/EXT/400
150	380	305	210	118	401 to 600	152	14.07	VAR	110	AV600/EXT/600
150	380	305	210	118	601 to 800	152	14.07	VAR	110	AV600/EXT/800
150	380	305	210	118	801 to 1000	152	14.07	VAR	110	AV600/EXT/1000

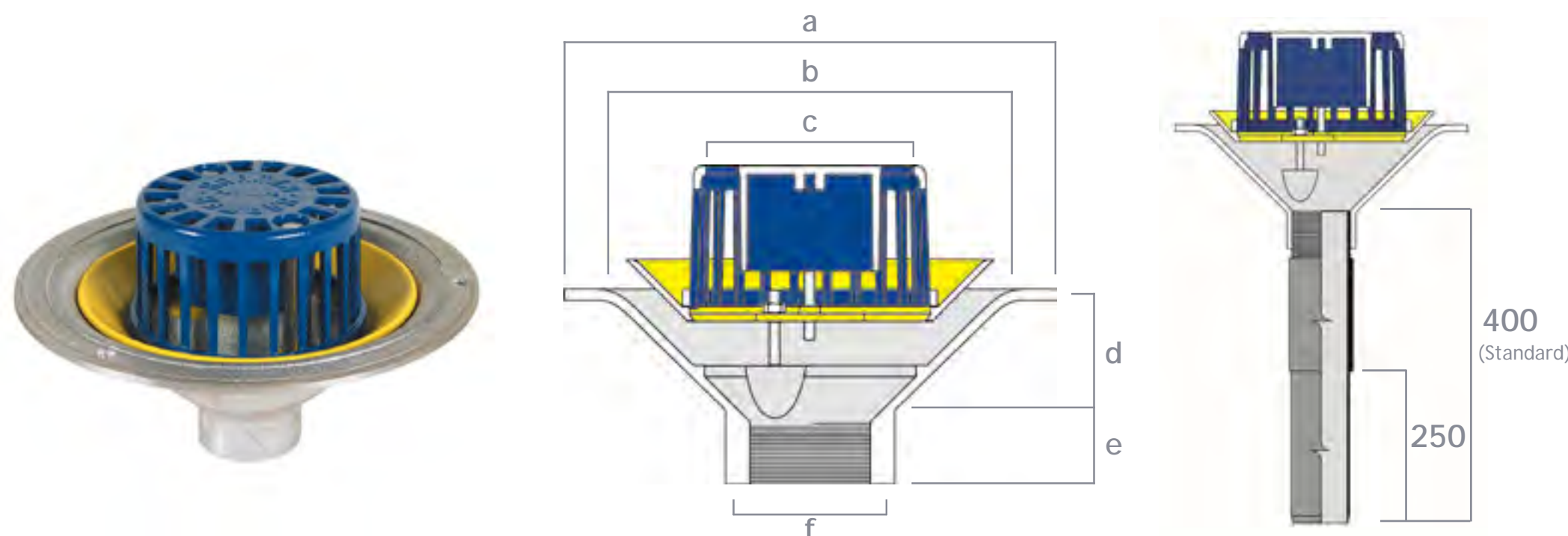


# Aluminium Roof Outlets - AV Vertical Outlets



## Vertical Threaded Outlet - Domical Grate

Vertical Threaded outlets have a female socket with parallel thread to BS EN 10226-1 for direct connection to threaded tube conforming with BS EN 10226-1. Threaded outlets are particularly recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases, a threaded connection will create a completely gastight seal within the slab.



Harmer Roof AV threaded outlets can be connected to socketed and socketless cast iron pipework, HDPE pipework and PVC pipework by means of the Harmer Roof Threaded Spigot Adaptor with appropriate Harmer coupling.

Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (BSP)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Grating Height (mm)	Product Code
50	292	239	137	88	33	2"	1.69	2.3	86	AV200T
75	292	239	137	74	47.5	3"	4.97	2.3	86	AV300T
100	380	305	210	93	40	4"	10.71	4.5	110	AV400T
150	380	305	210	68	50	6"	14.07	4.5	110	AV600T

For flat grate versions add suffix /F to the product code (See page 20) A range of accessories is available for use with special detail requirements (See page 20)



## Aluminium Threaded Spigot Adaptors

The aluminium threaded spigot adaptor has been designed to facilitate an A1 fire rated connection to Harmer Roof AV and detail threaded aluminium rainwater outlets to all types of pipe systems due to the external diameter of the spigot being that of most standard internal pipework systems. This tube is supplied with BS EN 10255 taper male thread which ensures a completely watertight joint when screwed home into the socket outlet. (Page 42)



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	58	400	0.5	2ADPA
50	58	600	0.7	2ADPA/600
75	82.5	400	1.0	3ADPA
75	82.5	600	1.4	3ADPA/600
100	110	400	1.2	4ADPA
100	110	600	1.8	4ADPA/600
150	160	400	1.7	6ADPA
150	160	600	2.4	6ADPA/600

## ABS Threaded Spigot Adaptors

The ABS threaded spigot adaptor has been designed to facilitate the connection of Harmer Aluminium Roof Outlets and Harmer Cast Iron Roof Outlets where a fire rated solution is not applicable. This provides an economical method of connection onto all manor of pipework systems due to the external diameter of the spigot being that of most standard internal pipework systems. This tube is supplied with BS EN 10255 taper male thread which ensures a completely watertight joint when screwed home into the socket outlet. (Page 42)



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	63	400	0.4	2ADP
50	63	600	0.6	2ADP/600
75	82.5	400	0.6	3ADP
75	82.5	600	0.9	3ADP/600
100	110	400	1.2	4ADP
100	110	600	1.8	4ADP/600
150	160	400	2.0	6ADP
150	160	600	3.0	6ADP/600

Threaded Spigot Adaptors: 2ADP, 3ADP, 4ADP and 6ADP

Standard length for adaptors is 400mm, but lengths of 500, 600, 700 and 800mm are also Available on request.

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

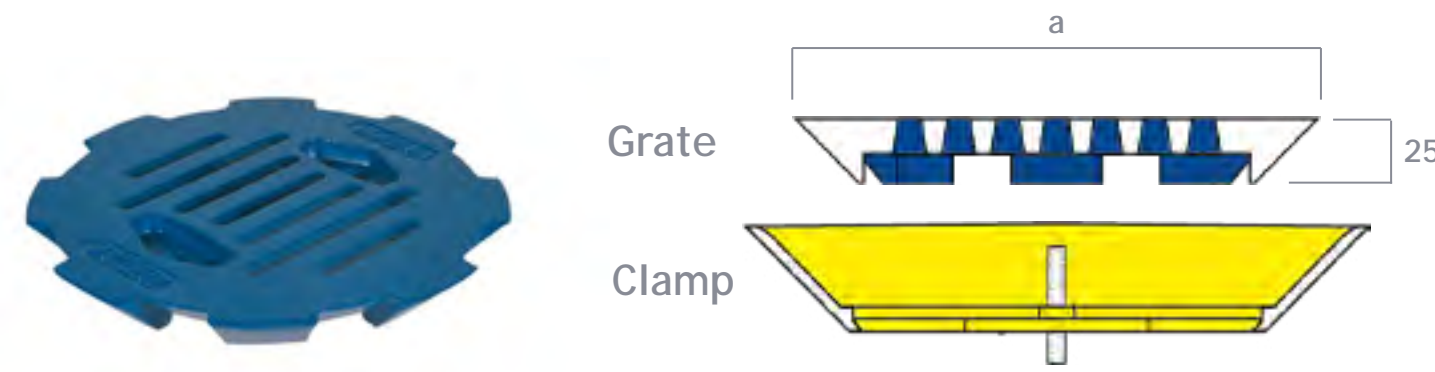


# Aluminium Roof Outlets - AV Vertical Outlets



## Flat Grate

Flat grates should be used if the outlet occurs in an area which is subject to pedestrian traffic. These grates are also designed for use with Harmer Modulock pedestal system where concealed rainwater outlets are used. To specify or order, add suffix /F to the product codes on pages 18-19, e.g 100mm Vertical Spigot outlet with Flat Grate: AV400/F.

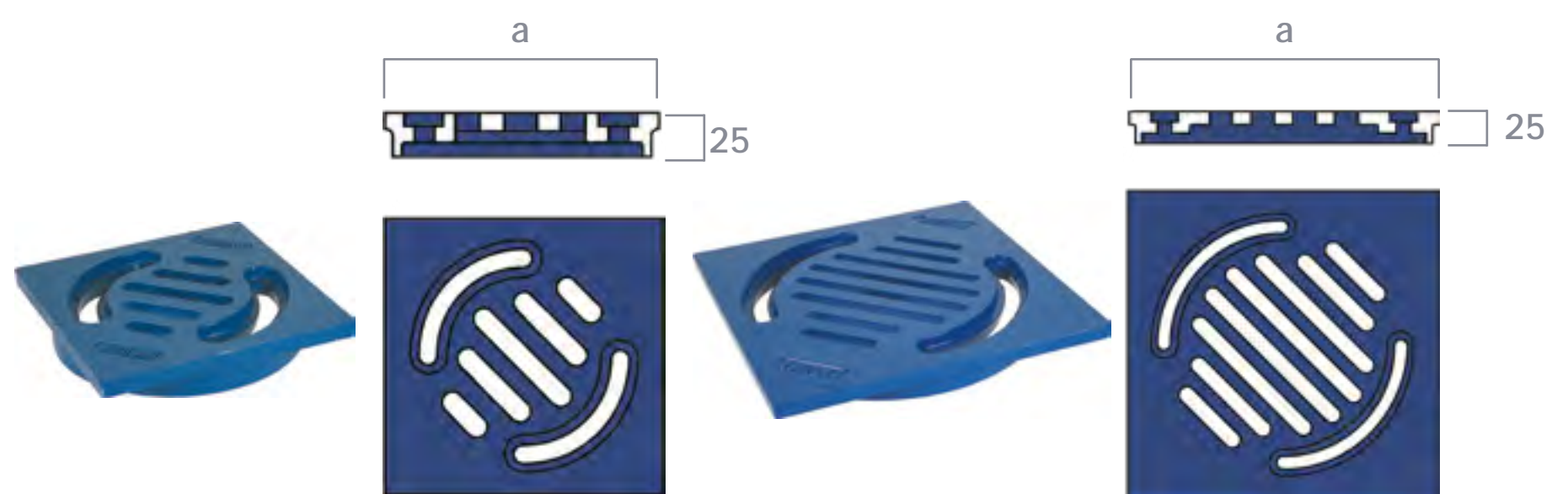


Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
50	200	1.69	1.5	0.8	/F
75	200	4.97	1.5	0.8	/F
100	270	10.71	1.5	1.2	/F
150	270	15.55	1.5	1.2	/F



## Terrace Grates

Terrace Grates are designed for installation in terrace tiles or brick paviors. They should be used in connection with Grate Extension Pieces which raise the Terrace Grate to the level of the paved surface. The radius slots in the grate allow for movement through 90° permitting adjustment to suit surrounding paving prior to final tightening.



Terrace Grate 2/3TG (For use with Extension Piece 2/3EP)      Terrace Grate 4/6TG (For use with Extension Piece 4/6EP)

Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Product Code
50	150	1.69	1.5	0.7	2/3TG
75	150	4.97	1.5	0.7	2/3TG
100	232	10.71	1.5	1.6	4/6TG
150	232	15.55	1.5	1.6	4/6TG



## Grate Extension Pieces

Grate Extension Pieces are for applications where it is necessary to raise the level of the grate above the body of the outlet such as in inverted roof construction.

The Grate Extension Pieces will accept domical grates and terrace grates but not standard flat grates. Terrace Grates can be used only in connection with grate extension pieces. The extension pieces can be cut down if necessary to suit the thickness of paving or tiles. This can be done easily on site with a hacksaw, or, if required, extension pieces can be trimmed prior to delivery.



Grate Extension Piece 2/3EP      Grate Extension Piece 4/6EP

Outlet Size (mm)	a (mm)	b (mm)	Weight (kg)	Product Code
50	161	150	0.7	2/3EP
75	161	150	0.7	2/3EP
100	233	222	1.6	4/6EP
150	233	222	1.6	4/6EP

Grate Extension Pieces are supplied with one set of stainless steel extension studs per outlet.



## Gravel Guard

Made of stainless steel with 3mm perforations, the Gravel Guard is used with Domical Grates on roofs with gravel finish to prevent ingress of insulation and gravel into the outlet. Other heights are available to order.



Outlet Size (nominal)	a (mm)	b (mm)	Weight (kg)	Product Code
Medium Sump	150	200	0.5	C4/GG/15
Medium Sump	200	200	0.6	C4/GG/20
Large Sump	150	305	0.8	C6/GG/15
Large Sump	200	305	0.9	C6/GG/20



# Aluminium Roof Outlets - AV Retro-Gully Outlets

Harmer Roof AV Retro-Gully outlets are designed to fit within the existing outlet and pipework of the roof which is being upgraded. Because of minimal disturbance and the ease with which the Retro-Gully is fitted, it represents an extremely cost-effective and efficient solution to flat roof upgrading.



## Application

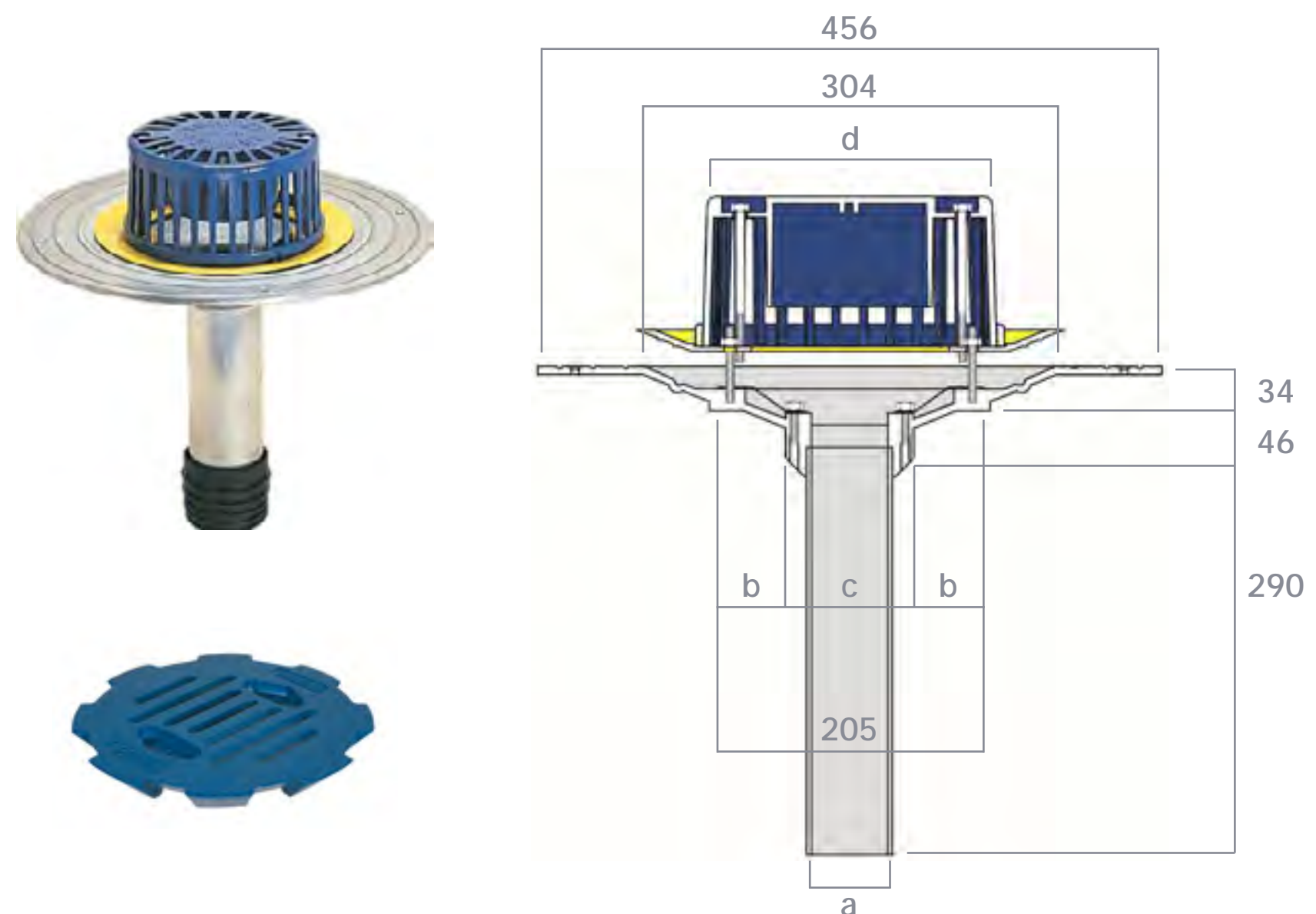
The use of AV increases flow performance at the outlet location regardless of pipe diameter downsizing.

There is no need to remove the old rainwater outlet.

The outlet body is in diecast LM6 aluminium silicon alloy to BS EN 1706, and incorporates a welded 300mm aluminium tail pipe. The tail pipe, cut to the required length, is simply inserted through the existing outlet, into existing pipework, and sealed by means of the Harmer Roof AV special multi-fin pipe seal. This seal creates a watertight junction between existing pipework and the Retro-Gully tail pipe. The outlet body's wide fixing flange incorporates concentric grooves which enhance the bond with roofing felts or asphalt.

An LM6 aluminium silicon clamping ring, also has a ridged under-surface for improved bond with roofing membranes.

Two sealable ports in the outlet body are designed for injection of PU foam to fill the void between old and new outlet.



Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Grate Height (mm)	Product Code
75	63.5	55	95	137	4.63	5.4	86	RAV75
100	88.9	42	120	210	5.53	4.9	110	RAV100

For flat grate versions add suffix /F to the product code (See page 20) A range of accessories is available for use with special detail requirements (See page 20)

## Connection to Pipework

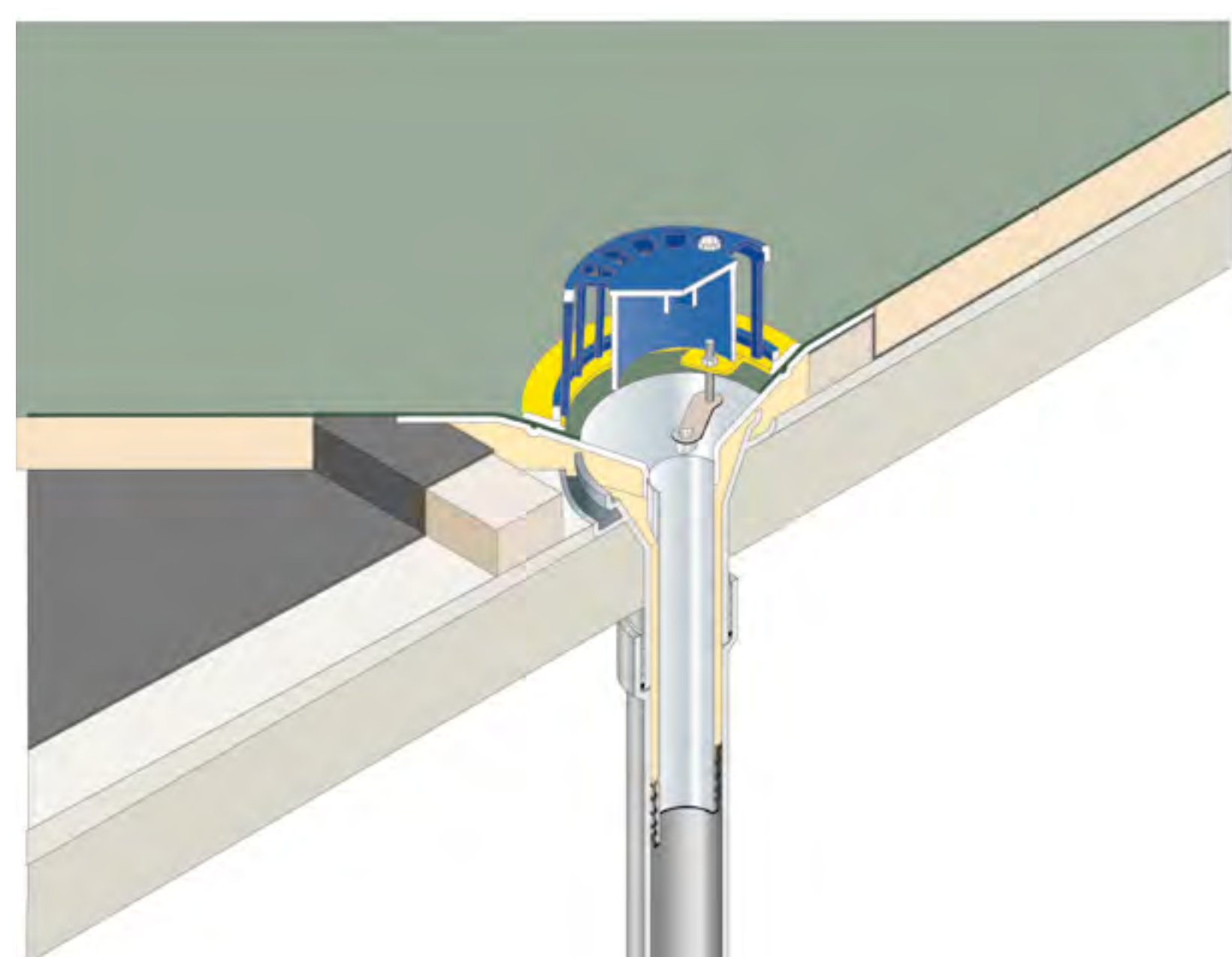
The Retro-Gully may be used for any type of warm roof refurbishment and with any flat roof waterproofing system. 75mm and 100mm pipework options are Available, and will accommodate variations on pipe internal diameter from PVC through to cast iron pipe systems.

The AV Retro-Gully has been designed in conjunction with the Flat Roofing Alliance (FRA).

## Existing pipe diameters for connection

Existing pipework internal diameter (mm)	Product Code
71.5 - 78.5	RAV75
97.0 - 104.0	RAV100

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity





# Aluminium Roof Outlets - Intro to Detail Outlets

The Harmer Roof Detail range includes outlets to cover all the awkward detailing situations that occur in building design and in refurbishment.



## Main Characteristics

Harmer Roof Detail outlets incorporate all the key features inherent in the Alumasc design approach to trouble-free flat roof drainage:

- Integral and generously proportioned sump ensures an adequate head of water for a steady flow into the rainwater pipe.
- Clamp fixing of the waterproof membrane to the sides of the sump completely eliminates any risk of leakage through capillary action or back pressure.
- Elimination of flashings means there is nothing which might reduce the effective bore of the rainwater pipe and restrict the flow of water.
- Connection to all standard sizes of pipework.

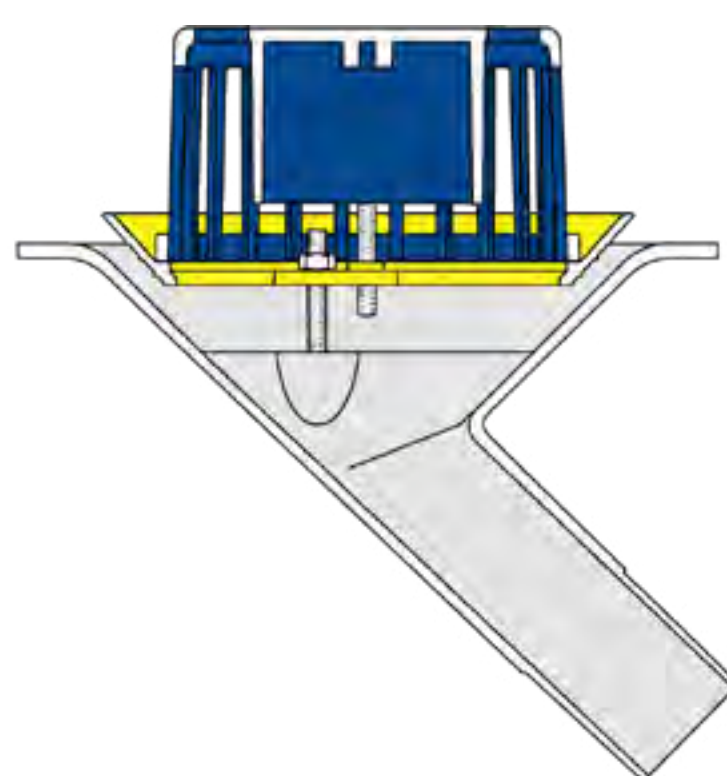
## Areas of Application

Harmer Roof Detail includes outlets specially designed for the following situations:

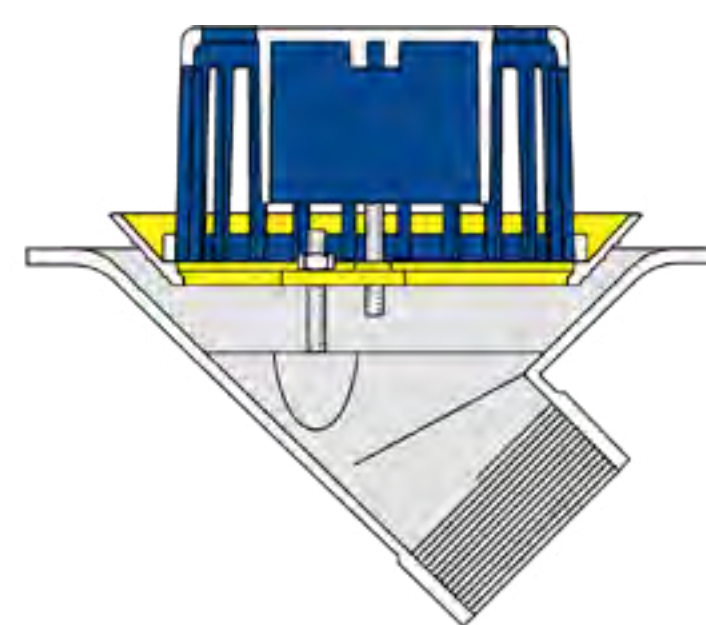
- Spigot, Extended Spigot or Screw threaded aluminium outlets cast in LM6 aluminium alloy for connection to drainage pipework at 45° and 90°.
- Two-way extended spigot and screw threaded outlets cast in LM6 aluminium alloy for connection to pipework through a parapet. Two-way outlets can be installed to provide either vertical or horizontal takeoff, and are particularly suitable for parapet type applications.
- Balcony standard spigot and extended spigot outlets cast in LM6 aluminium alloy for balcony drainage or similar applications. Supplied with a flat grate, the balcony outlet is ideal for use in areas of pedestrian access. Grates can be hole punched to receive 50, 75 or 100mm diameter rainwater down pipes.
- Gully standard spigot and extended spigot outlets cast in LM6 aluminium alloy for narrow gutter and gully drainage where an outlet narrower than the standard AV outlet is required.
- Screw threaded car park and service deck drains cast in LM6 aluminium alloy for drainage requirements in multi-level car park and utility areas.

## Bespoke Manufacture

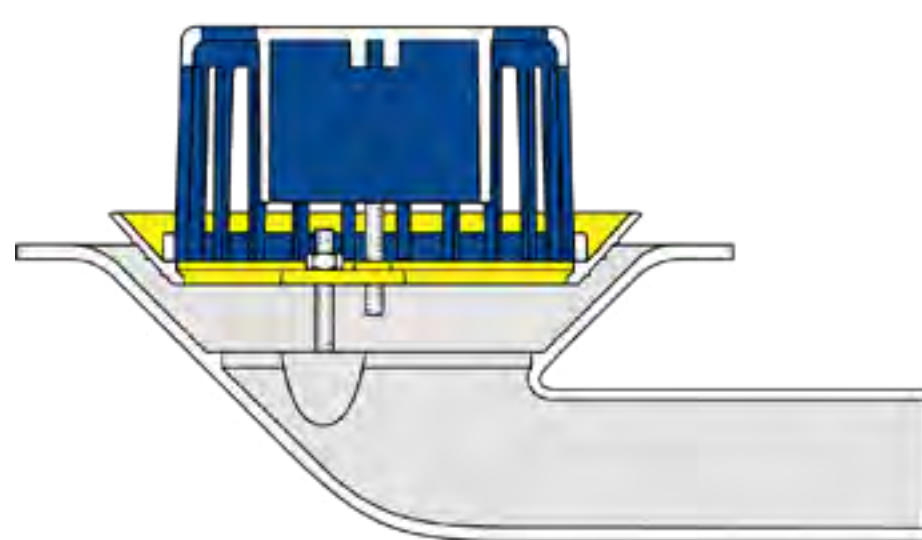
Rainwater outlets can be modified to have extended pipework as well as pipe conversions to co-ordinate with Alumasc colour coated, external rainwater pipe systems. Contact Harmer Technical Department for all bespoke requirements.



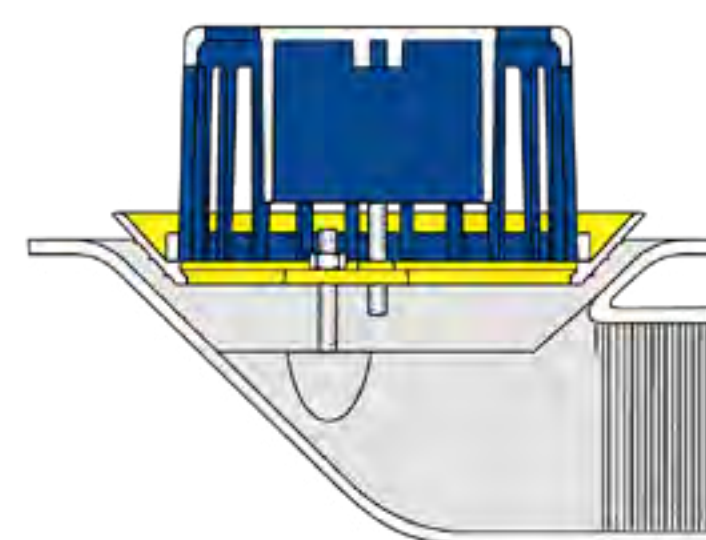
45° Spigot Outlet



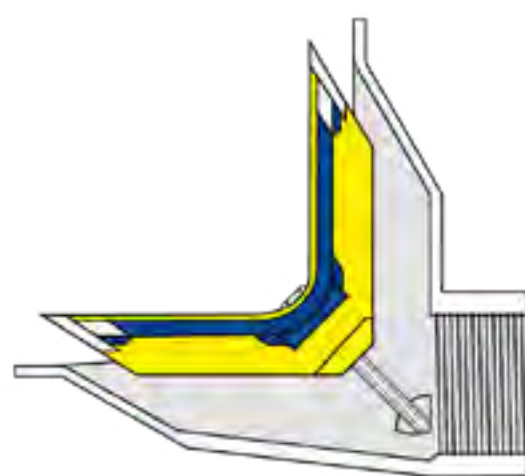
45° Screw Outlet



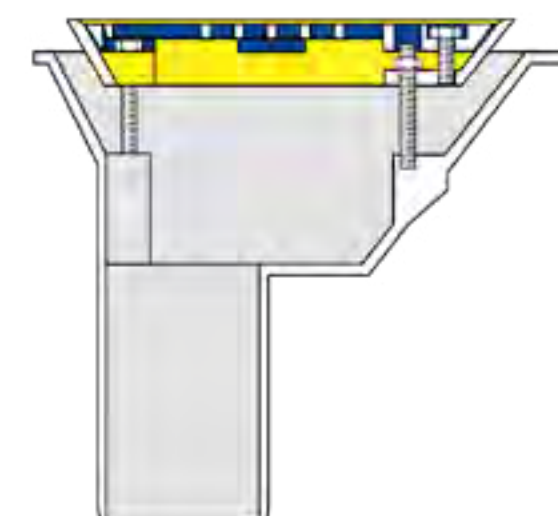
90° Spigot Outlet



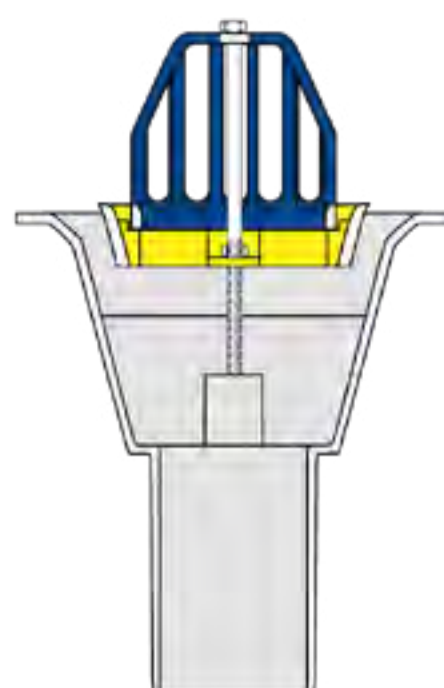
90° Screw Outlet



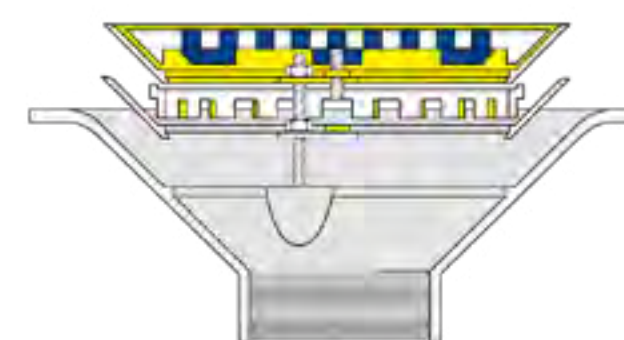
Two-way Outlet



Balcony Outlet



Gully Outlet



Car Park Outlet



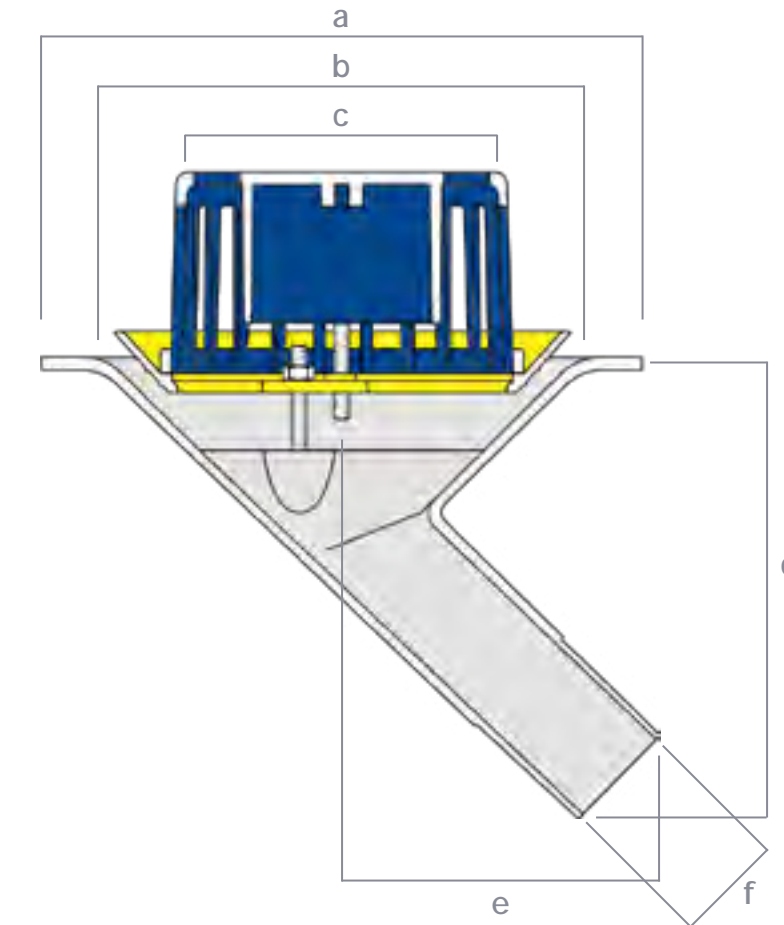
# Aluminium Roof Outlets - 45° Detail Outlets

Harmer Roof 45° Detail outlets are designed for use with flat roof structures using either insitu cast concrete, timber and lightweight metal deck construction. Harmer Roof outlets are ideal for connection to continuous waterproofing systems using single ply membranes, mastic asphalt or high performance built-up felt.



## 45° Spigot Outlet - Domical Grate

45° Spigot outlets are suitable for connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC pipe to BS 4514 and BS EN 1329-1. Please see Harmer couplings available (page 41).



Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

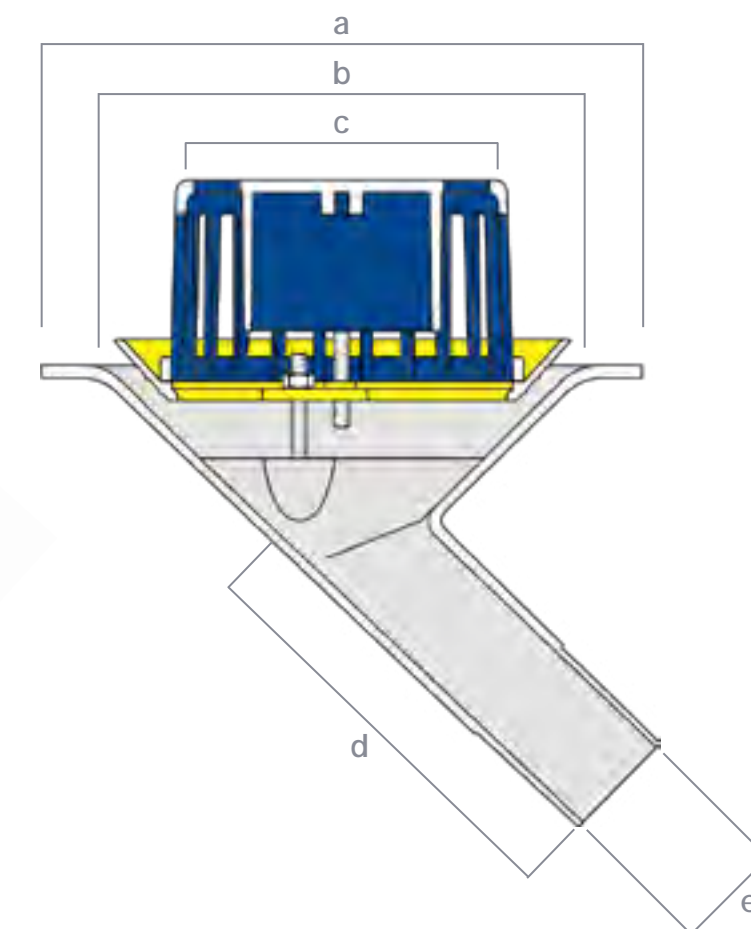
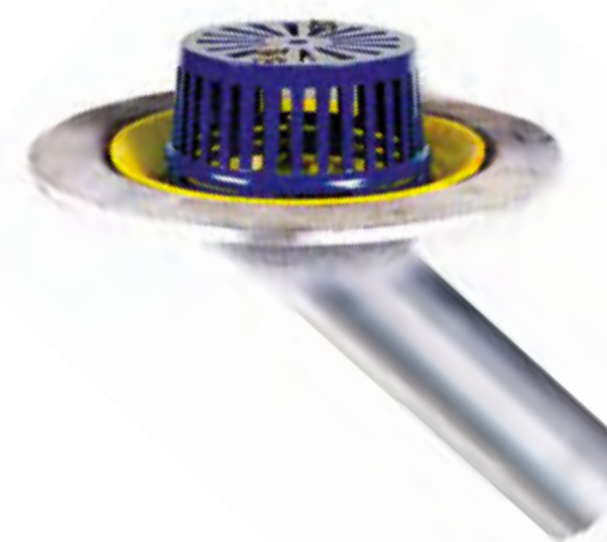
Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	305	229	137	229	175	62	1.69	3.6	86	245
75	305	229	137	235	175	87	4.97	4.2	86	345
100	372	305	210	273	191	114	10.66	6.0	110	445

For flat grate versions add suffix /F to the product code (See page 20) A range of accessories is available for use with special detail requirements (See page 20)



## 45° Extended Spigot Outlet - Domical Grate

45° Extended Spigot outlets are suitable for connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC pipe to BS 4514 and BS EN 1329-1. Please see Harmer couplings available (page 41).



All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:

Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	305	229	137	Up to 400	63	1.69	VAR	86	245/EXT/400
50	305	229	137	401 to 600	63	1.69	VAR	86	245/EXT/600
50	305	229	137	601 to 800	63	1.69	VAR	86	245/EXT/800
50	305	229	137	801 to 1000	63	1.69	VAR	86	245/EXT/1000
75	305	229	137	Up to 400	82	4.97	VAR	86	345/EXT/400
75	305	229	137	401 to 600	82	4.97	VAR	86	345/EXT/600
75	305	229	137	601 to 800	82	4.97	VAR	86	345/EXT/800
75	305	229	137	801 to 1000	82	4.97	VAR	86	345/EXT/1000
100	372	305	210	Up to 400	110	10.66	VAR	110	445/EXT/400
100	372	305	210	401 to 600	110	10.66	VAR	110	445/EXT/600
100	372	305	210	601 to 800	110	10.66	VAR	110	445/EXT/800
100	372	305	210	801 to 1000	110	10.66	VAR	110	445/EXT/1000

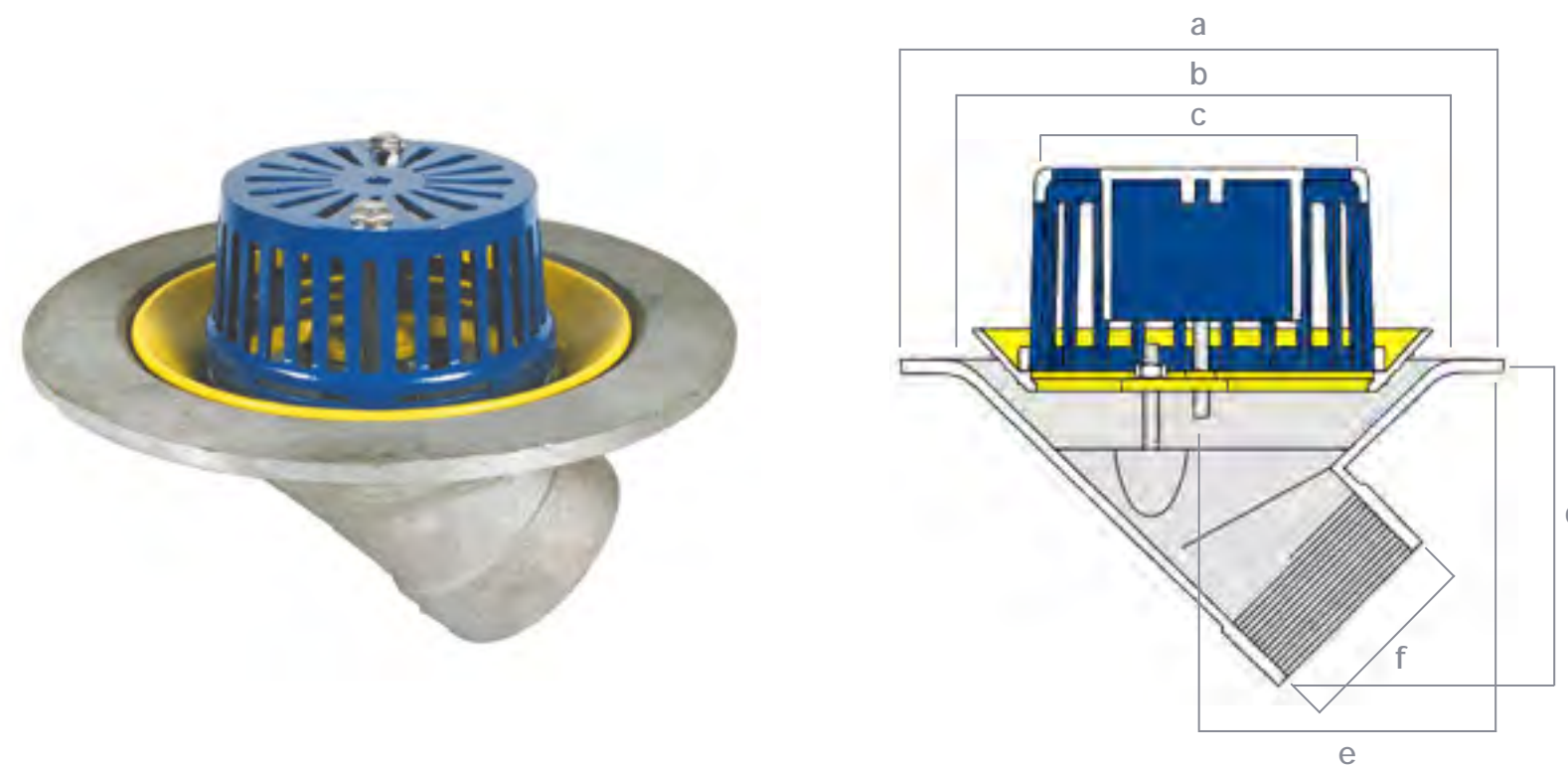


# Aluminium Roof Outlets - 45° Detail Outlets



## 45° Threaded Outlet - Domical Grate

45° Screw outlets have a female socket with parallel thread to BS EN 10226-1 for direct connection to threaded tube conforming with BS EN 10226-1. Threaded outlets are particularly recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases, a threaded connection will create a completely gastight seal within the slab. Harmer Roof AV threaded outlets can be connected to socketed and socketless cast iron pipework, HDPE pipework and PVC pipework by means of the Harmer Roof Threaded Spigot Adaptor with appropriate Harmer coupling (page 41).



Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (BSP)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Grating Height (mm)	Product Code
50	305	229	137	159	109	2"	1.69	3.8	86	245T
75	305	229	137	159	109	3"	4.97	3.5	86	345T
100	372	305	210	186	113	4"	10.71	6.0	110	445T

For flat grate versions add suffix /F to the product code (See page 25) A range of accessories is available for use with special detail requirements (See page 25)



## Aluminium Threaded Spigot Adaptors

The aluminium threaded spigot adaptor has been designed to facilitate an A1 fire rated connection to Harmer Roof AV and detail threaded aluminium rainwater outlets to all types of pipe systems due to the external diameter of the spigot being that of most standard internal pipework systems. This tube is supplied with BS EN 10255 taper male thread which ensures a completely watertight joint when screwed home into the socket outlet. (Page 42)



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	58	400	0.5	2ADPA
50	58	600	0.7	2ADPA/600
75	82.5	400	1.0	3ADPA
75	82.5	600	1.4	3ADPA/600
100	110	400	1.2	4ADPA
100	110	600	1.8	4ADPA/600
150	160	400	1.7	6ADPA
150	160	600	2.4	6ADPA/600

## ABS Threaded Spigot Adaptors

The ABS threaded spigot adaptor has been designed to facilitate the connection of Harmer Aluminium Roof Outlets and Harmer Cast Iron Roof Outlets where a fire rated solution is not applicable. This provides an economical method of connection onto all manner of pipework systems due to the external diameter of the spigot being that of most standard internal pipework systems. This tube is supplied with BS EN 10255 taper male thread which ensures a completely watertight joint when screwed home into the socket outlet. (Page 42)



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	63	400	0.4	2ADP
50	63	600	0.6	2ADP/600
75	82.5	400	0.6	3ADP
75	82.5	600	0.9	3ADP/600
100	110	400	1.2	4ADP
100	110	600	1.8	4ADP/600
150	160	400	2.0	6ADP
150	160	600	3.0	6ADP/600

Threaded Spigot Adaptors: 2ADP, 3ADP, 4ADP and 6ADP

Standard length for adaptors is 400mm, but lengths of 500, 600, 700 and 800mm are also Available on request.

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

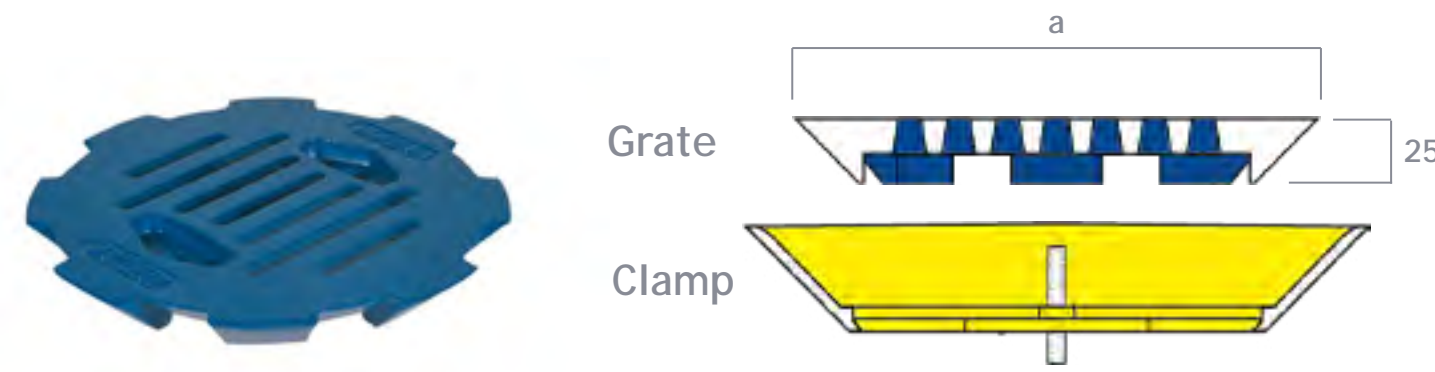


# Aluminium Roof Outlets - 45° Detail Outlets



## Flat Grate

Flat grates should be used if the outlet occurs in an area which is subject to pedestrian traffic. These grates are also designed for use with Harmer Modulock pedestal system where concealed rainwater outlets are used. To specify or order, add suffix /F to the product codes on pages 23-24, e.g 100mm Vertical Spigot outlet with Flat Grate: AV400/F.

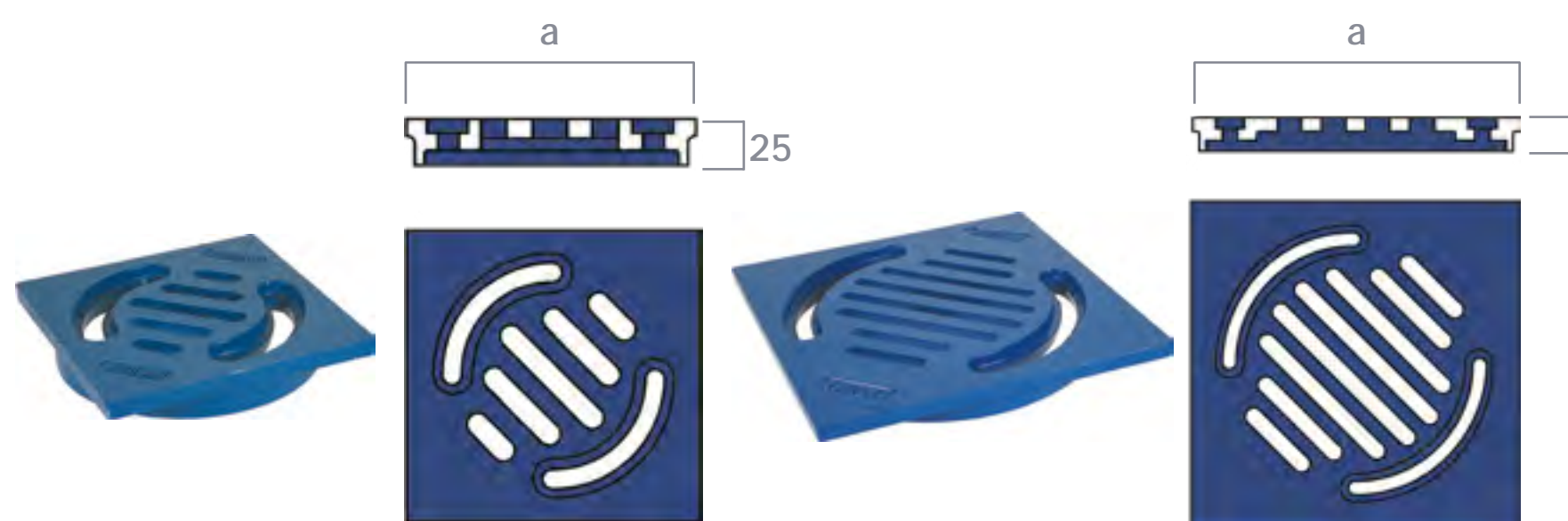


Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
50	200	1.69	1.5	0.8	/F
75	200	4.97	1.5	0.8	/F
100	270	10.71	1.5	1.2	/F
150	270	15.55	1.5	1.2	/F



## Terrace Grates

Terrace Grates are designed for installation in terrace tiles or brick paviors. They should be used in connection with Grate Extension Pieces which raise the Terrace Grate to the level of the paved surface. The radius slots in the grate allow for movement through 90° permitting adjustment to suit surrounding paving prior to final tightening.



Terrace Grate 2/3TG  
(For use with Extension Piece 2/3EP)

Terrace Grate 4/6TG  
(For use with Extension Piece 4/6EP)

Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Product Code
50	150	1.69	1.5	0.7	2/3TG
75	150	4.97	1.5	0.7	2/3TG
100	232	10.71	1.5	1.6	4/6TG
150	232	15.55	1.5	1.6	4/6TG



## Grate Extension Pieces

Grate Extension Pieces are for applications where it is necessary to raise the level of the grate above the body of the outlet such as in inverted roof construction.

The Grate Extension Pieces will accept domical grates and terrace grates but not standard flat grates. Terrace Grates can be used only in connection with grate extension pieces. The extension pieces can be cut down if necessary to suit the thickness of paving or tiles. This can be done easily on site with a hacksaw, or, if required, extension pieces can be trimmed prior to delivery.



Grate Extension Piece 2/3EP

Grate Extension Piece 4/6EP

Outlet Size (mm)	a (mm)	b (mm)	Weight (kg)	Product Code
50	161	150	0.7	2/3EP
75	161	150	0.7	2/3EP
100	233	222	1.6	4/6EP
150	233	222	1.6	4/6EP

Grate Extension Pieces are supplied with one set of stainless steel extension studs per outlet.



## Gravel Guard

Made of stainless steel with 3mm perforations, the Gravel Guard is used with Domical Grates on roofs with gravel finish to prevent ingress of insulation and gravel into the outlet. Other heights are available to order.



Outlet Size (nominal)	a (mm)	b (mm)	Weight (kg)	Product Code
Medium Sump	150	200	0.5	C4/GG/15
Medium Sump	200	200	0.6	C4/GG/20
Large Sump	150	305	0.8	C6/GG/15
Large Sump	200	305	0.9	C6/GG/20



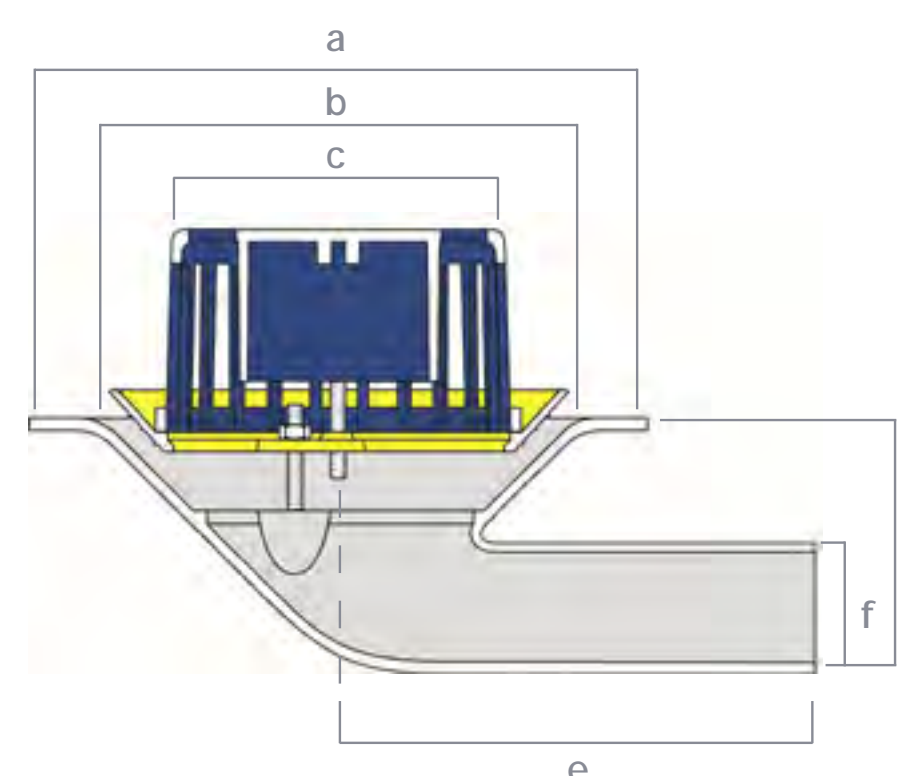
# Aluminium Roof Outlets - 90° Detail Outlets

Harmer Roof 90° Detail outlets are designed for use with flat roof structures using either insitu cast concrete, timber and lightweight metal deck construction. Harmer Roof outlets are ideal for connection to continuous waterproofing systems using single ply membranes, mastic asphalt or high performance built-up felt.



## 90° Spigot Outlet - Domical Grate

90° Spigot outlets are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipe to BS 4514 and BS EN 1329-1. Please see Harmer couplings available (page 41).



Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

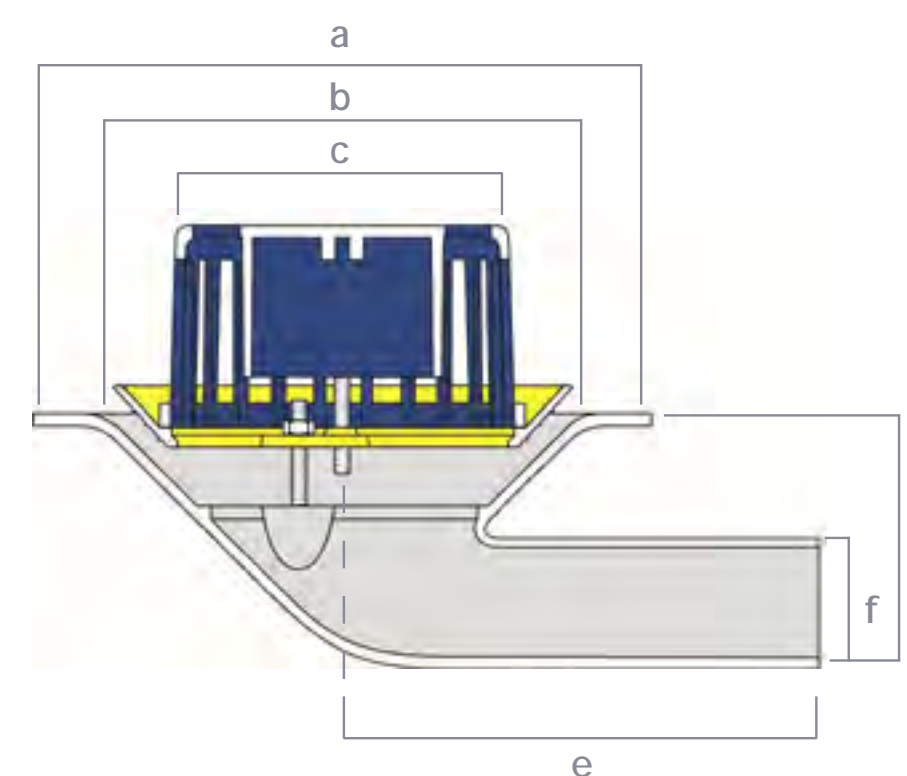
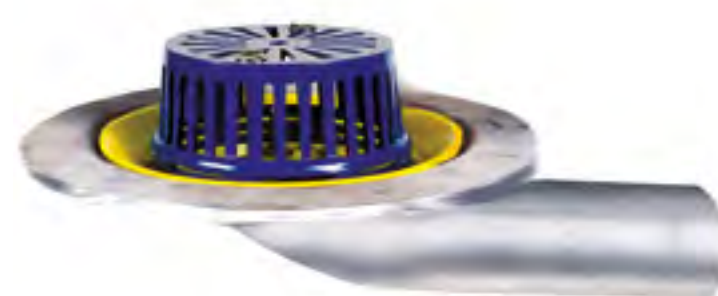
Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	305	229	137	124	232	62	1.69	4.0	86	290
75	329	229	121	267	83	137	3.31	3.8	86	390
100	405	305	210	142	285	110	7.19	5.5	110	490

For flat grate versions add suffix /F to the product code (See page 28)  
A range of accessories is available for use with special detail requirements (See page 28)



## 90° Extended Spigot Outlet - Domical Grate

90° Extended Spigot outlets are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipe to BS 4514 and BS EN 1329-1. Please see Harmer couplings available (page 41).



All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:

Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	305	229	137	127	Up to 400	63	1.69	VAR	86	290/EXT/400
50	305	229	137	127	401 to 600	63	1.69	VAR	86	290/EXT/600
50	305	229	137	127	601 to 800	63	1.69	VAR	86	290/EXT/800
50	305	229	137	127	801 to 1000	63	1.69	VAR	86	290/EXT/1000
75	329	226	137	139	Up to 400	82	3.39	VAR	86	390/EXT/400
75	329	226	137	139	401 to 600	82	3.39	VAR	86	390/EXT/600
75	329	226	137	139	601 to 800	82	3.39	VAR	86	390/EXT/800
75	329	226	137	139	801 to 1000	82	3.39	VAR	86	390/EXT/1000
100	356	305	210	172	Up to 400	110	7.29	VAR	110	490/EXT/400
100	356	305	210	172	401 to 600	110	7.29	VAR	110	490/EXT/600
100	356	305	210	172	601 to 800	110	7.29	VAR	110	490/EXT/800
100	356	305	210	172	801 to 1000	110	7.29	VAR	110	490/EXT/1000
150	356	305	210	225	Up to 400	152	10.01	VAR	110	690/EXT/400
150	356	305	210	225	401 to 600	152	10.01	VAR	110	690/EXT/600
150	356	305	210	225	601 to 800	152	10.01	VAR	110	690/EXT/800
150	356	305	210	225	801 to 1000	152	10.01	VAR	110	690/EXT/1000

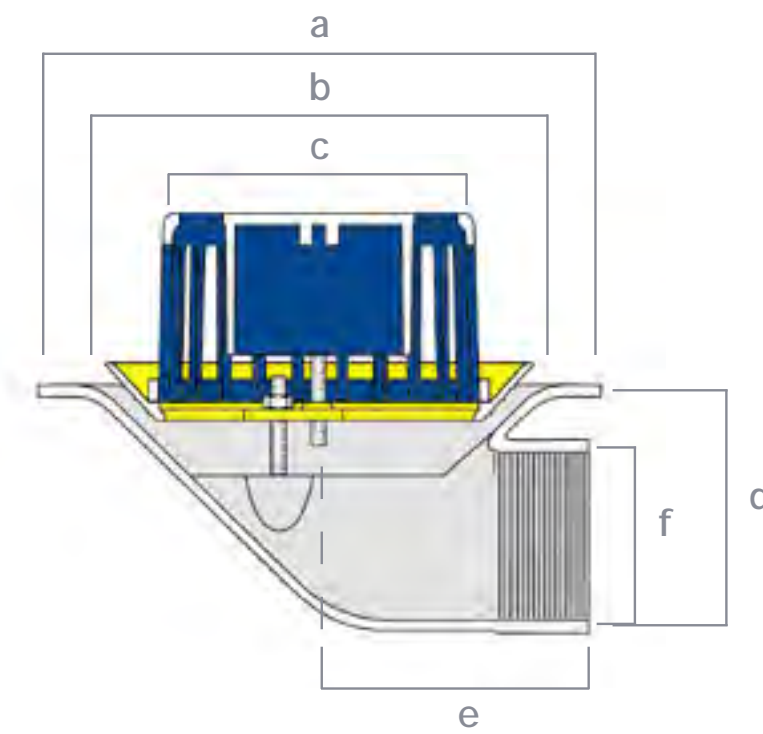


# Aluminium Roof Outlets - 90° Detail Outlets



## 90° Threaded Outlet - Domical Grate

90° Screw outlets have a female socket with parallel thread to BS EN 10226-1 for direct connection to threaded tube conforming with BS EN 10226-1. Threaded outlets are particularly recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases, a threaded connection will create a completely gastight seal within the slab. Harmer Roof AV threaded outlets can be connected to socketed and socketless cast iron pipework, HDPE pipework and PVC pipework by means of the Harmer Roof Threaded Spigot Adaptor with appropriate Harmer coupling (page 41).



Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (BSP)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	305	229	137	127	140	2"	1.69	3.9	86	290T
75	329	226	137	139	140	3"	3.39	4.2	86	390T
100	356	305	210	172	152	4"	7.29	5.5	110	490T
150	356	305	210	225	152	6"	10.01	7.0	110	690T

For flat grate versions add suffix /F to the product code (See page 28)  
A range of accessories is available for use with special detail requirements (See page 28)



## Aluminium Threaded Spigot Adaptors

The aluminium threaded spigot adaptor has been designed to facilitate an A1 fire rated connection to Harmer Roof AV and detail threaded aluminium rainwater outlets to all types of pipe systems due to the external diameter of the spigot being that of most standard internal pipework systems. This tube is supplied with BS EN 10255 taper male thread which ensures a completely watertight joint when screwed home into the socket outlet. (Page 42)



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	58	400	0.5	2ADPA
50	58	600	0.7	2ADPA/600
75	82.5	400	1.0	3ADPA
75	82.5	600	1.4	3ADPA/600
100	110	400	1.2	4ADPA
100	110	600	1.8	4ADPA/600
150	160	400	1.7	6ADPA
150	160	600	2.4	6ADPA/600

## ABS Threaded Spigot Adaptors

The ABS threaded spigot adaptor has been designed to facilitate the connection of Harmer Aluminium Roof Outlets and Harmer Cast Iron Roof Outlets where a fire rated solution is not applicable. This provides an economical method of connection onto all manner of pipework systems due to the external diameter of the spigot being that of most standard internal pipework systems. This tube is supplied with BS EN 10255 taper male thread which ensures a completely watertight joint when screwed home into the socket outlet. (Page 42)



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	63	400	0.4	2ADP
50	63	600	0.6	2ADP/600
75	82.5	400	0.6	3ADP
75	82.5	600	0.9	3ADP/600
100	110	400	1.2	4ADP
100	110	600	1.8	4ADP/600
150	160	400	2.0	6ADP
150	160	600	3.0	6ADP/600

Threaded Spigot Adaptors: 2ADP, 3ADP, 4ADP and 6ADP

Standard length for adaptors is 400mm, but lengths of 500, 600, 700 and 800mm are also Available on request.

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

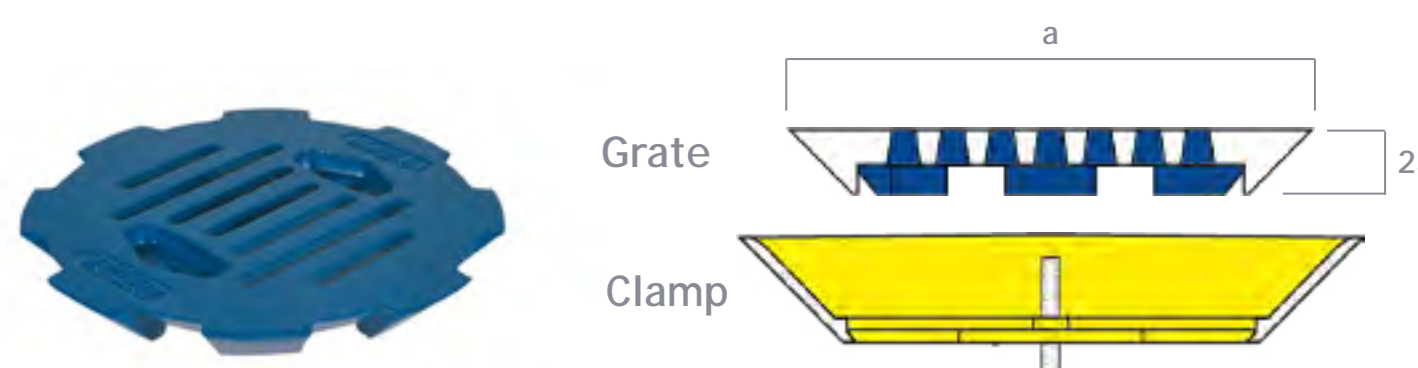


# Aluminium Roof Outlets - 90° Detail Outlets



## Flat Grate

Flat grates should be used if the outlet occurs in an area which is subject to pedestrian traffic. These grates are also designed for use with Harmer Modulock pedestal system where concealed rainwater outlets are used. To specify or order, add suffix /F to the product codes on pages 26-27, e.g 100mm Vertical Spigot outlet with Flat Grate: AV400/F.

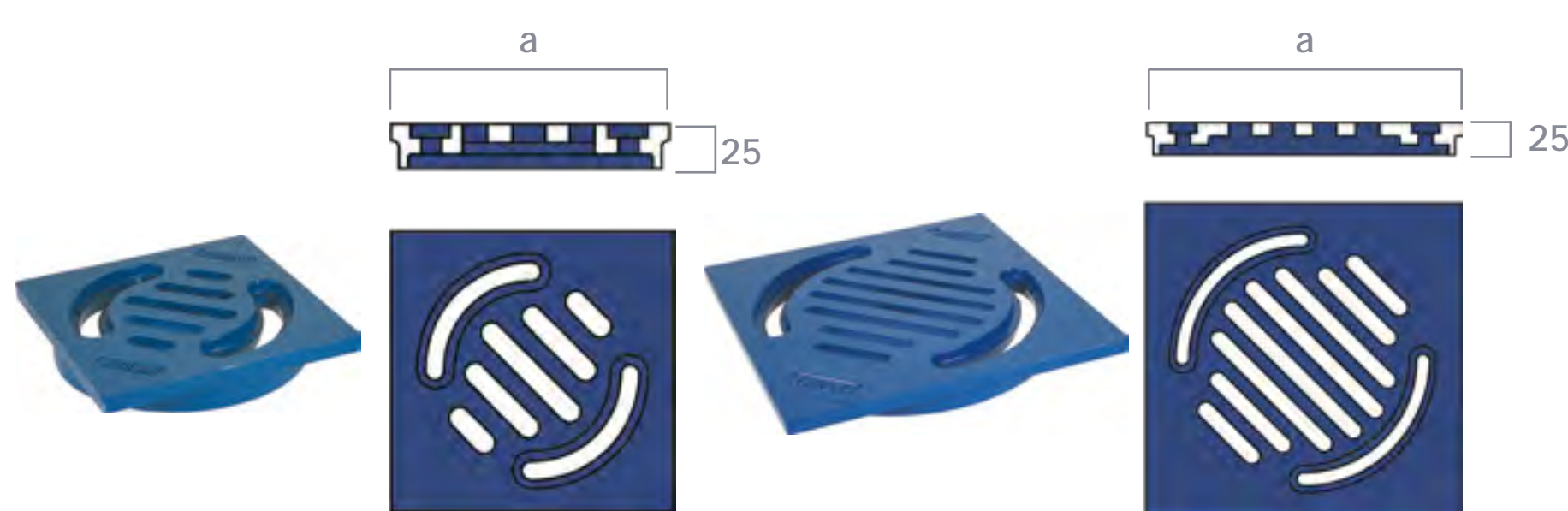


Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
50	200	1.69	1.5	0.8	/F
75	200	4.97	1.5	0.8	/F
100	270	10.71	1.5	1.2	/F
150	270	15.55	1.5	1.2	/F



## Terrace Grates

Terrace Grates are designed for installation in terrace tiles or brick paviors. They should be used in connection with Grate Extension Pieces which raise the Terrace Grate to the level of the paved surface. The radius slots in the grate allow for movement through 90° permitting adjustment to suit surrounding paving prior to final tightening.



Terrace Grate 2/3TG  
(For use with Extension Piece 2/3EP)

Terrace Grate 4/6TG  
(For use with Extension Piece 4/6EP)

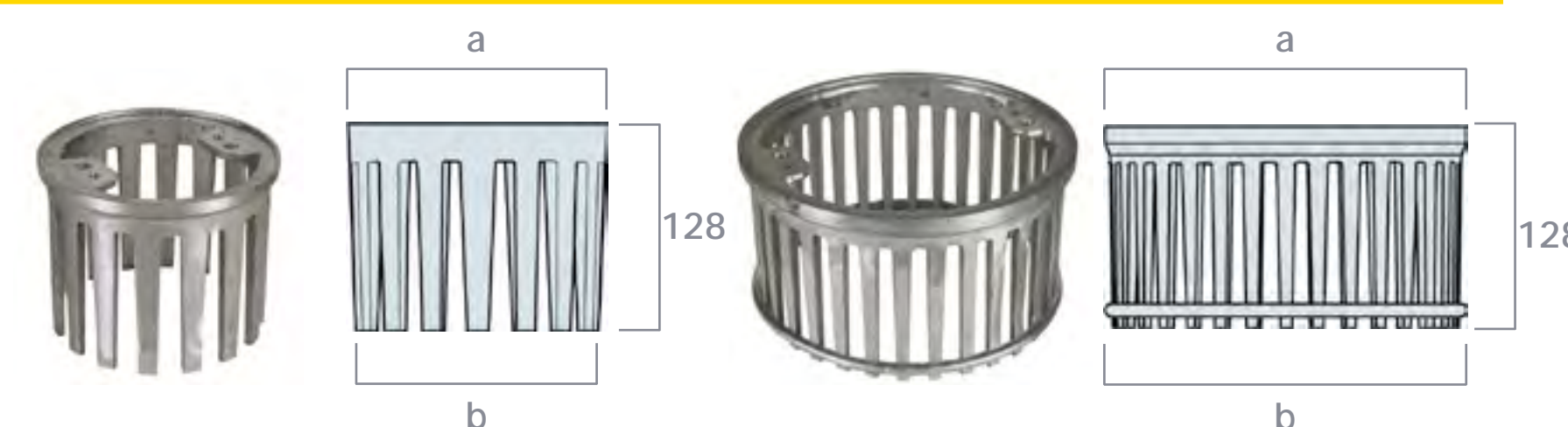
Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Product Code
50	150	1.69	1.5	0.7	2/3TG
75	150	4.97	1.5	0.7	2/3TG
100	232	10.71	1.5	1.6	4/6TG
150	232	15.55	1.5	1.6	4/6TG



## Grate Extension Pieces

Grate Extension Pieces are for applications where it is necessary to raise the level of the grate above the body of the outlet such as in inverted roof construction.

The Grate Extension Pieces will accept domical grates and terrace grates but not standard flat grates. Terrace Grates can be used only in connection with grate extension pieces. The extension pieces can be cut down if necessary to suit the thickness of paving or tiles. This can be done easily on site with a hacksaw, or, if required, extension pieces can be trimmed prior to delivery.



Grate Extension Piece 2/3EP

Grate Extension Piece 4/6EP

Outlet Size (mm)	a (mm)	b (mm)	Weight (kg)	Product Code
50	161	150	0.7	2/3EP
75	161	150	0.7	2/3EP
100	233	222	1.6	4/6EP
150	233	222	1.6	4/6EP

Grate Extension Pieces are supplied with one set of stainless steel extension studs per outlet.



## Gravel Guard

Made of stainless steel with 3mm perforations, the Gravel Guard is used with Domical Grates on roofs with gravel finish to prevent ingress of insulation and gravel into the outlet. Other heights are available to order.



Outlet Size (nominal)	a (mm)	b (mm)	Weight (kg)	Product Code
Medium Sump	150	200	0.5	C4/GG/15
Medium Sump	200	200	0.6	C4/GG/20
Large Sump	150	305	0.8	C6/GG/15
Large Sump	200	305	0.9	C6/GG/20



# Aluminium Roof Outlets - Car Park Detail Outlets

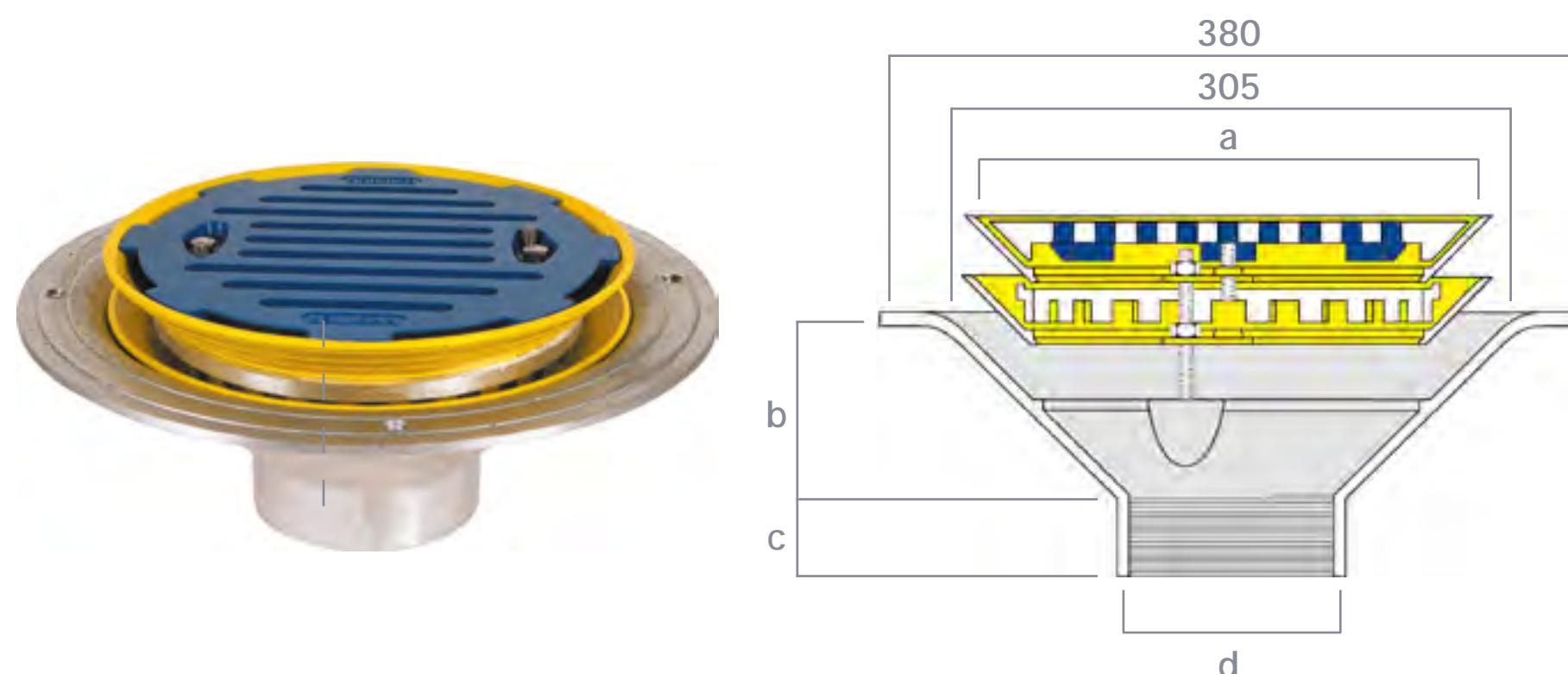
Harmer Roof Car Park Detail outlets have been specially designed for installation in parking decks for cars and light commercial vehicles (ie, where there is a maximum single wheel loading of 1.5 tonne). The threaded body is available in two types, flanged and flangeless.



## Car Park Outlet Flanged

Harmer Roof Car Park Detail outlets provide the ideal drainage and installation solution where car park deck drainage is required in either asphalted concrete deck or float finish concrete decks.

The Flanged Car Park outlets are designed to be cast insitu and feature a double clamp arrangement to allow the individual attachment of the wearing course and the waterproofing course that are applied to the concrete deck.

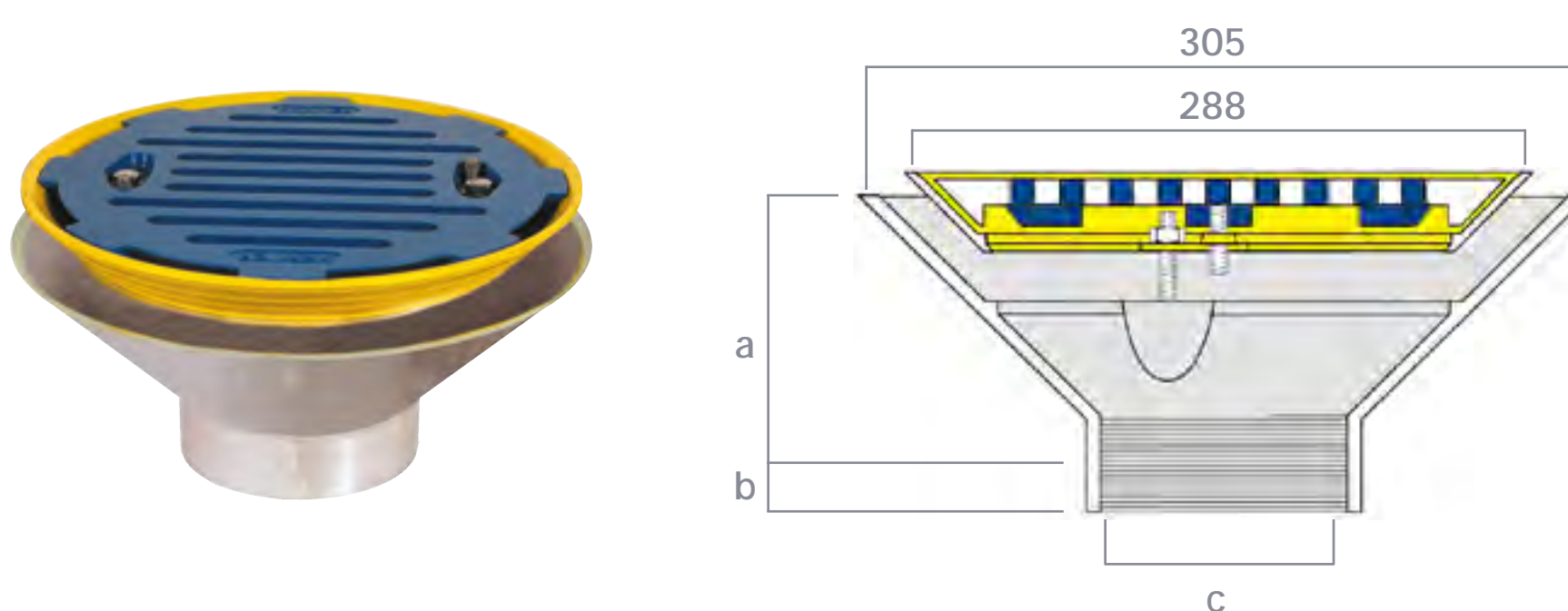


Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (BSP)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
100	288	95	38	4"	10.71	5.0	400CP
150	288	76	38	6"	15.55	5.1	600CP



## Car Park Outlet Flangeless

Flangeless Car Park Detail outlets are also designed for cast insitu slab construction where waterproofing is not required. They feature a combined clamp and grate arrangement which is securely bolted to the body of the outlet. The combination of clamp and grate as a single unit generally improves strength and stability as well as providing quick and easy access to pipework.



Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

Outlet Size (mm)	a (mm)	b (mm)	c (BSP)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
100	95	38	4"	10.71	4.9	400T/DD
150	76	38	6"	15.55	5.0	600T/DD

## Car Park Outlet Flangeless

The use of Harmer Adaptors for both Flanged and Flangeless Car Park Detail outlets provides a convenient solution for pipe connection through a structural concrete deck. A special length Adaptor is available where the depth of the concrete deck is greater than a standard adaptor length.

Car Park Outlets have a female socket with parallel thread to BS EN 10226-1 for direct connection to threaded tube conforming with BS EN 10255. The tube must be threaded in accordance with BS EN 10226-1 taper male thread to ensure a completely watertight joint when screwed home into the socket of the outlet. Threaded outlets are particularly recommended where a connection to the outlet occurs within the thickness of the concrete slab. In such cases, a threaded connection will create a completely gastight seal within the slab. Harmer Roof Detail Car Park outlets can be connected to socketless cast iron pipework conforming to BS EN 877 as well as socketed PVCu and HDPE systems by means of the Harmer Roof Threaded Spigot Adaptor with appropriate Harmer coupling (page 41).

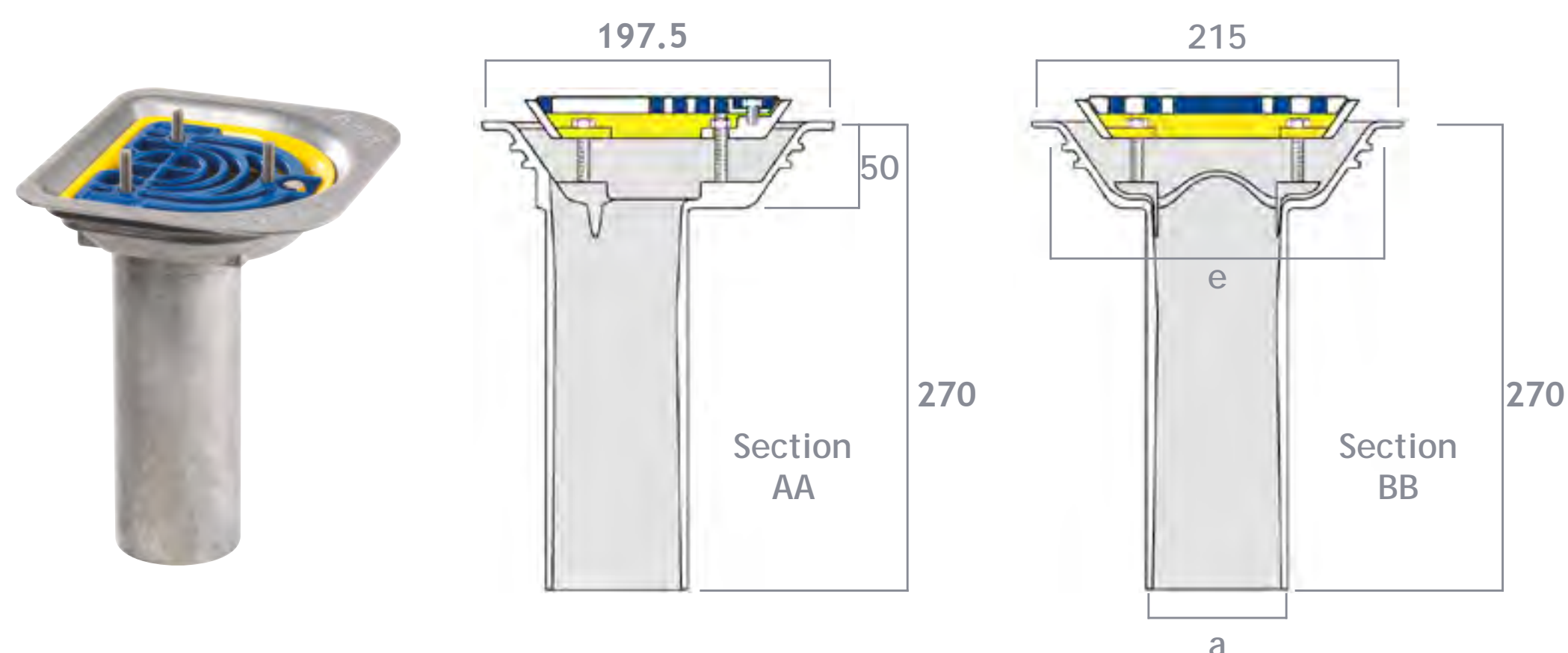


# Aluminium Roof Outlets - Balcony Detail Outlets



## Mini Balcony Outlet

The Harmer aluminium mini balcony outlet provides an unobtrusive solution for use on balcony applications. The shallow 50mm sump is designed to avoid interference with steel reinforcement and is easily installed in new and refurbishment applications. The standard range consists of 63mm and 83mm diameter outlet sizes. Other Round, Square and Rectangular outlet connections for use with Alumasc rainwater systems are available on request.

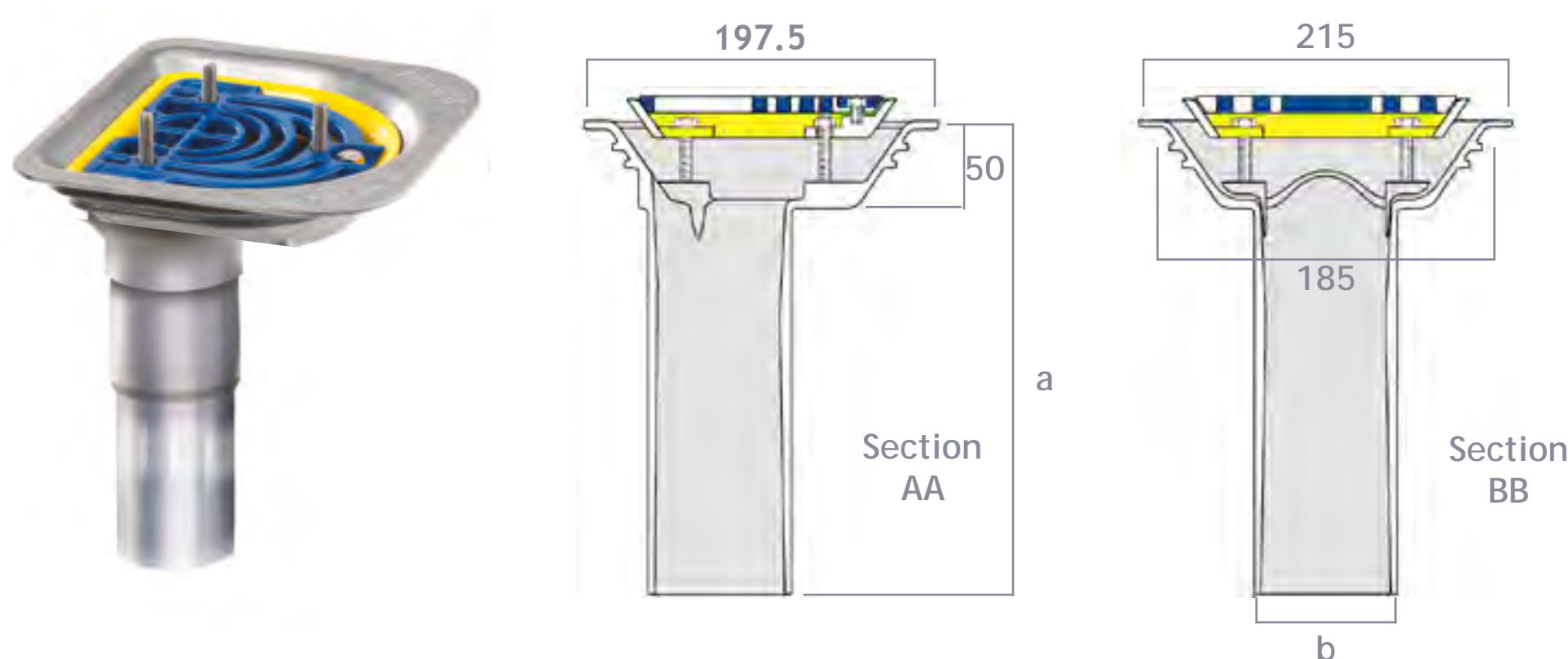


Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50	63	1.7	1.6	2BO/M
75	83	4.8	1.7	3BO/M



## Mini Extended Balcony Outlet

The aluminium mini extended balcony outlet provides an unobtrusive solution for use on balcony applications. The shallow 50mm sump is designed to avoid interference with steel reinforcement and is easily installed in new and refurbishment applications. The standard range consists of 63mm and 83mm diameter outlet sizes. Other Round, Square and Rectangular outlet connections for use with Alumasc rainwater systems are available on request.



Outlet Size (mm)	a (mm)	b (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50	Up to 400	63	1.69	VAR	2BO/M/EXT/400
50	401 to 600	63	1.69	VAR	2BO/M/EXT/600
50	601 to 800	63	1.69	VAR	2BO/M/EXT/800
50	801 to 1000	63	1.69	VAR	2BO/M/EXT/1000
75	Up to 400	82	3.39	VAR	3BO/M/EXT/400
75	401 to 600	82	3.39	VAR	3BO/M/EXT/600
75	601 to 800	82	3.39	VAR	3BO/M/EXT/800
75	801 to 1000	82	3.39	VAR	3BO/M/EXT/1000

Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

All the codes in the table above are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

## Standard Grate

Similar in function to the deep sump Harmer Detail Balcony outlet, the grating fits level with the clamping ring regardless of the thickness of waterproofing membrane. Rainwater pipes from upper level balconies can either freely discharge over the grating or the cut-outs in the grating can be removed on site to allow the rainwater pipe to discharge within the sump area. (See application detail on page 48)



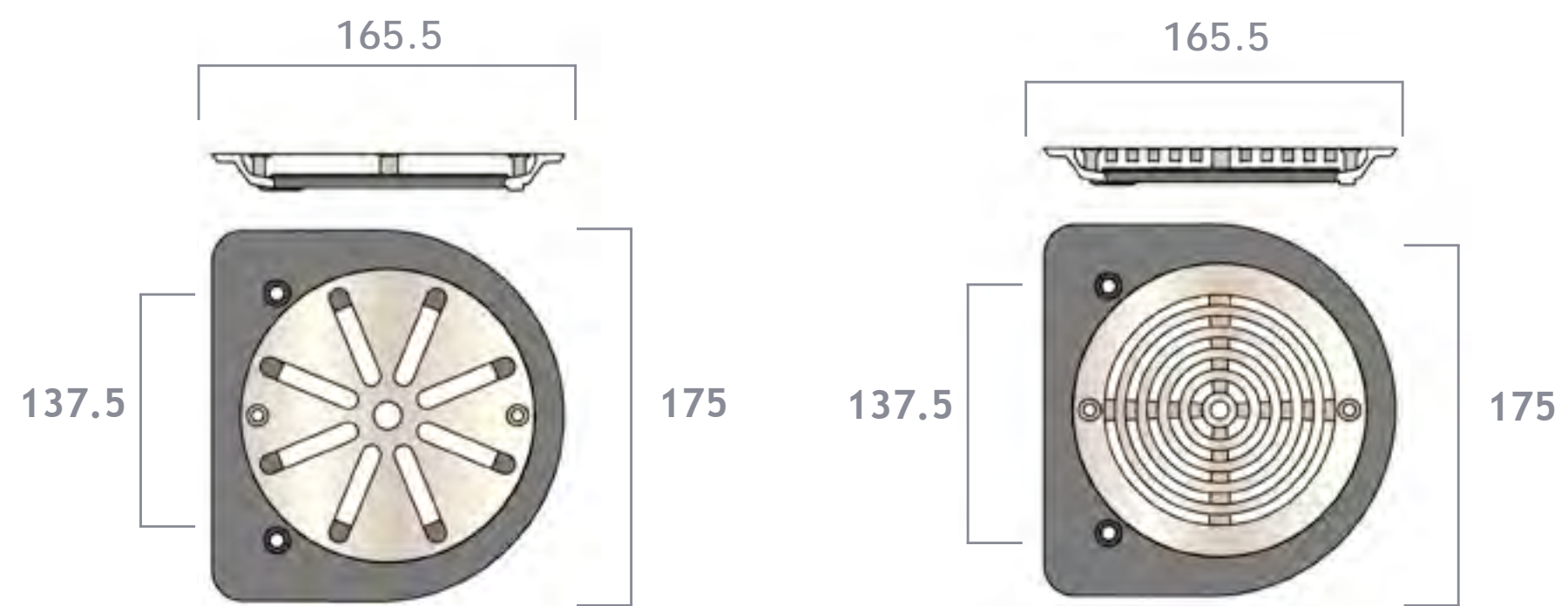
# Aluminium Roof Outlets - Balcony Detail Outlets



## Fixed Height Grate Options

For added quality and finished appearance of any Harmer Mini Balcony outlet installation a stainless steel grate can be fitted.

After waterproofing to the outlet and the clamp ring has been fastened down, an adaptor bezel is fitted to the clamp ring which allows for the fitting of a Star pattern or Concentric Ring grate.



Material	Grate Type	a (mm)	b (mm)	c (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
Stainless Steel	Star	165.5	175	137.5	3.3*	K3	/SS
Stainless Steel	Concentric Ring	165.5	175	137.5	2.1*	K3	/RS

\*Flow rate on 2BO/M is restricted to 1.69 l/s in accordance with BS EN 12056 pipe capacity

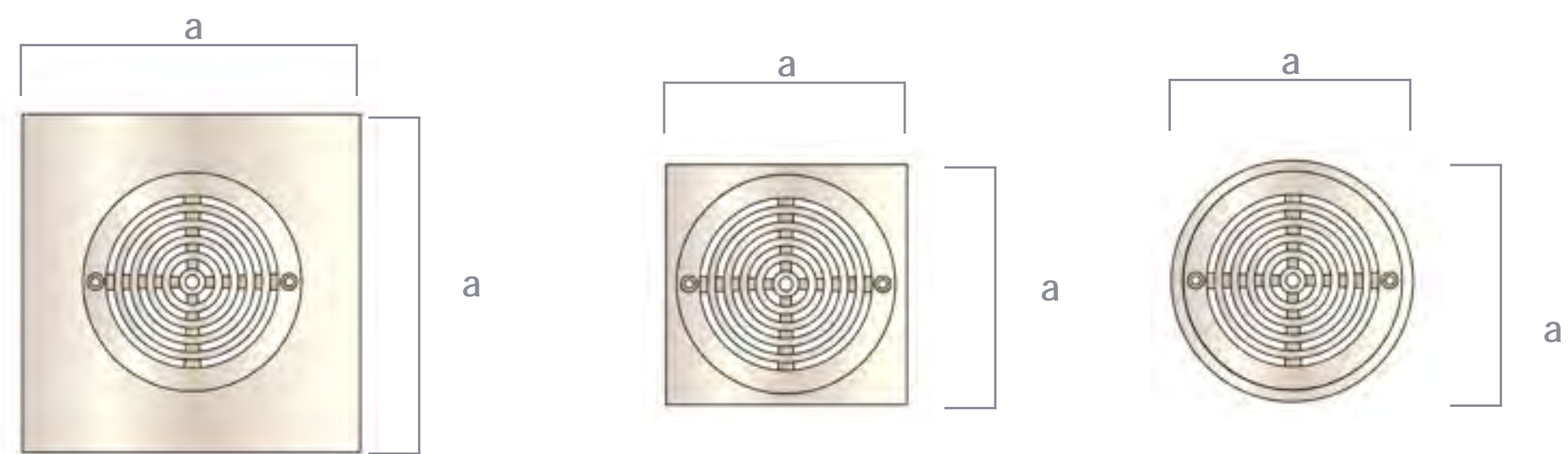


## Adjustable Height Grate Options

In addition to fixed height grates, height adjustable grates and bezels in stainless steel are available.

After waterproofing to the balcony outlet and the clamp ring has been fastened down, an adaptor plate is fitted to the clamp ring which allows for the insertion of a height adjustable throat complete with round or square grating assembly.

The standard plastic throat can be cut down to the required height of paved or tiled surrounds. This is particularly useful where paving slabs are being laid on Harmer Modulock Raised Deck Supports.



Material	Grate Type	a (mm)	Flow Rate <sup>1</sup> (l/s)	Load Class	Weight (kg)	Product Code
Stainless Steel	Round 150mm	150	3.3*	K3	1.3	/C15S
Stainless Steel	Square 150mm	150	3.3*	K3	1.3	/S15S
Stainless Steel	Square 150mm	200	3.3*	K3	1.8	/S20S

\*Flow rate on 2BO/M is restricted to 1.69 l/s in accordance with BS EN 12056 pipe capacity



# Aluminium Roof Outlets - Balcony Detail Outlets

The Large Balcony outlet is ideal for use where larger balcony water catchment areas dictate the discharge requirements.



## Large Balcony Outlet

Balcony outlets are suitable for direct connection to: Cast iron pipework to BS 416: 1973 or EN 877, PVC O-ring socketed pipe to BS 4514: 1983 (3BO and 4BO outlets only).

Balcony outlets can also be connected to Alumasc's aluminium Flushjoint and Heritage rainwater pipes.

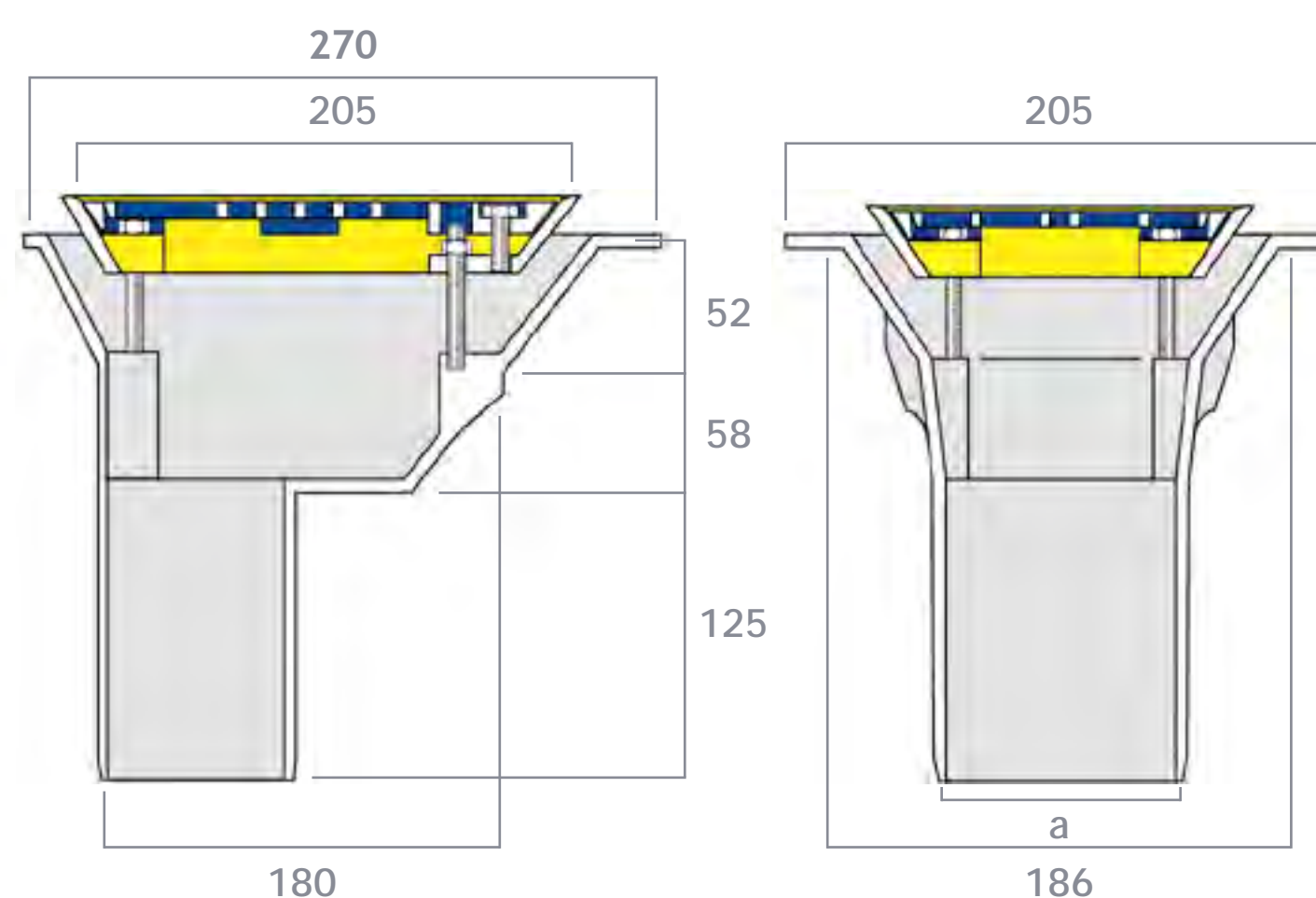
Flat grates can be supplied with holes punched out to receive 50, 75 or 100mm nominal bore rainwater downpipes. When ordering pre-punched grates, add the following suffixes shown in blue to the product codes:

- 2BO/2H for 50mm pipe
- 3BO/3H for 75mm pipe
- 4BO/4H for 100mm pipe

Alternatively, where grates are not supplied pre-punched, the hole can be cut on site by the installer.

The Balcony outlet can be used with an extension piece.

Please see Harmer couplings available (page 41).



Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50	60	1.69	2.8	2BO
75	83	4.97	3.1	3BO
100	110	8.41	3.3	4BO

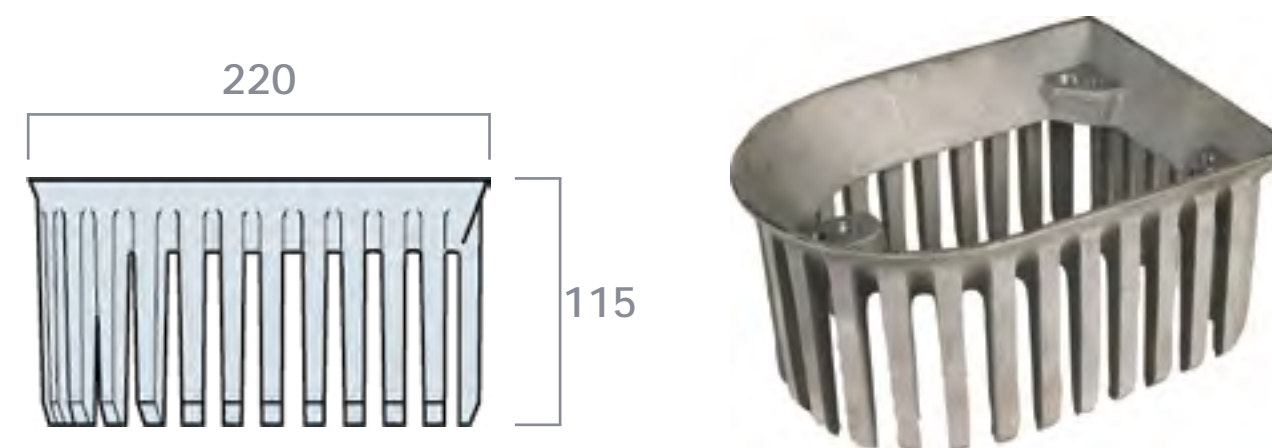
Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity



## Grate Extension Piece

The Grate Extension Piece is for applications where it is necessary to raise the level of the grate above the body of the outlet such as in inverted roof construction.

The extension piece can be cut down if necessary to suit the thickness of paving or tiles. This can be done easily on site with a hacksaw, or, if required, extension pieces can be trimmed prior to delivery. The Grate Extension Piece is supplied with one set of stainless steel extension studs per outlet.



Outlet Size (mm)	Product Code
50	BO/EP
75	BO/EP
100	BO/EP



# Aluminium Roof Outlets - Balcony Detail Outlets



## Large Balcony Extended Spigot Outlet

Balcony extended spigot outlets are suitable for direct connection to: Cast iron pipework to BS 416: 1973 or EN 877, PVC O-ring socketed pipe to BS 4514: 1983 (3BO and 4BO outlets only).

Balcony outlets can also be connected to Alumasc's aluminium Flushjoint and Heritage rainwater pipes. Flat grates can be supplied with holes punched out to receive 50, 75 or 100mm nominal bore rainwater downpipes. When ordering pre-punched grates, add the following suffixes shown in blue to the product codes:

- 2BO/2H for 50mm pipe
- 3BO/3H for 75mm pipe
- 4BO/4H for 100mm pipe

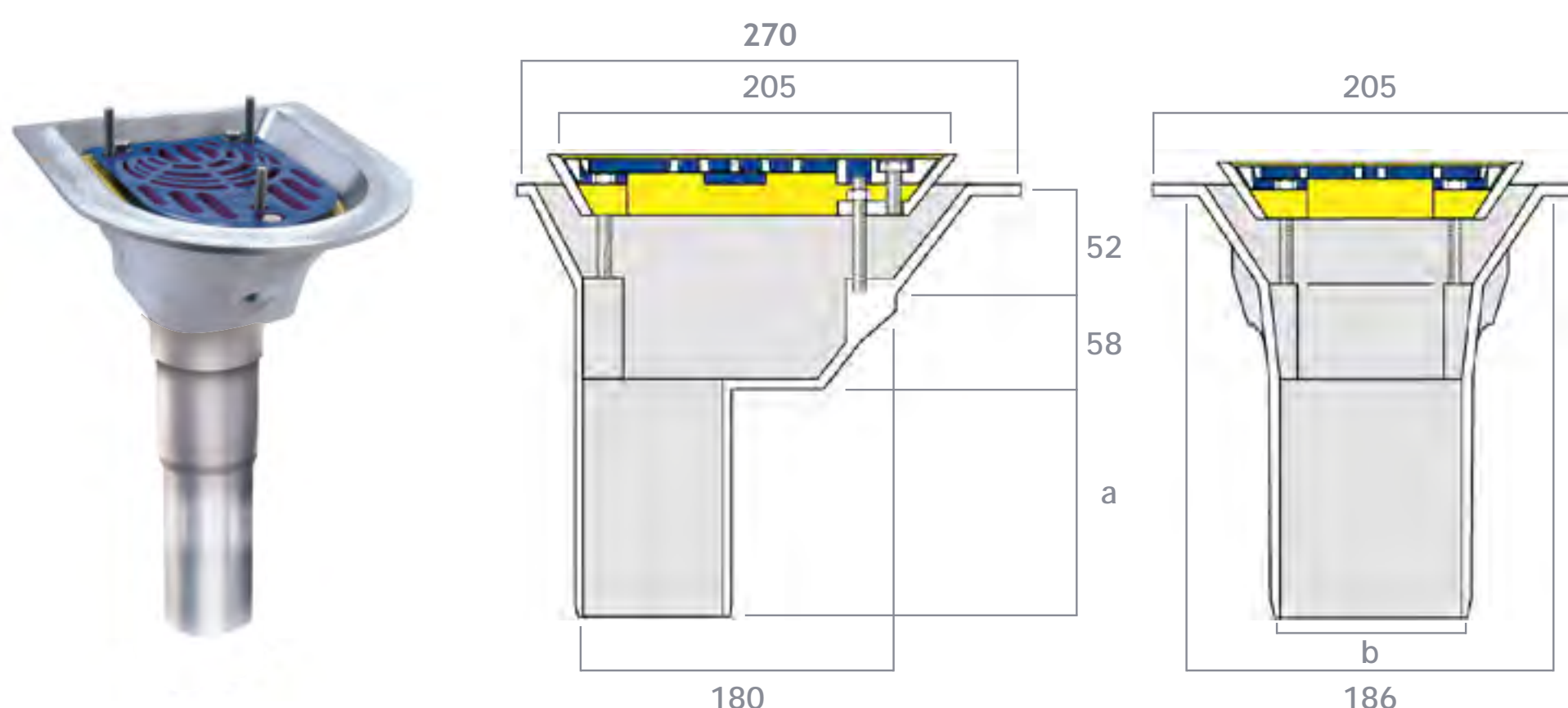
Alternatively, where grates are not supplied pre-punched, the hole can be cut on site by the installer.

The balcony outlet can be used with an extension piece.

Please see harmer couplings available (page 41).

All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:

Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000



Outlet Size (mm)	a (mm)	b (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50	Up to 200	63	1.69	VAR	2BO/EXT/200
50	201 to 400	63	1.69	VAR	2BO/EXT/400
50	401 to 600	63	1.69	VAR	2BO/EXT/600
50	601 to 800	63	1.69	VAR	2BO/EXT/800
50	801 to 1000	63	1.69	VAR	2BO/EXT/1000
75	Up to 200	82	4.97	VAR	3BO/EXT/200
75	201 to 400	82	4.97	VAR	3BO/EXT/400
75	401 to 600	82	4.97	VAR	3BO/EXT/600
75	601 to 800	82	4.97	VAR	3BO/EXT/800
75	801 to 1000	82	4.97	VAR	3BO/EXT/1000
100	Up to 200	110	8.41	VAR	4BO/EXT/200
100	201 to 400	110	8.41	VAR	4BO/EXT/400
100	401 to 600	110	8.41	VAR	4BO/EXT/600
100	601 to 800	110	8.41	VAR	4BO/EXT/800
100	801 to 1000	110	8.41	VAR	4BO/EXT/1000

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity



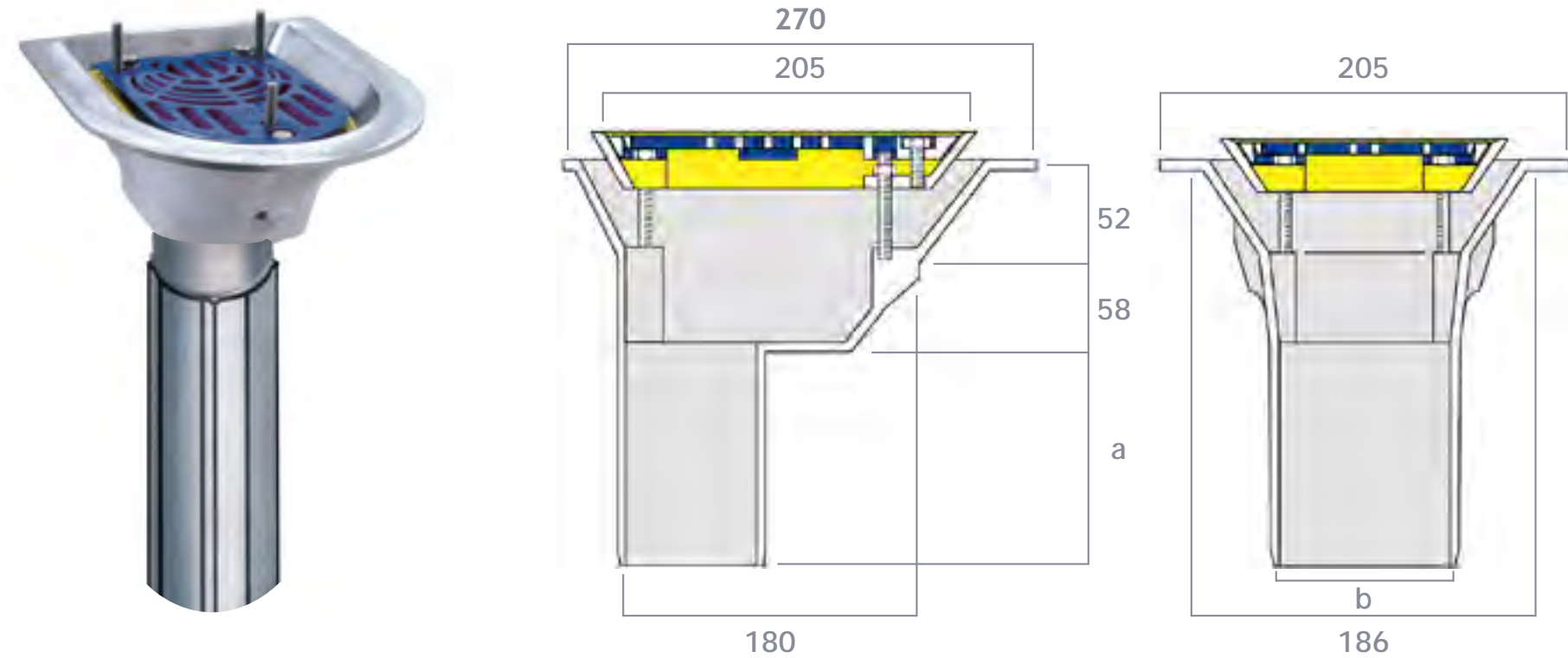
# Aluminium Roof Outlets - Balcony Detail Outlets



## Large Balcony Extended Flushjoint Circular Spigot Outlet

Balcony extended spigot outlets are suitable for connection onto Alumasc Rainwater Flushjoint Circular Pipework System.

All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:



Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

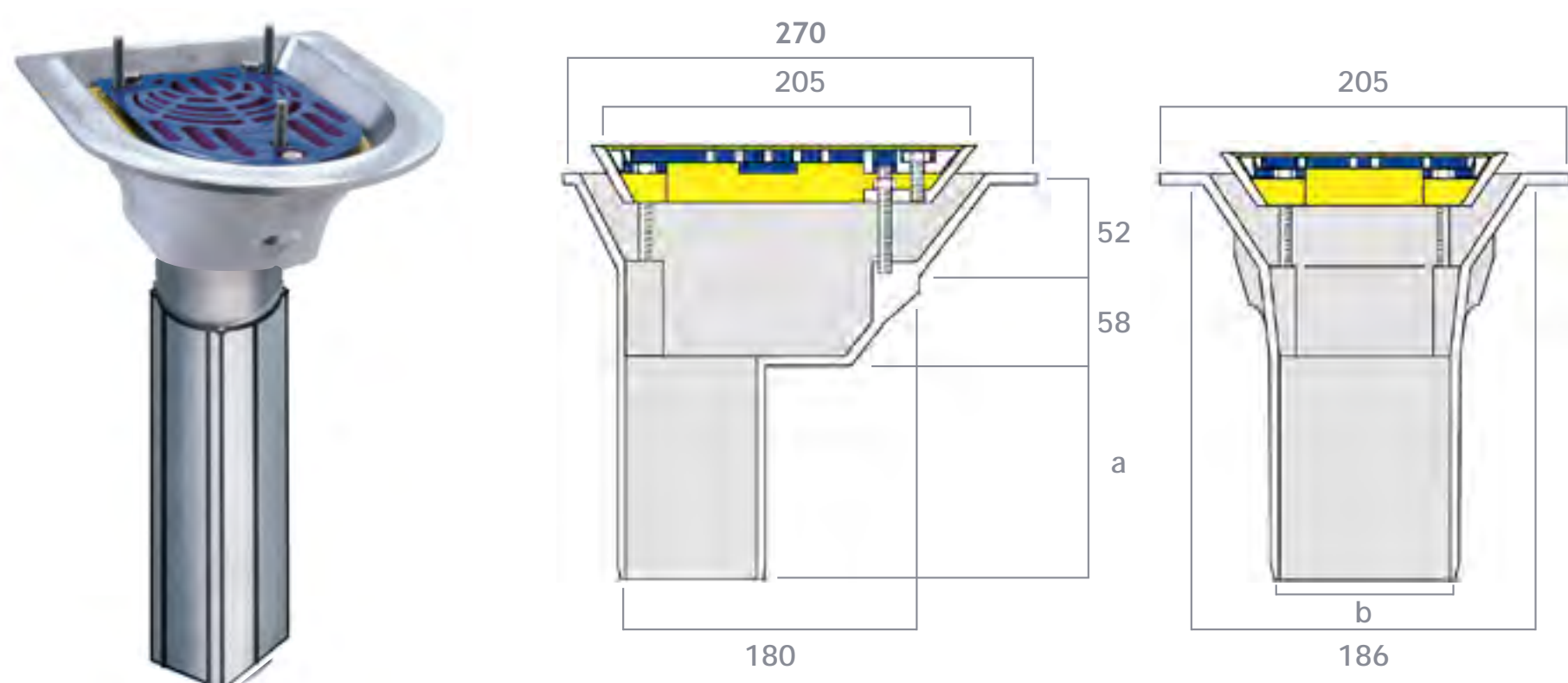
Outlet Size (mm)	a (mm)	b (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50	Up to 200	60	1.69	VAR	2BO/EXT/200/CP25
50	201 to 400	60	1.69	VAR	2BO/EXT/400/CP25
50	401 to 600	60	1.69	VAR	2BO/EXT/600/CP25
50	601 to 800	60	1.69	VAR	2BO/EXT/800/CP25
50	801 to 1000	60	1.69	VAR	2BO/EXT/1000/CP25
75	Up to 200	73.5	4.97	VAR	3BO/EXT/200/CP30
75	201 to 400	73.5	4.97	VAR	3BO/EXT/400/CP30
75	401 to 600	73.5	4.97	VAR	3BO/EXT/600/CP30
75	601 to 800	73.5	4.97	VAR	3BO/EXT/800/CP30
75	801 to 1000	73.5	4.97	VAR	3BO/EXT/1000/CP30
100	Up to 200	97.5	8.41	VAR	4BO/EXT/200/CP40
100	201 to 400	97.5	8.41	VAR	4BO/EXT/400/CP40
100	401 to 600	97.5	8.41	VAR	4BO/EXT/600/CP40
100	601 to 800	97.5	8.41	VAR	4BO/EXT/800/CP40
100	801 to 1000	97.5	8.41	VAR	4BO/EXT/1000/CP40



## Large Balcony Extended Flushjoint Square Spigot Outlet

Balcony extended outlets are suitable for connection onto Alumasc Rainwater Flushjoint square and rectangular Pipework Systems.

All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:



Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

Outlet Size (mm)	a (mm)	b (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
75	Up to 200	67.5 x 67.5	4.97	VAR	3BO/EXT/200/CP33
75	201 to 400	67.5 x 67.5	4.97	VAR	3BO/EXT/400/CP33
75	401 to 600	67.5 x 67.5	4.97	VAR	3BO/EXT/600/CP33
75	601 to 800	67.5 x 67.5	4.97	VAR	3BO/EXT/800/CP33
75	801 to 1000	67.5 x 67.5	4.97	VAR	3BO/EXT/1000/CP33
100	Up to 200	97 x 71	8.41	VAR	4BO/EXT/200/CP43
100	201 to 400	97 x 71	8.41	VAR	4BO/EXT/400/ CP43
100	401 to 600	97 x 71	8.41	VAR	4BO/EXT/600/ CP43
100	601 to 800	97 x 71	8.41	VAR	4BO/EXT/800/ CP43
100	801 to 1000	97 x 71	8.41	VAR	4BO/EXT/1000/ CP43
100	Up to 200	97 x 71	8.41	VAR	4BO/EXT/200/CP44
100	201 to 400	97 x 97	8.41	VAR	4BO/EXT/400/CP44
100	401 to 600	97 x 97	8.41	VAR	4BO/EXT/600/CP44
100	601 to 800	97 x 97	8.41	VAR	4BO/EXT/800/CP44
100	801 to 1000	197 x 97	8.41	VAR	4BO/EXT/1000/CP44

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity



# Aluminium Roof Outlets - Gully Detail Outlets

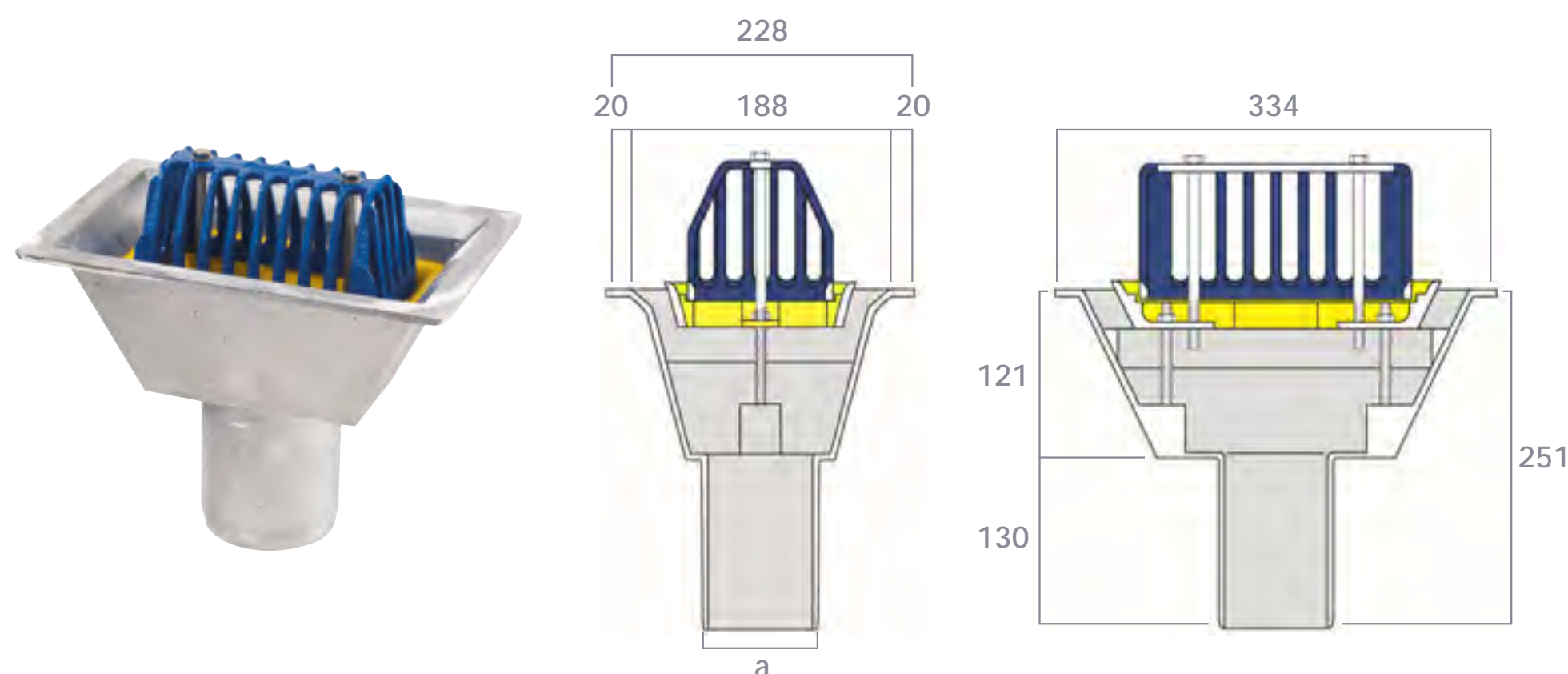
Harmer Roof Gully Detail outlets should be used in roof constructions incorporating formed drainage channels. They are specially designed to suit internal flat roof gutters.



## Gully Outlet

Gully outlets are suitable for direct connection to: Cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipework to BS 4514 (3GO and 4GO outlets). Please see Harmer couplings available (page 41).

Spigots are sized to suit nominal diameter pipework shown in the table opposite.



Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
75	83	4.97	3.7	3GO
100	110	8.41	3.9	4GO

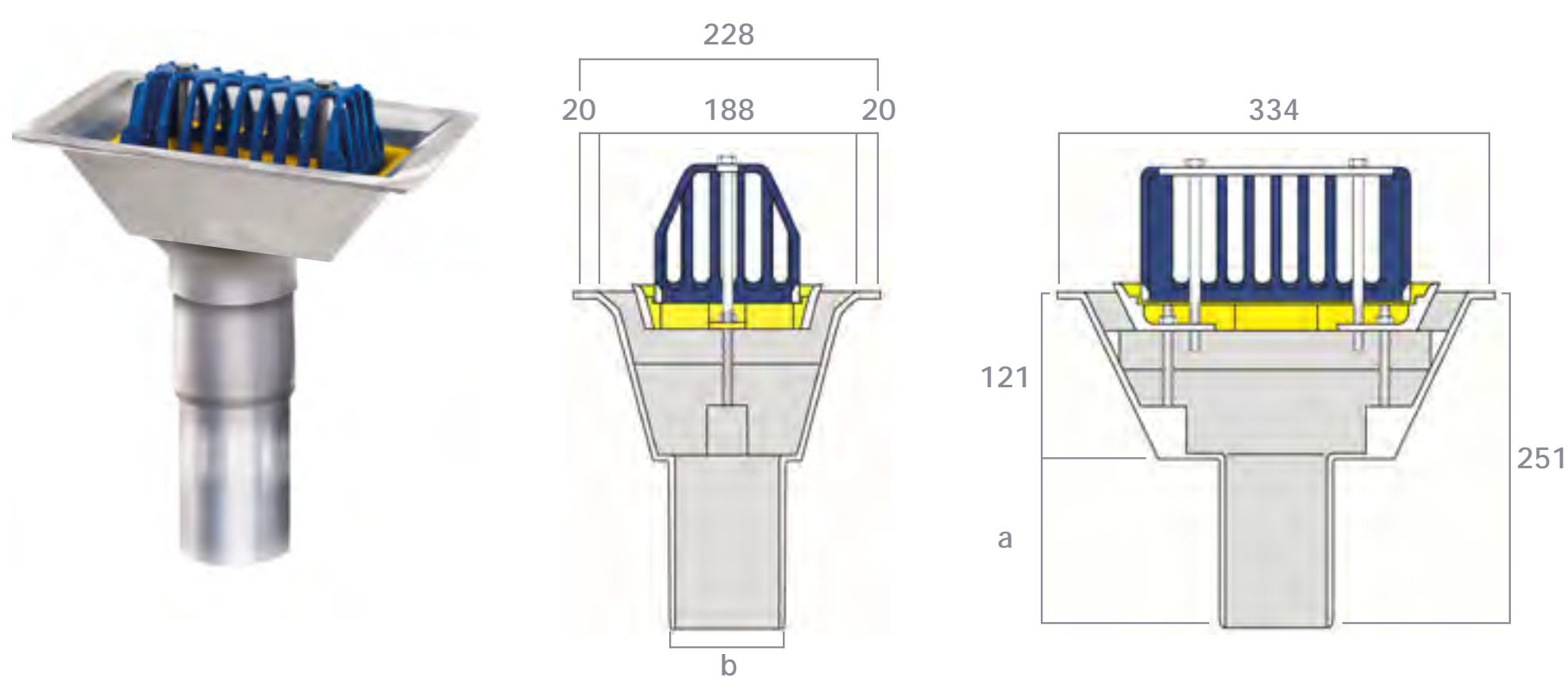


## Gully Extended Spigot Outlet

Gully extended spigot outlets are suitable for direct connection to: Cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipework to BS 4514 (3GO and 4GO outlets). Please see Harmer couplings available (pages 41).

Spigots are sized to suit nominal diameter pipework shown in the table opposite.

All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:



Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

Outlet Size (mm)	a (mm)	b (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
75	Up to 200	83	4.97	VAR	3GO/EXT/200
75	201 to 400	83	4.97	VAR	3GO/EXT/400
75	401 to 600	83	4.97	VAR	3GO/EXT/600
75	601 to 800	83	4.97	VAR	3GO/EXT/800
75	801 to 1000	83	4.97	VAR	3GO/EXT/1000
100	Up to 200	110	8.41	VAR	4GO/EXT/200
100	201 to 400	110	8.41	VAR	4GO/EXT/400
100	401 to 600	110	8.41	VAR	4GO/EXT/600
100	601 to 800	110	8.41	VAR	4GO/EXT/800
100	801 to 1000	110	8.41	VAR	4GO/EXT/1000



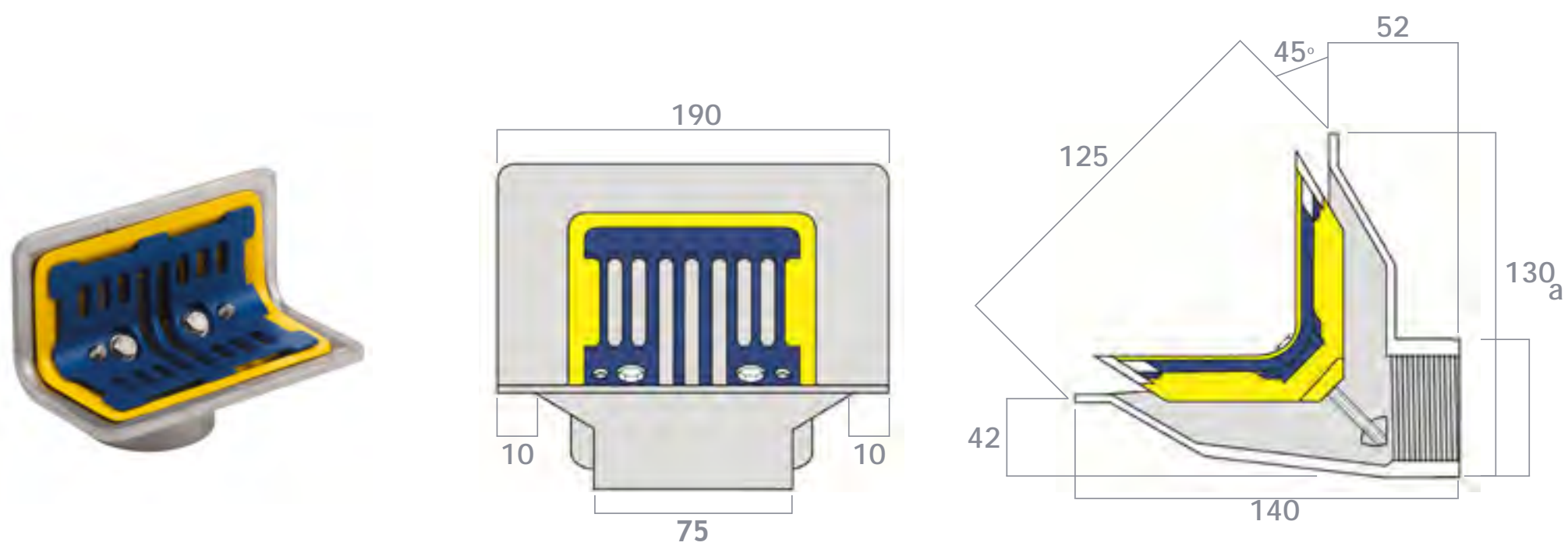
# Aluminium Roof Outlets - Two-Way Detail Outlets



## Mini Two-Way

Specially designed for connection to 50mm pipework in situations where the drainage requirement is small, such as domestic balconies. Outlet connection is 2" BSP thread.

Threaded outlets are particularly recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases, a threaded connection will create a completely gastight seal within the slab. (Page 42)



Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

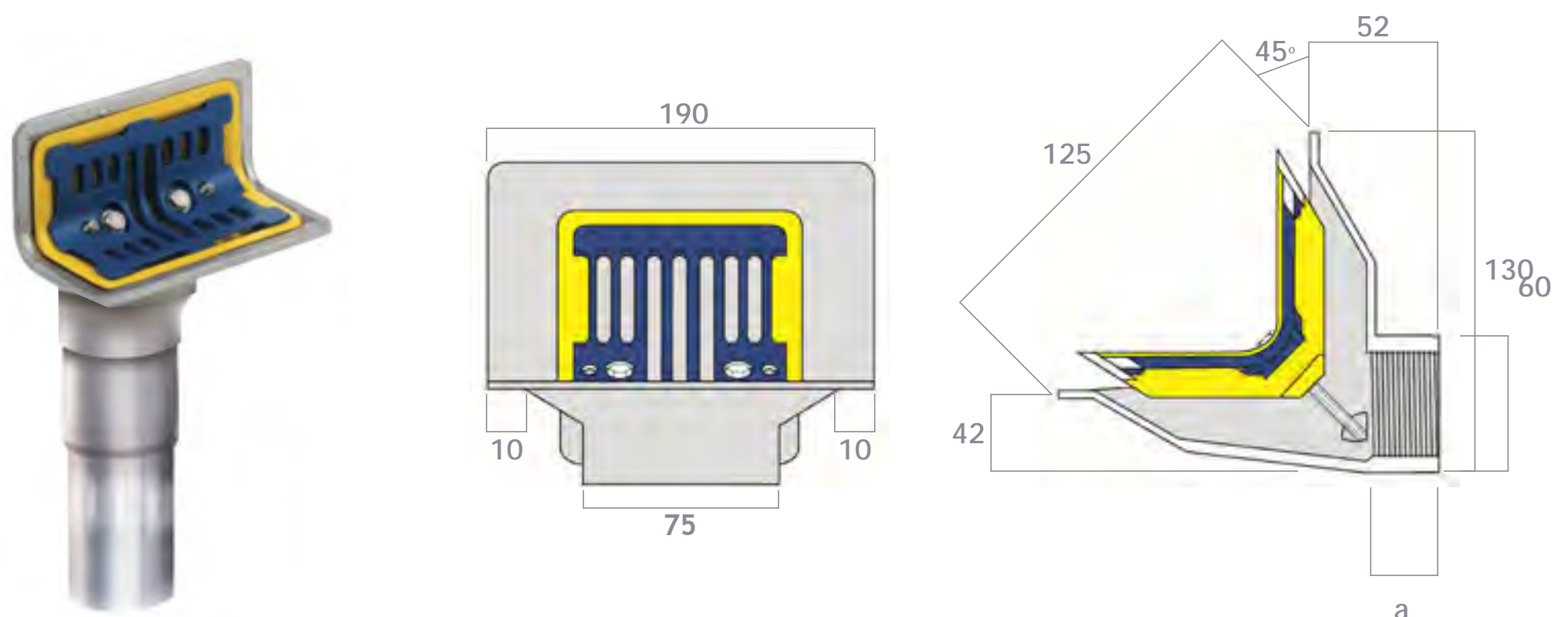
Outlet Size (mm)	a (BSP)	Flow Rate <sup>1</sup> (l/s)		Weight (kg)	Product Code
		Vertical	Horizontal		
50	2"	1.69	1.13	1.4	2TW/M



## Mini Two-Way Extended Spigot Outlet

Mini two way extended spigot outlets are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipe to BS 4514 and BS EN 1329-1

All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:



Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)		Weight (kg)	Product Code
		Vertical	Horizontal		
50	Up to 200	1.69	1.13	VAR	2TW/M/EXT/200
50	201 to 400	1.69	1.13	VAR	2TW/M/EXT/400
50	401 to 600	1.69	1.13	VAR	2TW/M/EXT/600
50	601 to 800	1.69	1.13	VAR	2TW/M/EXT/800
50	801 to 1000	1.69	1.13	VAR	2TW/M/EXT/1000



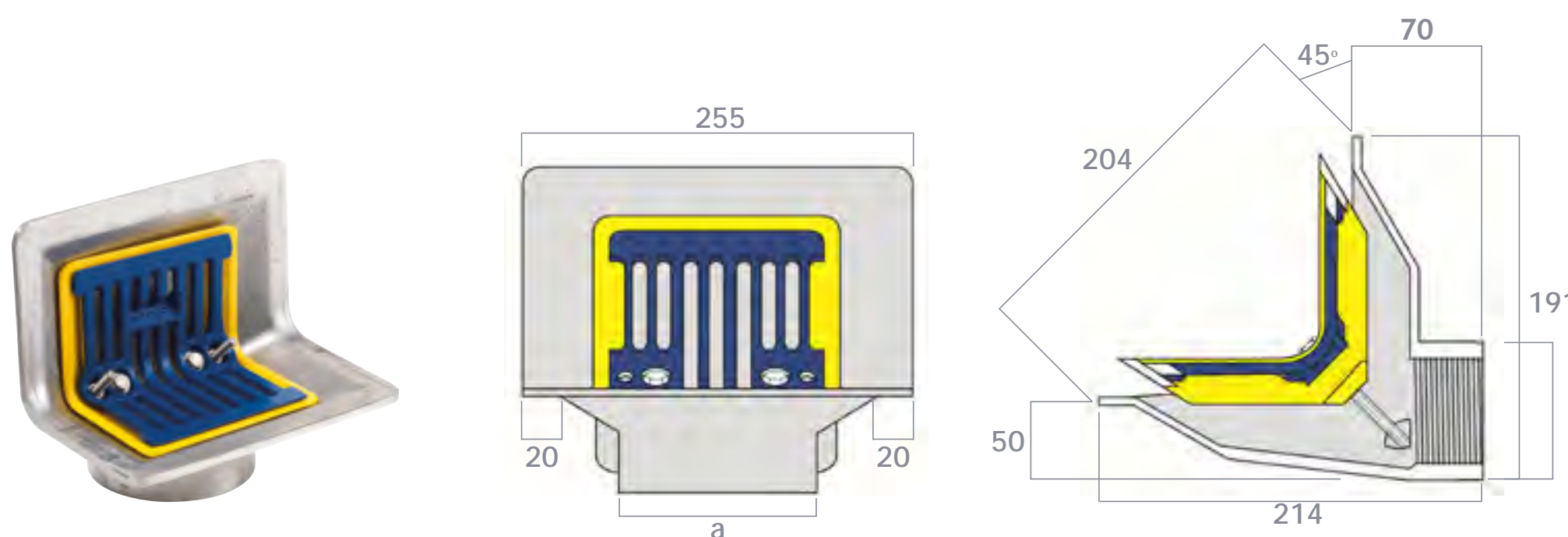
# Aluminium Roof Outlets - Two-Way Detail Outlets



## Regular Two-Way

The Regular Two-Way is designed for use in many applications. The sump is compact yet provides adequate drainage for most parapet applications, and it has three outlet options in 2", 3", and 4" BSP thread.

Threaded outlets are particularly recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases, a threaded connection will create a completely gastight seal within the slab. (Page 42)



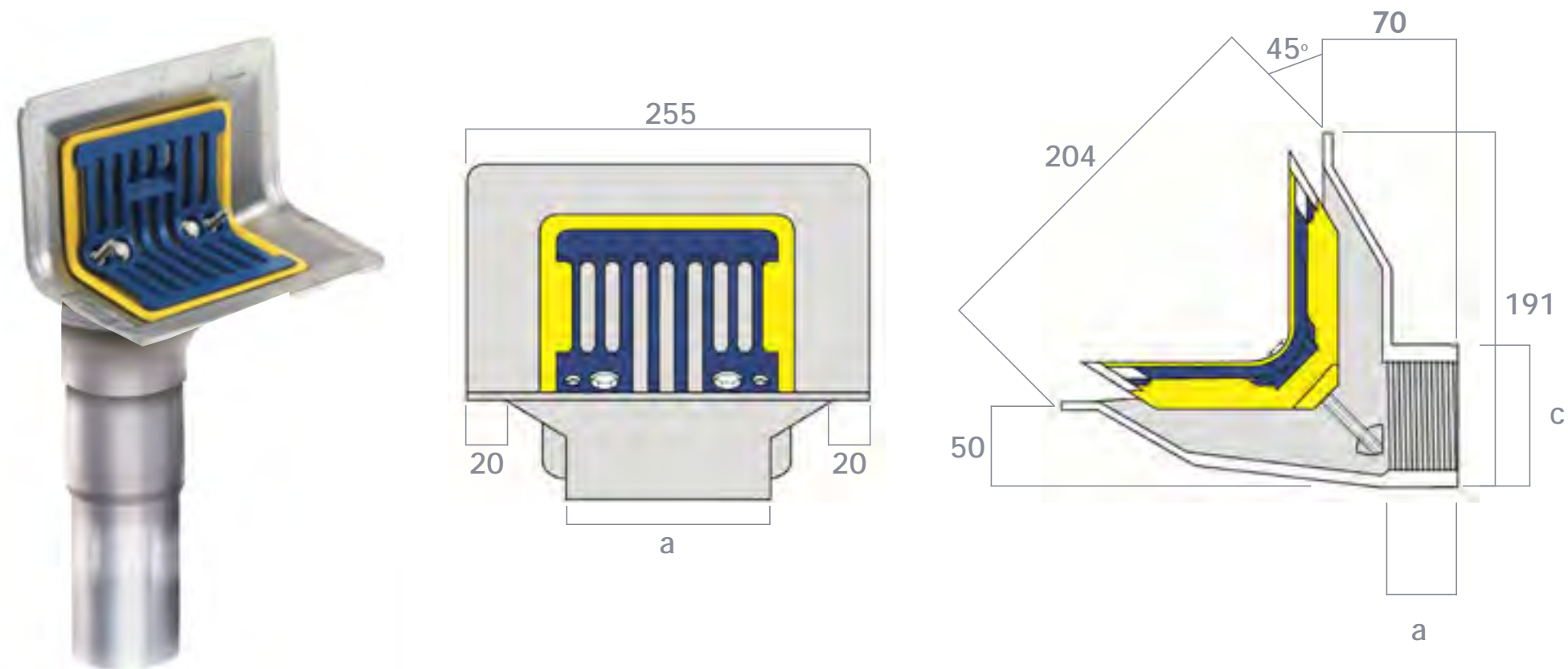
Outlet Size (mm)	a (mm)	b (BSP)	Flow Rate <sup>1</sup> (l/s)		Weight (kg)	Product Code
			Vertical	Horizontal		
50	75	2"	1.69	1.69	2.4	2TW
75	107	3"	3.94	1.47	2.6	3TW
100	130	4"	6.00	2.05	2.5	4TW



## Regular Two-Way Extended Spigot Outlet

The Regular Two-Way Extended Spigot outlets are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipe to BS 4514 and BS EN 1329-1

All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:



Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

Outlet Size (mm)	a (mm)	b (mm)	c (mm)	Flow Rate <sup>1</sup> (l/s)		Weight (kg)	Product Code
				Vertical	Horizontal		
50	75	Up to 200	63	1.69	1.69	VAR	2TW/EXT/200
50	75	201 to 400	63	1.69	1.69	VAR	2TW/EXT/400
50	75	401 to 600	63	1.69	1.69	VAR	2TW/EXT/600
50	75	601 to 800	63	1.69	1.69	VAR	2TW/EXT/800
50	75	801 to 1000	63	1.69	1.69	VAR	2TW/EXT/1000
75	107	Up to 200	82	3.94	1.47	VAR	3TW/EXT/200
75	107	201 to 400	82	3.94	1.47	VAR	3TW/EXT/400
75	107	401 to 600	82	3.94	1.47	VAR	3TW/EXT/600
75	107	601 to 800	82	3.94	1.47	VAR	3TW/EXT/800
75	107	801 to 1000	82	3.94	1.47	VAR	3TW/EXT/1000
100	130	Up to 200	97.5	6.00	2.05	VAR	4TW/EXT/200
100	130	201 to 400	97.5	6.00	2.05	VAR	4TW/EXT/400
100	130	401 to 600	97.5	6.00	2.05	VAR	4TW/EXT/600
100	130	601 to 800	97.5	6.00	2.05	VAR	4TW/EXT/800
100	130	801 to 1000	97.5	6.00	2.05	VAR	4TW/EXT/1000



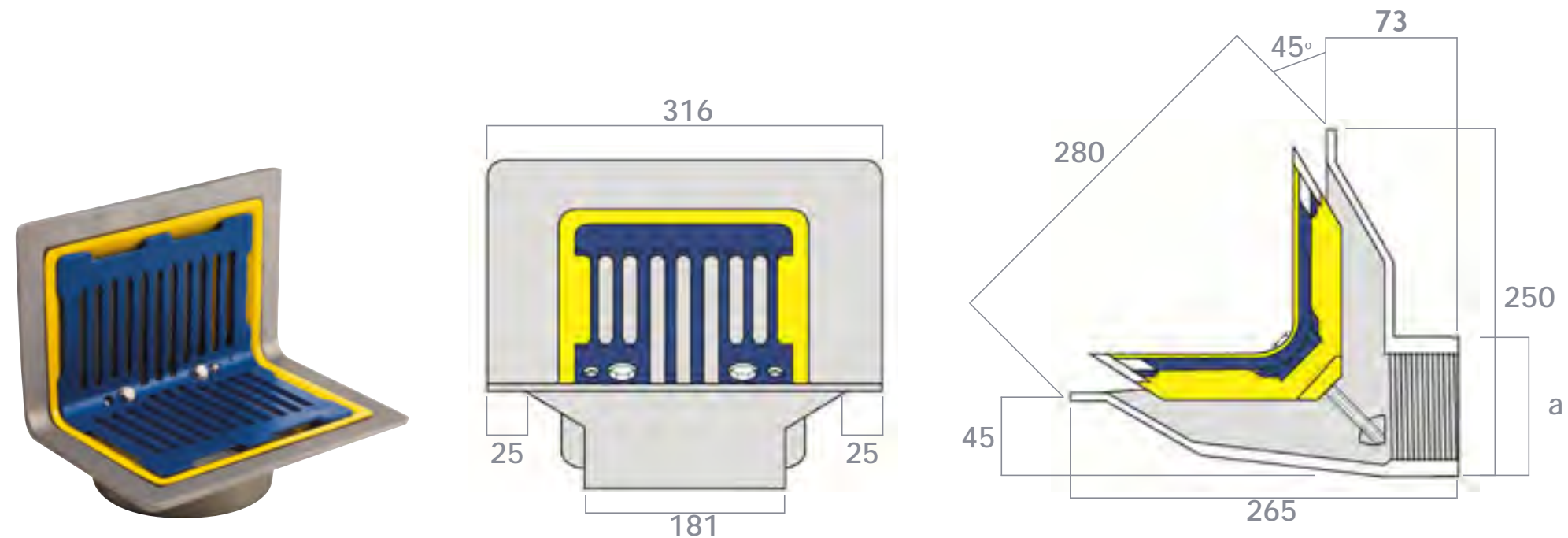
# Aluminium Roof Outlets - Two-Way Detail Outlets



## Large Two-Way

The Large Two-Way is designed for use on large surface drainage areas where 150mm outlets are required. Outlet connection options is 6" BSP thread.

Threaded outlets are particularly recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases, a threaded connection will create a completely gastight seal within the slab. (Page 42)



Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

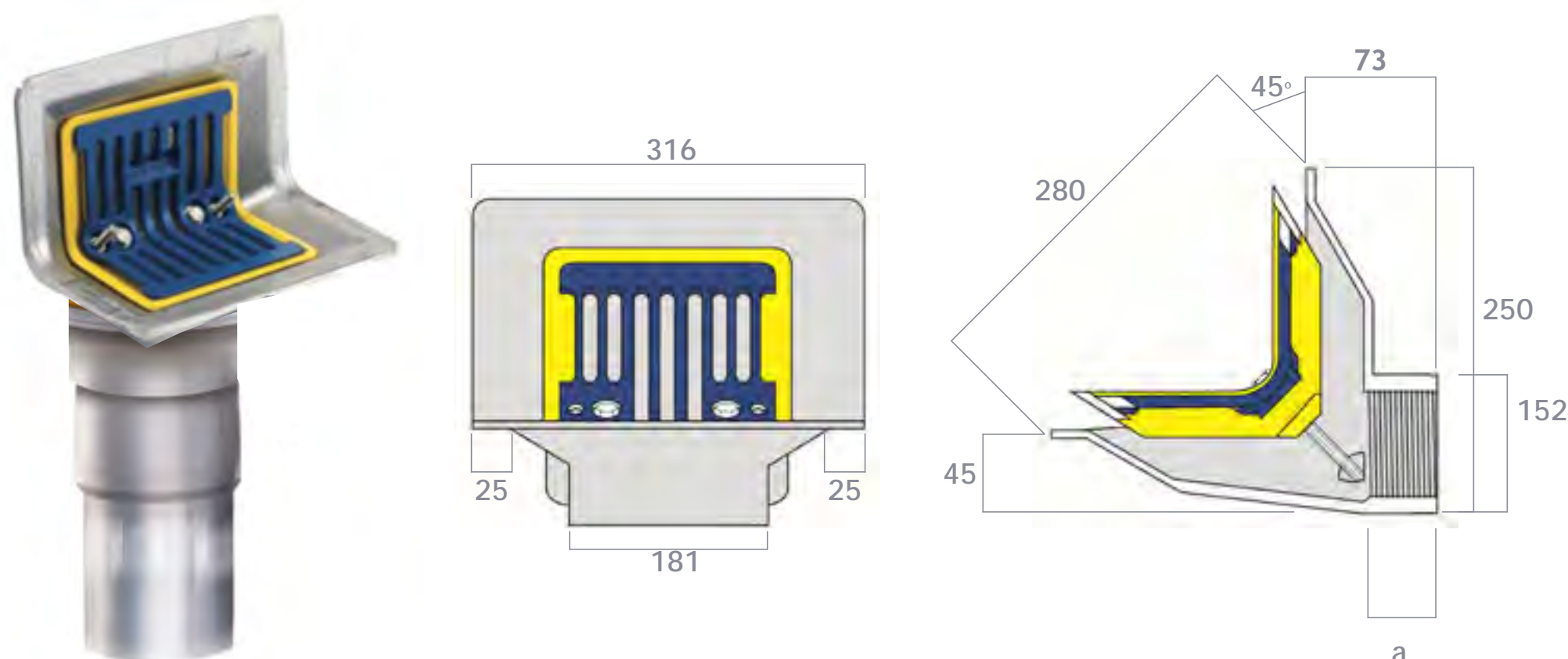
Outlet Size (mm)	a (BSP)	Flow Rate <sup>1</sup> (l/s)		Weight (kg)	Product Code
		Vertical	Horizontal		
150	2"	6.37	2.91	5.1	6TW



## Large Two-Way Extended Spigot Outlet

The Large Two-Way is designed for use on large surface drainage areas where 150mm outlets are required. Outlet connection options is 6" BSP thread.

All the codes in the table on the right are variable meaning that when placing an order you can specify what length you would like the spigot to be made. Below is a breakdown of what code to order dependant on what spigot length you require:



Spigot Length Required (mm)	Product Code Required
0-200	Code ending /200
201-400	Code ending /400
401-600	Code ending /600
601-800	Code ending /800
801-1000	Code ending /1000

Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)		Weight (kg)	Product Code
		Vertical	Horizontal		
150	Up to 200	6.37	2.91	VAR	6TW/EXT/200
150	201 to 400	6.37	2.91	VAR	6TW/EXT/400
150	401 to 600	6.37	2.91	VAR	6TW/EXT/600
150	601 to 800	6.37	2.91	VAR	6TW/EXT/800
150	801 to 1000	6.37	2.91	VAR	6TW/EXT/1000



# Aluminium Roof Outlets - Parapet Downspouts

Harmer Roof Parapet Downspouts are designed to effectively discharge rainwater away from the building and avoid the problem of rainwater backtrack to the face of the wall. Parapet Downspouts can also be used in conjunction with parapet overflows.

## Introduction

Harmer Roof Parapet Downspouts provide an attractive means of directing water away from the face of the building in such a way as to prevent the backtrack of rainwater from causing unsightly staining and damage.

Harmer Roof Parapet Downspouts can be used in combination with Alumasc's Flushjoint and Heritage rainwater pipes as well as hoppers, and when colour co-ordinated, will add to the finished appearance of the building.

## Application

Downspouts are ideally suited for use with Harmer Detail Two-Way outlets fitted with Harmer Threaded Spigot Adaptors. They can also provide a discreet means of discharge when used with parapet overflows.

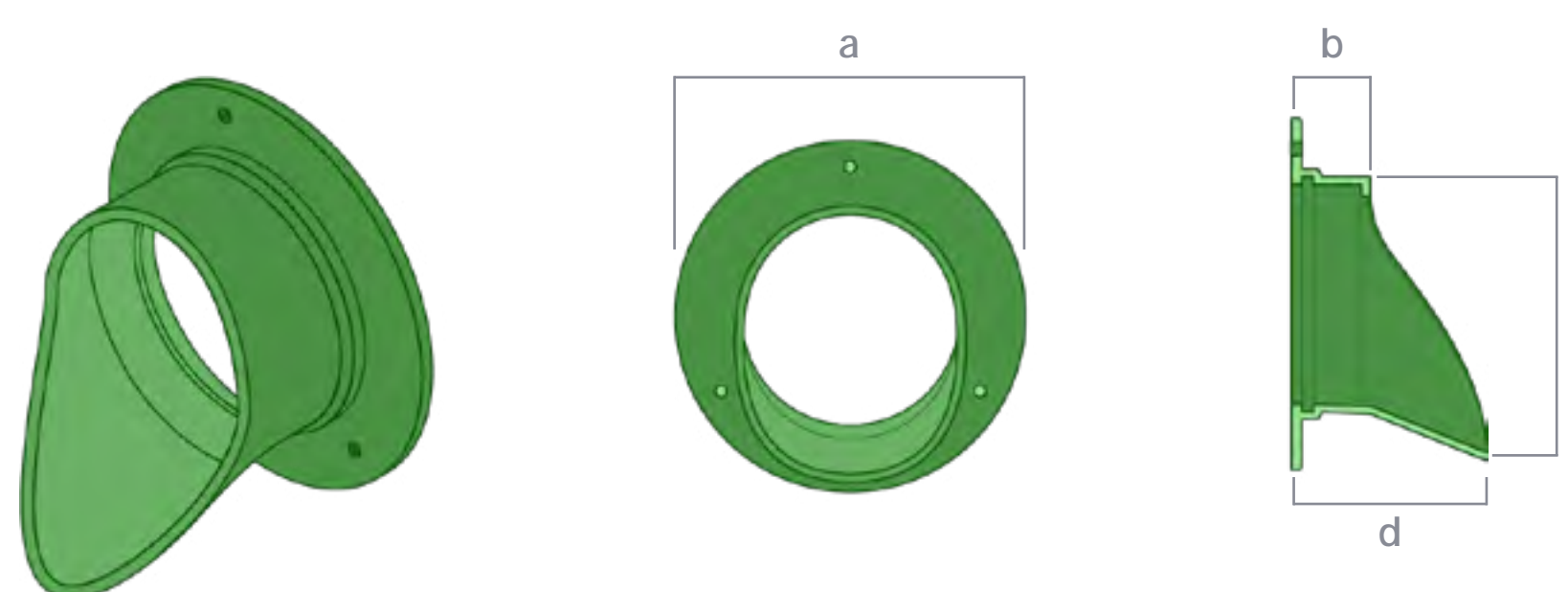
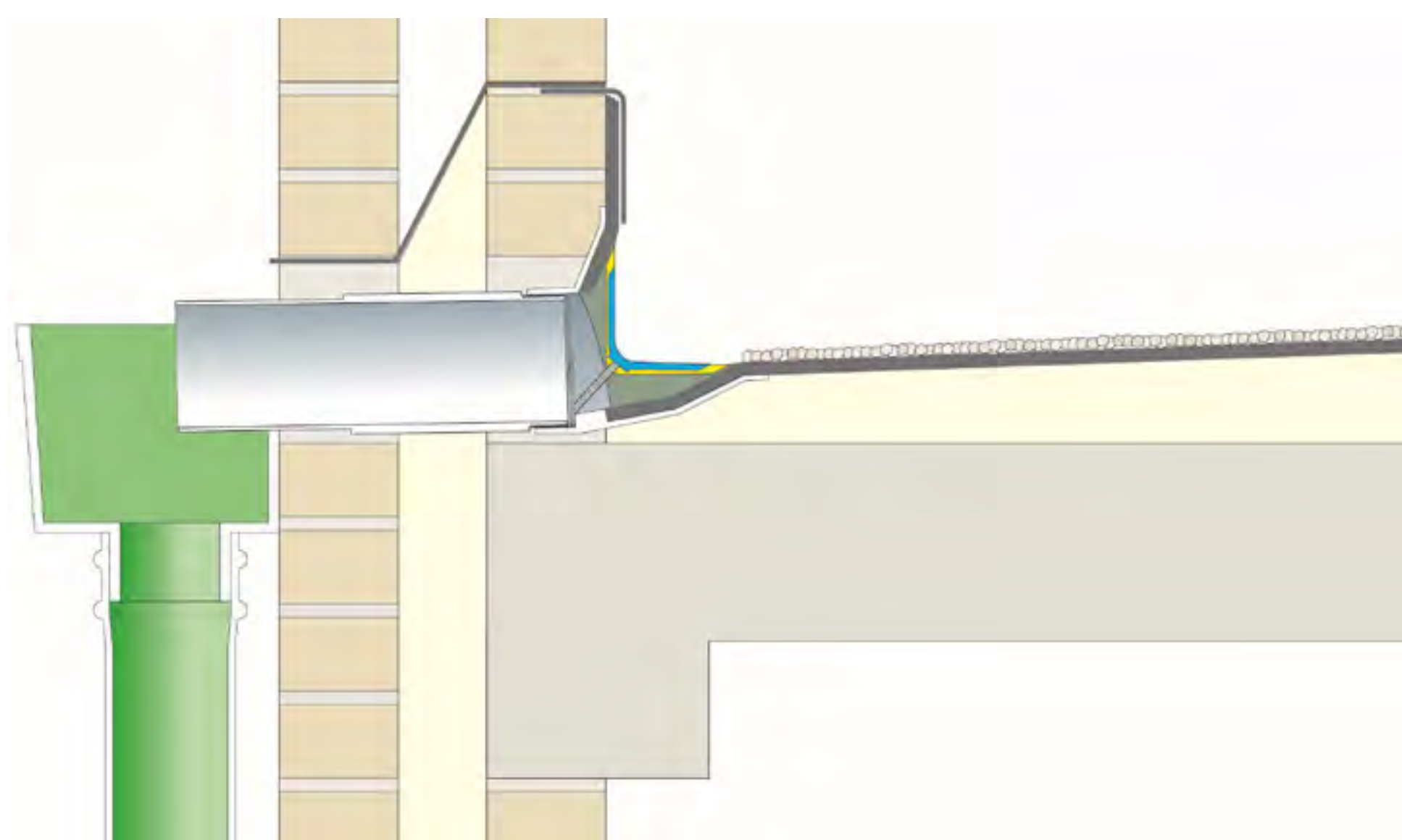
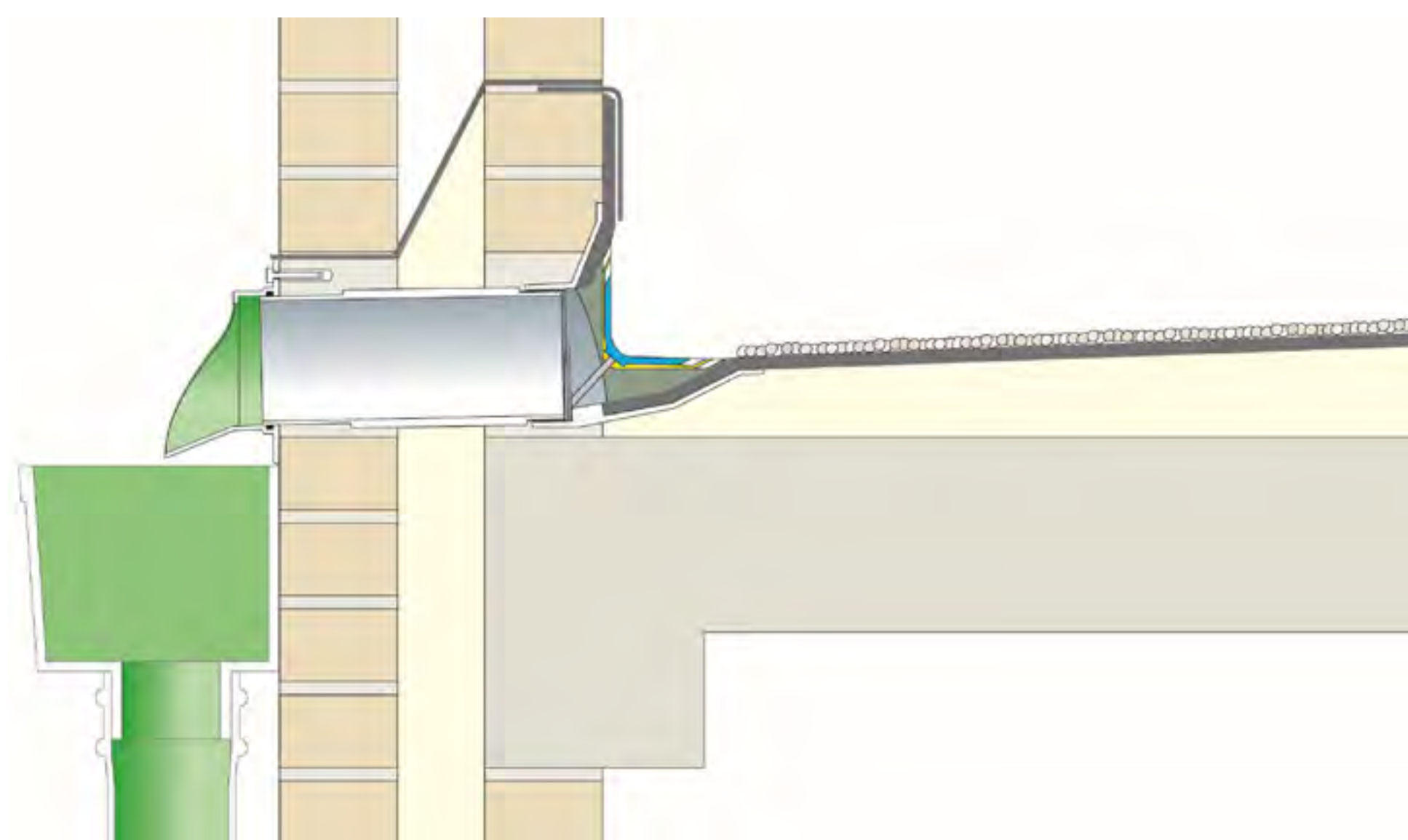
Material - Siliconised Cast Aluminium LM6

## Finish

Aluminum downspouts are supplied in mill finish cast aluminium. Polyester powder coated finishes in Alumasc's standard colours are available to match external building finishes or colour coated rainwater pipes and hoppers.

## Connection

For ease of installation and perfect alignment, Harmer Downspouts push-fit connect to standard 110mm diameter plain ended pipe using an "O" ring seal and mechanical fixing into masonry.



Outlet Size (mm)	Material	a (mm)	b (mm)	c (mm)	d (mm)	Weight (kg)	Product Code
100	Aluminium	180	40	146	100	0.5	ADS/4*

\*Also available in polyester powder coated finish to Alumasc standard colour range or RAL.

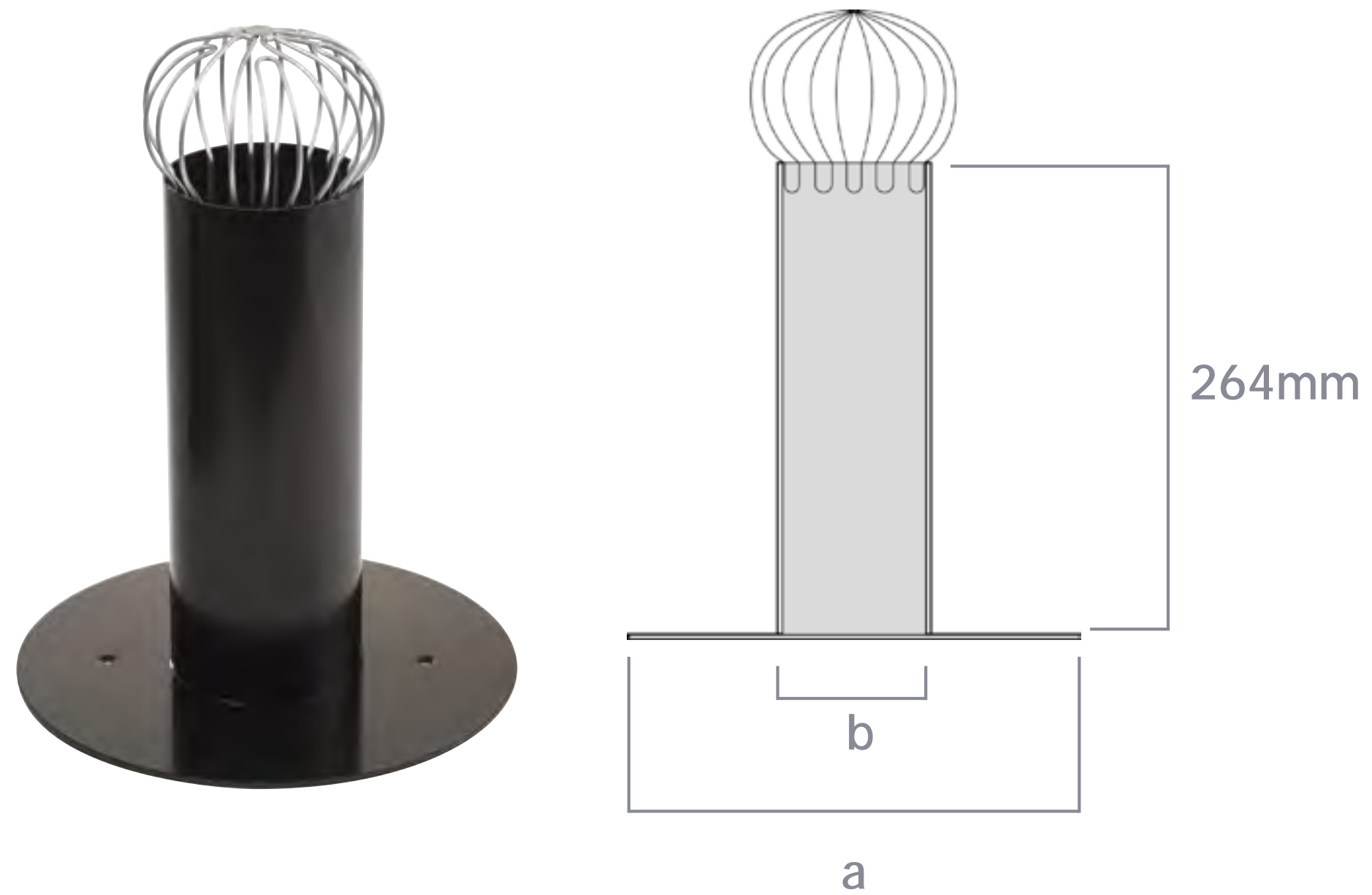


# Aluminium Roof Outlets - Overflow Outlets



## Overflow Outlet

The Overflow assembly simply bolts onto the clamp where the grate normally sits. Made from aluminium, the overflow is easily cut to the required length on site. The balloon grate can be re-fitted back into the overflow inlet to protect the outlet from debris. In accordance with BS EN 12056:2000 & BS EN 8579:2020



Outlet Type	a (mm)	b (mm)	Weight (kg)	Product Code
AV200 and AV300	212	76	0.5	OF/23
AV400 and AV600	290	102	0.6	OF/46

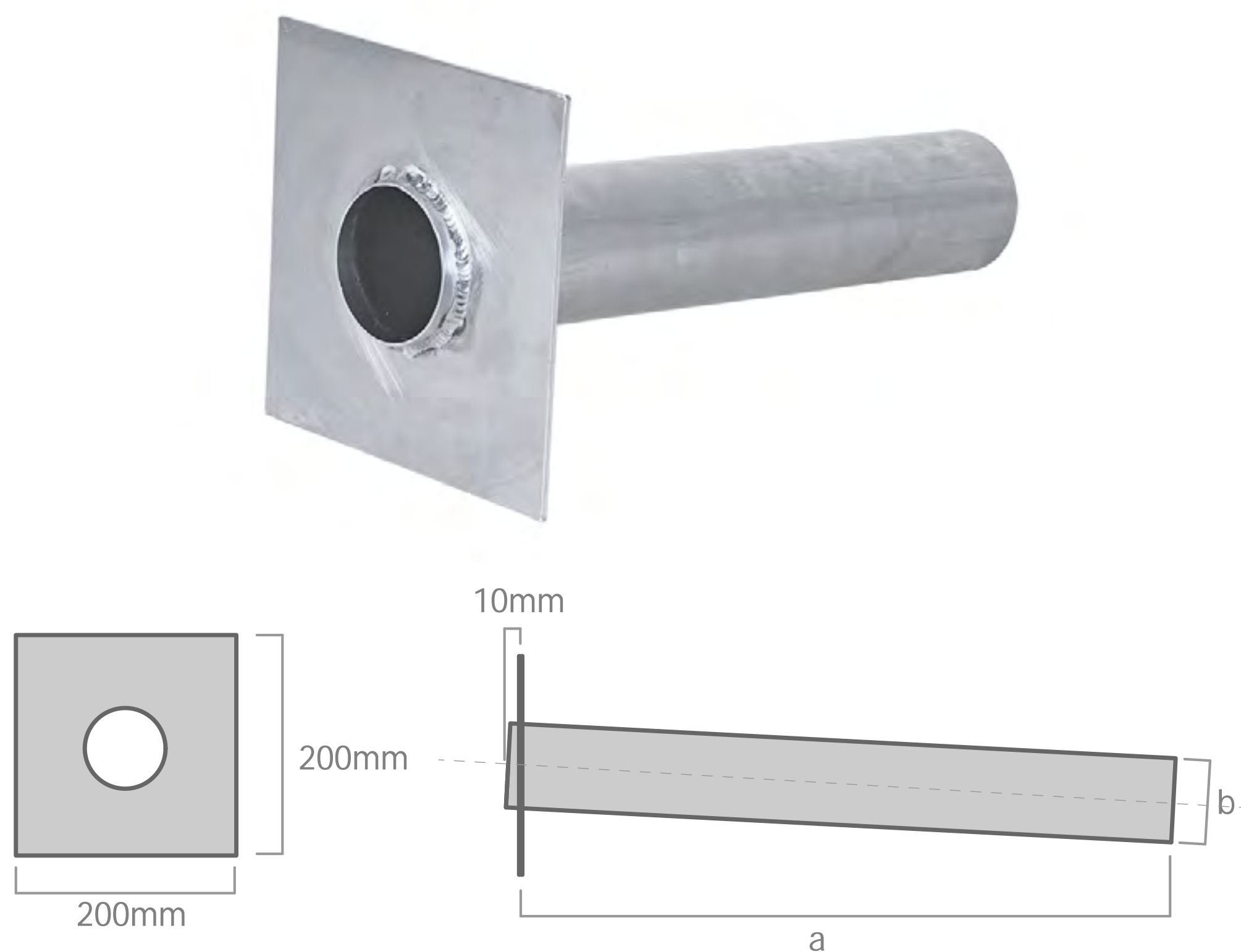


## Horizontal Overflow Outlet

The Horizontal Overflow Outlet is designed to be installed through a parapet wall above the water level at which the roof area has been designed to.

For example this would typically be installed at 50mm above the waterproofing layer if the roof area calculations were completed to a 35mm head of water.

This overflow is not designed to take the full capacity of the system, but to be a visual indicator that there is a blockage or maintenance required with the primary drainage system. In accordance with BS EN 12056:2000 & BS EN 8579:2020.



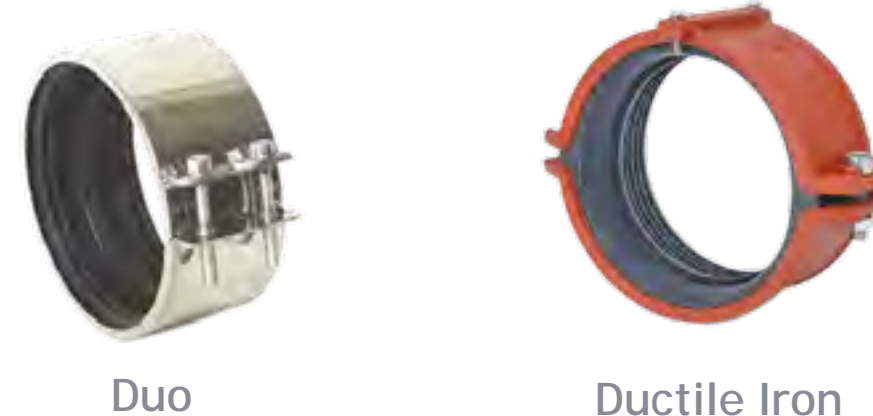
Outlet Size (mm)	a (mm)	b (mm)	Weight (kg)	Product Code
50	400	50	0.6	OVER/50/400
50	600	50	0.75	OVER/50/600
75	400	76.5	0.7	OVER/75/400
75	600	76.5	0.9	OVER/75/600



# Aluminium Roof Outlets - Accessories & Connections

## Harmer Couplings

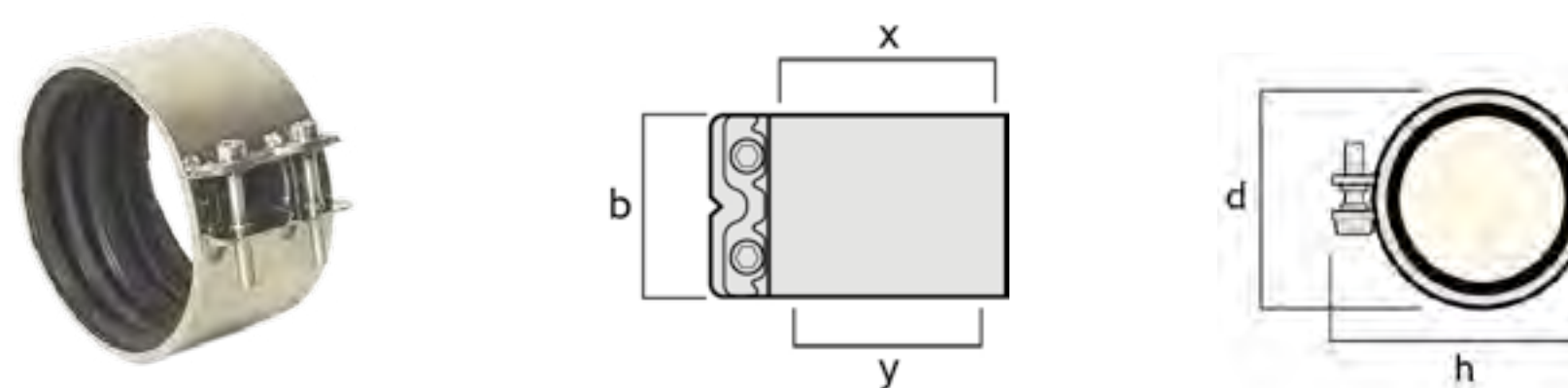
Harmer SML couplings are available in either ductile iron or stainless steel and meet the requirements of BS EN 877. The internal pressure performance of couplings ranges from 0.5 bar to 10 bar. All couplings feature EPDM elastomeric seals as standard. Neoprene rubber seals are available on request.



Coupling Type	Pipe Diameter (mm)	Product Code
SML Ductile Iron	50	235849
SML Ductile Iron	100	235357
SML Ductile Iron	150	235358
SML Duo Stainless Steel	50	3140/50
SML Duo Stainless Steel	100	3140/100
SML Duo Stainless Steel	150	3140/150

## Adaptor Couplings

The Stainless Steel Harmer SML Adaptor coupling is used when it is necessary to make a connection between BS EN 877 lightweight cast iron 'soil' systems, conventional cast iron thick wall 'drain' systems and 3"/83mm imperial pipework. This coupling does not incorporate any provision for electrical continuity.



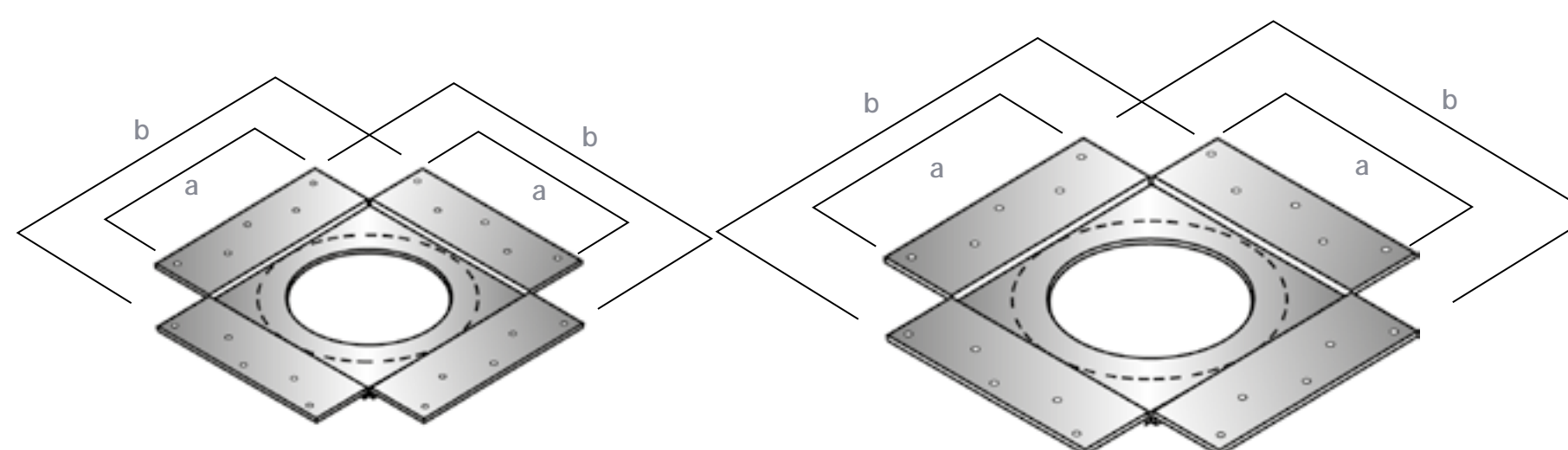
Pipe Dia (mm)	Bolts	d	h	b	x	y	Product Code
70	2	95	110	70	83-84	75-76	3151/010075
100	2	130	145	70	116-119	108-113	3102/100
150	4	180	215	70	168	159	3102/150

## Metal Deck Support Plates

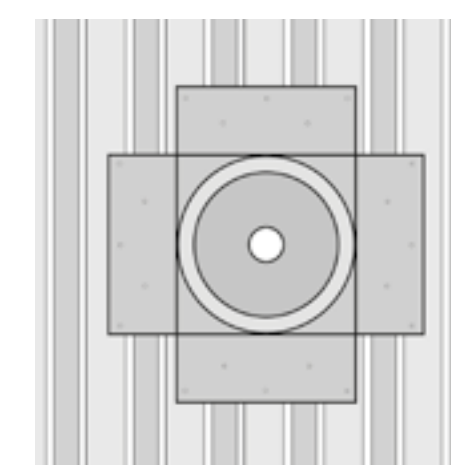
Recommended for use where Harmer cast aluminium rainwater outlets are installed in metal deck roofs. They are designed to provide a secure and stable junction between the roof deck and rainwater outlet.

### Materials

The Support Plates are manufactured from 2mm galvanised steel sheet, finished in epoxy primer. They are suitable for installation in all types of metal deck roofing.



Plan view of Harmer outlet body in the Metal Deck Support Plate fixed to the structural metal deck.



Outlet Size (nominal)	a (mm)	b (mm)	Weight (kg)	Product Code
Medium Sump	335	490	2.7	SP1
Large Sump	415	570	3.5	SP2



# Aluminium Roof Outlets - Accessories & Connections

## Threaded Spigot Adaptors

The Threaded Spigot Adaptor has been designed to facilitate the connection of Harmer Roof AV and Detail threaded cast aluminium rainwater outlets to all types of pipe systems and presents an economic alternative to using a short length of steel gas tube to BS EN 10255 in the case of cast iron socketed or socketless systems.

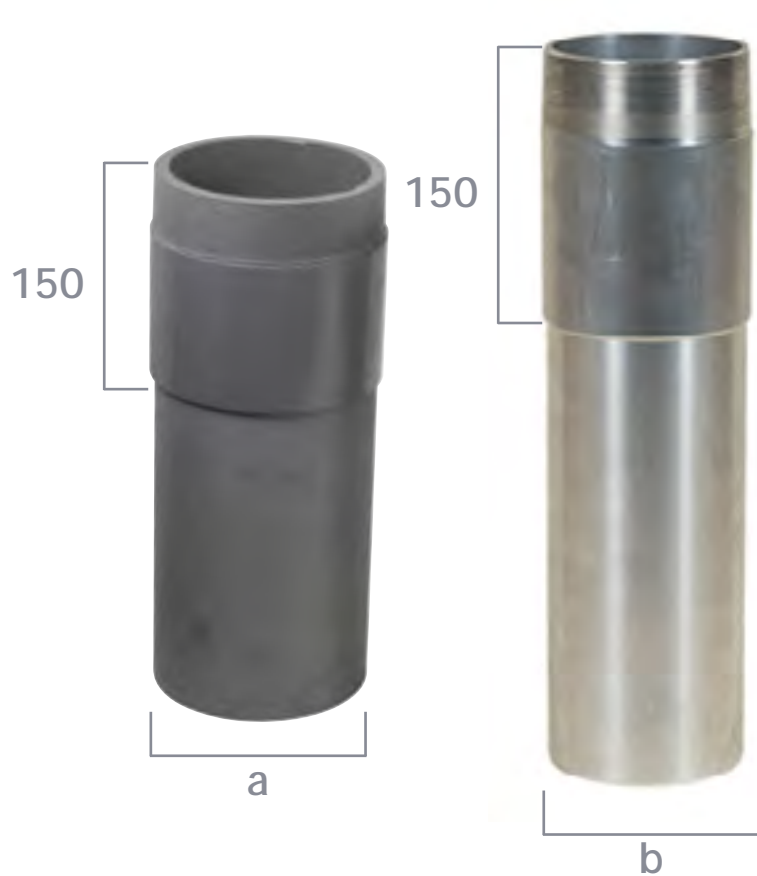
### Materials

Threaded Spigot Adaptors in Aluminium or ABS plastic are supplied in 400mm & 600mm lengths, taper threaded externally at one end to BS EN 10226-1 and chamfered at the other end to BS 4514 and BS EN 1329-1 spigot dimensions. Sizes are available to suit 50, 75, 100 and 150mm nominal bore pipework.

### Connection to Pipework

The Threaded Spigot Adaptor is screwed into the base of the outlet using a PTFE tape or silicone sealant to obtain a gas-tight seal. The spigot end of the adaptor can then be connected to the pipe socket. If necessary, the length of the spigot end of the adaptor can be reduced by cutting as required with a fine toothed saw. The spigots of the Threaded Spigot Adaptors are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework with appropriate Harmer couplings, PVC O-ring socketed pipe to BS EN 1329.

Please see Harmer couplings available (pages 41).



Standard length for adaptors is 400mm, but lengths of 500, 600, 700 and 800mm are also available on request.

Nominal Bore (mm)	a (mm)	b (mm)	Length (mm)	Aluminium Adaptors		ABS Adaptor	
				Weight (kg)	Product Code	Weight (kg)	Product Code
50	63	58	400	0.5	2ADPA	0.4	2ADP
50	63	58	600	0.7	2ADPA/600	0.6	2ADP/600
75	83	83	400	1.0	3ADPA	0.6	3ADP
75	83	83	600	1.4	3ADPA/600	0.9	3ADP/600
100	110	110	400	1.2	4ADPA	1.2	4ADP
100	110	110	600	1.8	4ADPA/600	1.8	4ADP/600
150	160	160	400	1.7	6ADPA	2.0	6ADP
150	160	160	600	2.4	6ADPA/600	3.0	6ADP/600

## Fitting the Harmer Threaded Spigot Adaptor

### Materials

- A cast aluminium body with female parallel threaded boss.
- A 400mm long taper male threaded pipe sized for Standard BSP onward connection.
- PTFE tape or silicone sealant.

### Preparation

- Wear protective (latex) gloves to avoid risk of injury or contamination during materials handling.
- Process will require pipe chains for tightening the adapter into the outlet.
- Degreasing agent and fine bristle brush.
- Paper towels (this last relates to Method 2).

### Connecting Adapter - Method 1

Using PTFE tape:

- Inspect all threads and ensure they are free of dirt, grease and foreign matter.
- Apply sufficient PTFE tape to the taper male threaded end of the adapter. This requires care as too much tape will limit the amount of travel within the parallel thread of the outlet and too little may prevent an effective seal.
- Securely tighten the adapter into the outlet, using chains or similar equipment.

### Connecting Adapter - Method 2

Using silicone sealant (DOW CORNING 791 recommended):

- Inspect all threads and ensure they are free of dirt and foreign matter.
- Allow for ventilation and degrease the threads of the outlet using a degreasing agent and fine brush.
- Using paper towels ensure that threads are dry.
- Apply a liberal coating of silicone sealant to the threads of the outlet and adapter and immediately tighten using chains or similar equipment.
- A surplus of sealant will squeeze out indicating that all the thread void areas have filled.
- Clean up with paper towels and dispose of appropriately.
- Follow guidance cure advice on silicone product before subjecting outlet to water test.

For method 1 and 2 it is recommended that a Standing Water Test is undertaken before installation.



# Aluminium Roof Outlets - Installation

The Aluminium range of outlets are designed for use with flat roof structures using either insitu cast concrete, timber or lightweight metal deck construction. Harmer outlets are ideal for connection to continuous waterproofing systems using mastic asphalt, high performance built-up felt, wet-applied waterproofing systems and most types of single ply membranes.

## Components

Harmer aluminium roof outlets are made up of three base components:

- **Body** - An outlet body with integral sump for controlled flow of water into the pipe.
- **Clamping Ring** - The clamping ring is designed to compress the waterproof membrane against the outlet body to ensure total integrity of seal. The side fixing of the clamping ring and domical grate to the outlet body, for both AV and Detail outlet types, ensures that the throat is completely unobstructed to optimise flow and facilitate rodding.
- **Grate** - Domical grates permit a free flow of rainwater while preventing loose chippings or debris from entering the outlet. Flat grates are used for trafficked and pedestrian areas.
- An important feature of both the Domical and Flat grate fixture is that it can be removed without disturbing the clamping ring and waterproof seal of the roofing membrane.

Site detailing is taken care of with a range of accessories which are designed for use in different types of applications. Accessories include, Extension Pieces, Terrace Grates, Support Plates, Overflows and Downspouts.

## Materials

All Harmer aluminium outlets are cast using LM6 aluminium silicon alloy. This grade of alloy exhibits excellent resistance to corrosion under both ordinary atmospheric and marine conditions making it suitable for most types of flat roof applications.

The aluminium alloy is light in weight and therefore easy to handle on site and during installation. The alloy is stronger and less brittle than cast iron. This lightness also makes aluminium outlets suitable for a wide range of lightweight roof decks.

For copper or lead-clad roofs, where there is a risk of bi-metallic corrosion with aluminium, the Harmer Roof Cast Iron range should be used.

## Installation and Sitework

Each site application will require careful assessment by the installer.

- Consideration must be given to the type of outlet, roof construction and pipework connection that is used. The general principal of installation is common to all Harmer outlets and the following guidance should be used.
- Threaded outlets using threaded spigot adaptors must be leak tested prior to fixing to the roof structure.

- Position outlet in the roof construction so that the roof substrate is flush with outlet rim and ensure that the roof has adequate falls to the outlet.
- Depending on the type of waterproofing membrane, degrease or prime the inside of the outlet body as per roof membrane manufacturer's recommendation i.e. for asphalt, prime the outlet with bitumen.
- Dress the waterproof membrane into the outlet making sure that adequate material is available for full surface contact between the clamping ring and the outlet body. Bolt down the clamping ring ensuring that equal pressure is applied to the bolts.
- Fix the Grate to the clamping ring using the bolts provided.
- Flood test the outlet in accordance with good practice and commission the rainwater system.
- Typical application details are shown on pages 45-49. For further advice on installation, contact Harmer Technical Helpline 01536 383810.

## Care and Maintenance

Maintenance is a key aspect of reliable, low cost operation.

- Before completion of any drainage scheme:
- Check if overflows have been provided.
- Anticipate blockage - never have a single rainwater outlet.
- Once the rainwater outlets have been installed they should be inspected to ensure that all parts have been correctly fitted, that no parts are missing and that nuts and bolts are tight and secure.
- Remove tacks, nails and screws left by other trades. These will damage the membrane if trodden on.
- Every flat roof must have an inspection plan:
- Inspection of the outlets should be on a regular basis and generally not less than twice annually - Autumn and Spring.
- In locations with nearby trees, leaf congestion will require more frequent clearance.
- Plastic bags blown onto the roof will wash to an outlet position and block the strainer.
- Airborne grit and fines will silt up the inlets to the outlet and restrict flow.
- Remove silt and remove leaves.
- Check overflows have leaf guards fitted.
- Clear any blockages immediately to ensure system does not overflow.

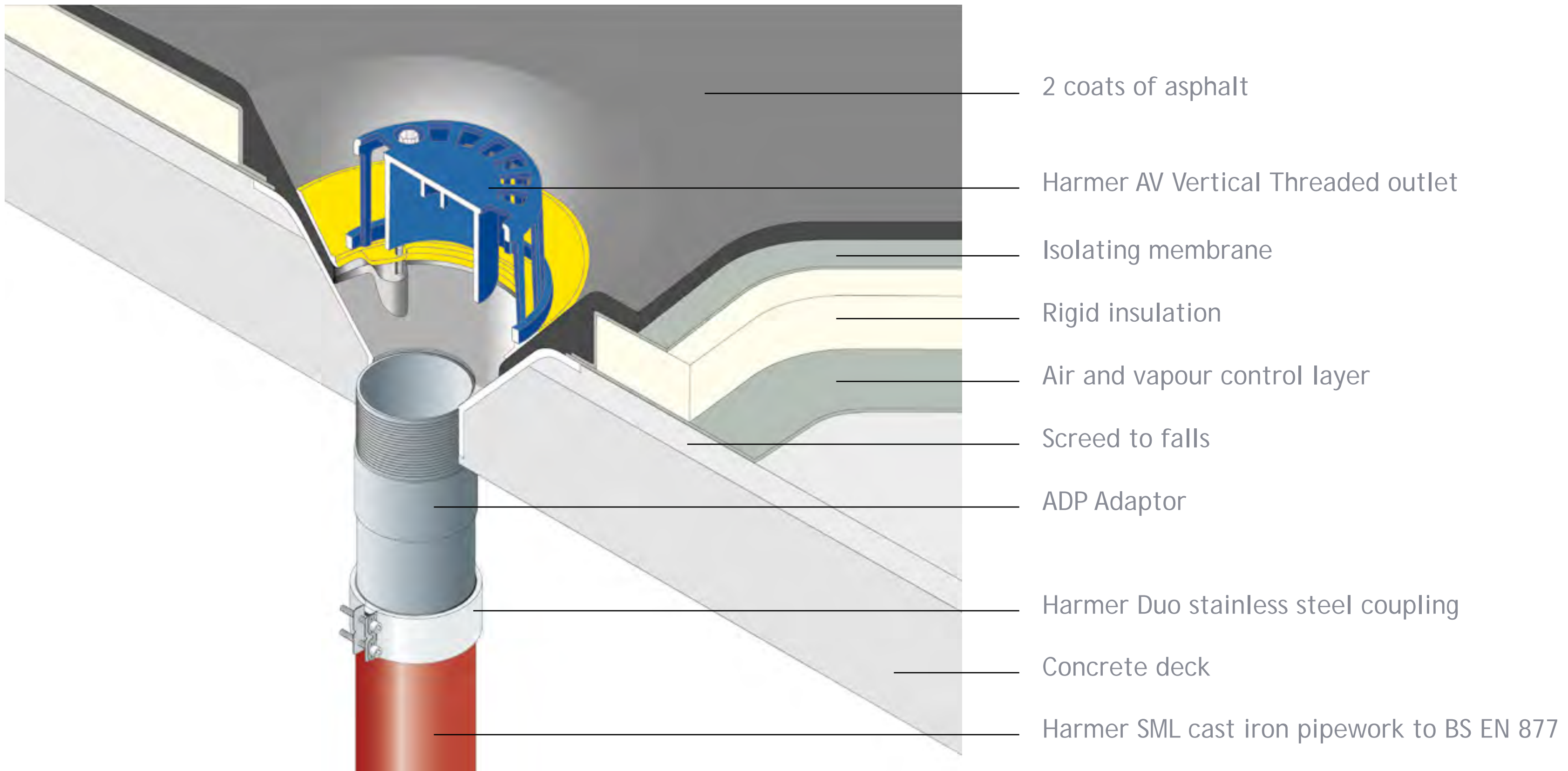
## Health & Safety

Always refer to current Health & Safety legislation, safe systems of work and the relevant material safety data sheets.

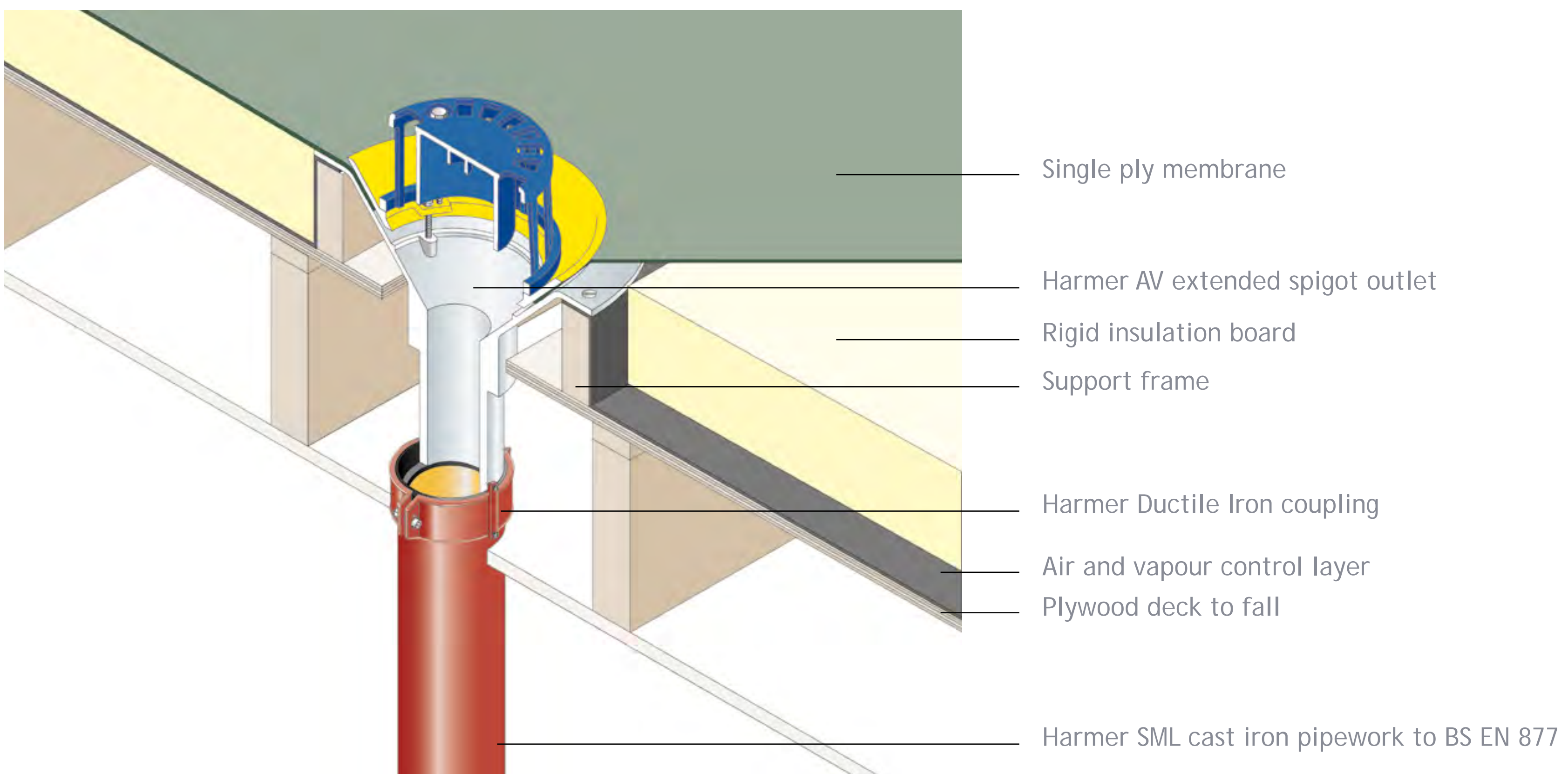


# Aluminium Roof Outlets - Application Details

## Harmer AV Vertical Threaded Outlet in Warm Roof Concrete Deck Construction with Waterproofing Membrane - 3 Layer, 2 Layer, Asphalt and Hot Melt



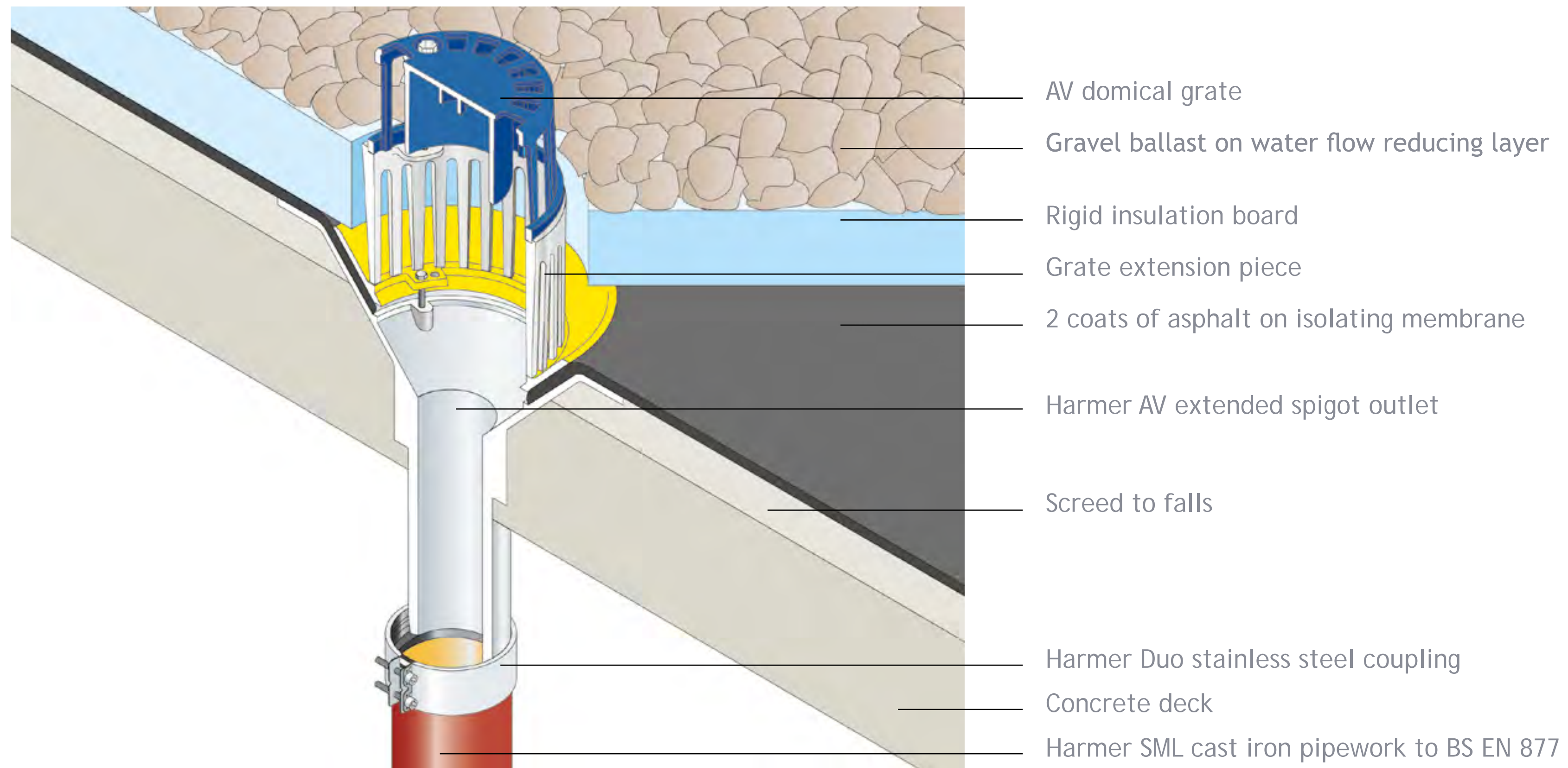
## Harmer AV Vertical Spigot Outlet in Warm Roof Timber Deck Construction with Single Ply Waterproof Membrane



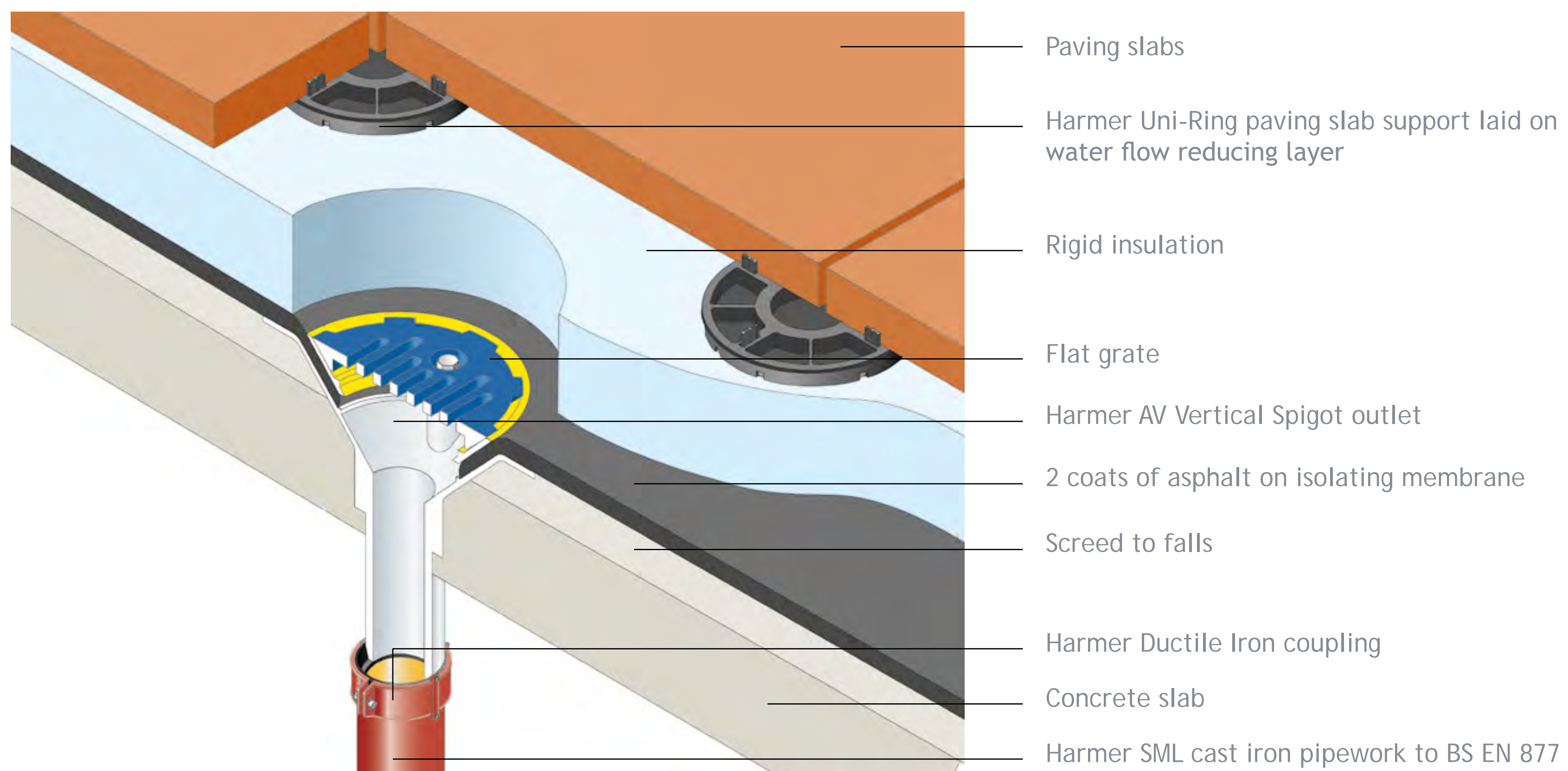


# Aluminium Roof Outlets - Application Details

## Harmer AV Vertical Spigot Outlet and Extension Piece in Inverted Roof Concrete Deck Construction



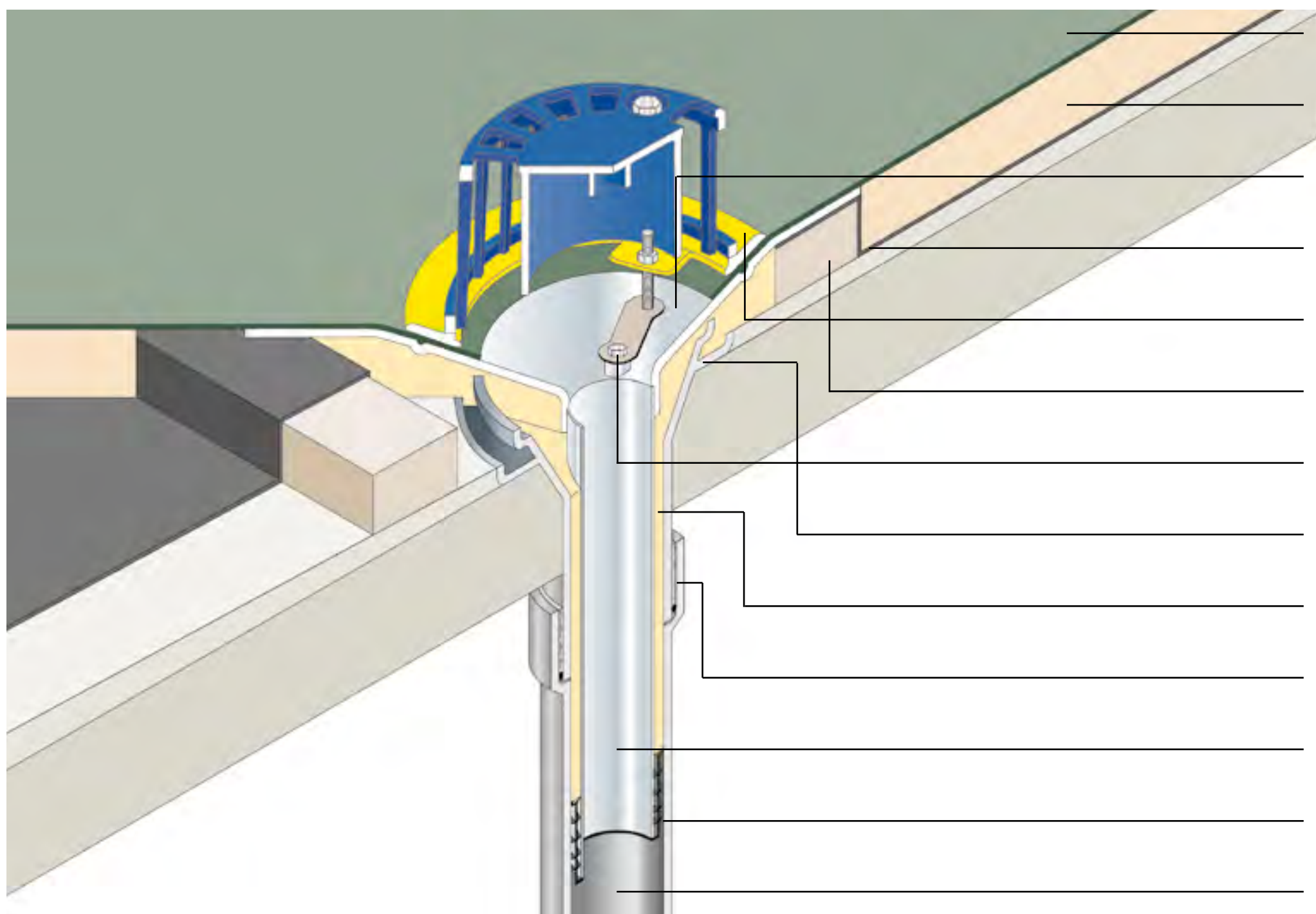
## Harmer AV Vertical Spigot Outlet with Flat Grate in Inverted Roof Concrete Deck Construction with Paving Slabs on Uni-Ring Raised Deck Supports





# Aluminium Roof Outlets - Application Details

## Harmer AV Retro-Gully Roof Refurbishment, Retaining Existing Cast Iron Outlet

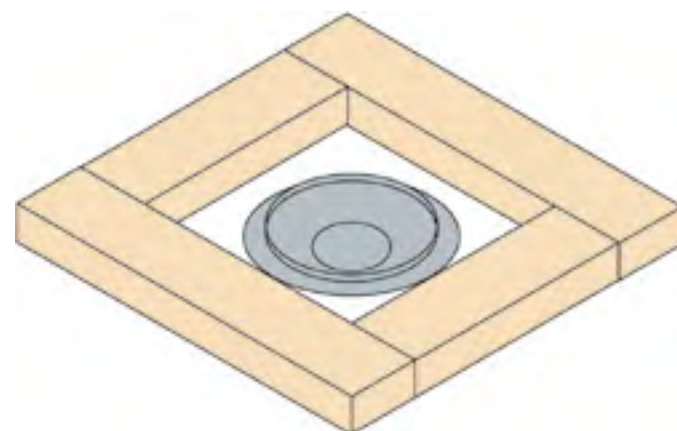


- Single ply membrane
- New insulation board
- Harmer Roof AV Retro-Gully outlet
- New air and vapour control layer
- Clamping collar
- Timber frame seating for Retro-Gully outlet
- PU foam sealant injection port
- Old cast iron outlet remains undisturbed
- Injected PU foam sealant between old and new outlets
- Old socket joint remains undisturbed
- Retro-Gully outlet tail pipe
- Harmer multi-finned pipe seal
- Existing pipework

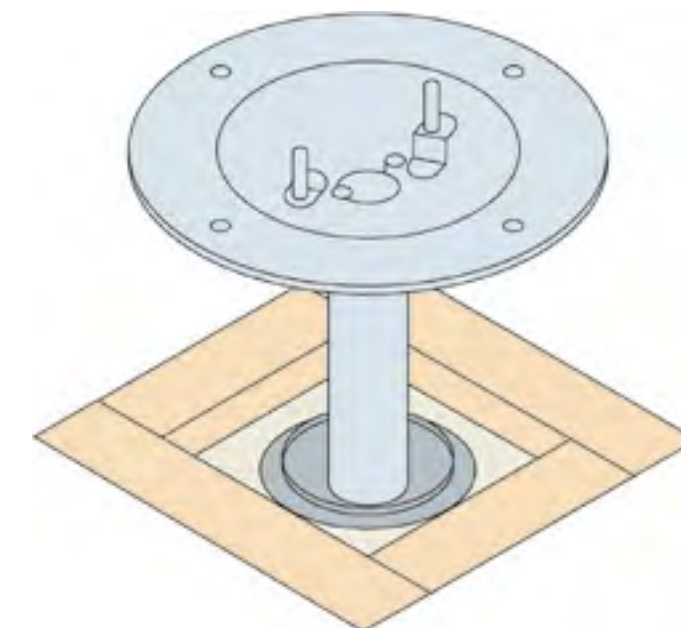
## Installing Harmer AV Retro-Gully



1. Strip all roof coverings back to deck level. Wire brush old outlet and flush with clean water.



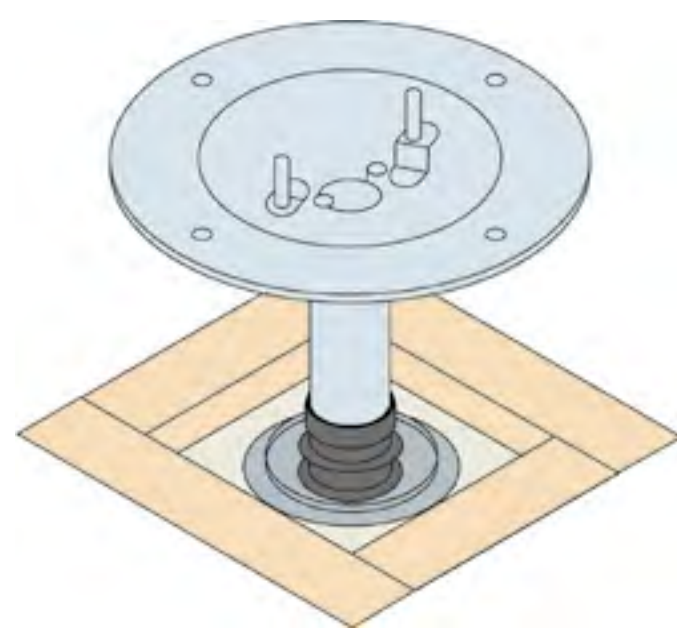
2. Form timber frame around old roof outlet, lay vapour barrier/insulation board (35mm+).



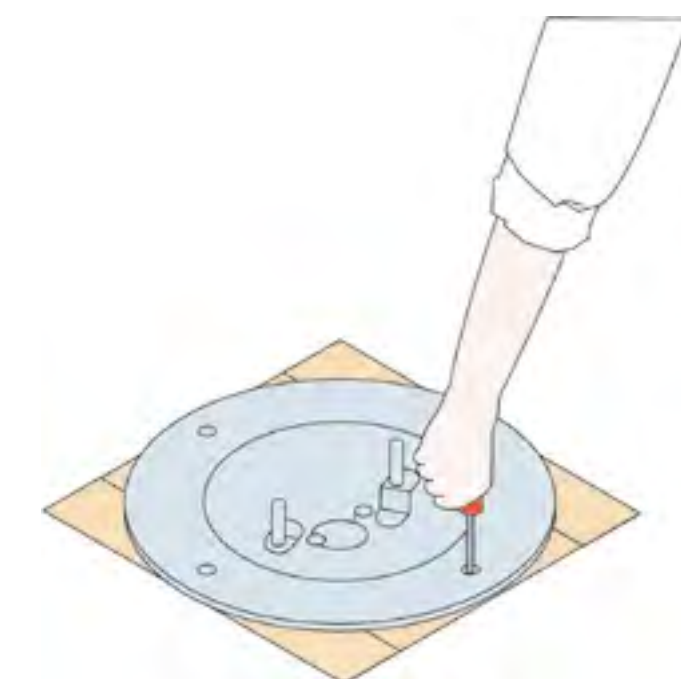
3. Check clearance, and cut tail pipe to required length if necessary.



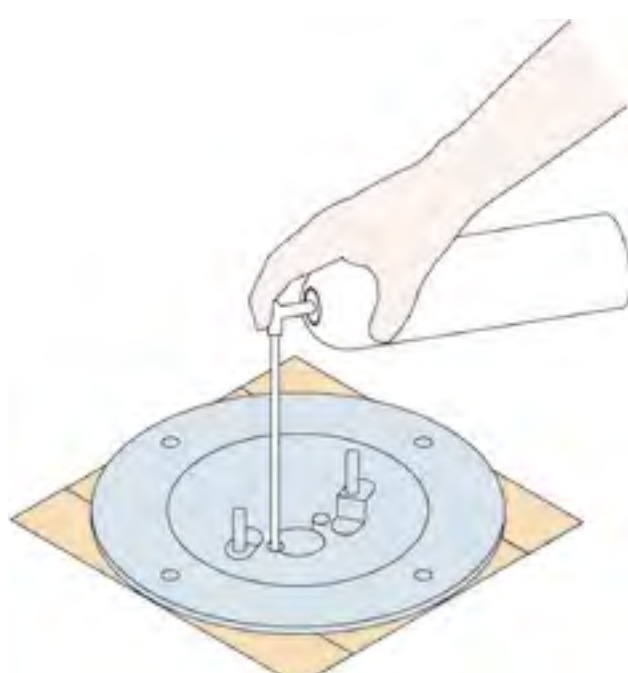
4. Once correct length of tail pipe has been established fit Harmer multi-finned pipe seal.



5. Repeat clean water flush. Insert tail pipe into existing pipework with flange seated on timber frame.



6. Secure flange by screw-fixing through preformed holes.



7. Inject intumescent PU foam in one injection port for up to 5 seconds. Wipe away surplus foam.

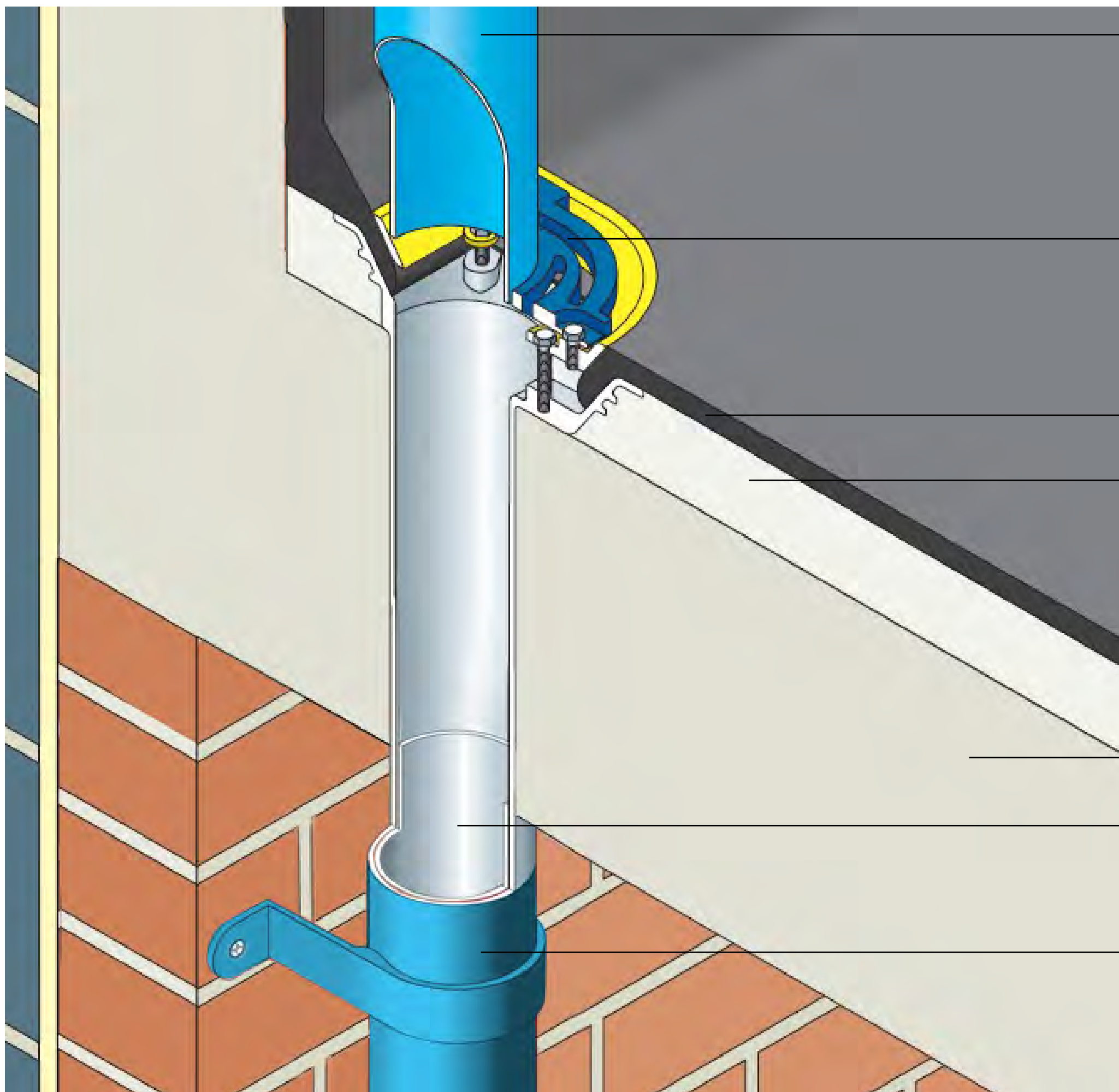


8. Close off port openings with the captive screws and washers. Complete weatherproofing and clamping ring/ grate installation.



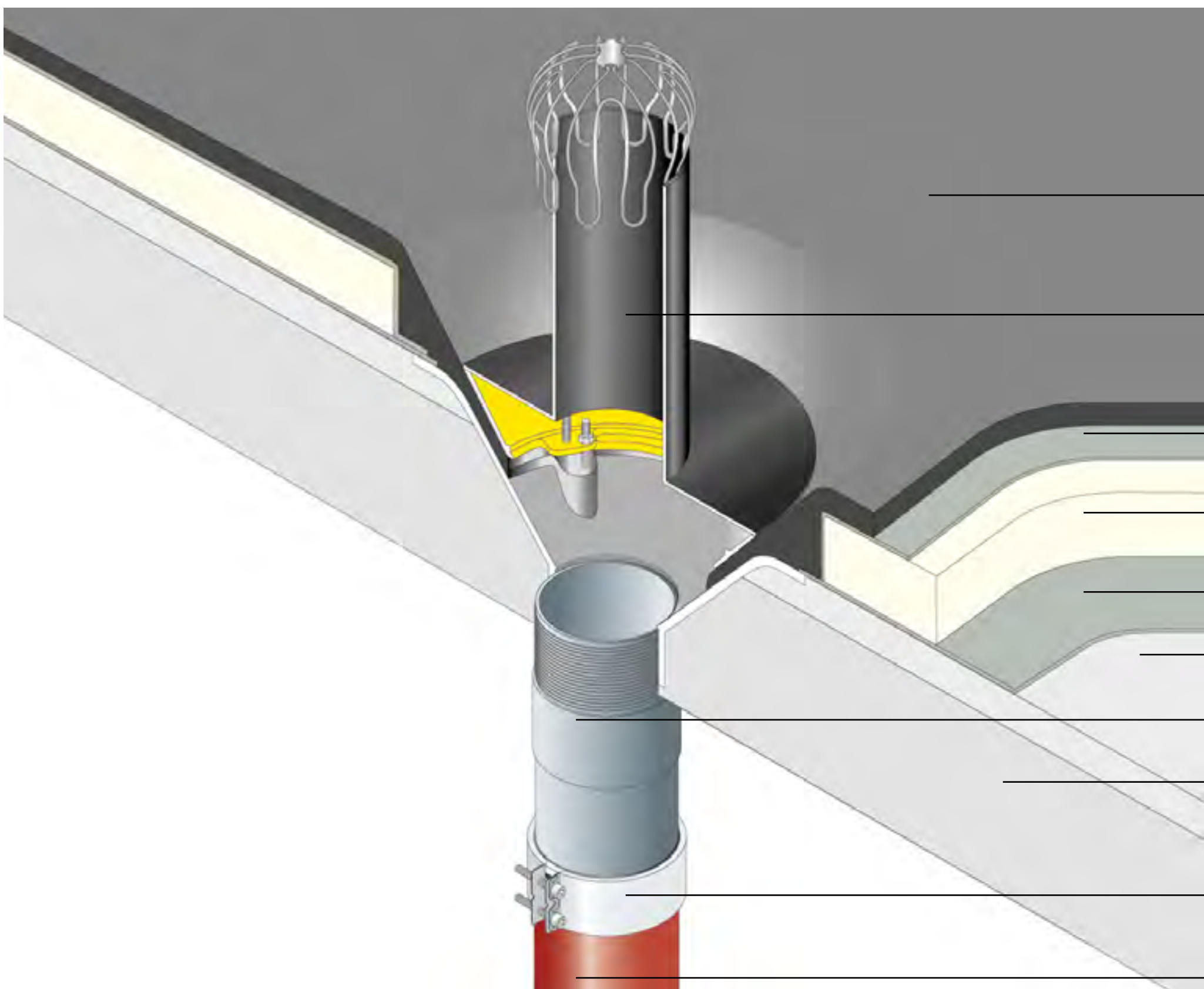
# Aluminium Roof Outlets - Application Details

## Flushjoint Extended Spigot Application Detail



- Alumasc Flushjoint aluminium downpipe system.
- Harmer Mini Balcony outlet with grate hole-punched to receive rainwater downpipe
- Water proofing membrane
- Screed to falls
- Concrete Slab
- Extended spigot
- Alumasc Flushjoint aluminium downpipe system.

## Harmer Overflow Outlet in Warm Roof Concrete Deck Construction with Waterproofing Membrane - 3 Layer, 2 Layer, Asphalt and Hot Melt

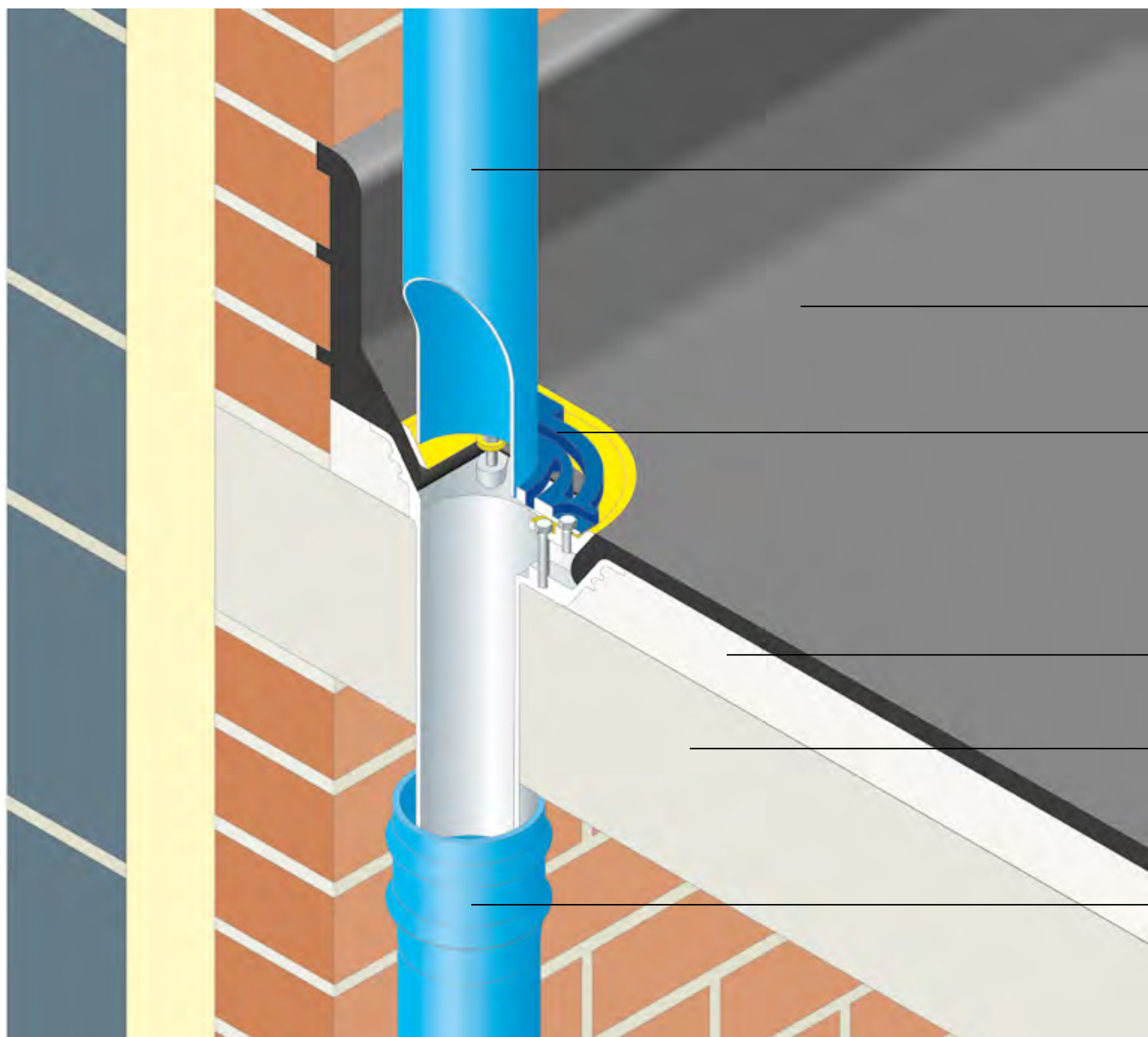


- 2 coats of asphalt
- Harmer Overflow Outlet
- Isolating membrane
- Rigid insulation
- Air and vapour control layer
- Screed to falls
- ADP Adaptor
- Concrete deck
- Harmer Duo stainless steel coupling
- Harmer SML cast iron pipework to BS EN 877



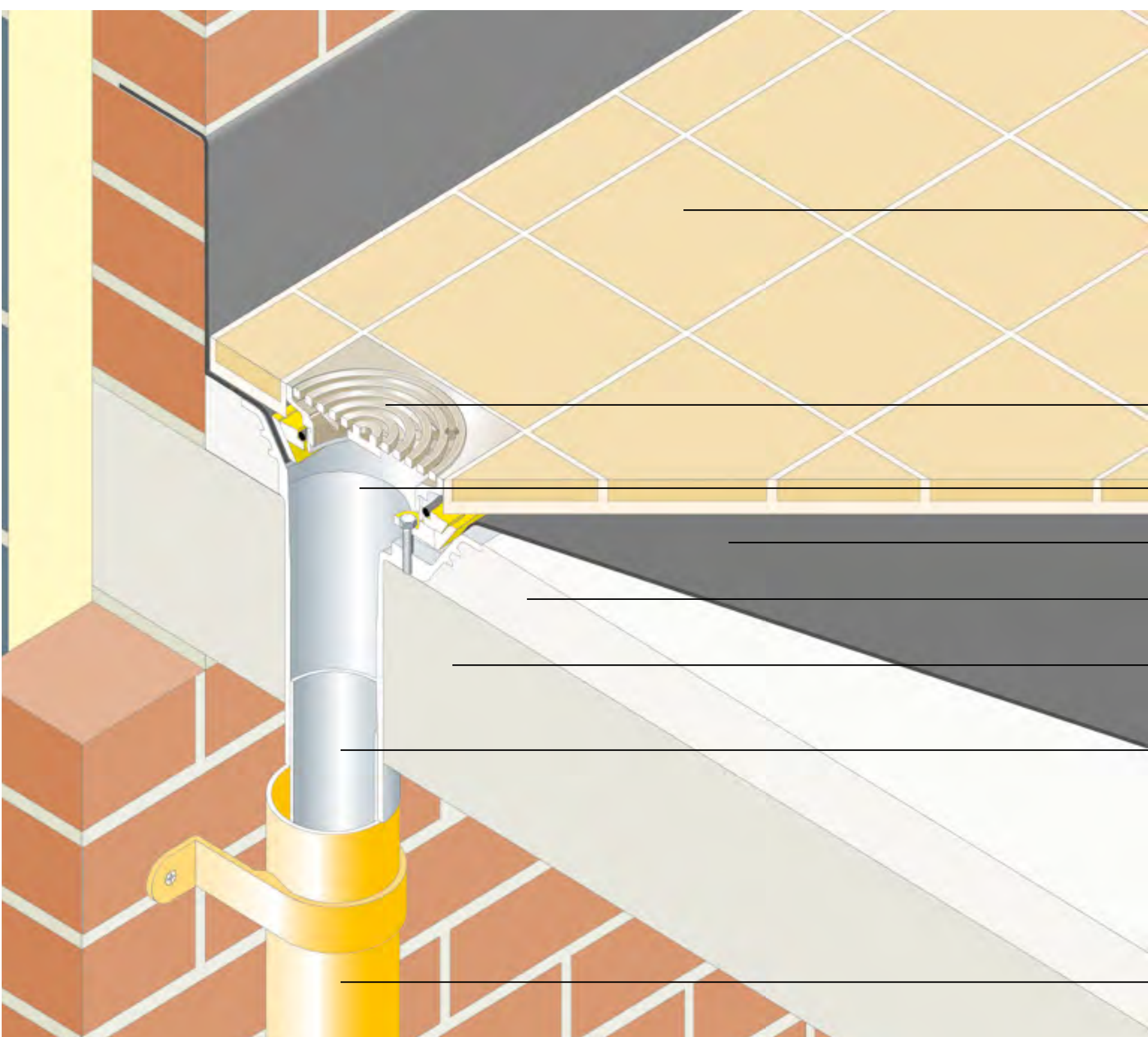
# Aluminium Roof Outlets - Application Details

## Harmer Mini Balcony Outlet with Standard Grate



- Alumasc aluminium rainwater pipe
- Water proofing membrane
- Harmer Mini Balcony outlet with grate hole-punched to receive rainwater downpipe
- Screed to falls
- Concrete slab
- Alumasc Heritage aluminium pipe system

## Harmer Mini Balcony Outlet with Stainless Steel Tile Grate

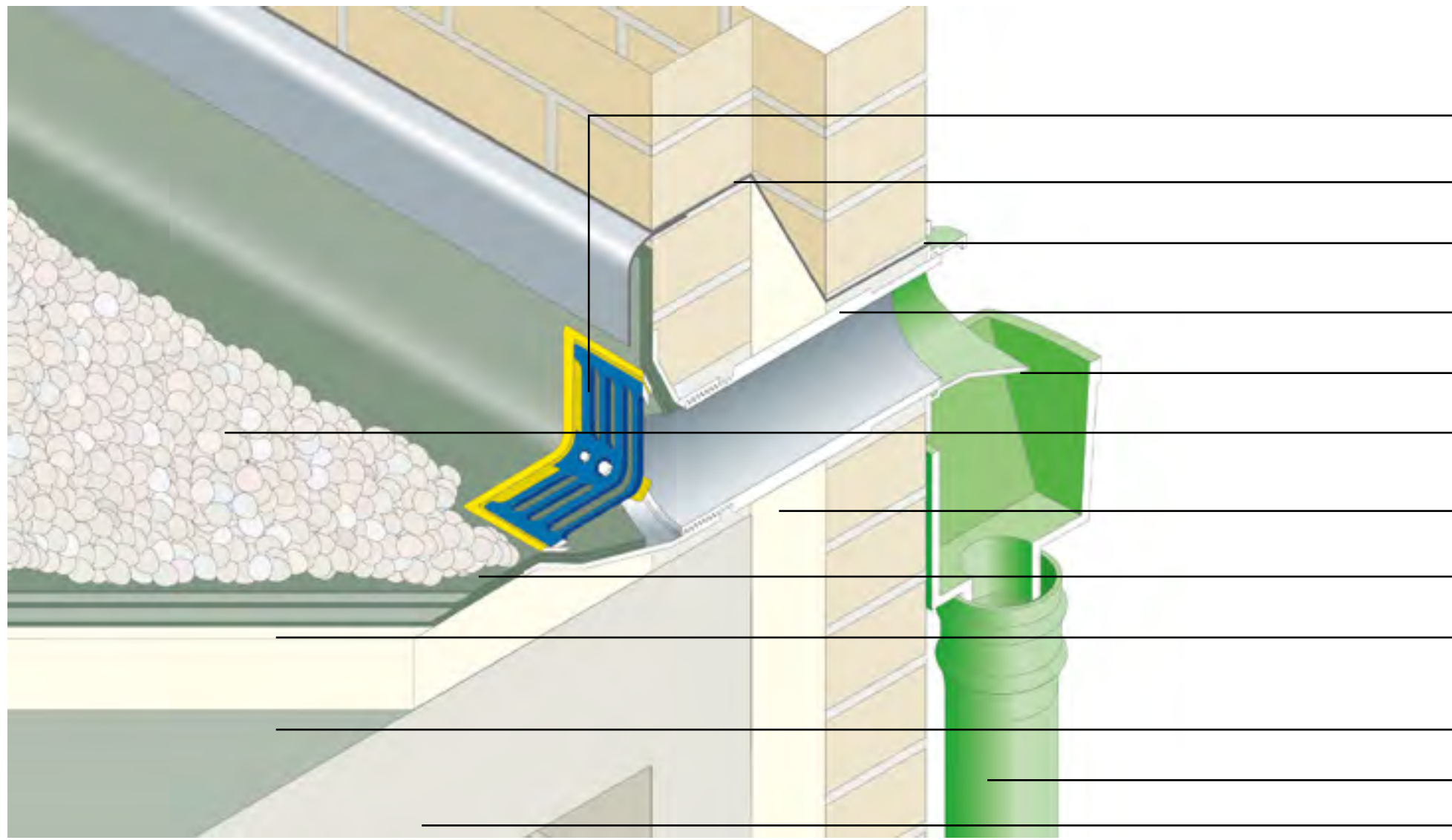


- Tiles
- Stainless steel height-adjustable concentric ring grate, throat and bezel
- Harmer Mini Balcony outlet
- Water proofing membrane
- Screed to falls
- Concrete slab
- Internal spigot pipe welded to inside of Harmer Mini Balcony outlet
- Alumasc Flushjoint aluminium pipe system



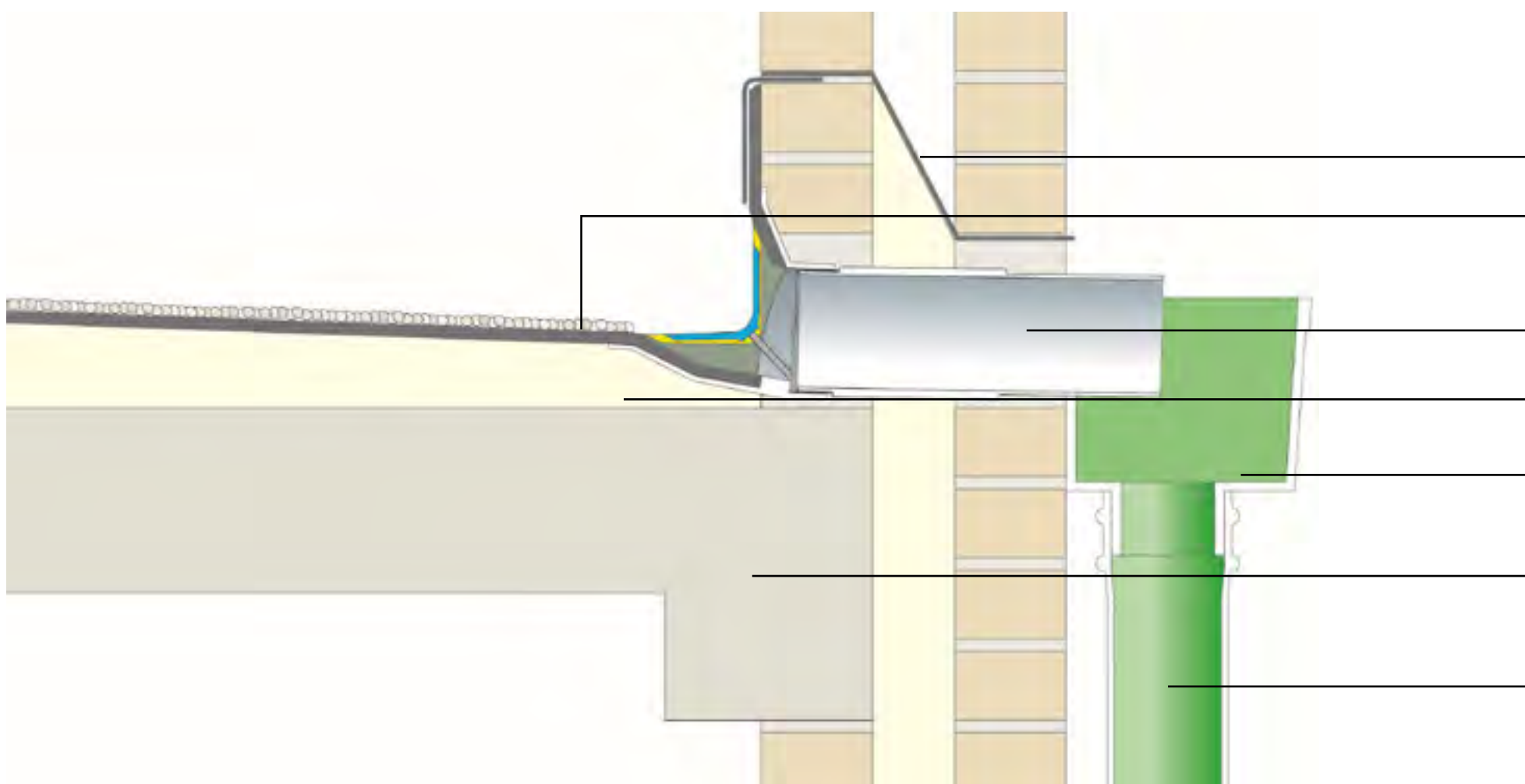
# Aluminium Roof Outlets - Application Details

## Harmer Two-Way Outlet in Warm Roof Concrete Deck Construction



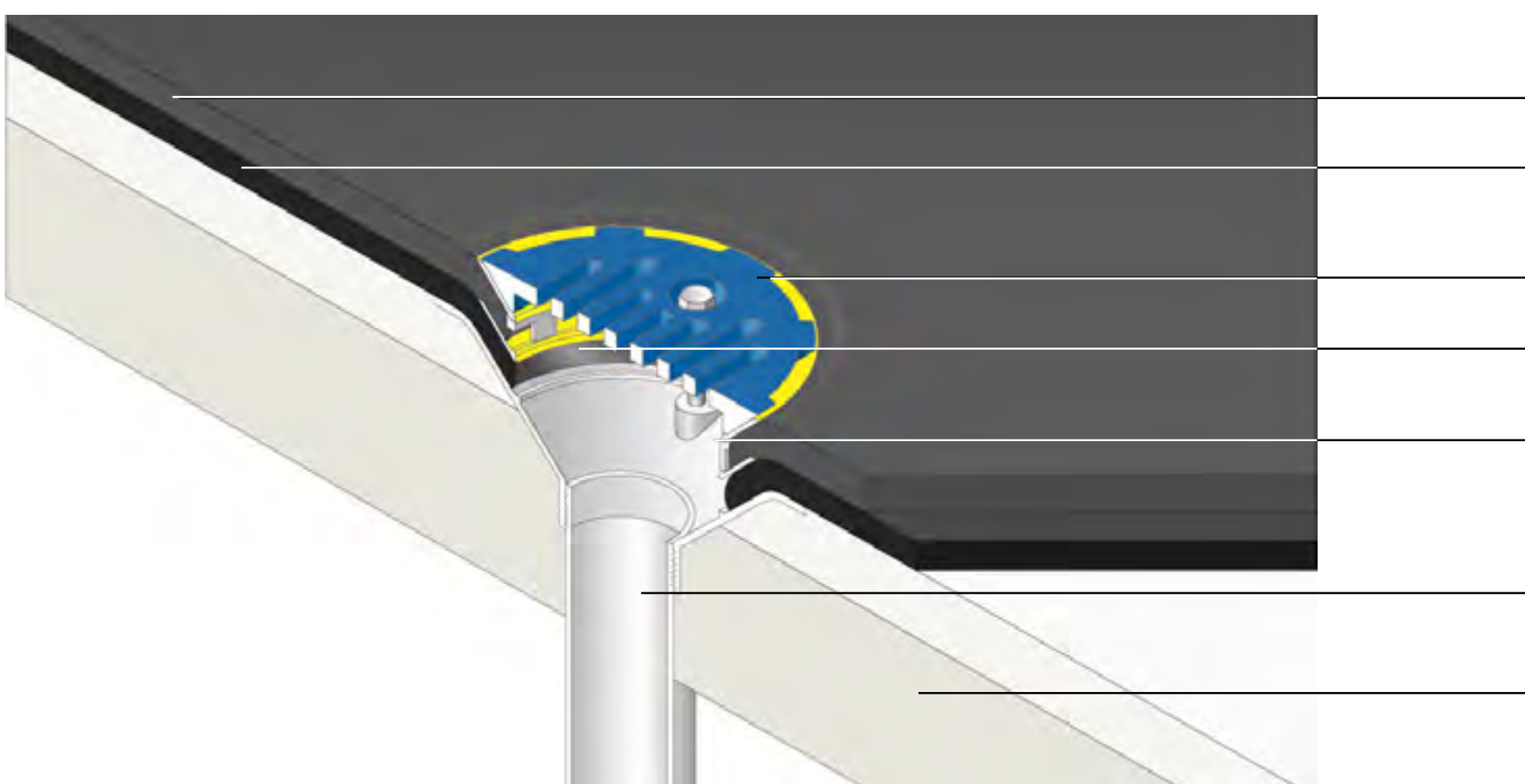
- Harmer Two-Way outlet
- DPC
- Harmer Roof aluminium Downspout
- Harmer Threaded ADP Adaptor
- Alumasc Rectangular Rainwater Head Outlet
- Reflective layer of chippings
- Cavity insulation
- Three-layer felt
- Tapered rigid insulation board
- Vapour barrier
- Alumasc Heritage aluminium downpipe
- Concrete slab

## Harmer Two-Way Outlet Section Showing Rainwater Discharge Via ADP Adaptor



- DPC
- Elastomeric felt waterproofing membrane with granular chippings
- Harmer Threaded ADP Adaptor
- Tapered rigid insulation board
- Alumasc Rainwater Head with cutout
- Concrete deck
- Alumasc Heritage aluminium downpipe

## Harmer Flanged Car Park Detail Outlet with Flat Grate



- Asphalt wearing course
- Asphalt waterproofing course
- Flat grate set in top clamping ring
- Bottom clamping ring
- Extension piece between top/bottom clamping rings
- Harmer Flanged Car Park Detail outlet
- Concrete deck



# Bespoke Aluminium Service

*The Harmer technical team work alongside architects and contractors to produce engineered solutions from concept to finished product.*

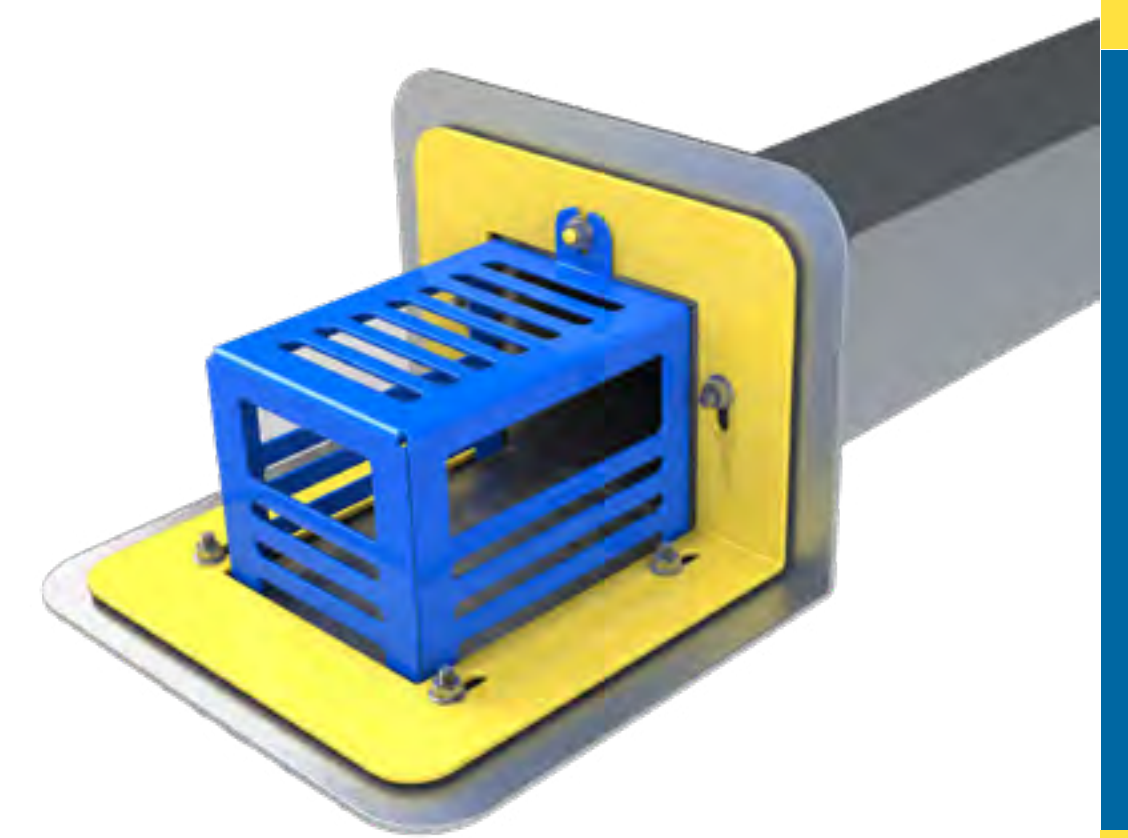




# Bespoke Aluminium Service

We have an extensive portfolio of successful past solutions in situations where a bespoke rainwater drainage design was the only answer. Our innovative, problem-solving specials cover a myriad of applications in which a bespoke design creates a drainage solution in applications that would otherwise be unworkable. Our special designs have solved problems with overflow, pipework configurations, flow rates, practical constructional issues, problems with the location of pipework, compliance with Building Regulations and conformity with the requirements of bodies such as the National Housebuilding Council (NHBC).

Specially fabricated 'out of the box' unit for draining twin rainwater outlets into a single drainage stack - Harmer outlets welded to an Alumasc Flushjoint extruded aluminium downpipe.



Our development of flush-mounted scupper drains, for example, provides a drainage solution in situations where achieving adequate coverage of the reinforcement within the slab is a potential problem issue.

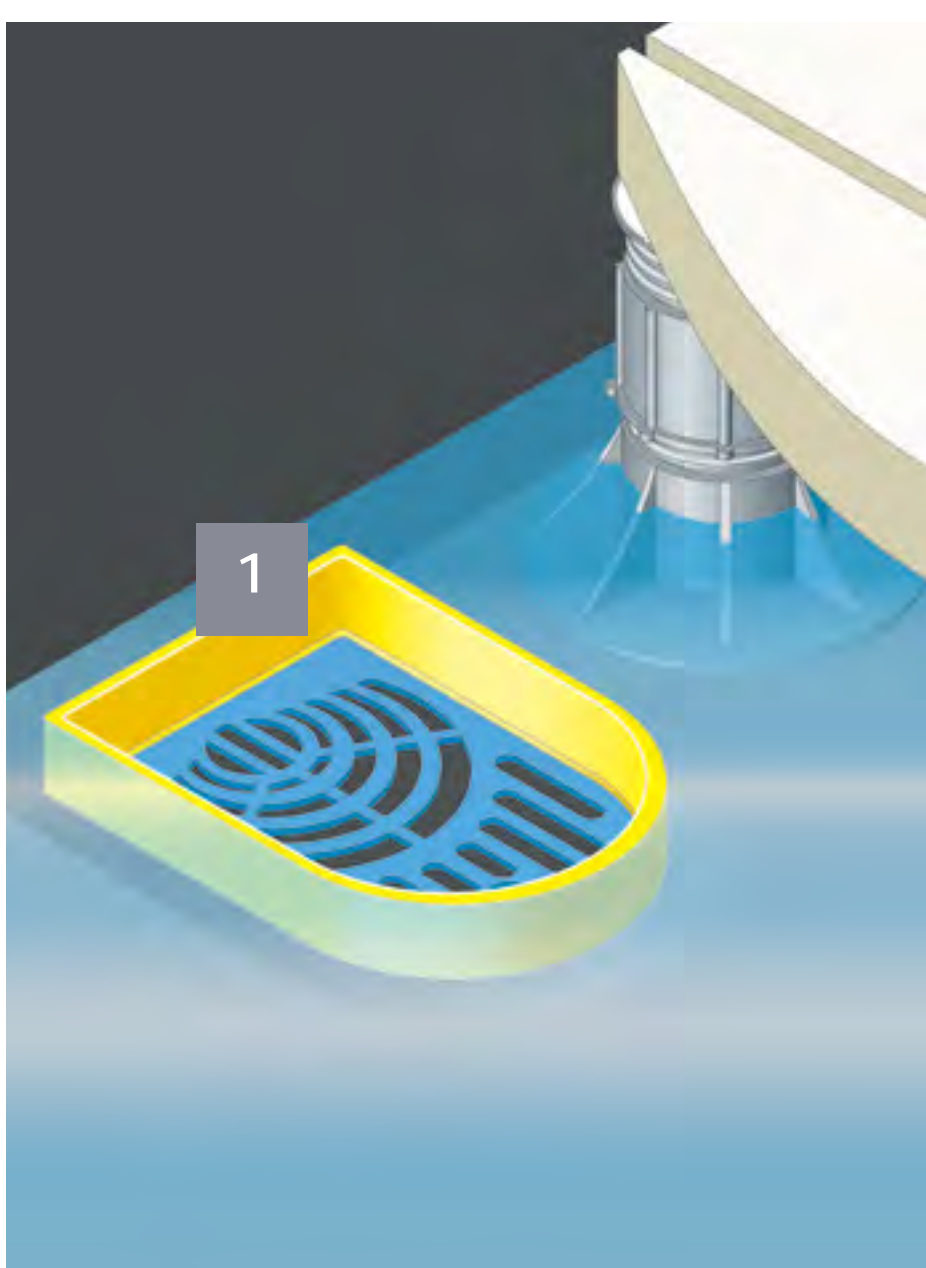
In some circumstances, there may not be sufficient depth of cover for the reinforcement to allow installation of a standard two-way parapet outlet. Our bespoke flush-mounted scupper drains offer the solution by leaving the slab and reinforcement undisturbed. Whatever the drainage problem you face, the Harmer specialist team is here to assist. We work alongside architect and contractor to produce a fully engineered solution from first concept through to finished solution. Whatever the problem, our expert team evaluates and devises an efficient solution - a unique service that gives designers confidence that all drainage issues are effectively dealt with and any potential problems solved.

No matter what the drainage problem - we have the answer. Our bespoke service allows you to design and manufacture solutions to suit your needs.

## Meeting NHBC requirements

Our bespoke service has provided practical ways of complying with NHBC requirements. Where flat roofs of balconies have an upstand on all sides, NHBC requires provision of an overflow outlet in the event of other outlets becoming blocked. The Harmer design team has designed a baffle that is factory-welded to the clamping ring of a standard rainwater outlet, creating an overflow outlet that allows water build-up to drain freely before flooding danger level is reached (see left).

**1** Bespoke baffle, factory-welded to the clamping collar. Baffle height designed to coincide with the flooding danger level

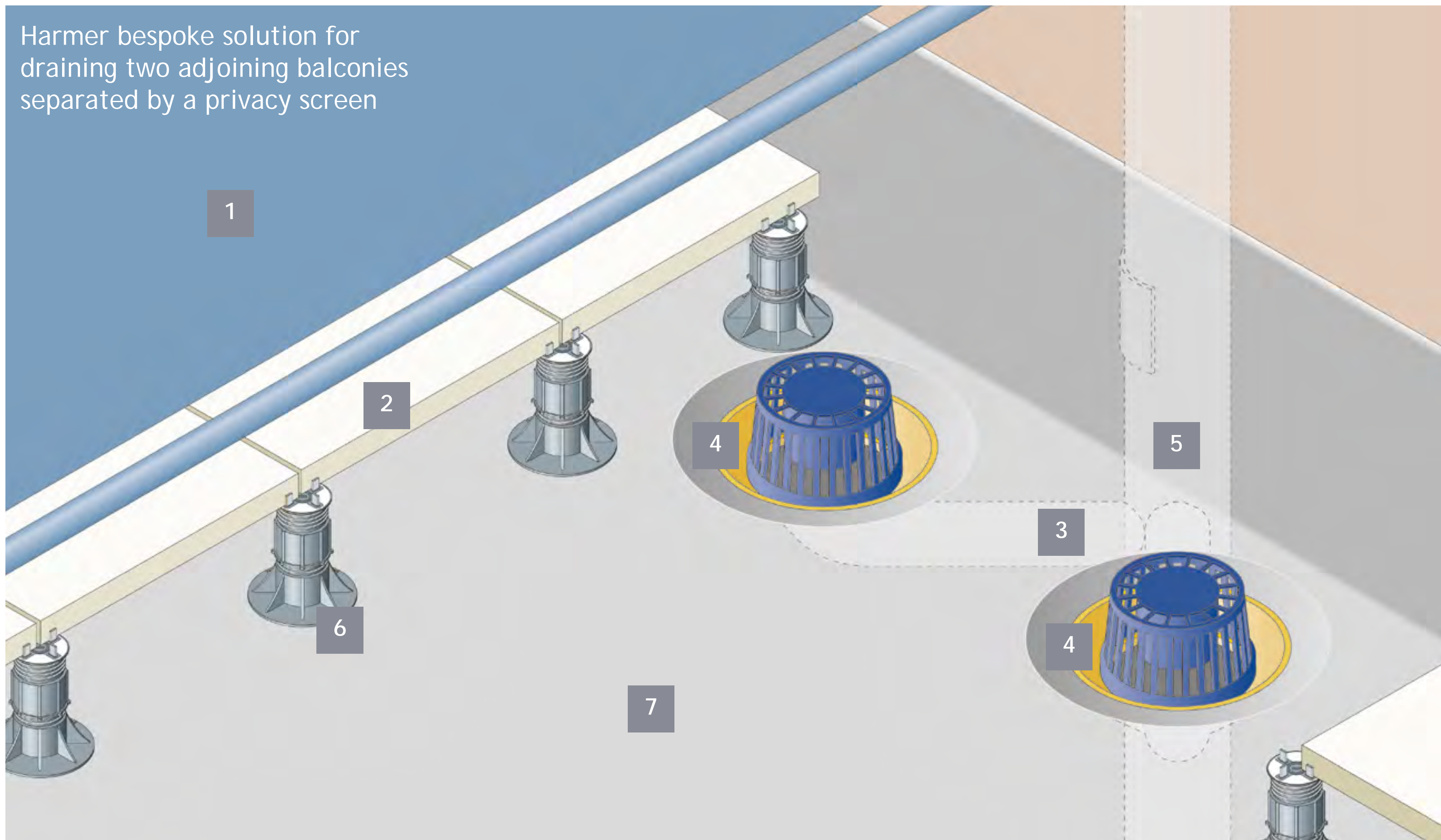




# Bespoke Aluminium Service - Application Details

## Aluminium Roof Outlets - Bespoke Solutions Application Detail 1

Harmer bespoke solution for draining two adjoining balconies separated by a privacy screen



- 1 Privacy screen between balconies
- 2 Raised paving overdecking
- 3 Pipework welded to outlet spigots and central stack
- 4 Harmer horizontal spigot outlets
- 5 Alumasc Flushjoint central drainage stack
- 6 Modulock Pedestal raised deck supports
- 7 Structural deck and waterproofing

### Design challenge

Draining paired balconies to a shared rainwater stack in multi-storey construction.

### Unique and innovative Harmer solution

Two Harmer 90 degree horizontal spigot outlets (Code ref 390) welded into a shared rainwater stack. A fully fabricated assembly with rodding access door and connection spigot designed to connect to a ducted rainwater pipe system.

### Commentary

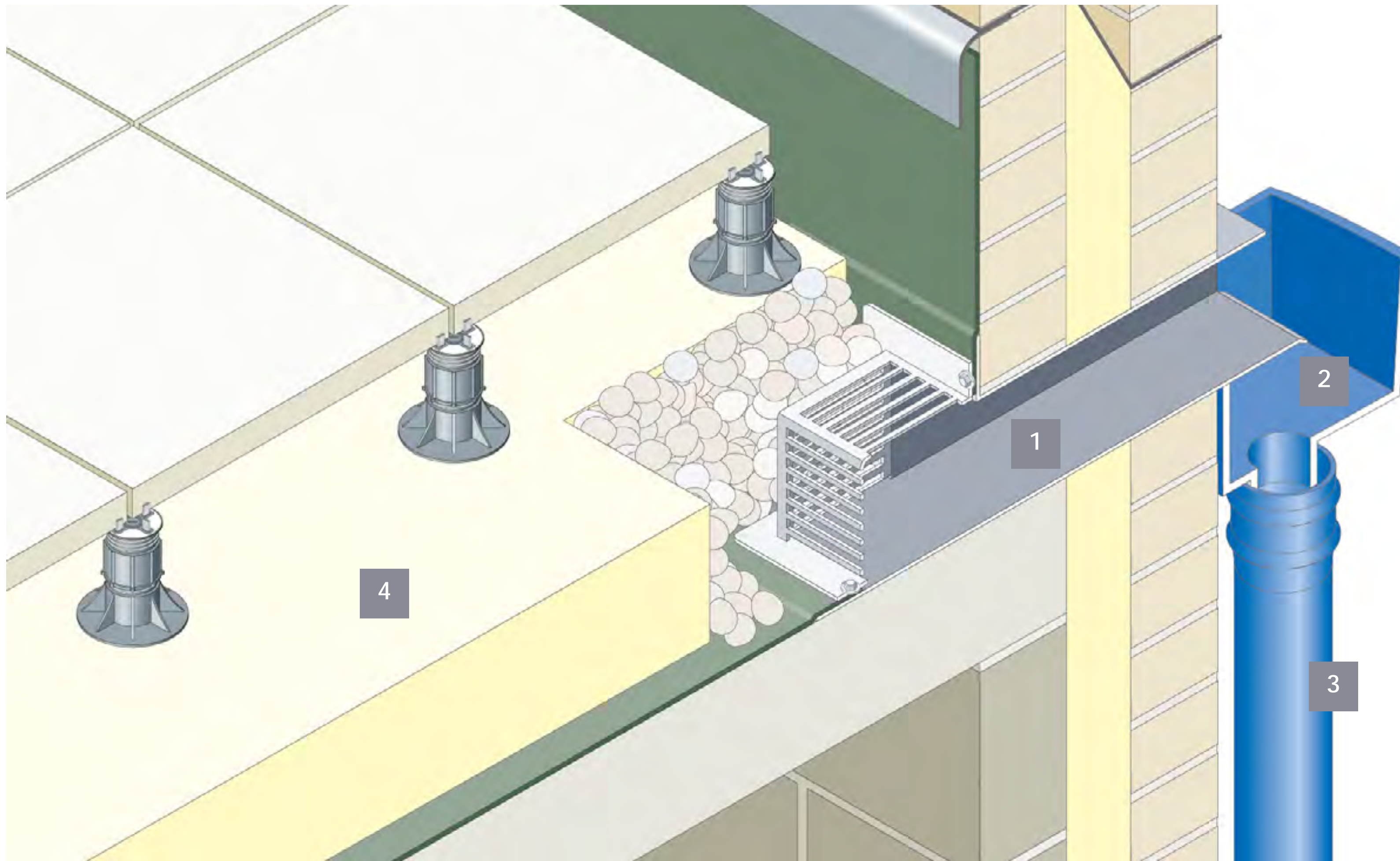
This drainage solution was devised specifically to drain paired balconies in a multistorey construction. A privacy screen separates two adjacent balconies, which share a rainwater downpipe located within a recess. The downpipe is 110mm in diameter to accommodate a high flow demand from the balconies in the multi-storey arrangement, and also drains water from the flat roof of the building. The rainwater outlets use 75mm diameter pipework, not so much for flow demand but because it is preferable to 50mm pipework, which may be susceptible to blockage. The balconies are overdecked and the outlets are fitted with domical grates that fit within the void between the decking and the structural deck.

Each twin outlet assembly has been manufactured as an individual 'out-of-the-box' item, complete with rodding access door and spigot for connection to the principal rainwater stack above and below each balcony.



# Bespoke Aluminium Service - Application Details

## Aluminium Roof Outlets - Bespoke Solutions Application Detail 2



- 1** Harmer bespoke scupper drain surface-mounted to existing parapet wall
- 2** Out-take to rainwater head
- 3** Alumasc Heritage cast aluminium circular downpipe and rectangular rainwater head
- 4** Existing warm roof

### Design challenge

High flow parapet drainage solution where installing a standard Two Way outlet was not feasible due to limited flow rate and interference with steel reinforcement.

### Unique and innovative Harmer solution

A bespoke scupper drain with tailored size of opening to achieve rate of flow with a level invert avoiding clash with steel reinforcement within the structural slab.

### Commentary

Several special scupper drain designs were developed for different parapet drainage conditions on the same project. Each scupper drain was carefully sized to meet a required high flow rate.

All the special scupper drains were designed with a generous flange for waterproofing and non-intrusive, flush-mounted installation. This meant that the concrete slab could remain undisturbed, without scabbling, which could reduce cover on the reinforcement. The scupper drain designs also allowed for fitting of a clamping collar for the waterproof membrane, and a grate.



# The Cast Iron Range

*The high quality Cast Iron Roof Outlet range, featuring medium sump and large sump bodies, two-way outlets, balcony outlets and an extensive range of loadbearing grates.*





# Cast Iron Roof Outlets - Benefits

Harmer Cast Iron Roof outlets provide a practical solution to many building drainage applications. Inherently strong, cast iron is an ideal choice for load-bearing applications.

## Compliances

The Harmer Roof Cast Iron range is cast to BS EN 1561 and is suitable for flat roof drainage applications. Designated load rating up to 12.5 tonnes. Drainage flow performance to BS EN 12056-3

## Flow Performance

Medium and Large Sump outlet bodies are available with varying flow rate capacity to discharge requirements and building design. Two-Way Parapet outlets and Downspouts are available for connection to external rainwater systems.

## Robust and Secure

The crystallised nature of cast iron gives the material very high strength and robustness. Once installed, cast iron components resist impact damage even in exposed areas, such as vehicular trafficked areas. Cast iron is inherently durable and can be used in conjunction with copper and lead clad roofs with reduced risk of bi-metallic corrosion. All Harmer cast iron clamps and grates are surface treated using a sherardizing zinc coating process which provides an extremely hard wearing anti-corrosive finish.

## A Choice of Body and Grates

A wide choice of standard drain body variations with spigot and threaded outlet connections, for vertical and horizontal discharge. Fully secured grating options available for vehicular applications. The new balcony outlets with flat and aperture grate options.

## Low Maintenance

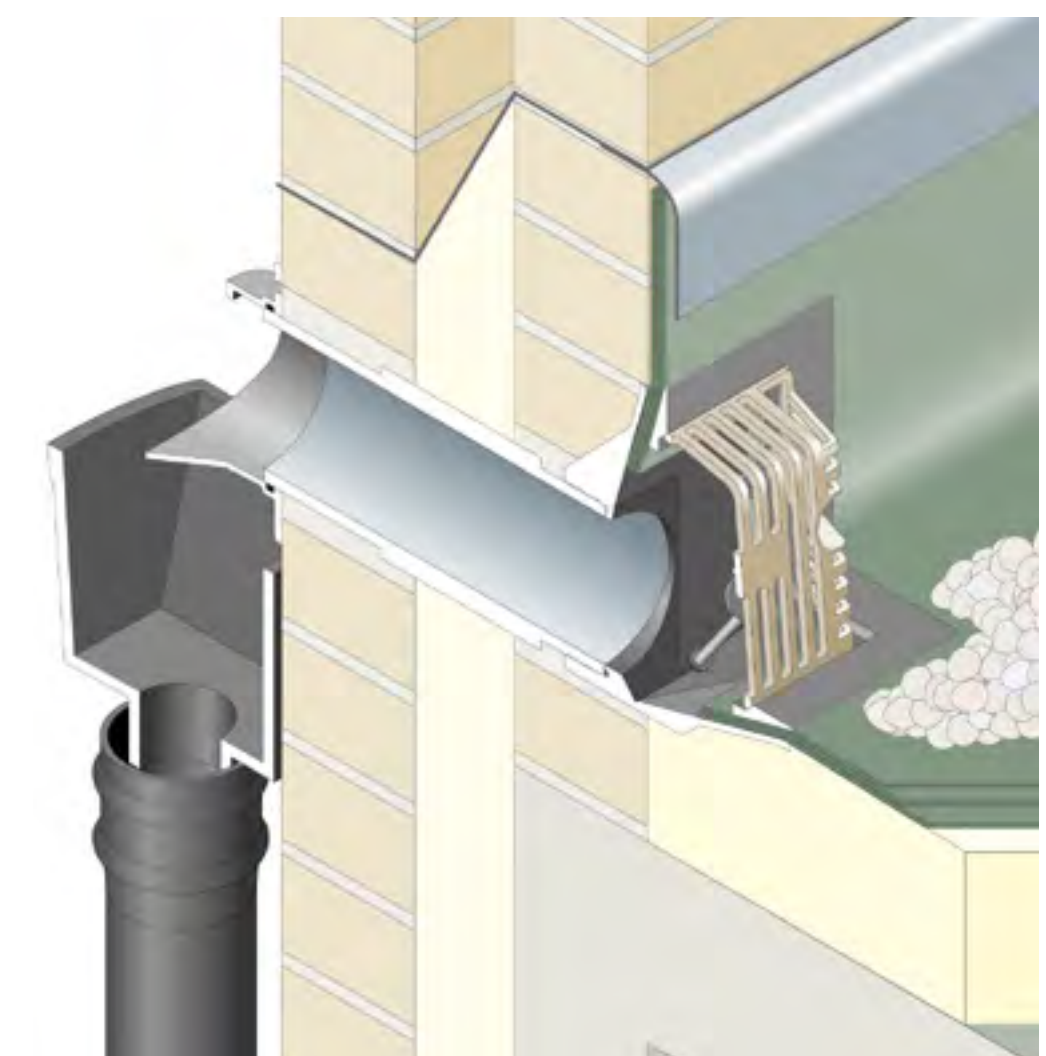
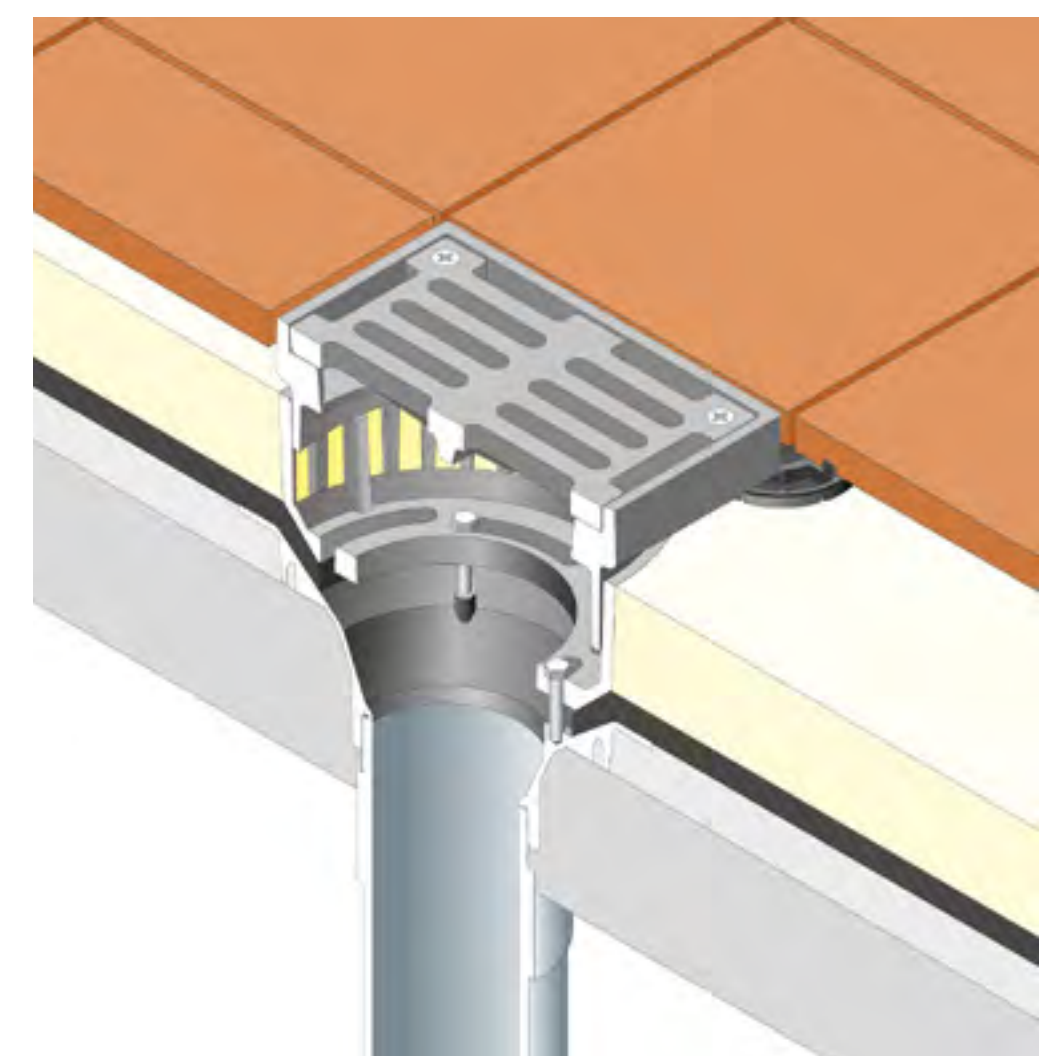
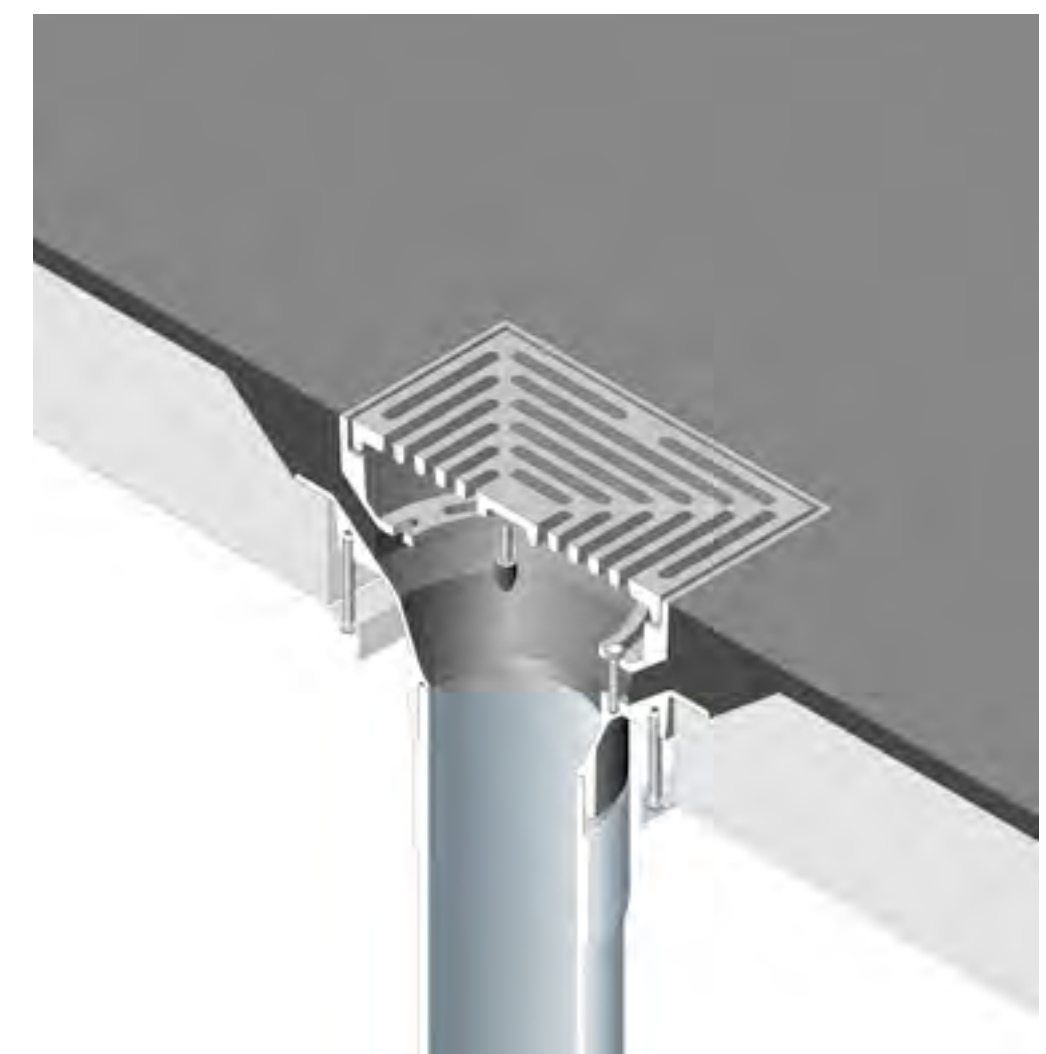
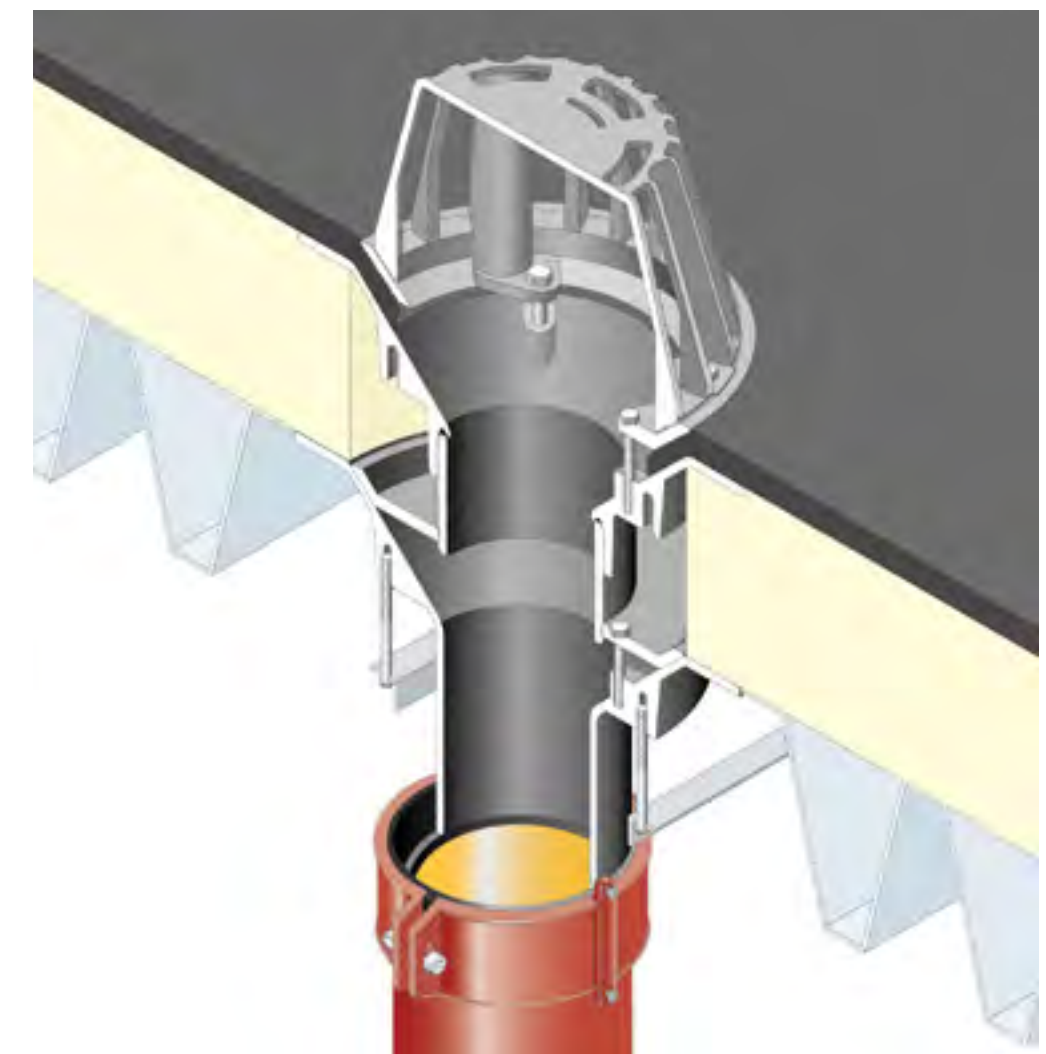
Domical grates made from UV-stable polypropylene to give long life service. Domical grate types are designed to permit a free flow of rainwater while preventing loose chippings or debris from entering the outlet. The side fixing of the clamping ring and domical grate to the outlet body ensures that the throat is completely unobstructed to facilitate rodding.

## Easy and Quick to Install

A wide range of standard accessories such as extension pieces, pipe adaptors and grates are available to ensure successful installation of Harmer rainwater outlets in most types of roof construction.

## Sustainable

Cast iron has a proven track record for its longevity over the lifetime of the building. Cast iron is 100% recyclable, therefore end of life Harmer Cast Iron outlets can be returned to the furnace to make new cast iron products.





# Cast Iron Roof Outlets - Range Summary

The Cast Iron range offers the ideal drainage combination to accommodate in-situ construction, drainage performance as well as ease of installation, practical aesthetics and finishes.

## Medium Sump Outlets

Page 57-58

Range of threaded and spigot, vertical and horizontal compact outlet bodies to connect to 50, 75 and 100mm pipework. Grates include domical grates and load bearing circular and square grates.



## Large Sump Outlets

Page 59-60

Range of deep outlet sump bodies for 100 or 150mm vertical pipe connections. 4" and 6" BSP options available. Connection adaptors to suit cast iron, HDPE, PVCu and Stainless Steel. Grates include domical grates, and heavy duty ductile iron circular and square grates



## Two-Way Outlets

Page 61

Unobtrusive outlets suitable for parapet wall construction. Suitable for vertical or horizontal use to connect to 50, 75 and 100mm pipework. Available in flat or rectangular grates made from cast iron, nickel bronze or aluminium



## Balcony Outlets

Page 62

Available with spigot or threaded connections, and come with a choice of full or aperture grates. The threaded versions can accommodate standard Harmer ADP adaptors. The aperture grate allows for easy removal without any need to touch the associated rwp.



## Accessories and Pipe Connection

Page 64-67

Available for successful installation of the Harmer rainwater outlets in most types of roof construction. The range includes gravel guards, underdeck clamp fixtures, overflow outlets, threaded adaptors, pipe couplings and metal deck support plates





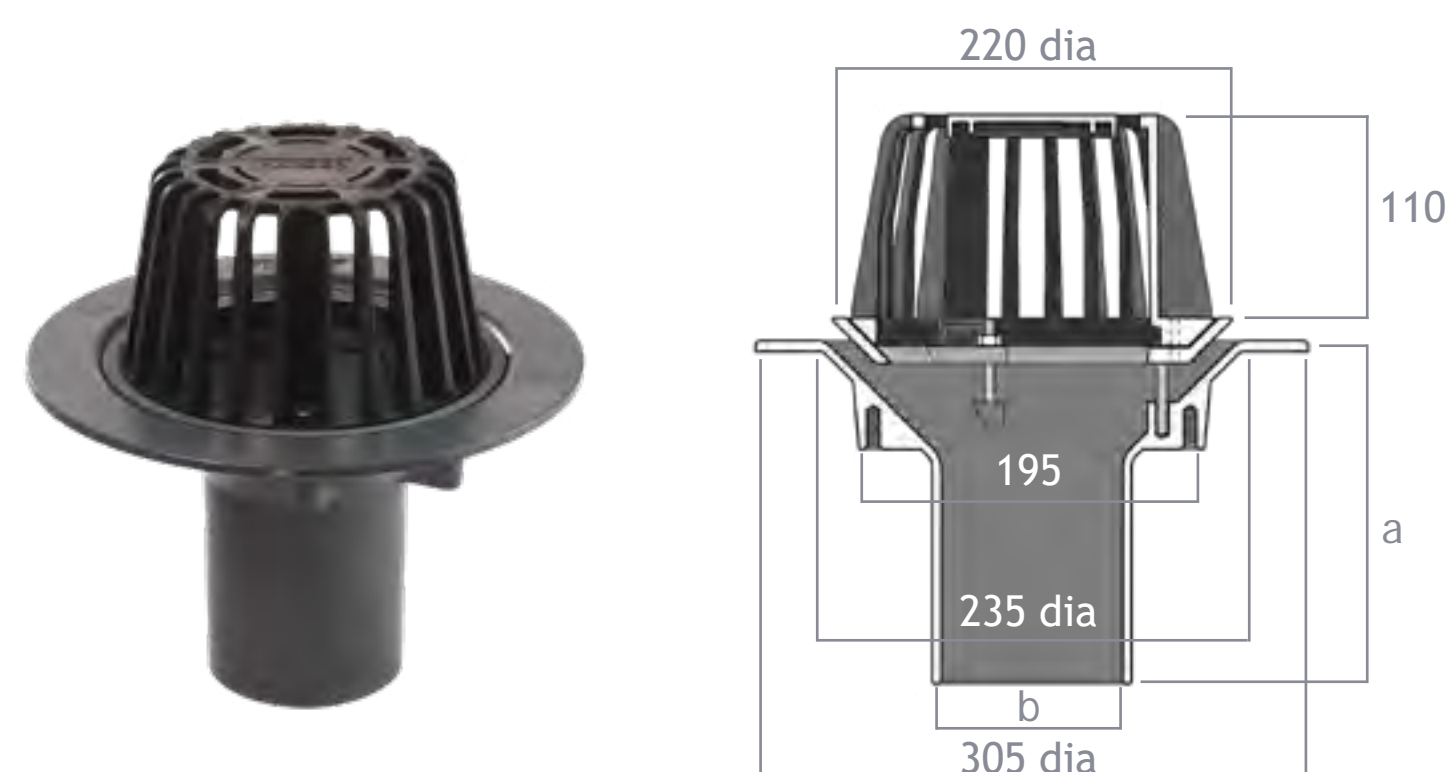
# Cast Iron Roof Outlets - Medium Sump

Harmer Cast Iron Medium Sump roof outlets comprise of a compact integral sump body available in 50, 75 and 100mm outlet sizes for vertical or horizontal pipework connection.

## Vertical Spigot Outlet - Domical Grate

Vertical Spigot outlets are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework and PVC O-ring socketed pipe to BS 4514 and BS EN1329-1. Please see pipework connections on page 65 for appropriate Harmer coupling selection.

*Note: For Flat Grate version add suffix /F to the product code (see page 59) A range of accessories is available for use with special detail requirements (See page 59,65,66)*



Outlet Size (mm)	a (mm)	b (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50*	220	60	1.69	7.2	C200
75*	220	83	4.97	7.8	C300
100	190	110	4.97	6.7	C400

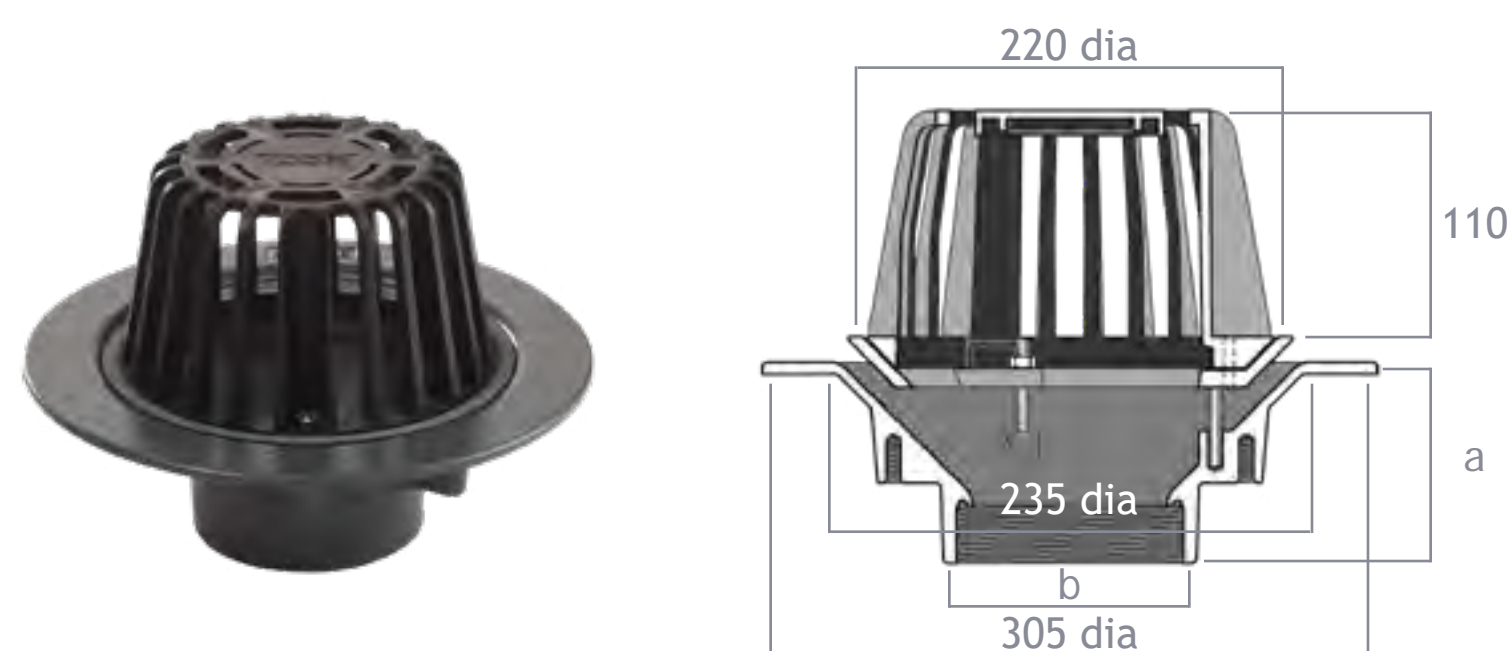
\*50mm and 75mm spigot outlets are supplied with reducer pieces for assembly on site.

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

## Vertical Threaded Outlet - Domical Grate

Vertical Threaded outlets have a female socket with parallel BSP thread suitable for connection to male BSP threaded pipe. Threaded outlets are recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases, a threaded connection will create a completely gas-tight seal within the slab. Harmer threaded outlets can be connected to socketed and socketless cast iron, HDPE and PVC pipework by means of the Harmer Threaded Spigot Adaptor) with appropriate Harmer coupling (page 65).

*Note: For Flat Grate version add suffix /F to the product code (see page 59) A range of accessories is available for use with special detail requirements (See page 59,65,66)*



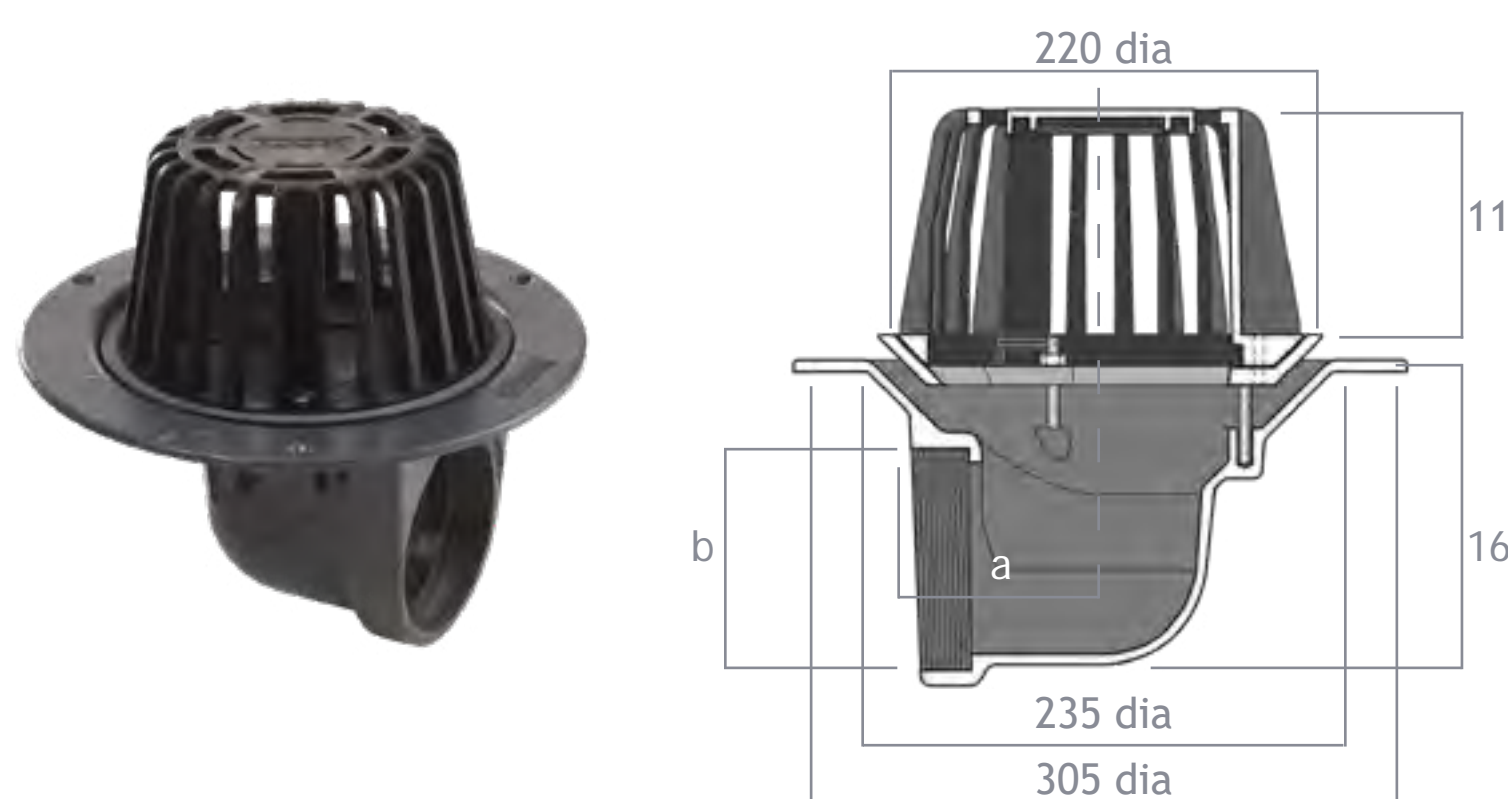
Outlet Size (mm)	a (mm)	b (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50*	112	2"	1.69	7.6	C200T
75*	112	3"	4.97	6.8	C300T
100	100	4"	4.97	5.5	C400T

\*50mm and 75mm spigot outlets are supplied with reducer pieces for assembly on site.

## Horizontal Threaded Outlet - Domical Grate

Horizontal Threaded outlets have a female socket with parallel BSP thread suitable for connection to male BSP threaded pipe. Threaded outlets are recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases, a threaded connection will create a completely gas-tight seal within the slab. Harmer threaded outlets can be connected to socketed and socketless cast iron, HDPE and PVC pipework by means of the Harmer Threaded Spigot Adaptor with appropriate Harmer coupling (page 65).

*Note: For Flat Grate version add suffix /F to the product code (see page 59) A range of accessories is available for use with special detail requirements (See page 59,65,66)*



Outlet Size (mm)	a (mm)	b (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50*	105	2"	1.69	9.0	C290T
75*	105	3"	4.97	8.2	C390T
100	90	4"	4.97	7.0	C490T

\*50mm and 75mm spigot outlets are supplied with reducer pieces for assembly on site.



# Cast Iron Roof Outlets - Medium Sump

The Harmer Cast Iron Medium Sump roof outlet range has options for use with specific types of drainage application and building design. To specify or order, add the correct suffix code to the appropriate body type on page 57. For example, 100mm Vertical Spigot Outlet with Flat Grate: C400/F.

## Flat Grate

For use in areas with pedestrian traffic or light vehicle traffic (excluding forklift) in commercially used premises. These grates are also designed for use with Harmer Modulock Raised Deck Supports where concealed rainwater outlets are used.



Circular Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Sherardized Ductile Iron	6.30*	1.5	1.3	/F

*\*For 50 and 75mm outlets maximum pipe capacity to BS EN 12056 applies*

## Extension Piece with Adjustable Height Grates

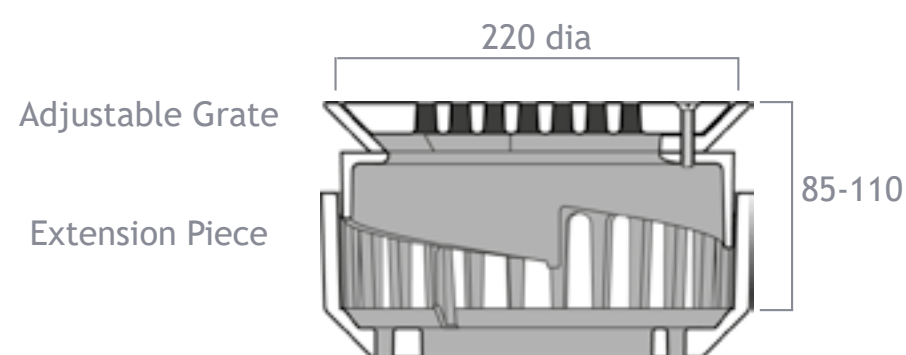
For use in inverted roofs and no fines screed areas with pedestrian or vehicle traffic (refer to load class). Waterproofing is achieved at the outlet body flange with the extension piece allowing permeable drainage into the outlet. Height adjustable grating assembly allows use with varying thickness's of insulation and roof finish. See page 69 for application details.



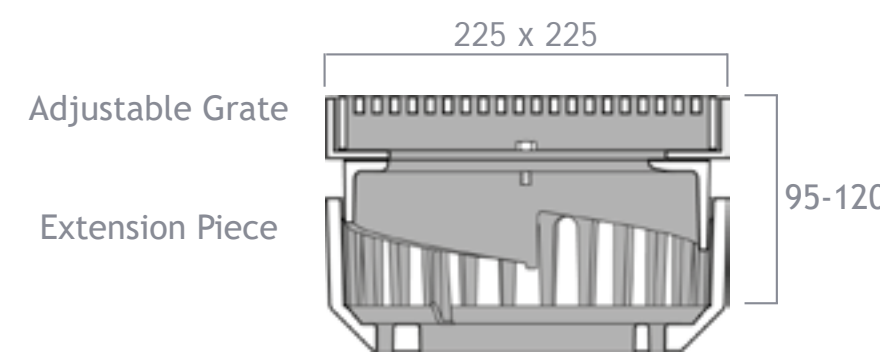
Square Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Sherardized Ductile Iron	6.30*	12.5	9.7	/ESD

*\*For 50 and 75mm outlets maximum pipe capacity to BS EN 12056 applies*

Circular Flat Grate



Square Flat Grate - Stainless Steel



Circular Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Sherardized Ductile Iron	6.30*	1.5	5.5	/ECD

*\*For 50 and 75mm outlets maximum pipe capacity to BS EN 12056 applies*

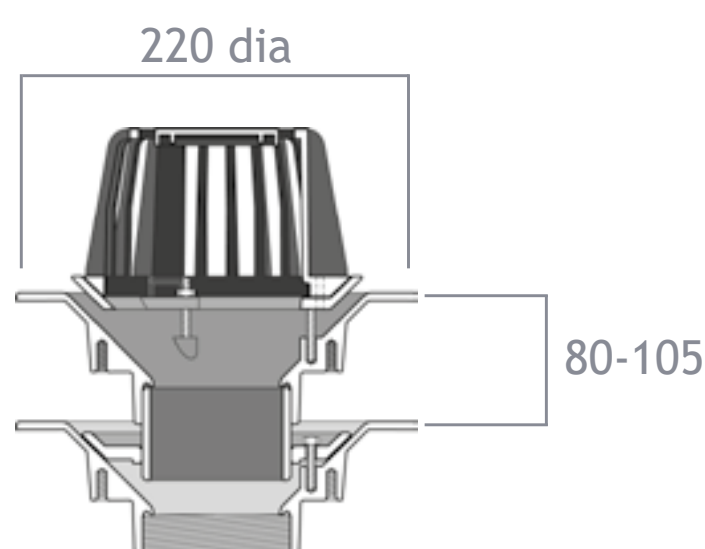
Square Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Stainless Steel	6.30*	12.5	7.8	/ESS

*\*For 50 and 75mm outlets maximum pipe capacity to BS EN 12056 applies*

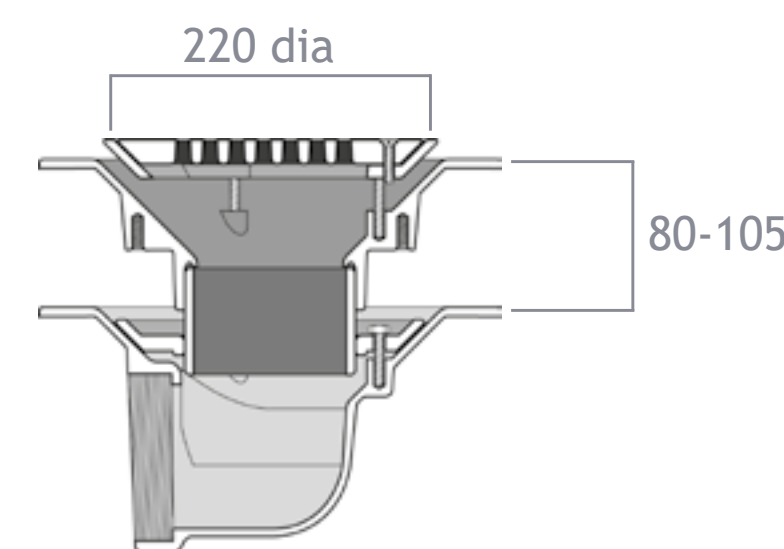
## Double Flange Variable Height Bodies

For use in loadbearing warm roof applications. Double flange construction allows fine adjustment for use with insulation thicknesses between 80-100mm. See page 69 for application details. For other insulation thicknesses, please contact Harmer Technical Helpline.

Domical Grate



Circular Flat Grate



Shown with vertical outlet C400T

Circular Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Polypropylene	4.97*	n/a	6.4	/D

*\*For 50 and 75mm outlets maximum pipe capacity to BS EN 12056 applies*

Shown with horizontal outlet C490T

Circular Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Sherardized Ductile Iron	6.30*	1.5	7.7	/DF

*\*For 50 and 75mm outlets maximum pipe capacity to BS EN 12056 applies*



# Cast Iron Roof Outlets - Large Sump

Harmer Cast Iron Large Sump rainwater outlets comprise of a deep sump integral body ideal for heavy duty locations such as car park decks requiring the inherent strength of cast iron. Threaded pipe sizes include 100mm and 150mm diameters for vertical pipework connections.

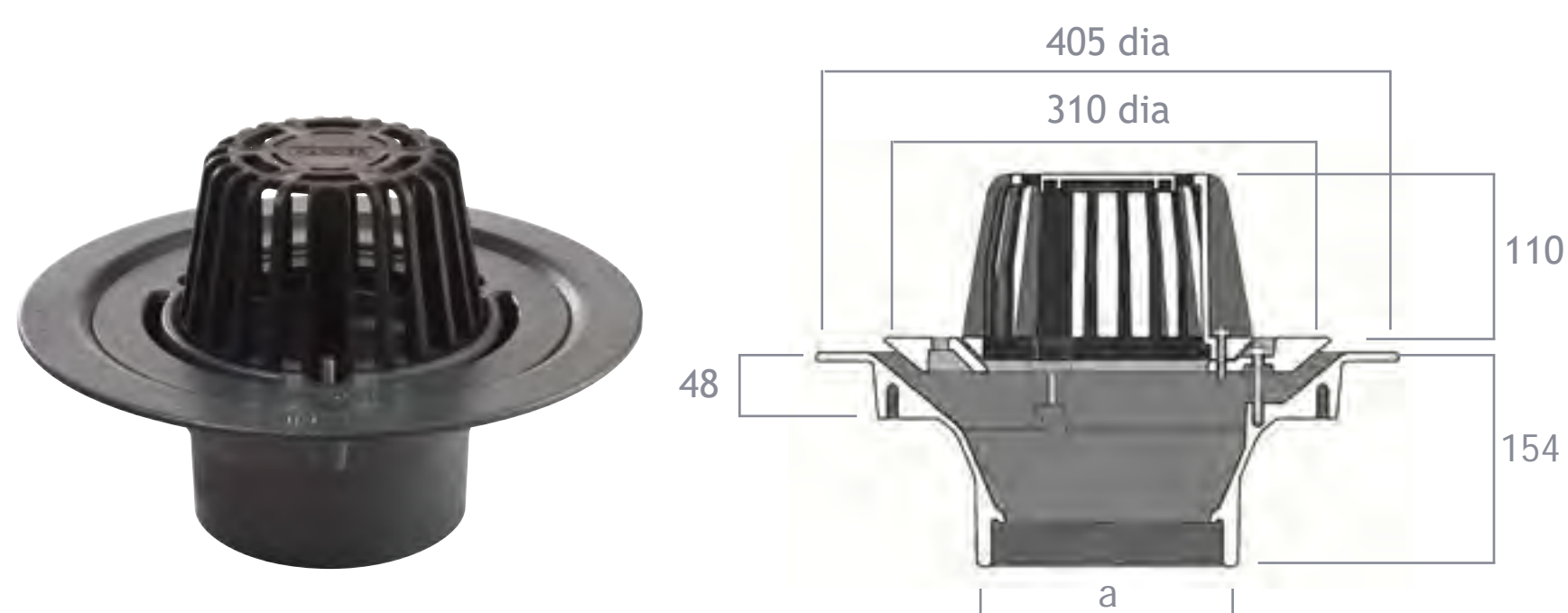
## Vertical Threaded Outlet - Domical Grate

Vertical Threaded outlets have a female socket with parallel BSP thread suitable for connection to male BSP threaded pipe. Threaded outlets are particularly recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases, a threaded connection will create a completely gas-tight seal within the slab. Harmer threaded outlets can be connected to socketed and socketless cast iron, HDPE and PVC pipework by means of the Harmer Threaded Spigot Adaptor with appropriate Harmer coupling (page 65).

*Note: A range of accessories is available for use with special detail requirements (See page 61,65,66)*

### Grate Options

Two Flat Grate options are available, Circular and Square, to suit various applications. To specify or order, simply add the suffixes shown in the tables below to the product codes shown in the table above. For example, 150mm Vertical Threaded Outlet with Square Flat Grate: C600LT/S.



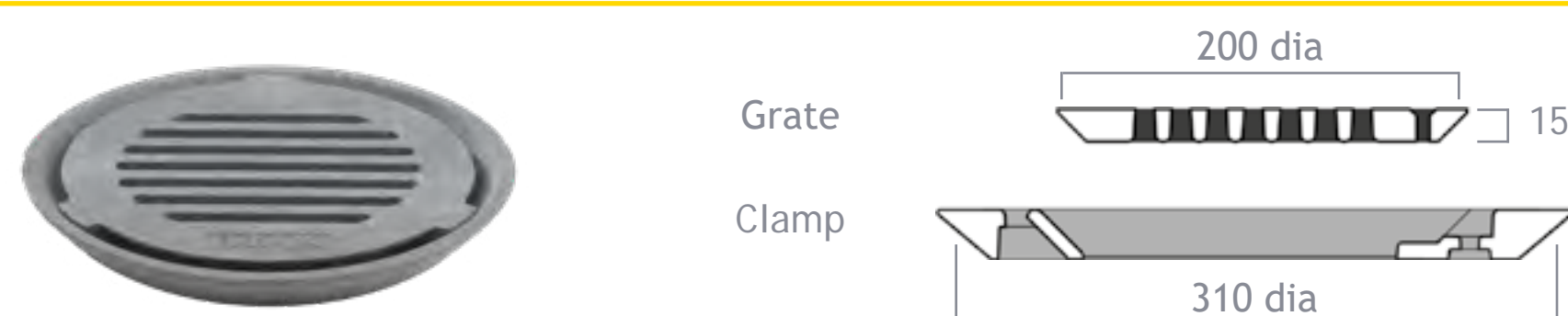
Outlet Size (mm)	a (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
100	4"	8.56	14.3	C400LT
150	6"	10.35	12.6	C600LT

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity



### Circular Flat Grate

For use in areas with pedestrian traffic or light vehicle traffic (excluding forklift) in commercially used premises. These grates are also designed for use with Harmer Modulock Raised Deck Paving Supports where concealed rainwater outlets are used.



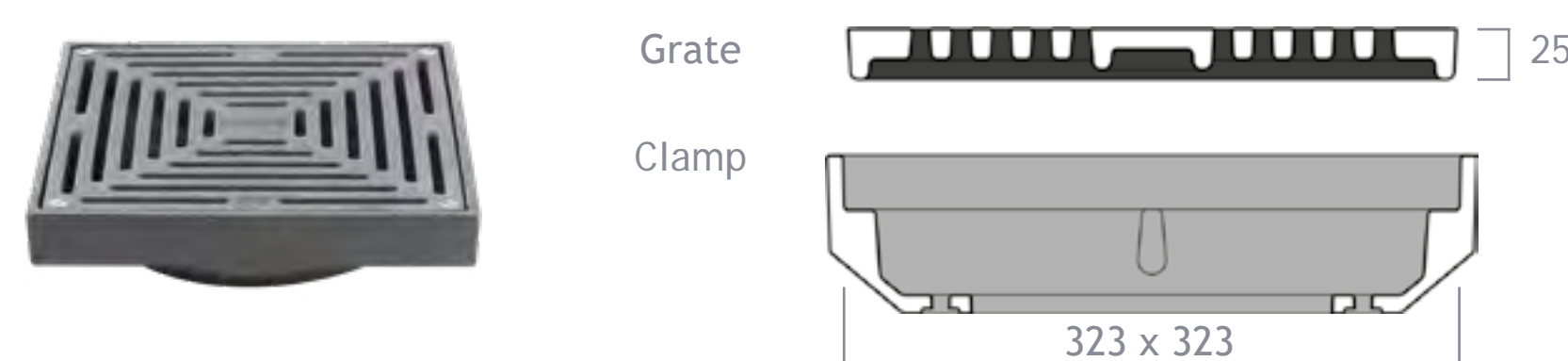
Circular Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Sherardized Ductile Iron	11.52*	1.5	1.3	/F

\*For 100mm outlet size, maximum pipe capacity to BS EN 12056 applies



### Square Flat Grate

Square Flat Grate 325 x 325mm Square Flat Grate is made of ductile iron and has a load rating of 12.5 tonnes. For use in areas with vehicular access, such as car parks, factories and workshops. The clamping collar extends above the outlet body to accommodate adequate thickness of concrete or asphalt finish around the grate surround. The clamping collar can also be rotated to suit paving alignment.



Square Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Sherardized Ductile Iron	14.56*	12.5	10.5	/S

\*For 100mm outlet size, maximum pipe capacity to BS EN 12056 applies



# Cast Iron Roof Outlets - Large Sump



## Extension Piece with Adjustable Height Grates

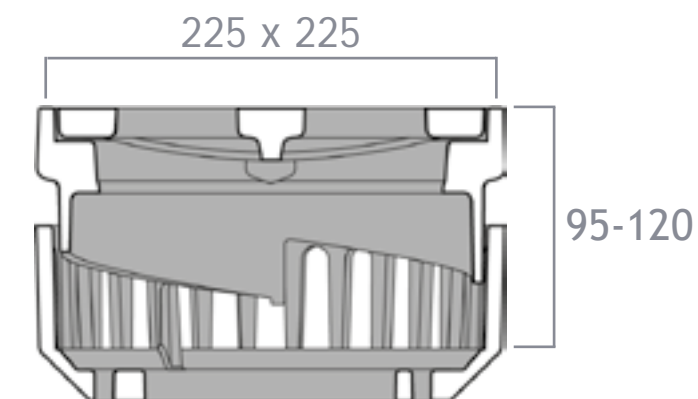
For use in inverted roofs and no fines screed areas with pedestrian or vehicle traffic (refer to load class). Waterproofing is achieved at the outlet body flange with the extension piece allowing permeable drainage into the outlet. Height adjustable grating assembly allows use with varying thicknesses of insulation and roof finish. See page 69 for application details.

Square Flat Grate - Ductile Iron



Adjustable Grate

Extension Piece



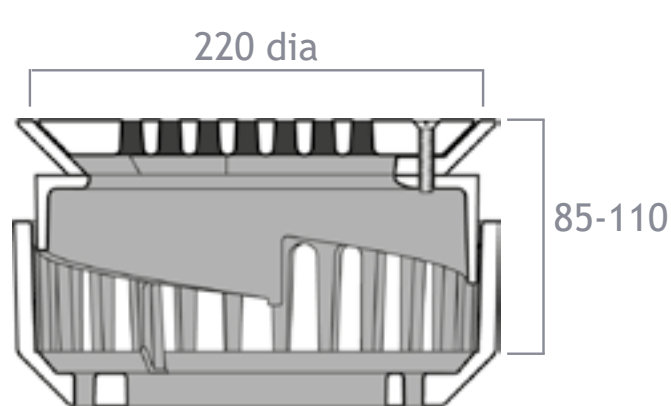
Square Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Sherardized Ductile Iron	6.3	12.5	9.7	/ESD

Circular Flat Grate



Adjustable Grate

Extension Piece



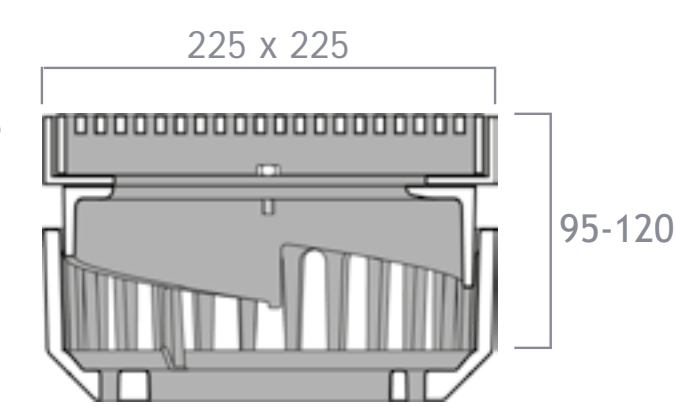
Circular Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Sherardized Ductile Iron	6.3	1.5	6.6	/ECD

Square Flat Grate - Stainless Steel



Adjustable Grate

Extension Piece



Square Grate Material (5mm aperture)	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Stainless Steel	6.3	12.5	8.9	/ESS



## Double Flange Variable Height Bodies

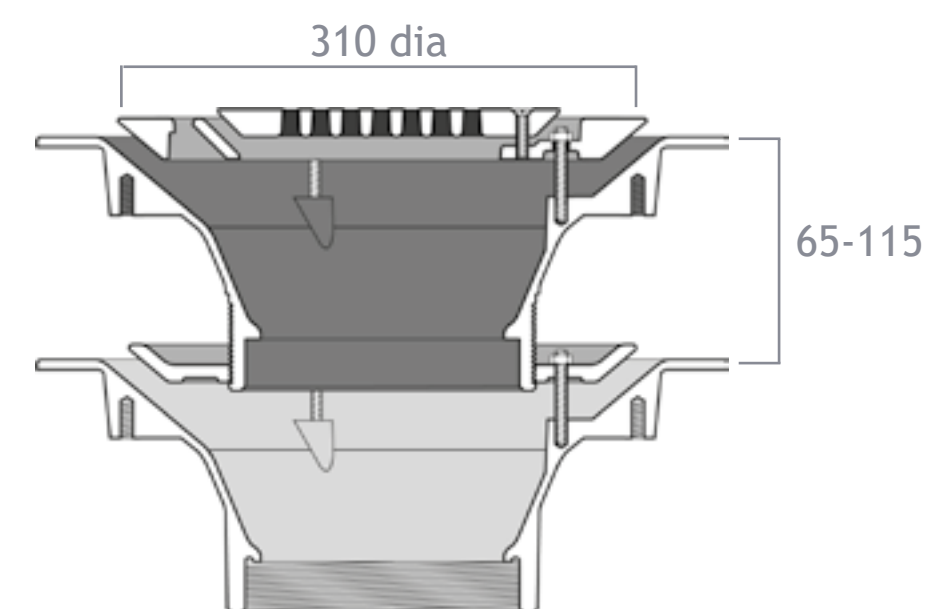
For use in loadbearing warm roof applications. Double flange construction allows fine adjustment for use with insulation thicknesses between 65-115mm. For other insulation thicknesses, please contact Harmer Technical Helpline.

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity

Circular Flat Grate



Shown with vertical outlet C600LT

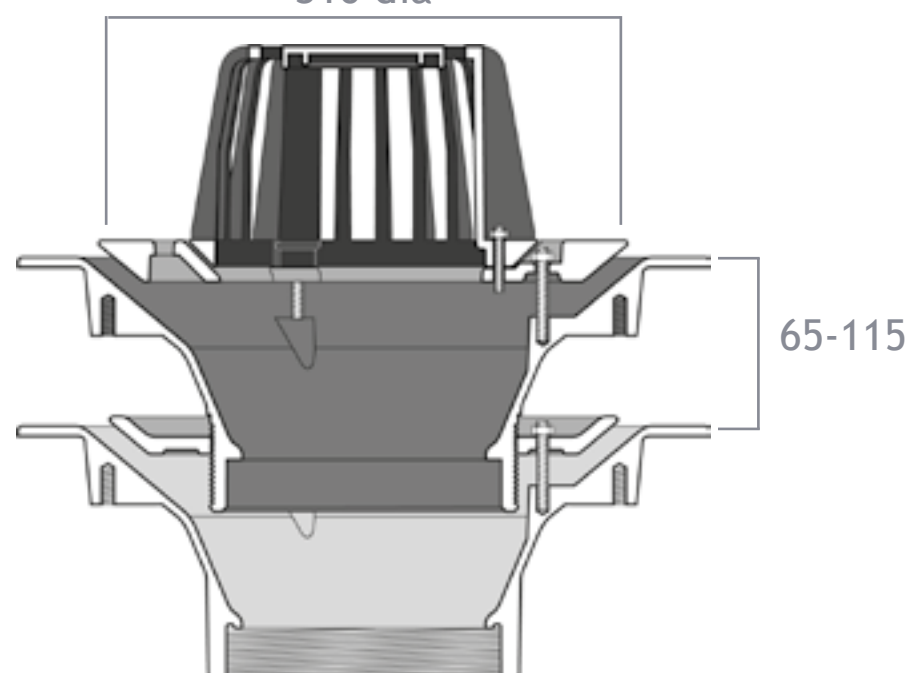


Flat Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Sherardized Ductile Iron	11.52*	1.5	12.2	/DF

Domical Grate



310 dia



Shown with vertical outlet C600LT

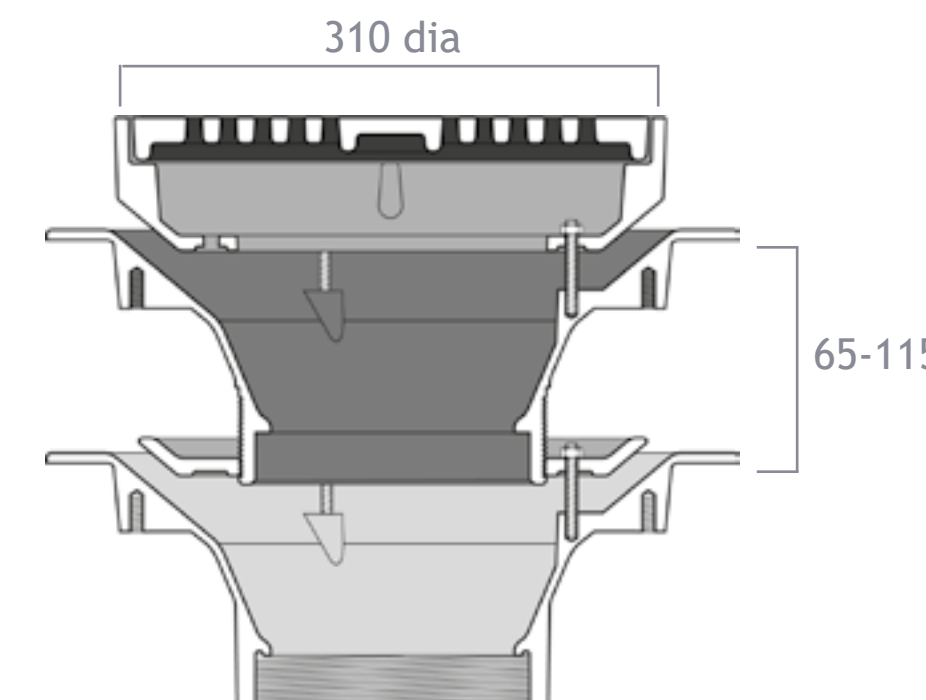
Domical Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Polypropylene	10.35*	n/a	10.9	/D

\*For 100mm outlet size, maximum pipe capacity to BS EN 12056 applies

Square Flat Grate



Shown with vertical outlet C600LT



Flat Grate Material	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
Sherardized Ductile Iron	14.56*	12.5	21.0	/DS

\*For 100mm outlet size, maximum pipe capacity to BS EN 12056 applies



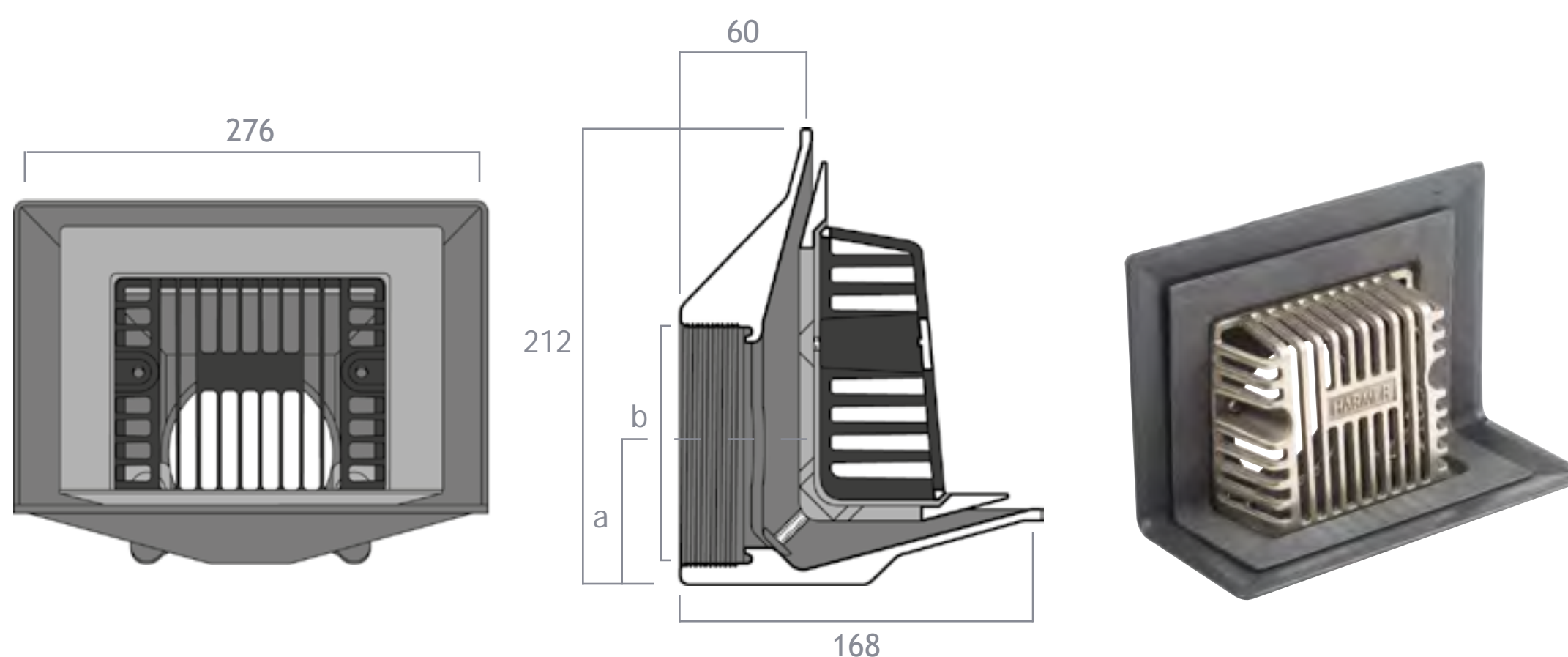
# Cast Iron Roof Outlets - Two Way

The Harmer Cast Iron Two-Way outlet is designed for applications where an angle is formed by the intersection of vertical and horizontal surfaces (for example, where a balcony or roof meets a parapet wall). They can be installed to provide either vertical or horizontal run-off.



## Two-Way Outlet - Rectangular Grate

Two-Way Outlet with Rectangular Grate is suitable for use in the majority of parapet wall applications in either horizontal or vertical run-off. Two-Way outlets are available in 50, 75 and 100mm diameter outlet sizes. The outlet has a female socket with parallel BSP thread suitable for connection to male BSP threaded pipe and is usually used in conjunction with Harmer Threaded Spigot Adaptors and Downspouts (page 64). Rectangular Grates are available in Cast Iron (painted black), Nickel Bronze or Mill Finish Aluminium. Aluminium grates can be polyester powder coated to order - please contact Harmer Technical Helpline.



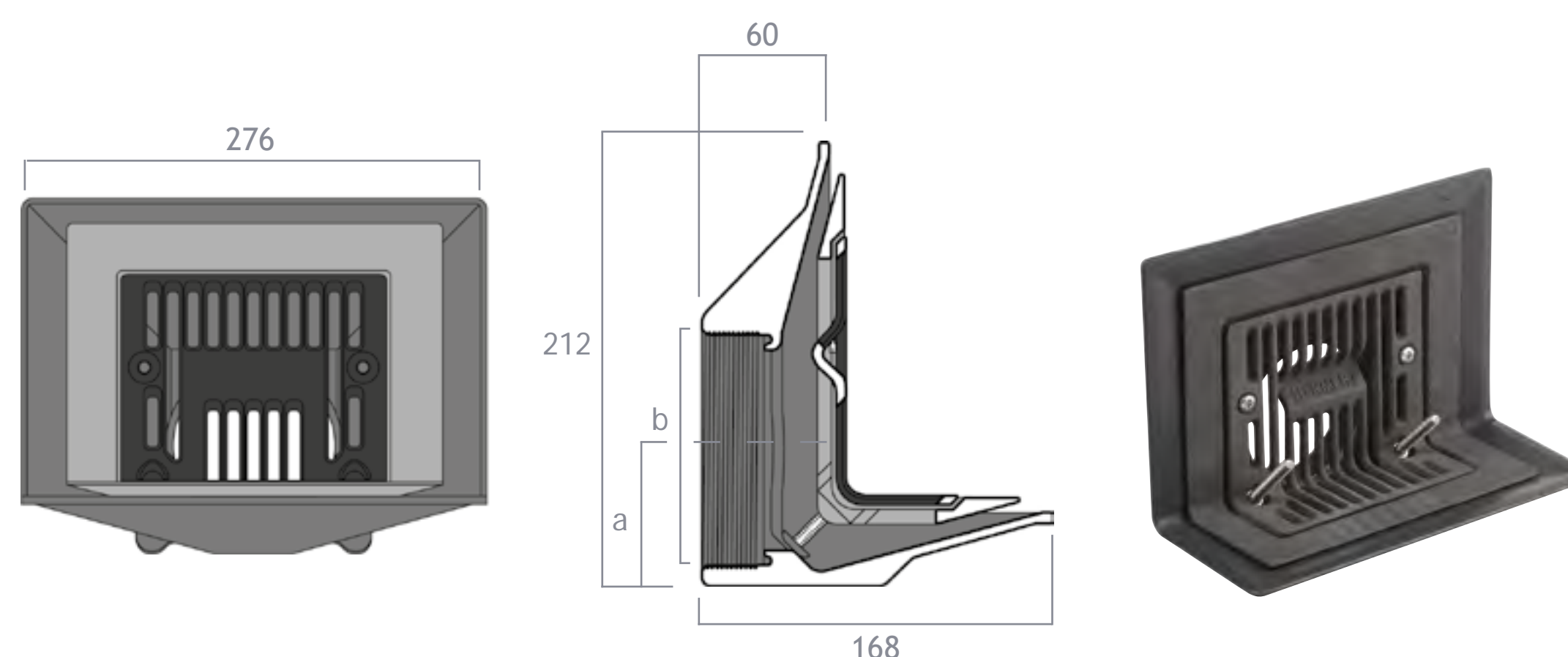
Outlet Size (mm)	Grate Material	a (mm)	b (BSP)	Flow Rate <sup>1</sup> (l/s)		Load Rating (tonne)	Weight (kg)	Product Code
				Vertical	Horizontal			
50	Cast Iron	38	2"	1.4	0.7	0.3	5.9	CTW2/RC
50	Nickel Bronze	38	2"	1.4	0.7	0.3	6.1	CTW2/RN
50	Aluminium	38	2"	1.4	0.7	0.3	5.2	CTW2/RA
75	Cast Iron	52	3"	2.6	0.8	0.3	5.8	CTW3/RC
75	Nickel Bronze	52	3"	2.6	0.8	0.3	6.0	CTW3/RN
75	Aluminium	52	3"	2.6	0.8	0.3	5.1	CTW3/RA
100	Cast Iron	65	4"	2.6	0.8	0.3	5.7	CTW4/RC
100	Nickel Bronze	65	4"	2.6	0.8	0.3	5.8	CTW4/RN
100	Aluminium	65	4"	2.6	0.8	0.3	4.9	CTW4/RA

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity



## Two-Way Outlet - Flat Grate

Two-Way Outlet with Flat Grate is suitable for use in the majority of parapet wall applications in either horizontal or vertical run-off. Two-Way outlets are available in 50, 75 and 100mm diameter outlet sizes. The outlet has a female socket with parallel BSP thread suitable for connection to male BSP threaded pipe and is usually used in conjunction with Harmer Threaded Spigot Adaptors and Downspouts (page 64). Flat Grates are available in Cast Iron (painted black)



Outlet Size (mm)	Grate Material	a (mm)	b (BSP)	Flow Rate <sup>1</sup> (l/s)		Load Rating (tonne)	Weight (kg)	Product Code
				Vertical	Horizontal			
50	Cast Iron	38	2"	1.4	0.7	0.3	5.8	CTW2/FC
75	Cast Iron	52	3"	2.6	0.8	0.3	5.7	CTW3/FC
100	Cast Iron	65	4"	2.6	0.8	0.3	5.5	CTW4/FC



# Cast Iron Roof Outlets - Balcony

The Harmer Cast Iron Balcony outlet is designed for use with concrete structures whereby a flat grate is required for either a pedestrian accessed area or as internal perimeter drainage for vehicular traffic areas that necessitates the inherent strength of cast iron. This comprises of a medium sump and a clamping grate.



## Balcony Outlet - Spigot Connection

The vertical spigot options are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE and PVC O-ring socketed pipe to BS 4514 and BS EN1329-1.

### Balcony Outlet Grates

Can be used in areas with pedestrian or light traffic (excluding forklift) in commercially used premises. This has been designed to act as a drainage grate and clamp as a single one part component that is secured to the outlet body using stainless steel bolts and washers as provided. Two options are available as either a full or aperture grate. The aperture grate allows for 100mm nominal bore pipework from a higher level to finish within the outlet body. The grate can then be removed for inspection and/or maintenance without the need to move the higher level pipework.

Outlet with Full Grate

Outlet with Aperture Grate



Outlet Size (mm)	Grate Type	a (mm)	b (mm)	c (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50	Full	231.0	69.5	60.0	1.7	8.26	C2BO
50	Aperture	231.0	69.5	60.0	1.7	8.12	C2BO/4
75	Full	231.0	58.0	82.0	5.0	7.38	C3BO
75	Aperture	231.0	58.02	82.0	5.0	7.17	C3BO/4
100	Full	200.0	44.35	110.0	5.8	6.54	C4BO
100	Aperture	200.0	44.35	110.0	5.8	6.40	C4BO/4

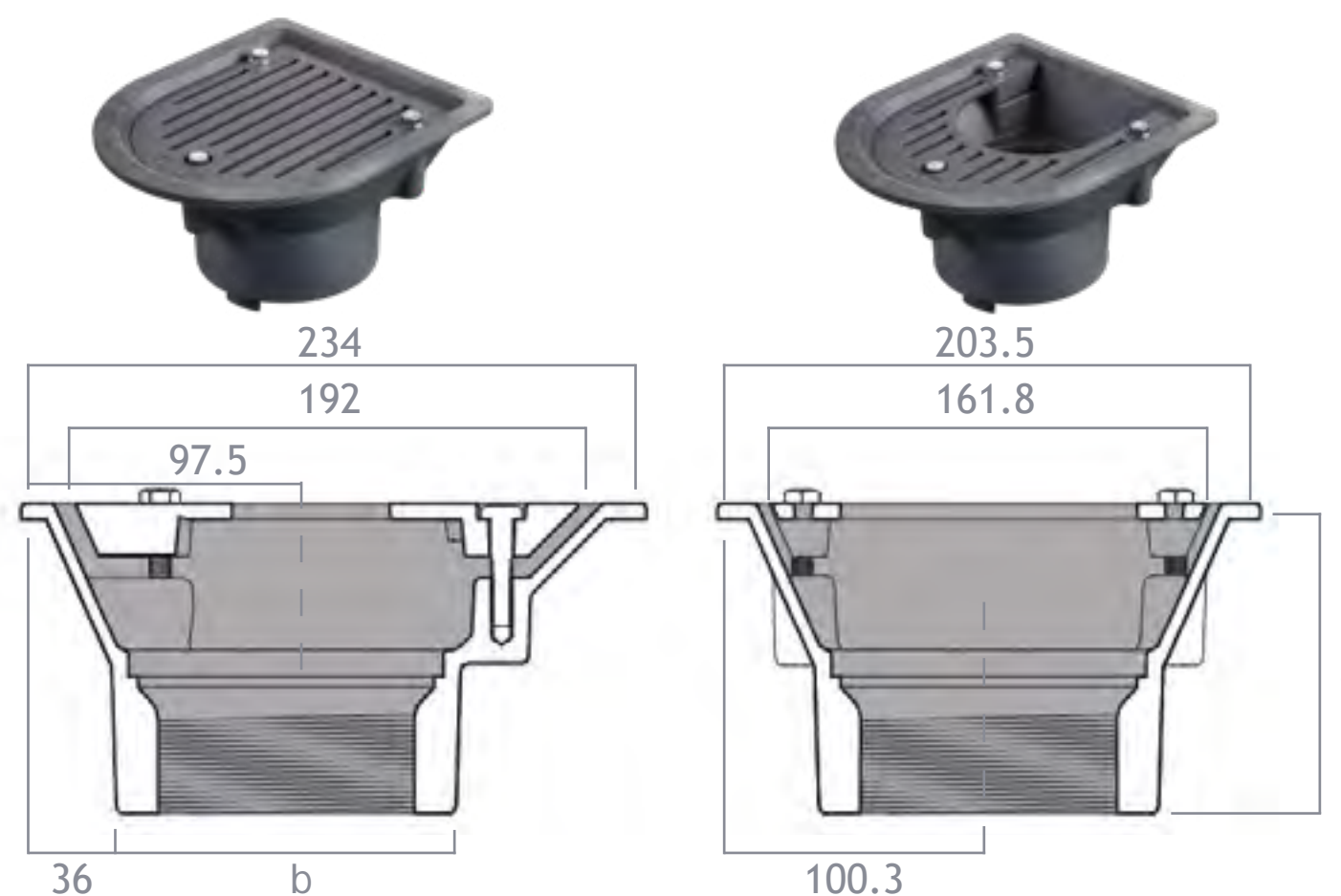


## Balcony Outlet - Threaded BSP Connection

The vertical threaded options have a female socket with parallel BSP thread suitable for connection to male BSP threaded pipe. Threaded outlets are recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases, a threaded connection will create a completely gas-tight seal within the slab. Harmer threaded outlets can be connected to socketed and socketless cast iron, HDPE and PVC pipework by means of the Harmer Threaded Spigot Adaptor with the appropriate Harmer coupling (page 66).

Outlet with Full Grate

Outlet with Aperture Grate



Outlet Size (mm)	Grate Type	a (mm)	b (BSP)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50	Full	127.3	2"	1.7	6.63	C2BO/T
50	Aperture	127.3	2"	1.7	6.31	C2BO/T/4
75	Full	127.3	3"	5.0	5.81	C3BO/T
75	Aperture	127.3	3"	5.0	5.49	C3BO/T/4
100	Full	127.3	4"	5.8	4.63	C4BO/T
100	Aperture	127.3	4"	5.8	4.31	C4BO/T/4

Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific depth of water and rainfall intensity



# Cast Iron Roof Outlets - Parapet Downspouts

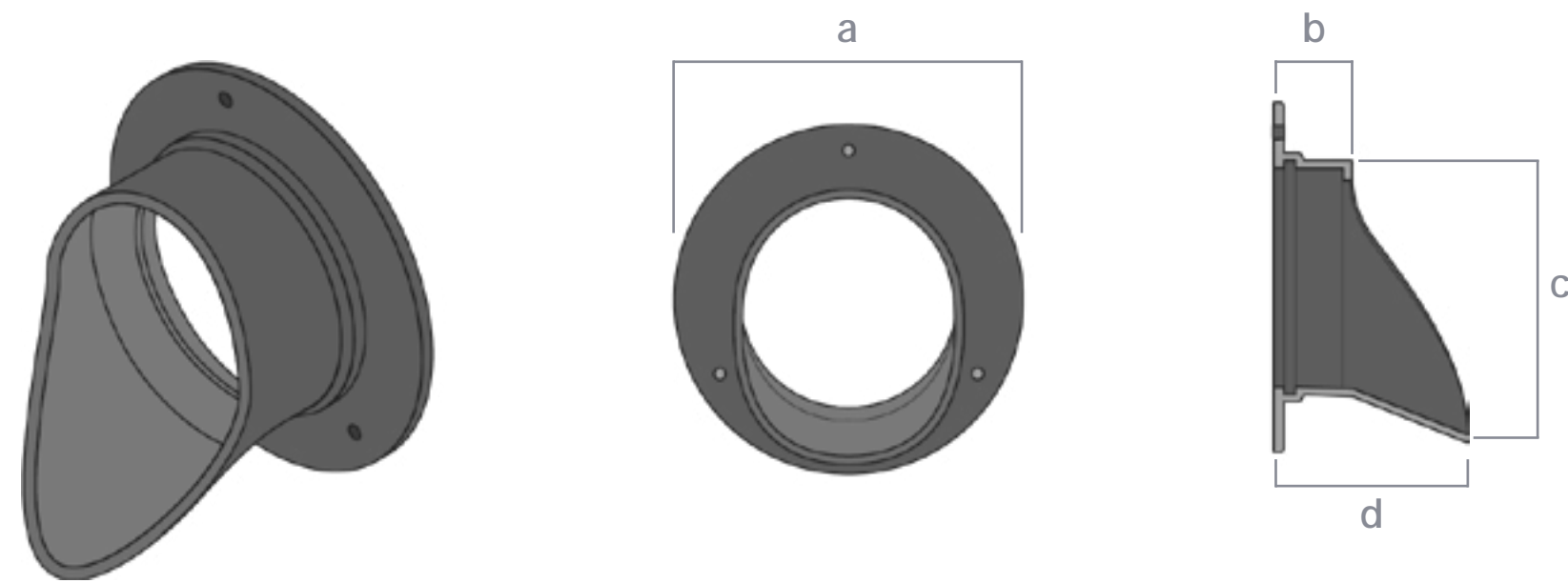
Harmer Roof Parapet Downspouts provide an attractive means of directing water away from the face of the building to prevent the backtrack of rainwater from causing unsightly staining and damage. Harmer Roof Parapet Downspouts can be used in combination with Alumasc rainwater pipes and hoppers, and can be colour co-ordinated.

## Application

Downspouts are ideally suited for use with Harmer Detail Two-Way Outlets fitted with Harmer Threaded Adaptors. They can also provide a discreet means of discharge when used with parapet overflows. Material - Cast Iron

## Finish

Cast iron downspouts are supplied as standard in primed finish for painting on site, or in a choice of colour finishes as available in the Alumasc range of cast iron rainwater goods.

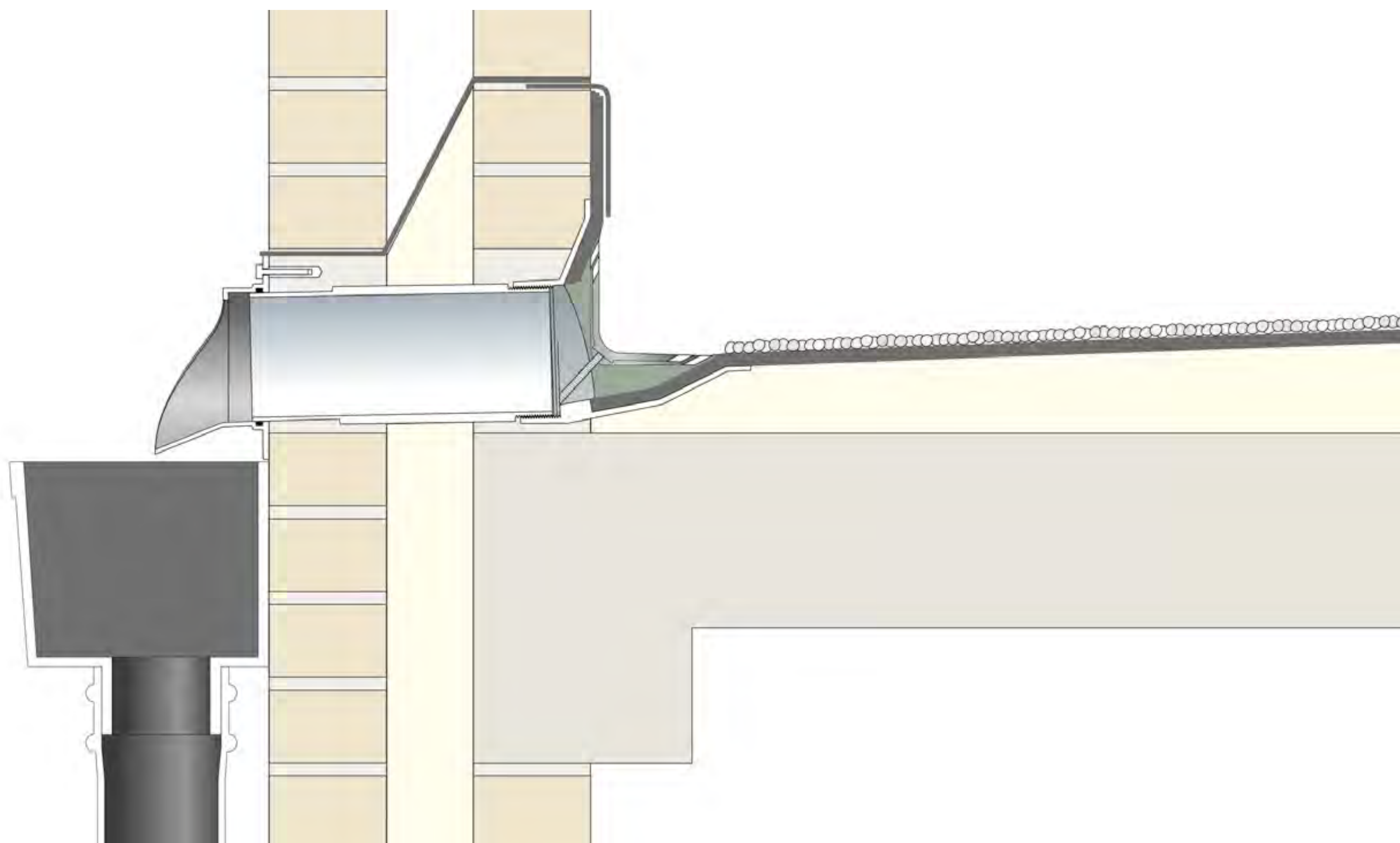


Outlet Size (mm)	Material	a (mm)	b (mm)	c (mm)	d (mm)	Weight (kg)	Product Code
100	Cast Iron	180	40	146	100	1.4	CDS/4*

\*Also available in other colours to Alumasc standard colour range or RAL.

## Connection

For ease of installation and perfect alignment, Harmer Downspouts push-fit connect to standard 110mm diameter plain ended pipe using an "O" ring seal and mechanical fixing into masonry.

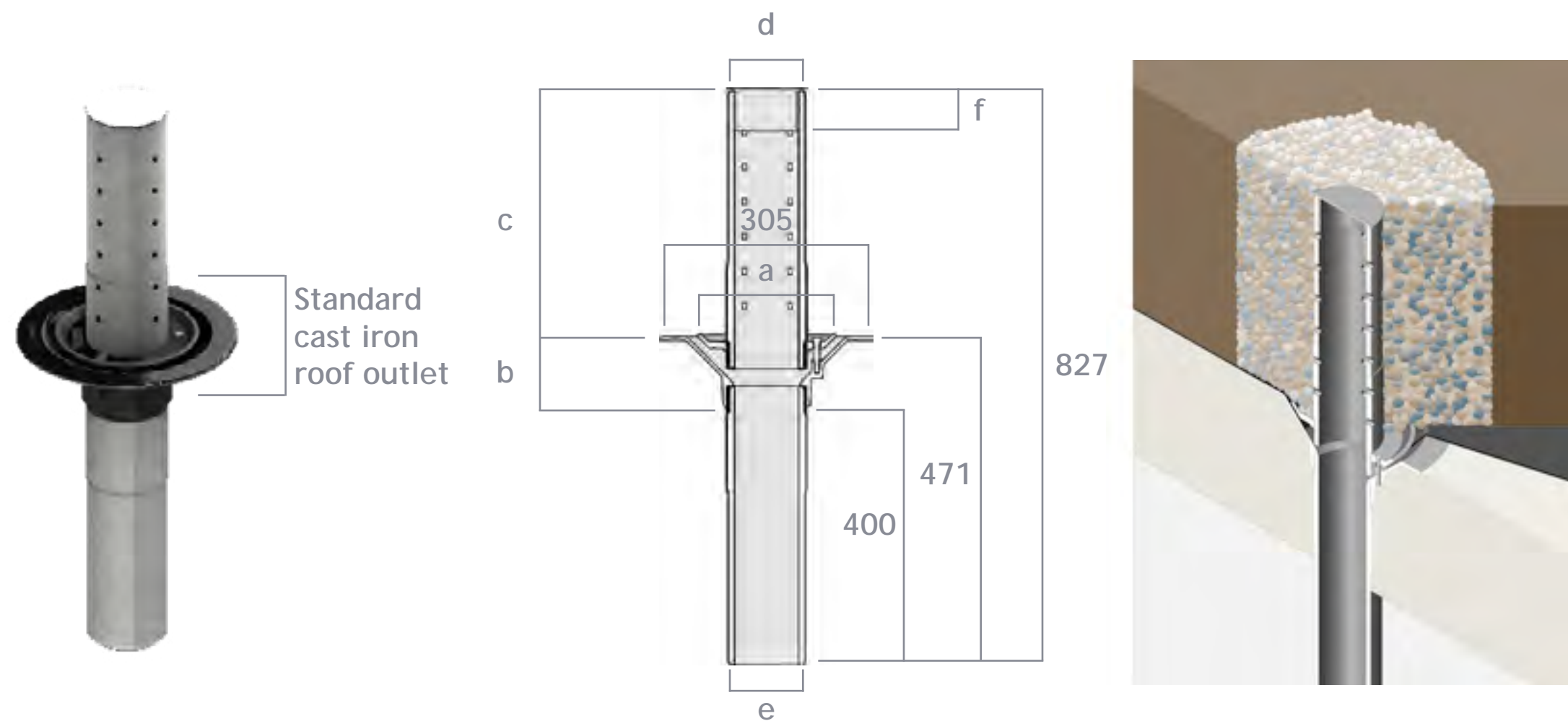




# Cast Iron Roof Outlets - Accessories & Connections



The Planter Drain consists of a number of parts to be assembled on site using a standard Harmer cast iron roof outlet, ABS adaptor, ABS perforated upstand pipe and an aluminium closure top cap. The perforated standpipe design will allow for slow release of excessive water and moisture as a consequence of rainfall intensity and regular maintenance to hydrate and maintain soil quality in typical green roof applications.



Outlet Type	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Weight (kg)	Product Code
Planter Drain	200	100	355	115	110	60	7.9	BVT100/PLANT



The cast iron threaded spigot adaptor has been designed to facilitate an A1 fire rated connection to Harmer Cast Iron Medium Sump, Large Sump, Two-Way and Balcony rainwater outlets to all types of pipe systems due to the external diameter of the spigot being that of most standard internal pipework systems.



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	58	400	2.6	2ADPCI
50	58	600	3.8	2ADPCI/600
75	83	400	5.3	3ADPCI
75	83	600	5.7	3ADPCI/600
100	110	400	6.5	4ADPCI
100	110	600	10.3	4ADPCI/600
150	160	400	11.1	6ADPCI
150	160	600	16.7	6ADPCI/600

## ABS Threaded Spigot Adaptors

The ABS threaded spigot adaptor has been designed to facilitate the connection of Harmer Aluminium Roof Outlets and Harmer Cast Iron Roof Outlets where a fire rated solution is not applicable. This provides an economical method of connection onto all manor of pipework systems due to the external diameter of the spigot being that of most standard internal pipework systems.



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	63	400	0.4	2ADP
50	63	600	0.6	2ADP/600
75	83	400	0.6	3ADP
75	83	600	0.9	3ADP/600
100	110	400	1.2	4ADP
100	110	600	1.8	4ADP/600
150	160	400	2.0	6ADP
150	160	600	3.0	6ADP/600

Threaded Spigot Adaptors: 2ADP, 3ADP, 4ADP and 6ADP

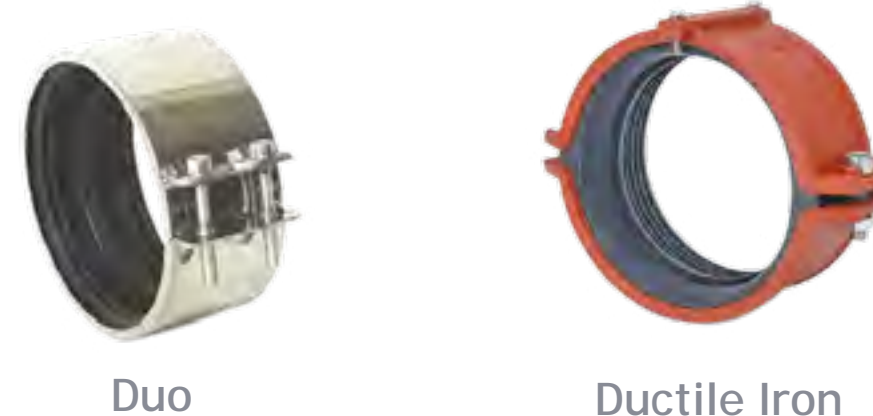
Standard length for adaptors is 400mm and 600mm, but lengths of 500, 600, 700 and 800mm are also available on request.



# Cast Iron Roof Outlets - Accessories & Connections

## Harmer Couplings

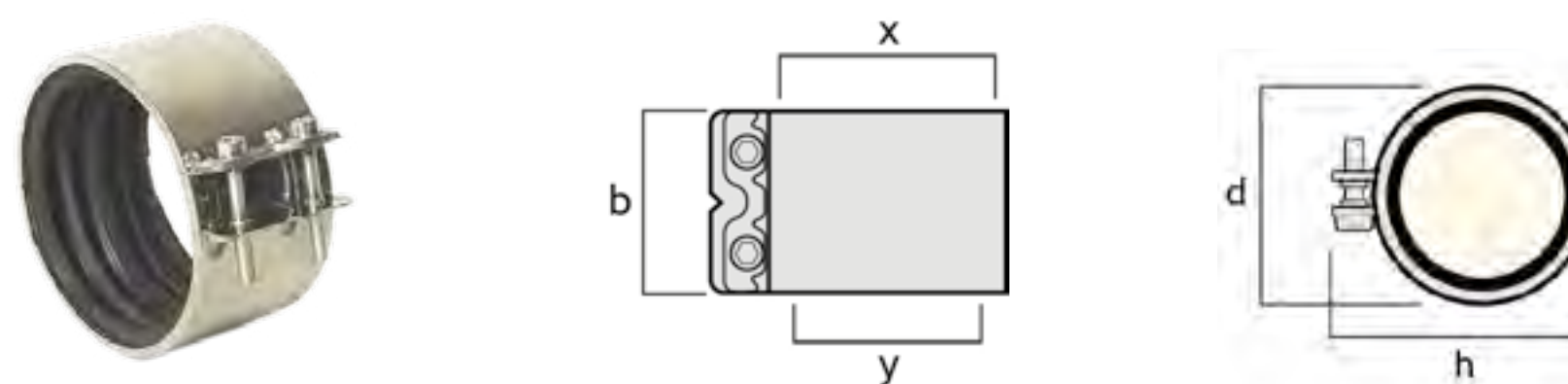
Harmer SML couplings are Available in either ductile iron or stainless steel and meet the requirements of BS EN 877. The internal pressure performance of couplings ranges from 0.5 bar to 10 bar. All couplings feature EPDM elastomeric seals as standard. Neoprene rubber seals are Available on request.



Coupling Type	Pipe Diameter (mm)	Product Code
SML Ductile Iron	50	235849
SML Ductile Iron	100	235357
SML Ductile Iron	150	235358
SML Duo Stainless Steel	50	3140/50
SML Duo Stainless Steel	100	3140/100
SML Duo Stainless Steel	150	3140/150



## Adaptor Couplings

The Stainless Steel Harmer SML Adaptor coupling is used when it is necessary to make a connection between BS EN 877 lightweight cast iron 'soil' systems, conventional cast iron thick wall 'drain' systems and 3"/83mm imperial pipework. This coupling does not incorporate any provision for electrical continuity.



Pipe Dia (mm)	Bolts	d	h	b	x	y	Product Code
70	2	95	110	70	83-84	75-76	3151/010075
100	2	130	145	70	116-119	108-113	3102/100
150	4	180	215	70	168	159	3102/150

## Pipe Connections

Outlet Type	Nominal Size (mm)	Outlet Diameter (mm)	Pipe Material and Connection Type			
			Cast Iron EN877	Stainless Steel	HDPE	PVCu
 Vertical Spigot	50	60	SML Duo coupling	Post formed socket OR flexible coupling	SML Duo coupling	Post formed socket OR flexible coupling
	75	83	SML Adaptor coupling	"O" ring socket OR SML Duo coupling	SML Adaptor coupling	"O" ring socket OR SML Duo coupling
	100	110	SML Duo coupling	"O" ring socket OR SML Duo coupling	SML Duo coupling	"O" ring socket OR SML Duo coupling
 Threaded	50	2" BSP	2ADP + SML Duo coupling	2ADP to Post formed socket OR flexible coupling	2ADP to Post formed socket OR flexible coupling	2ADP to Post formed socket OR flexible coupling
	75	3" BSP	3ADP + SML Adapter coupling	3ADP to "O" ring socket OR SML Duo coupling	3ADP + SML Adapter coupling	3ADP to "O" ring socket OR SML Duo coupling
	100	4" BSP	4ADP + SML Duo coupling	4ADP to "O" ring socket OR SML Duo coupling	4ADP + SML Duo coupling	4ADP to "O" ring socket OR SML Duo coupling
	150	6" BSP	6ADP + SML Duo coupling	6ADP to P "O" ring socket OR SML Duo coupling	6ADP + SML Duo coupling	6ADP to P "O" ring socket OR SML Duo coupling

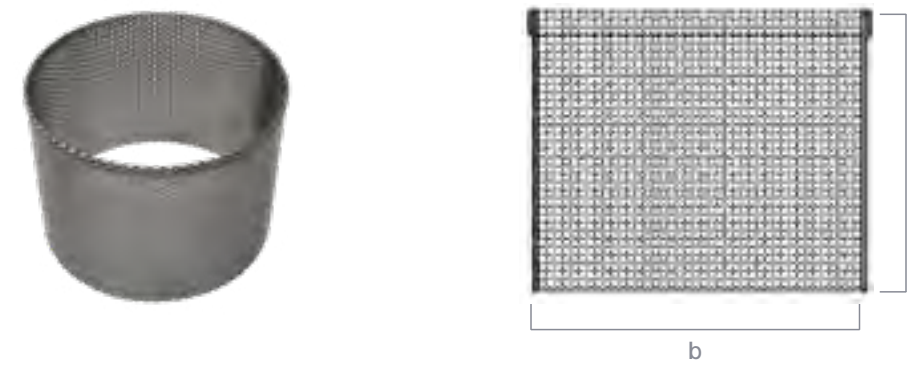


# Cast Iron Roof Outlets - Accessories & Connections



## Gravel Guard

Made of stainless steel, the Gravel Guard is used with Domical Grates on roofs with gravel finish to prevent ingress of insulation and gravel into the outlet. Other heights are available to order.

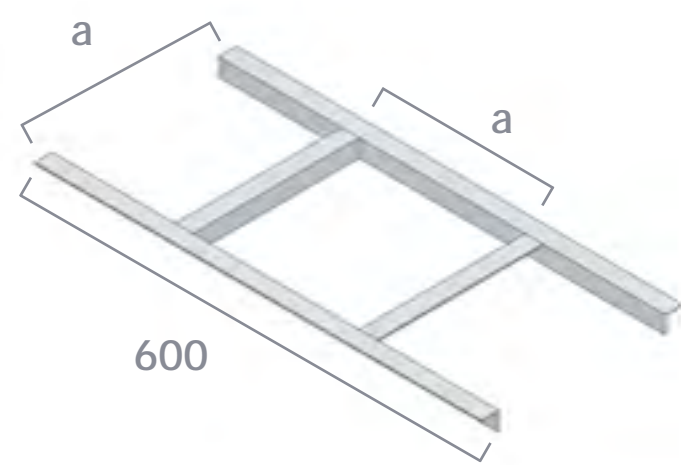


Outlet Size (nominal)	a (mm)	b (mm)	Weight (kg)	Product Code
Medium Sump	150	200	0.5	C4/GG/15
Medium Sump	200	200	0.6	C4/GG/20
Large Sump	150	305	0.8	C6/GG/15
Large Sump	200	305	0.9	C6/GG/20



## Underdeck Clamp

The Underdeck Clamp is used to secure cast iron outlet body to roof deck (cannot be used with horizontal outlet).

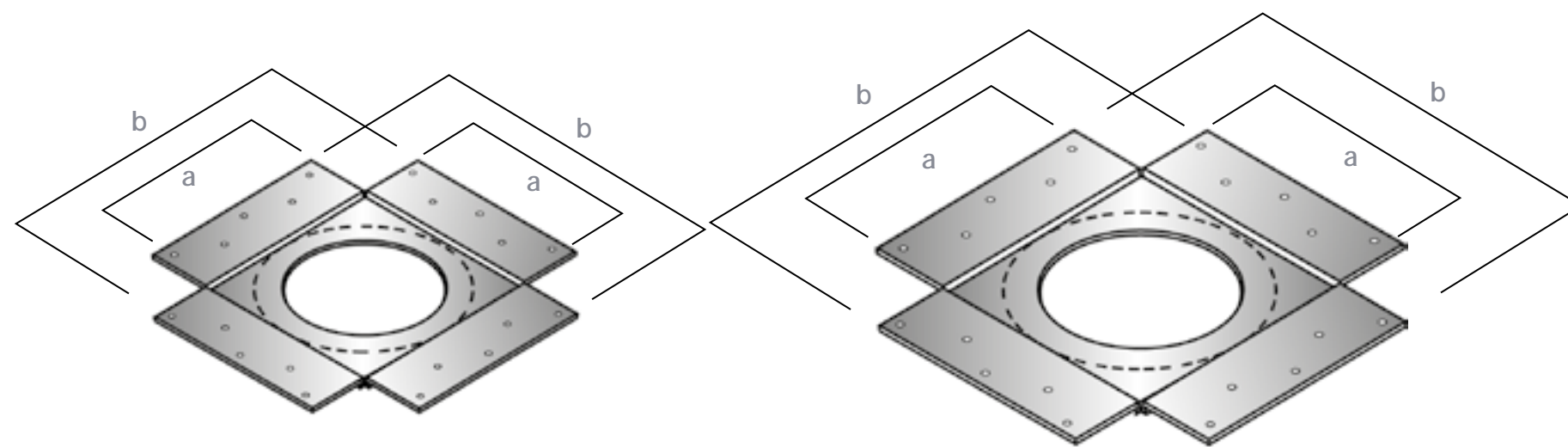


Outlet Size (nominal)	Material Type	a (mm)	Weight (kg)	Product Code
Medium Sump	Mild steel	175	1.7	C4/UC
Medium Sump	Stainless steel	175	2.1	C4/UC/SS
Large Sump	Mild steel	300	2.0	C6/UC
Large Sump	Stainless steel	300	2.4	C6/UC/SS

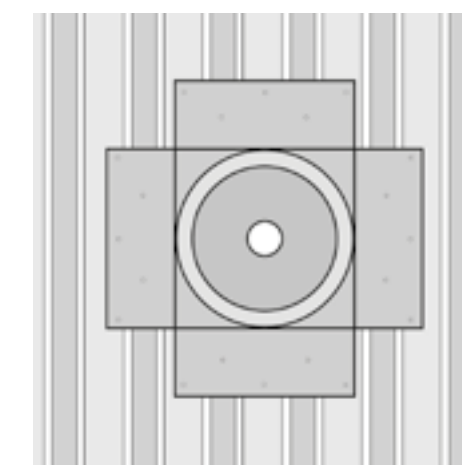


## Metal Deck Support Plates

Recommended for use where Harmer cast aluminium rainwater outlets are installed in metal deck roofs. They are designed to provide a secure and stable junction between the roof deck and rainwater outlet.



Plan view of Harmer outlet body in the Metal Deck Support Plate fixed to the structural metal deck.



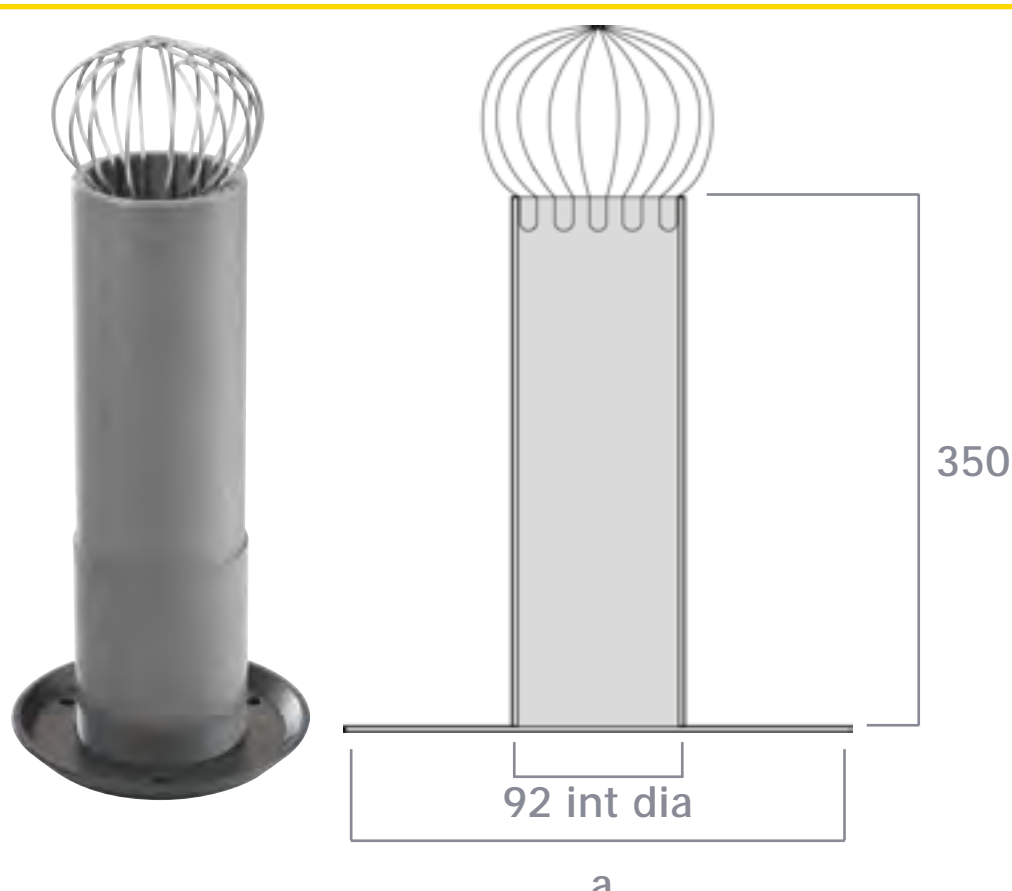
### Materials

The Support Plates are manufactured from 2mm galvanised steel sheet, finished in epoxy primer. They are suitable for installation in all types of metal deck roofing.

Outlet Size (nominal)	a (mm)	b (mm)	Weight (kg)	Product Code
Medium Sump	335	490	2.7	SP1
Large Sump	415	570	3.5	SP2



## Overflow Outlet



For use where overflow outlets are required. The overflow assembly simply bolts onto the rainwater outlet where the clamp normally sits. Made from ABS, the overflow is easily cut to the required length on site. The balloon grating can be re-fitted back into the overflow inlet to protect the outlet from debris.

Outlet Size (nominal)	a (mm)	Weight (kg)	Product Code
Medium Sump	200	2.6	C4/OF



# Cast Iron Roof Outlets - Accessories & Connections

## Threaded Spigot Adaptors

The cast iron threaded spigot adaptor has been designed to facilitate an A1 fire rated connection to Harmer Cast Iron Medium Sump, Large Sump, Two-Way and Balcony rainwater outlets to all types of pipe systems due to the external diameter of the spigot being that of most standard internal pipework systems.

### Materials

Threaded Spigot Adaptors in cast iron or ABS are supplied in 400mm & 600mm lengths, taper threaded externally at one end to BS EN 10226-1 and chamfered at the other end to BS 4514 and BS EN 1329-1 spigot dimensions. Sizes are available to suit 50, 75, 100 and 150mm nominal bore pipework.

### Connection to Pipework

The Threaded Spigot Adaptor is screwed into the base of the outlet using a PTFE tape or silicone sealant to obtain a gas-tight seal. The spigot end of the adaptor can then be connected to the pipe socket. If necessary, the length of the spigot end of the adaptor can be reduced by cutting as required with a fine toothed saw. The spigots of the Threaded Spigot Adaptors are suitable for direct connection to cast iron pipework to BS EN 877 and BS 416, HDPE pipework with appropriate Harmer couplings, PVC O-ring socketed pipe to BS EN 1329.

Please see Harmer couplings available (pages 66).



Standard length for adaptors is 400mm, but lengths of 500, 600, 700 and 800mm are also available on request.

Nominal Bore (mm)	a (mm)	b (mm)	Length (mm)	Cast Iron Adaptors		ABS Adaptor	
				Weight (kg)	Product Code	Weight (kg)	Product Code
50	63	58	400	2.6	2ADPCI	0.4	2ADP
50	63	58	600	3.8	2ADPCI/600	0.6	2ADP/600
75	83	83	400	5.3	3ADPCI	0.6	3ADP
75	83	83	600	5.7	3ADPCI/600	0.9	3ADP/600
100	110	110	400	6.5	4ADPCI	1.2	4ADP
100	110	110	600	10.3	4ADPCI/600	1.8	4ADP/600
150	160	160	400	11.1	6ADPCI	2.0	6ADP
150	160	160	600	16.7	6ADPCI/600	3.0	6ADP/600

## Fitting the Harmer Threaded Spigot Adaptor

### Materials

- A cast iron body with female parallel threaded boss.
- A 400mm long taper male threaded pipe sized for Standard BSP onward connection.
- PTFE tape or silicone sealant.

### Preparation

- Wear protective (latex) gloves to avoid risk of injury or contamination during materials handling.
- Process will require pipe chains for tightening the adapter into the outlet.
- Degreasing agent and fine bristle brush.
- Paper towels (this last relates to Method 2).

### Connecting Adapter - Method 1

#### Using PTFE tape:

- Inspect all threads and ensure they are free of dirt, grease and foreign matter.
- Apply sufficient PTFE tape to the taper male threaded end of the adapter. This requires care as too much tape will limit the amount of travel within the parallel thread of the outlet and too little may prevent an effective seal.
- Securely tighten the adapter into the outlet, using chains or similar equipment.

### Connecting Adapter - Method 2

Using silicone sealant (DOW CORNING 791 recommended):

- Inspect all threads and ensure they are free of dirt and foreign matter.
- Allow for ventilation and degrease the threads of the outlet using a degreasing agent and fine brush.
- Using paper towels ensure that threads are dry.
- Apply a liberal coating of silicone sealant to the threads of the outlet and adapter and immediately tighten using chains or similar equipment.
- A surplus of sealant will squeeze out indicating that all the thread void areas have filled.
- Clean up with paper towels and dispose of appropriately.
- Follow guidance cure advice on silicone product before subjecting outlet to water test.

For method 1 and 2 it is recommended that a Standing Water Test is undertaken before installation.



# Cast Iron Roof Outlets - Installation

The Harmer Roof Cast Iron range of outlets are designed for use with flat roof structures using either insitu cast concrete, timber or lightweight metal deck construction.

Harmer Roof outlets are ideal for connection to continuous waterproofing systems using mastic asphalt, hot melt, high performance built-up felt, wet-applied waterproofing systems and most types of single ply membranes. The Harmer range of outlets incorporate all the key features inherent in the Harmer design approach to trouble-free flat roof drainage.

## Components

Harmer cast iron roof outlets are made up of three base components:

- **Body** - An outlet body with integral sump for controlled flow of water into the pipe.
- **Clamping Ring** - The clamping ring is designed to compress the waterproof membrane against the outlet body to ensure total integrity of seal. The side fixing of the clamping ring and domical grate to the outlet body ensures that the throat is completely unobstructed to optimise flow and facilitate rodding.
- **Grate** - Domical grates permit a free flow of rainwater while preventing loose chippings or debris from entering the outlet. Flat grates are used for trafficked and pedestrian areas. An important feature of both the Domical and Flat grate fixture is that it can be removed without disturbing the clamping ring and waterproof seal of the roofing membrane.

Site detailing is taken care of with a range of accessories which are designed for use in different types of applications. Accessories include, Extension Pieces, Adjustable Height Grates, Double Flange Variable Height Bodies, Support Plates, Gravel Guards, Pipe Adaptors, Overflows and Downspouts

## Materials

All Harmer cast iron components are cast to material grade EN-GJL-200 to BS EN1561, ductile iron components are cast to material grade EN GJS-450-10 to EN1563..

## Installation and Sitework

Each site application will require careful assessment by the installer.

- Consideration must be given to the type of outlet, roof construction and pipework connection that is used. The general principal of installation is common to all Harmer outlets and the following guidance should be used.
- Threaded outlets using threaded spigot adaptors must be leak tested prior to fixing to the roof structure.
- Position outlet in the roof construction so that the roof substrate is flush with outlet rim and ensure that the roof has adequate falls to the outlet.
- Depending on the type of waterproofing membrane, degrease or prime the inside of the outlet body as per roof membrane manufacturer's recommendation i.e. for asphalt, prime the outlet with bitumen.

- Dress the waterproof membrane into the outlet making sure that adequate material is available for full surface contact between the clamping ring and the outlet body. Bolt down the clamping ring ensuring that equal pressure is applied to the bolts.
- Fix the Grate to the clamping ring using the bolts provided.
- Flood test the outlet in accordance with good practice and commission the rainwater system.

Typical application details are shown on pages 62-63. For further advice on installation, contact Harmer Technical Helpline 01536 383810.

## Care and Maintenance

Maintenance is a key aspect of reliable, low cost operation.

Before completion of any drainage scheme:

- Check if overflows have been provided.
- Anticipate blockage - never have a single rainwater outlet
- Once the rainwater outlets have been installed they should be inspected to ensure that all parts have been correctly fitted, that no parts are missing and that nuts and bolts are tight and secure.
- Remove tacks, nails and screws left by other trades. These will damage the membrane if trodden on.

Every flat roof must have an inspection plan:

- Inspection of the outlets should be on a regular basis and generally not less than twice annually - Autumn and Spring.
- In locations with nearby trees, leaf congestion will require more frequent clearance.
- Plastic bags blown onto the roof will wash to an outlet position and block the strainer.
- Airborne grit and fines will silt up the inlets to the outlet and restrict flow.
- Remove silt and remove leaves.
- Check overflows have leaf guards fitted.
- Clear any blockages immediately to ensure system does not overflow.

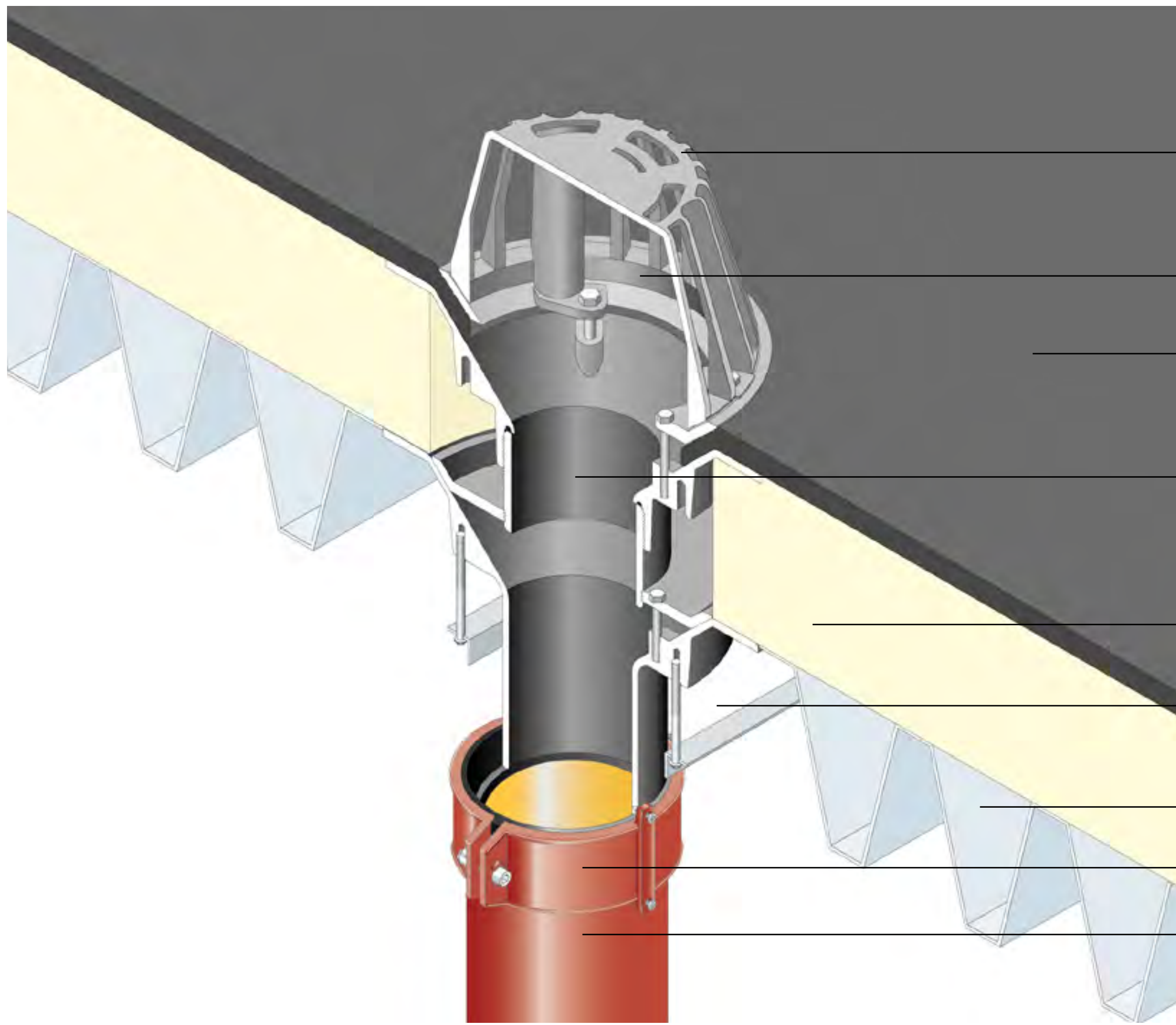
## Health & Safety

Always refer to current Health & Safety legislation, safe systems of work and the relevant material safety data sheets.



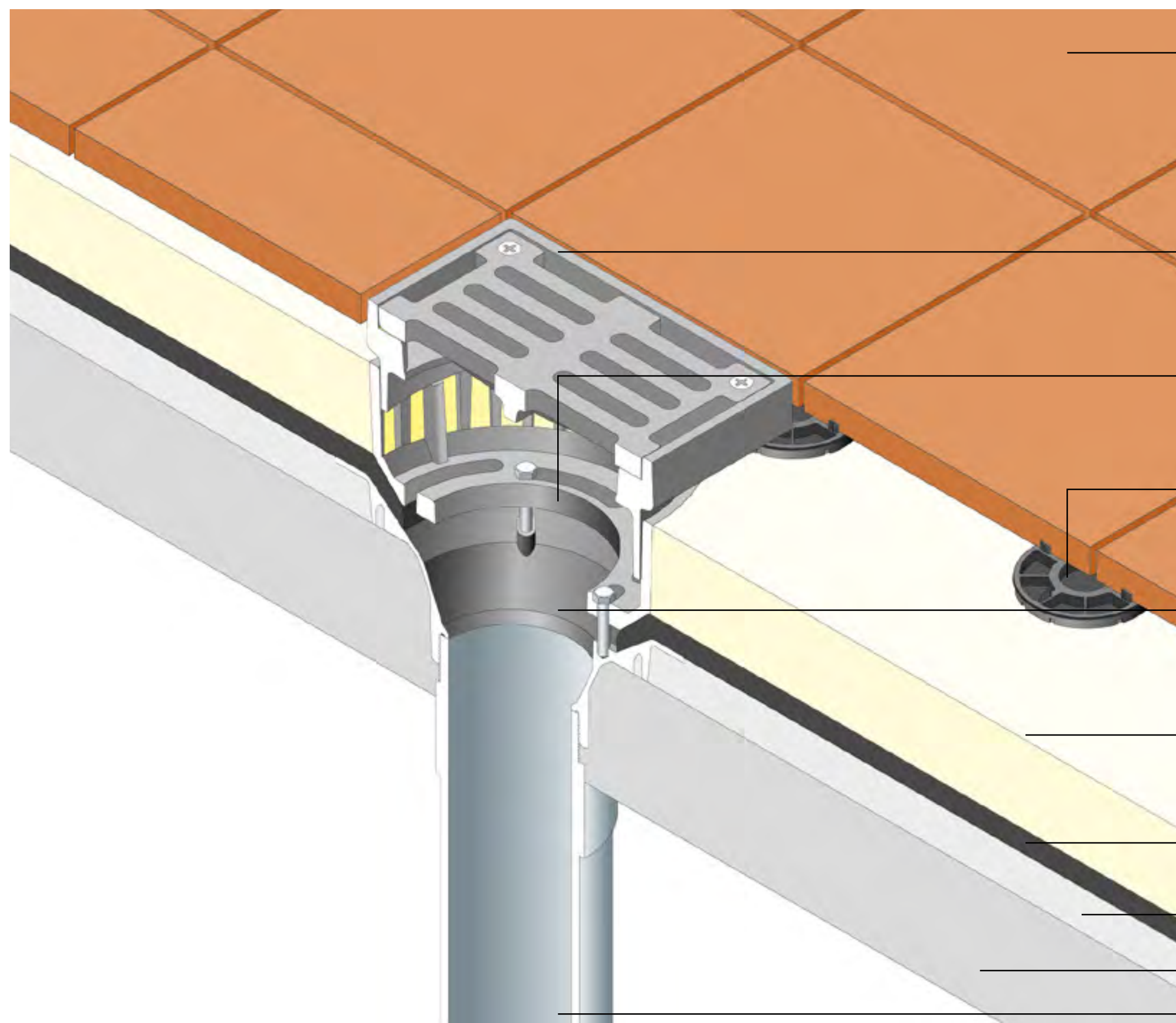
# Cast Iron Roof Outlets - Application Details

## Medium Sump Vertical Spigot Double Flanged Outlet - Warm Roof Metal Deck Construction



- Domical grate
- Clamping collar
- Waterproofing membrane system
- Harmer double flange variable height body (C400/D) comprising medium sump vertical threaded outlet and vertical spigot outlet system
- Insulation with integral vapour barrier
- Underdeck Clamp
- Metal roof deck
- Harmer SML Ductile Iron coupling
- Harmer SML cast iron pipework to BS EN 877

## Medium Sump Vertical Threaded Outlet - Square Grate, Inverted Roof Concrete Deck Construction

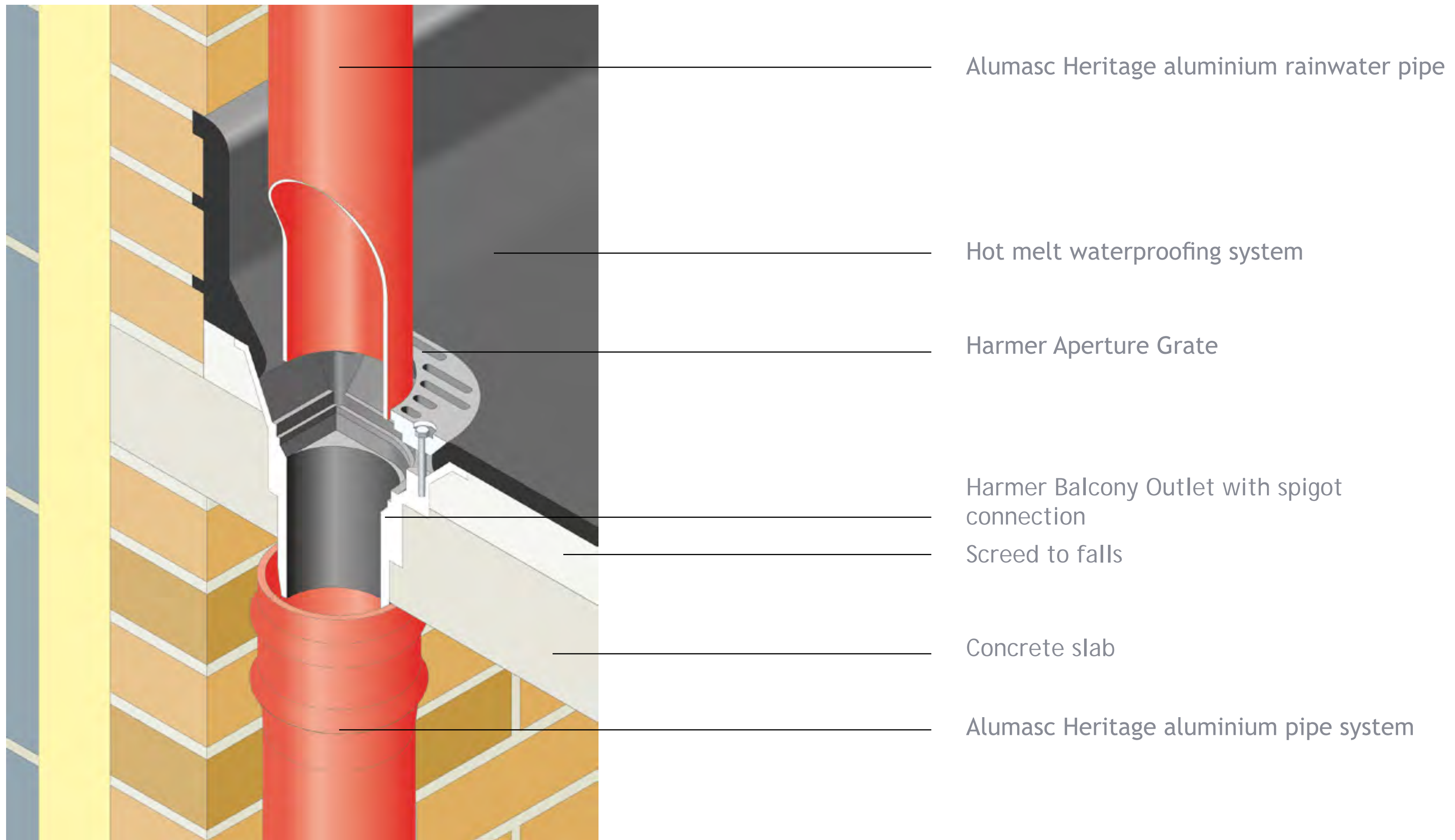


- Paving slabs
- Adjustable height square flat grate
- Extension piece
- Uni-Ring raised deck paving supports
- Harmer medium sump vertical threaded outlet (C400T/ESD)
- Insulation with integral vapour barrier
- Rigid insulation with waterflow reducing layer
- Waterproofing membrane
- Screed to falls
- Concrete deck
- Threaded spigot adaptor

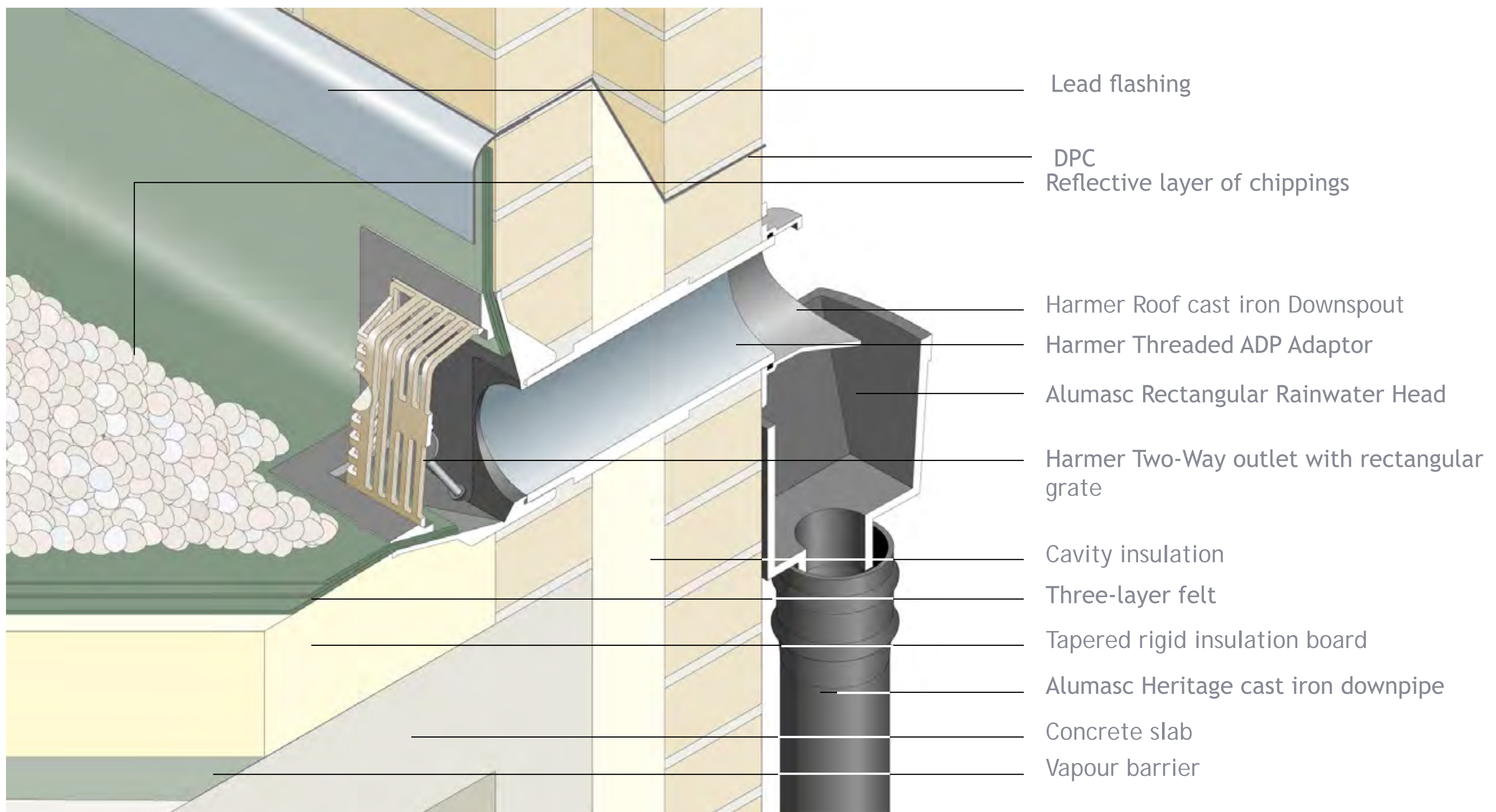


# Cast Iron Roof Outlets - Application Details

## Balcony Spigot Outlet - Aperture Grate in Concrete Deck Construction



## Two-Way Outlet - Warm Roof Concrete Deck Construction





# Roof Channel Drains

*The advanced, linear, steel drainage ranges are for use within a raised deck structure. Combining threshold drainage with the level access requirements of Part M, the channel drains can be used in their own right, or especially with Harmer Modulock Raised Deck Supports.*





# Roof Channel Drains - Benefits

Harmer Modulock Channel Drain ranges are highly versatile linear drainage systems designed to provide the ideal level access drainage solution where rainwater run-off and percolation are required to be intercepted at the perimeter of a building or across thresholds and points of access into and out of a building, and then ducted away to drainage outlets.

## Compliances

- Harmer Modulock Channel Drains ensure Level Access compliance with pedestrian loadings to Class K3 in accordance with Approved Document M access to buildings and other regional requirements.

## Safety

- A drainage system that intercepts rainwater and improves safety at point of access.

## Protection

- Buildings are protected from weathering at the vulnerable point where hard surfacemeets structure. Ponding water is prevented and freeze thaw attack on masonry is eliminated.

## Performance

- Modulock Channels form part of the overall rainwater drainage plan for most types of flat roof or deck construction including balconies and terraces within pedestrian areas permitting K3 Class loading.

## Versatility

- Modulock Channels can be used on podium decks, terraces and balcony areas in conjunction with Harmer Rainwater Outlets and Modulock Pedestal Support systems.

## Compatibility

- Harmer Modulock Channel Drains are used on all types of raised deck construction where drainage at the façade and across entrances is a requirement. Compatible with inverted roof, warm roof, Green roof and podium deck construction.

## Application

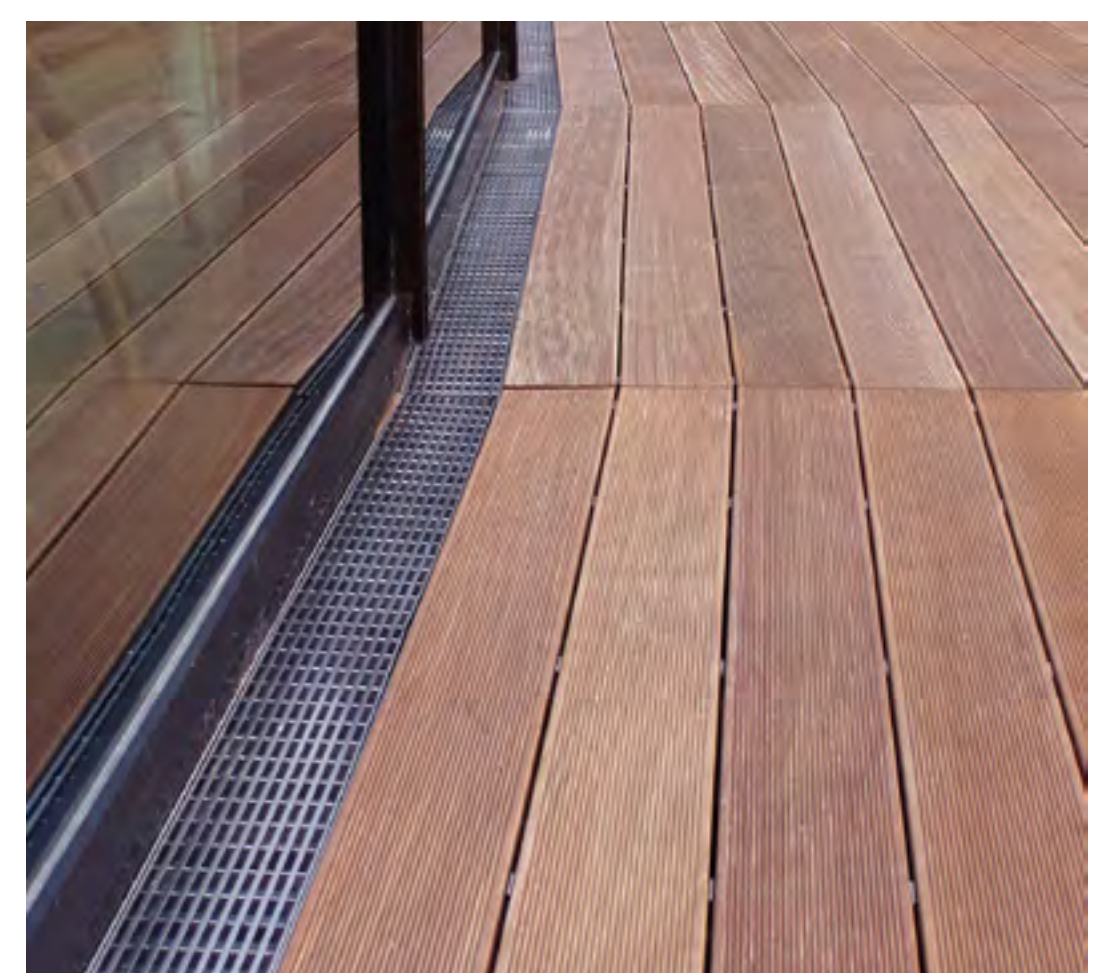
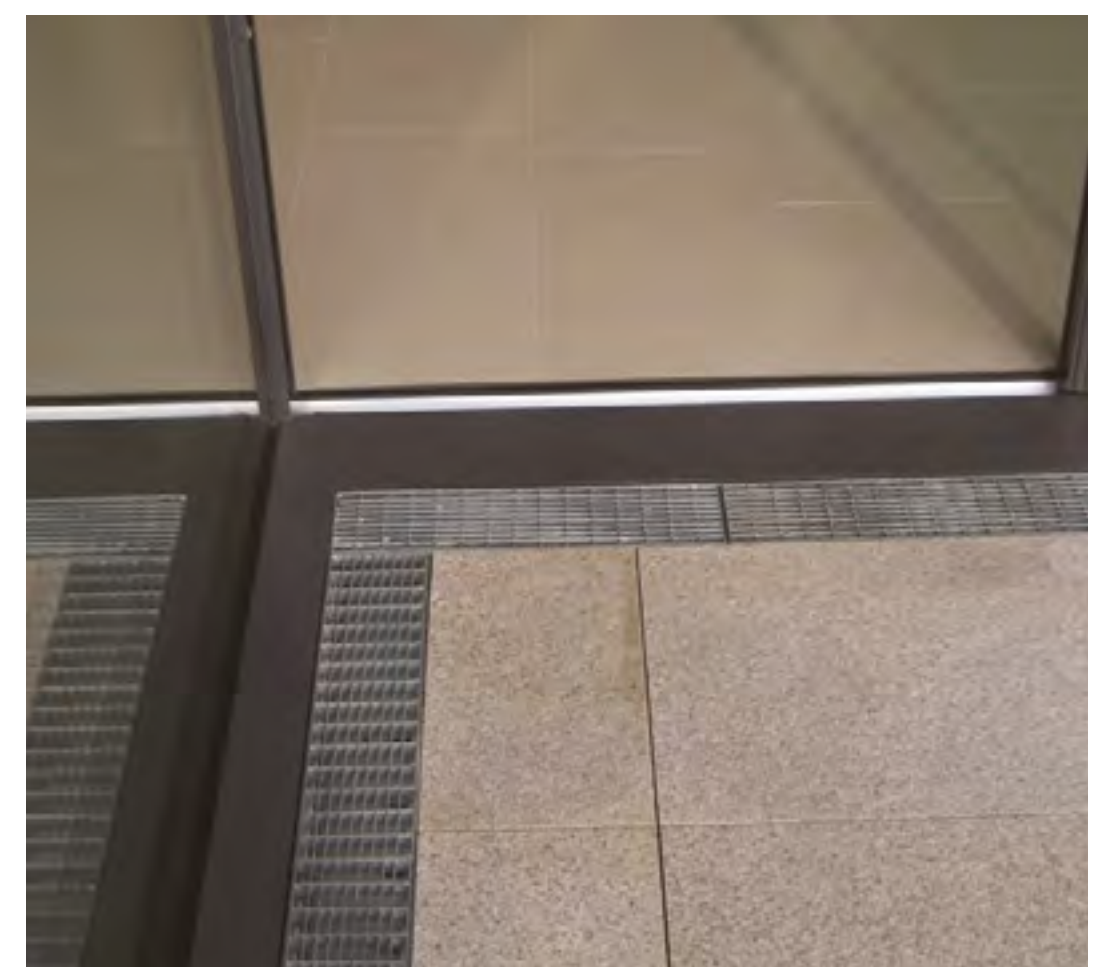
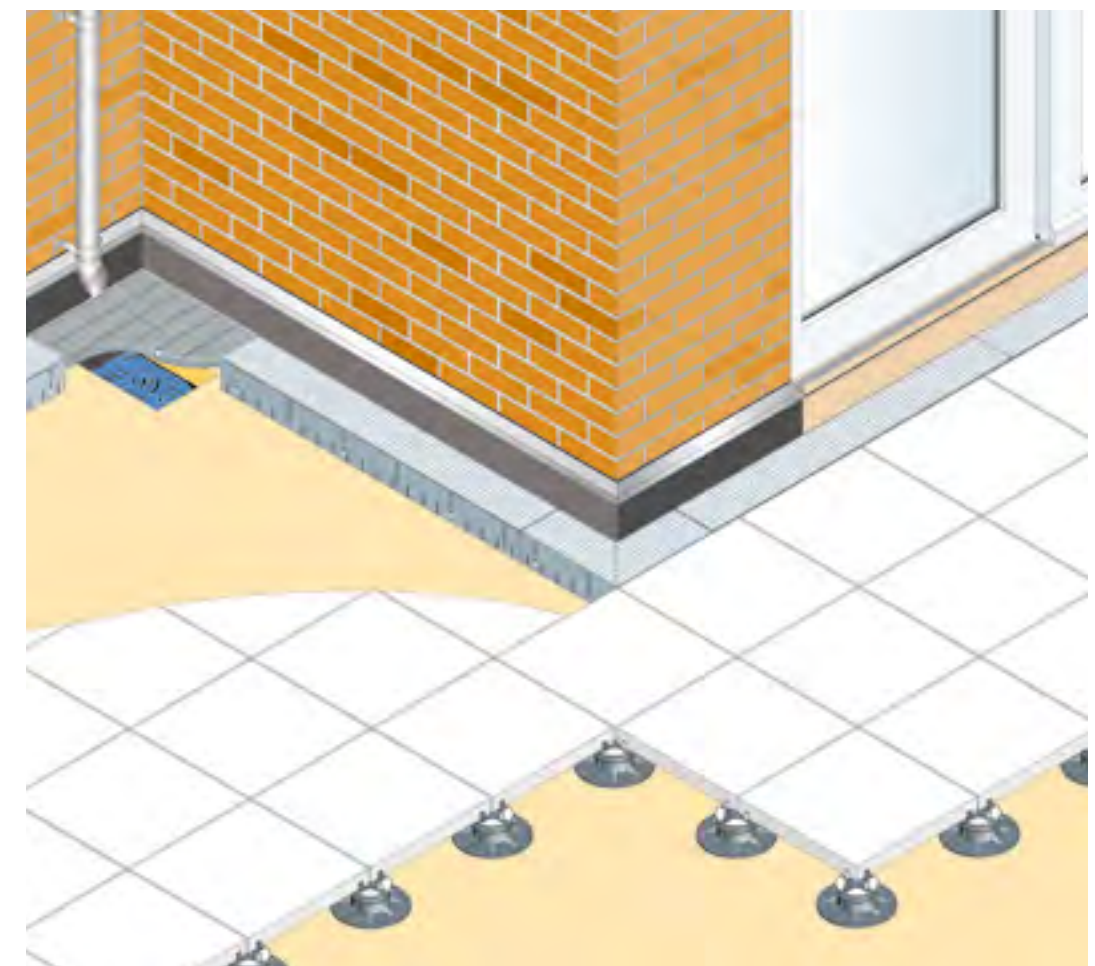
- A rainwater channel system in three nominal width sizes consisting of slotted sides with either a grill or slotted grating. Rainwater runoff is collected at hard surface level whilst percolation is relieved at membrane level.

## Material

- Channels and gratings are available in Grade 304 stainless steel or galvanised mild steel.

## Installation

- Straight line end to end installation with simple location clips ensures the system is fully stable whilst butt joint, site formed irregular angles accommodate change in direction. Gratings adjust vertically within the channel to elevate and correct cross falls and any irregularities in the supporting surface.





# Roof Channel Drains - Summary

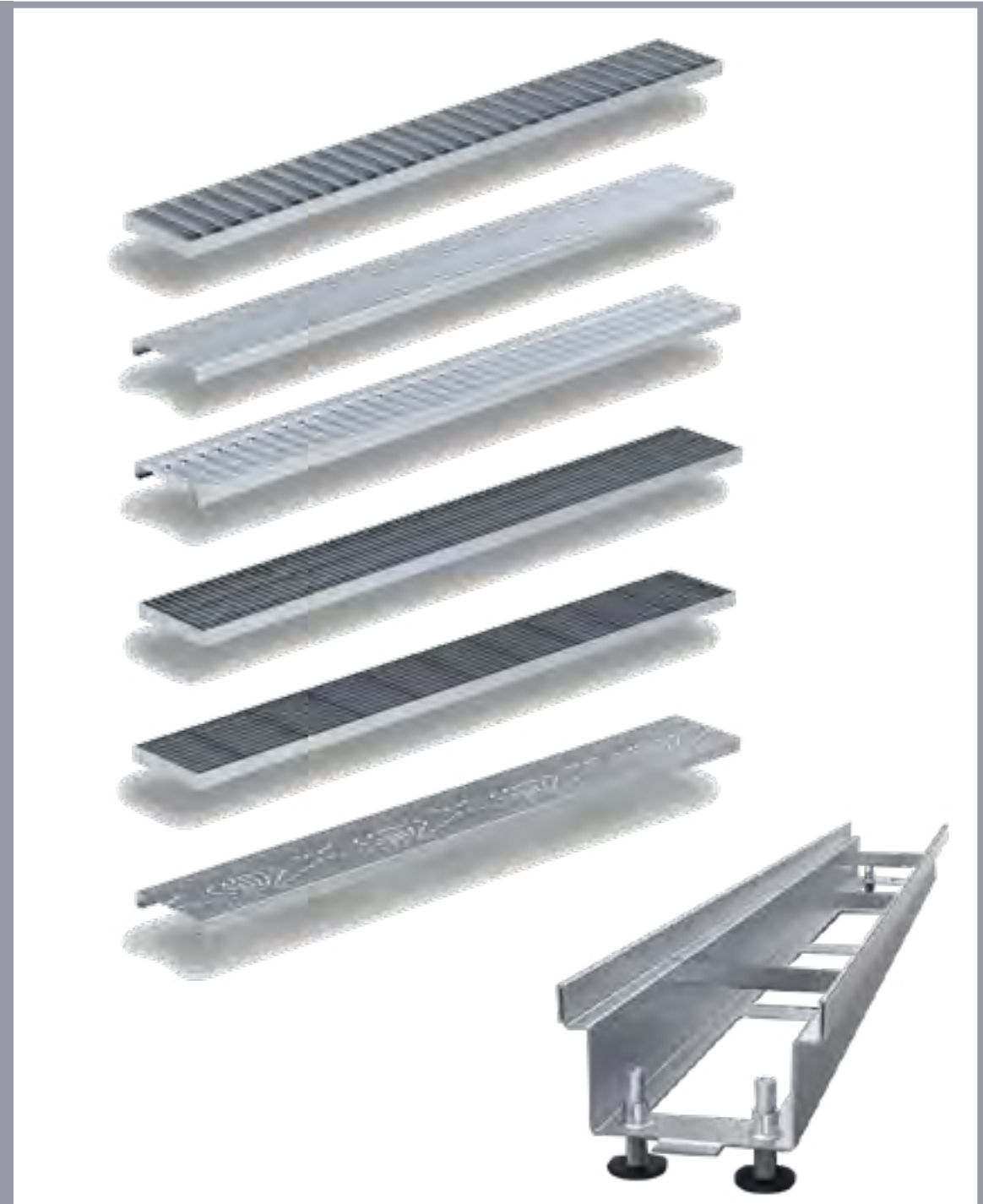
Designed for perimeter drainage of inverted roof and warm roof constructions, the Harmer Modulock Straight Channel range, manufactured in either stainless steel or galvanised mild steel, is available in 130mm and 200mm widths, with either variable or fixed depths.

## Straight Channels and Grates

Page 75-76

Grade 304 stainless steel channels in 130mm x 2000mm, 1000mm and 500mm available in fixed heights of 80mm and 180mm or with adjustable heights ranging from 80-120mm and 120-180mm. The channels can have either perforated, open or closed bottom. The channels are manufactured in or galvanised mild steel. The 130mm wide channels have a choice of 6 types of grate.

Also available are 200mm wide channels with a choice of 4 grate types in Grade 304 Stainless Steel or Galvanised mild steel with a load class of K3. 200mm wide channels come in a fixed height of 50mm or 90mm or adjustable height or 50-70mm or 70-100mm.



## Accessories for Straight Channels

Page 75-76

Prefabricated 90° Corners are used with the 130mm and 200mm wide channels.

They have adjustable heights matching that of the channel body. The 90° connections are manufactured in stainless steel Grade 304 or galvanised mild steel.

As with the channels, the 90° connections slot together via tongue and groove joints.



## Outlet Channels for Straight Channels

Page 75-76

Adjustable height and fixed height channels are available with vertical drainage outlets. They can be used with a drain trap.





# Roof Channel Drains - Summary

130mm and 200mm wide Straight Channels are available in either fixed depth versions or as versions that can be altered in depth using the integral adjustment mechanism.

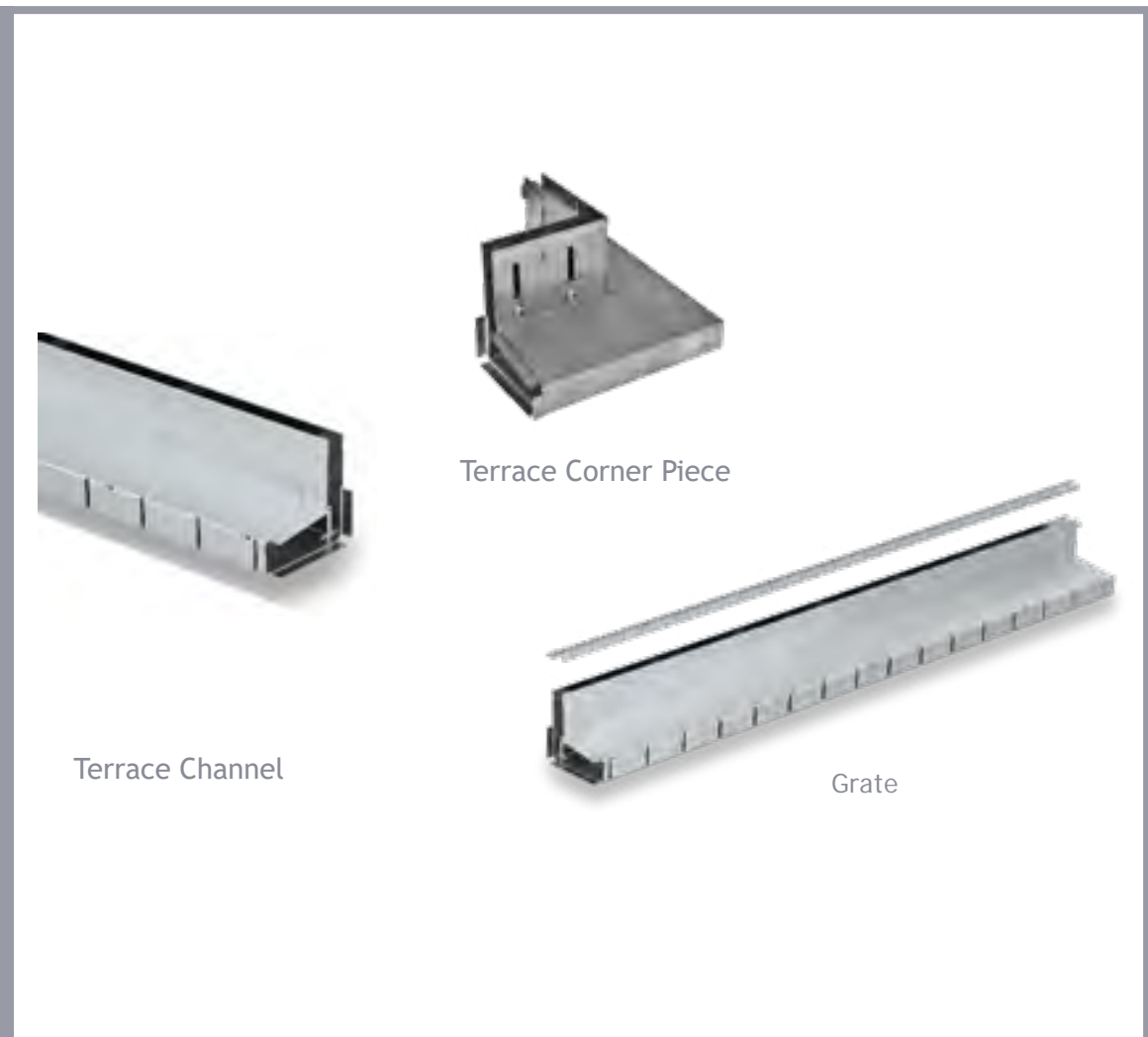
For the 130mm and 200mm wide Straight Channels, grates are available in six and four different profiles respectively. All grates can be made in stainless steel or galvanised mild steel. Terrace Slot Grates are available only in stainless steel.

Laid directly on the structural deck, all Straight and Slot Channels are rated Load Class K3.

## Terrace Slot Channels and Grates

Page 78-79

Utilising a slot of only 18mm, there is no loss of drainage capacity. The range offers a big advantage by allowing drainage on two levels: the flooring and the underlying floor plates.



## End Plates

Page 78-79

End Plates are channel stops that prevent leaves and windblown rubbish from congesting the waterway. Vermin are prevented from using the channel as a means of escape.



## Standard and Green Roof Accessories

Page 77

There is a range of accessories to ensure successful installation in most types of roof construction.

The range includes Access Units and Grates, Maintenance Units and Grates.

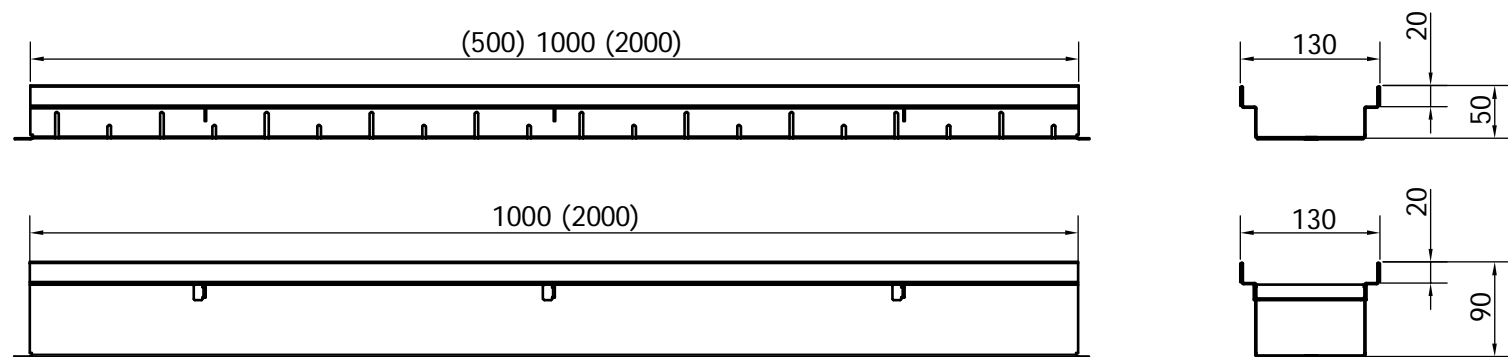
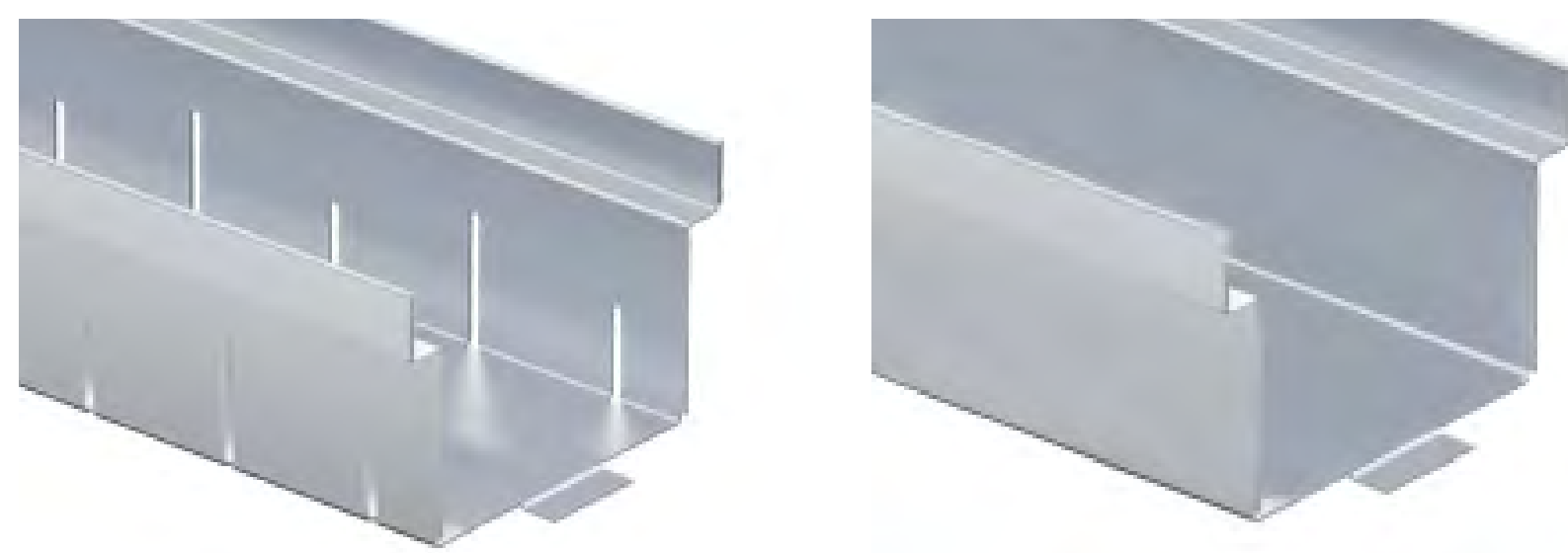




# Roof Channel Drains - 130mm

## 130mm Straight Channels

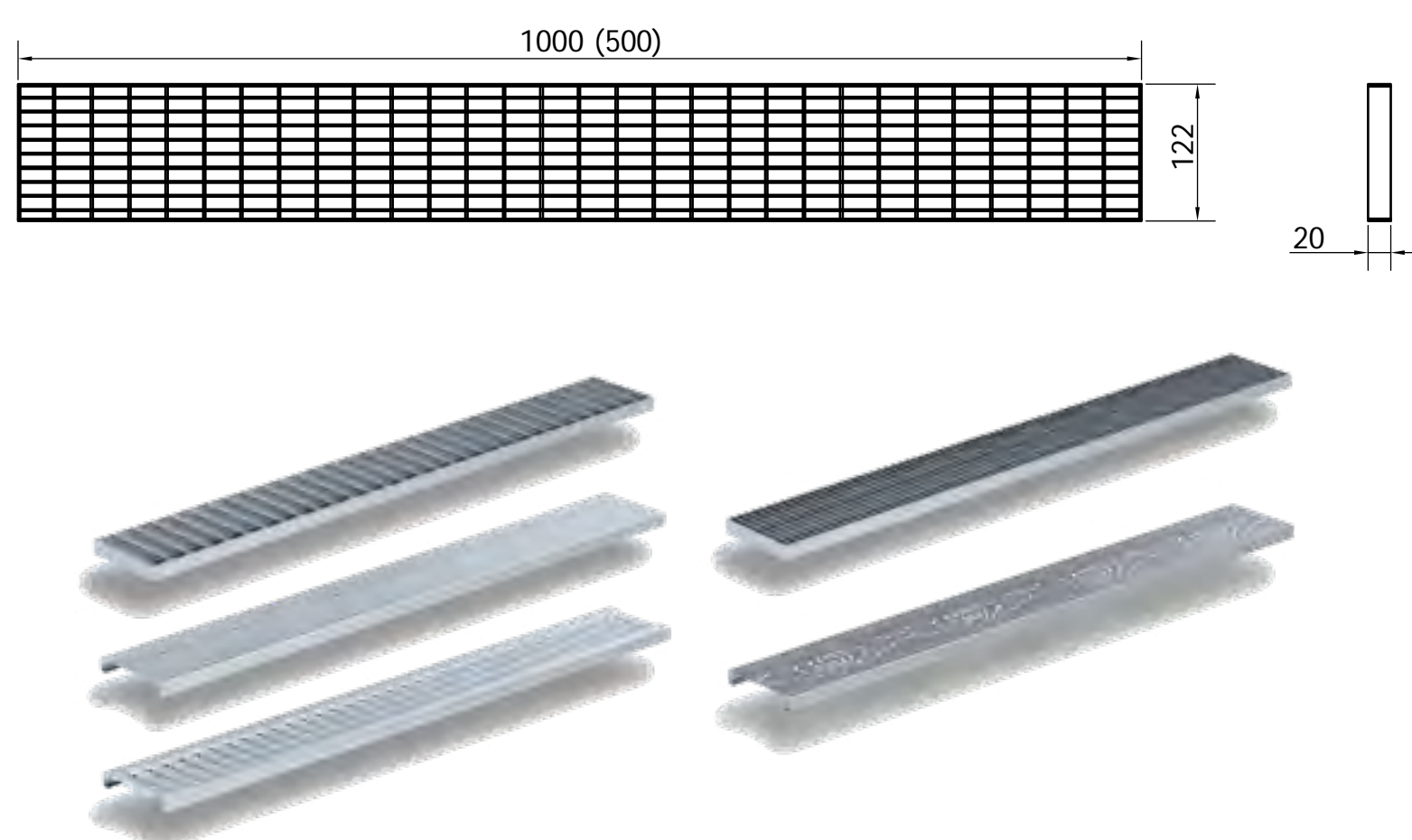
The Channel Drains are 130mm wide and made in 2000mm, 1000mm and 500mm lengths, with a choice of perforated or open bottom as well as closed. The depths of the Channels can be adjustable or fixed. The Channel lengths are slotted together.



Channel Side Type	Channel Length (mm)	Channel Depth (mm)	Product Code	
			Galvanised Steel	Stainless Steel
Perforated	1000	80	MD21013201	MD21013301
Perforated	2000	80	MD23013208	MD23013308
Perforated	1000	180	MD23013211	MD23013311
Perforated	2000	180	MD23013212	MD23013312
Unperforated	1000	80	MD23013227	MD23013327
Unperforated	2000	80	MD23013228	MD23013328
Unperforated	1000	180	MD23013231	MD23013331
Unperforated	2000	180	MD23013232	MD23013332

## Grates

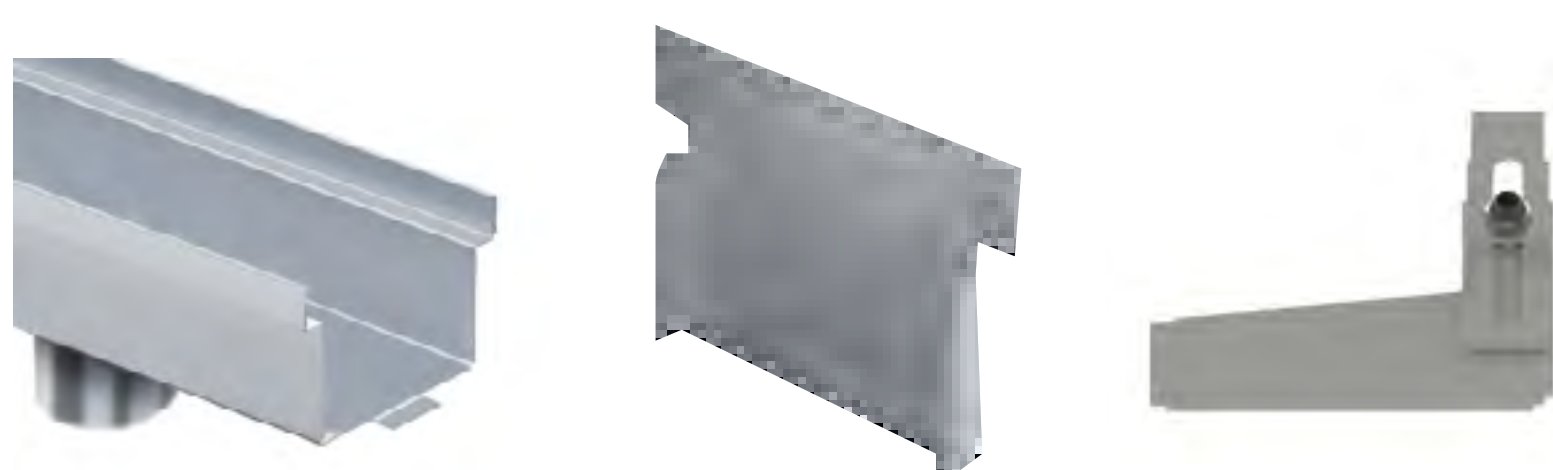
Grates are 130mm wide and available in 5 different designs in either stainless steel or galvanised steel. 90° corners can be butt jointed or mitred on site.



Grate Type	Length (mm)	Product Code	
		Galvanised Steel	Stainless Steel
Mesh	1000	MD24513201	MD24513301
Mesh	500	MD24513202	MD24513302
Slotted	1000	MD24513203	MD24513303
Slotted	500	MD24513204	MD24513304
Perforated	1000	MD24513205	MD24513305
Perforated	500	MD24513206	MD24513306
Longitudinal	1000	MD24513207	MD24513307
Longitudinal	500	MD24513208	MD24513308
Ray	1000	MD24513211	MD24513311
Ray	500	MD24513212	MD24513312

## Accessories

Outlet channels and corners join to straight lengths to avoid any mitred corners on site. Universal end plates and locking sets are also available as accessories in both galvanised and stainless steel.



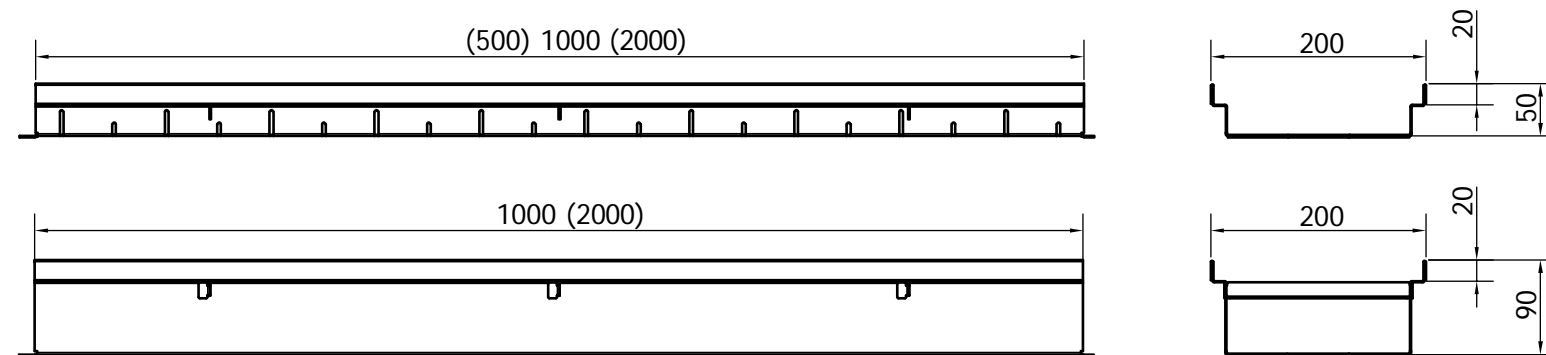
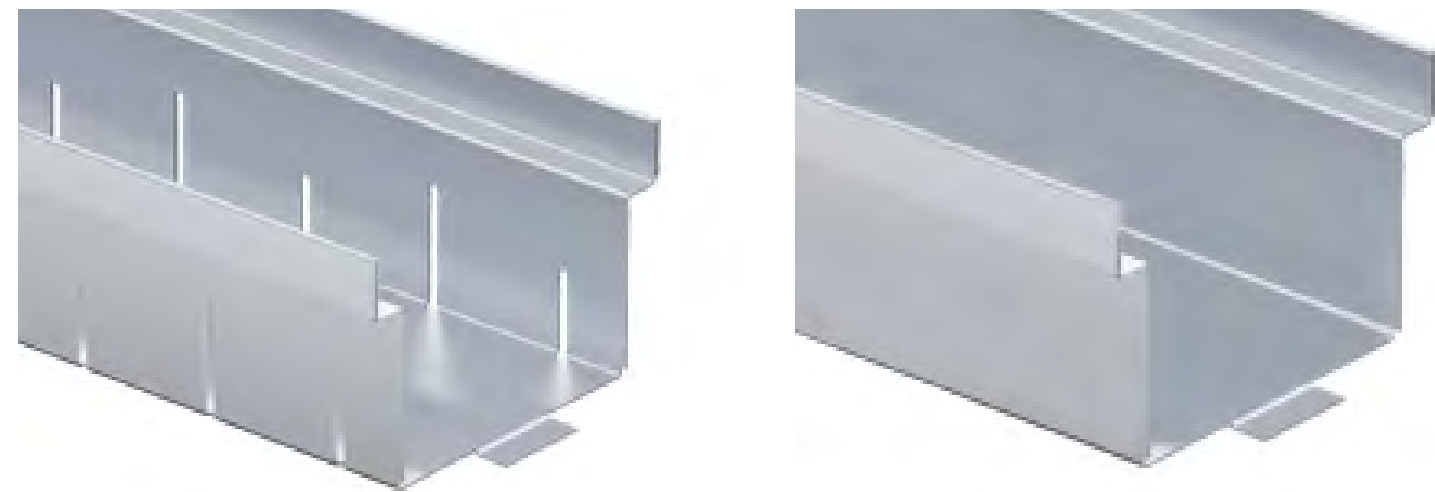
Channel Side Type	Depth (mm)	Product Code	
		Galvanised Steel	Stainless Steel
Outlet	80	MD24913201	MD24913301
Outlet	180	MD24913202	MD24913302
End Plate	80	MD24913221	MD24913321
End Plate	180	MD24913222	MD24913322
Locking Set	N/A	24900010	24900011
Corner	80	MD24913301	MD24913301
Corner	180	MD24913202	MD24913302



# Roof Channel Drains - 200mm

## 200mm Straight Channels

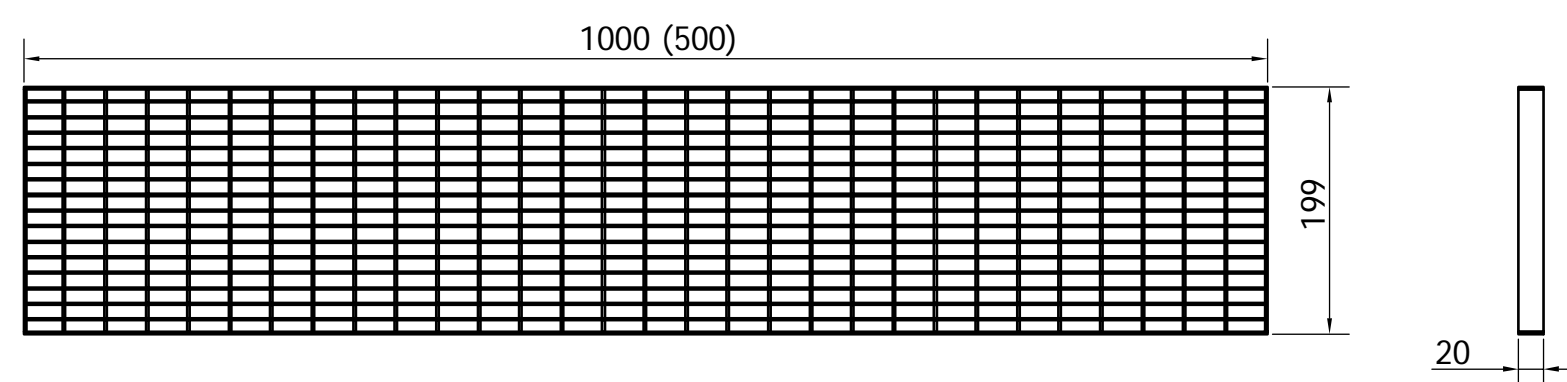
The Channel Drains are 200mm wide and made in 2000mm, 1000mm and 500mm lengths, with a choice of perforated or open bottom as well as closed. The depths of the Channels can be adjustable or fixed. The Channel lengths are slotted together.



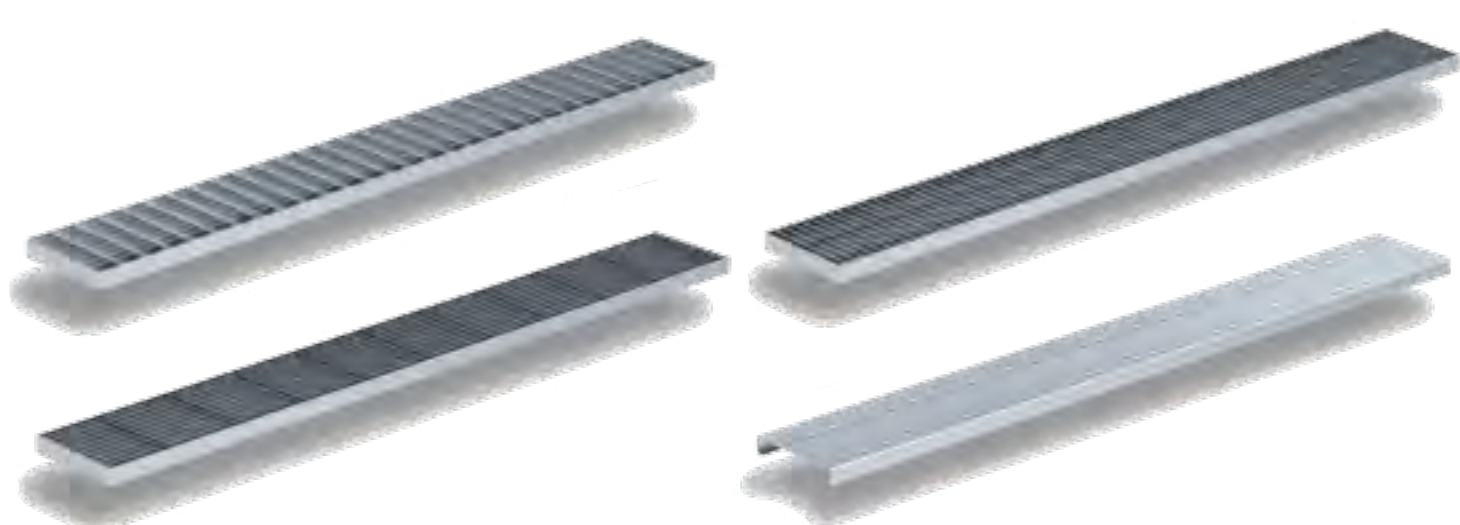
Channel Side Type	Channel Length (mm)	Channel Depth (mm)	Product Code	
			Galvanised Steel	Stainless Steel
Perforated	1000	50	MD23020205	MD23020305
Perforated	2000	50	MD23020206	MD23020306
Perforated	1000	90	MD23020209	MD23020309
Perforated	2000	90	MD23020210	MD23020310
Unperforated	1000	50	MD23020225	MD23020325
Unperforated	2000	50	MD23020226	MD23020326
Unperforated	1000	75	MD23020227	MD23020327
Unperforated	2000	75	MD23020228	MD23020328
Unperforated	1000	90	MD23020229	MD23020329
Unperforated	2000	90	MD23020230	MD23020330

## Grates

Grates are 200mm wide and available in 4 different designs in either stainless steel or galvanised steel. 90° corners can be butt jointed or mitred on site.



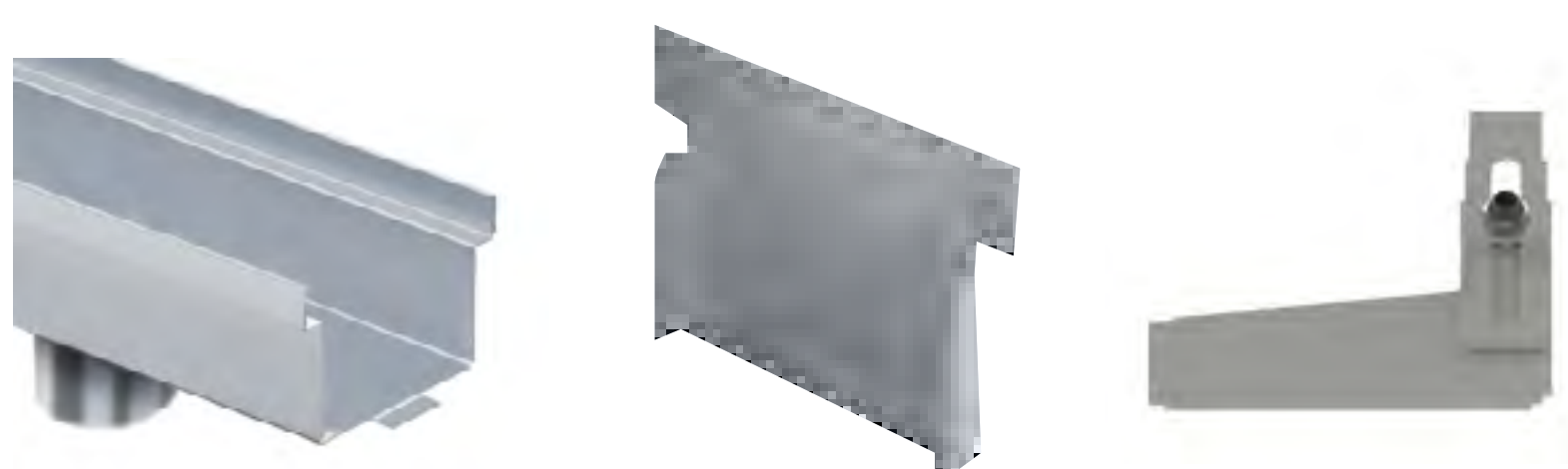
Grate Type	Length (mm)	Product Code	
		Galvanised Steel	Stainless Steel
Mesh	1000	MD24520201	MD24520301
Mesh	500	MD24520202	MD24520302
Perforated	1000	MD24520207	MD24520307
Perforated	500	MD24520208	MD24520308
Longitudinal	1000	MD24520203	MD24520303
Longitudinal	500	MD24520204	MD24520304



## Accessories

Outlet channels and corners join to straight lengths to avoid any mitred corners on site. Universal end plates and locking sets are also available as accessories in both galvanised and stainless steel.

Channel Side Type	Depth (mm)	Product Code	
		Galvanised Steel	Stainless Steel
Outlet	50	MD23020253	MD23020353
Outlet	90	MD23020255	MD23020355
Corner	50	MD24913211	MD24913311
End Plate	80	MD23920222	MD23920322
End Plate	180	MD23920224	MD23920323
Locking Set	N/A	249000012	249000013



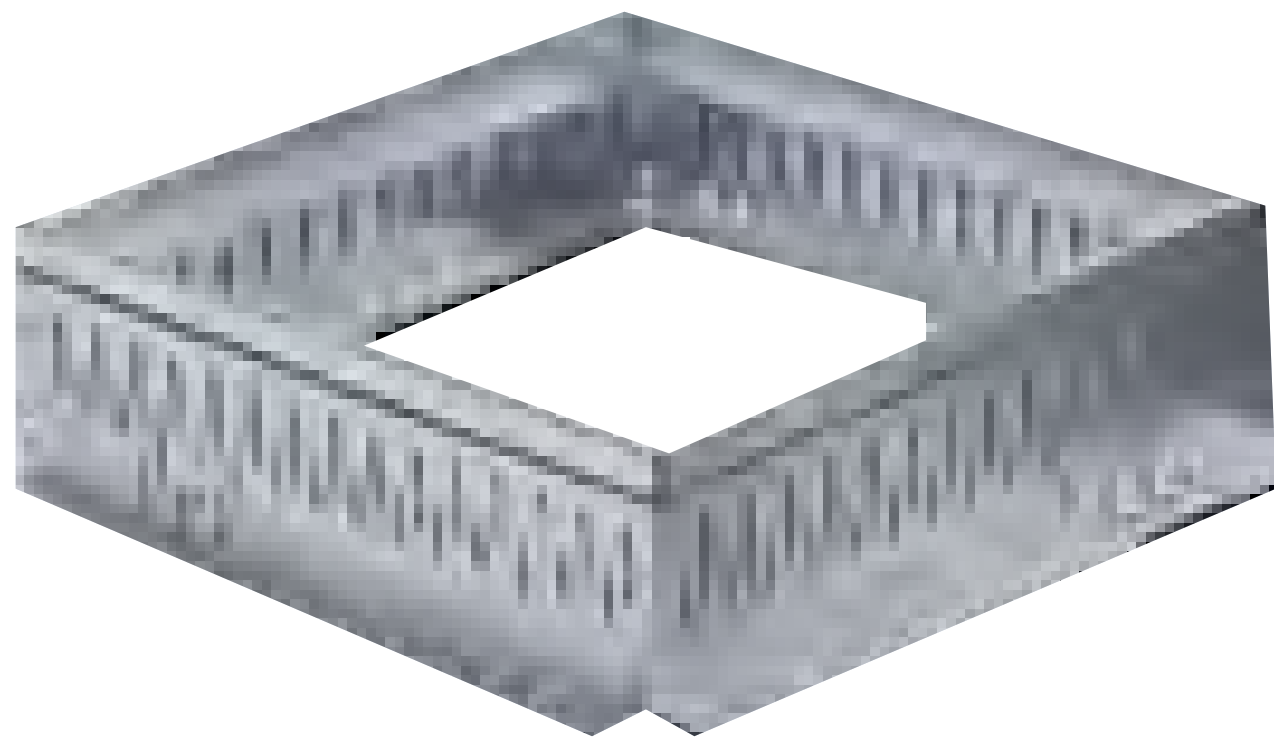


# Roof Channel Drains - Maintenance Units



## Maintenance Access Units

Access Units provide an efficient means of maintaining an unobstructed waterway within the channels.

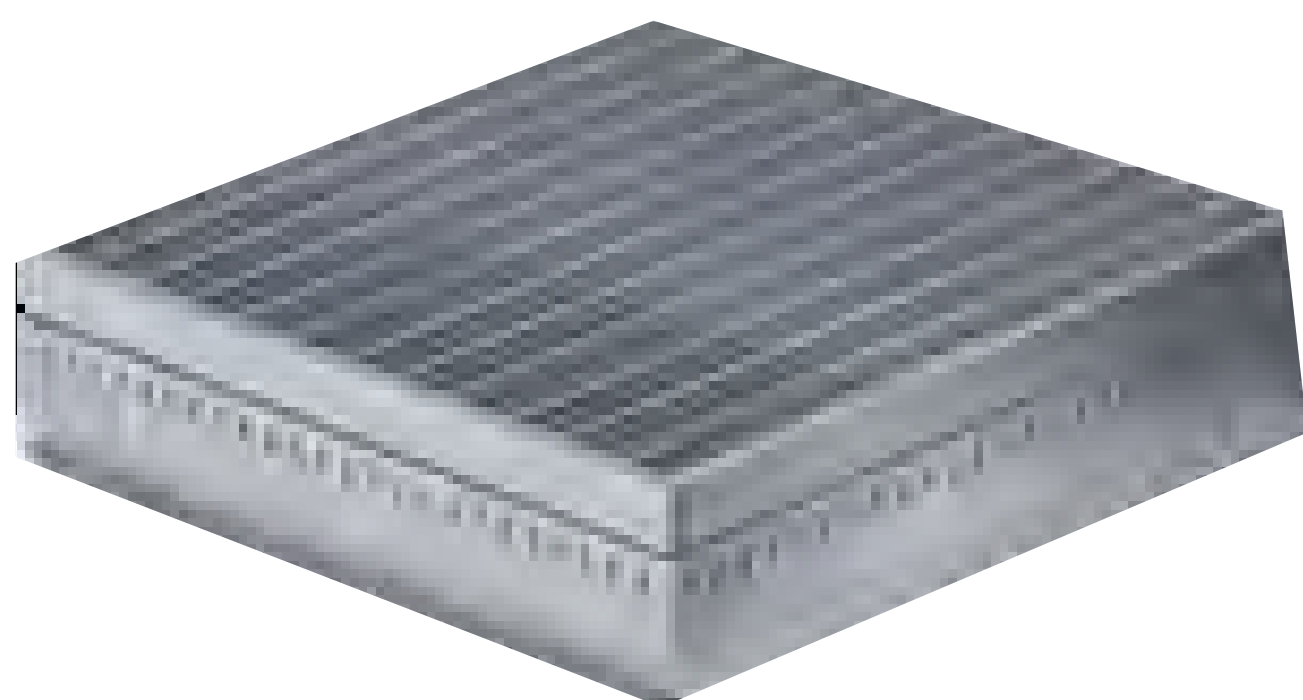


Size (mm)	Depth (mm)	Product Code	
		Galvanised Steel	Stainless Steel
250 x 250	50	MD24925200	MD24925300
250 x 250	70-100	MD24925201	MD24925301
250 x 250	100-160	MD24925202	MD24925302
400 x 400	50	MD24940200	MD24940300
400 x 400	70-100	MD24940201	MD24940301
400 x 400	100-160	MD2490202	MD2490302



## Grates for Maintenance Access Units

The Grates to the maintenance access units provide protection to the drainage system whilst giving additional rainwater drainage to paved areas.



Size (mm)	Height (mm)	Product Code	
		Galvanised Steel	Stainless Steel
242 x 242	20	MD24525200	MD24525300
392 x 392	20	MD24540200	MD24540300



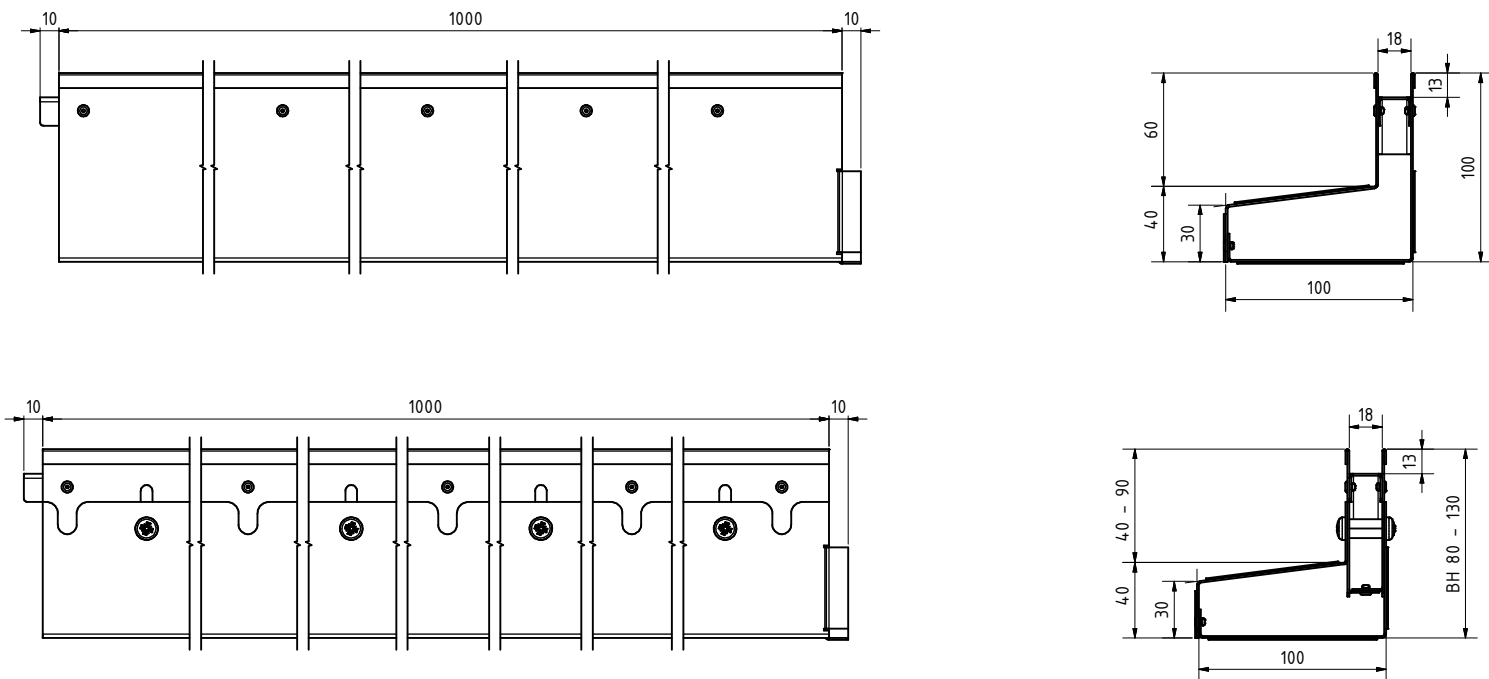


# Roof Channel Drains - Terrace Slot Channels



## Terrace Slot Channels

The stainless steel Slot Channel Drains take up the minimum amount of space to provide drainage of terrace rainwater run-off. The channel lengths are connected together via a tongue and groove jointing mechanism.



Channel Side Type	Channel Length (mm)	Channel Depth (mm)	Product Code
			Stainless Steel
Perforated	1000	Adjustable 80-130	MD38030
Perforated	1000	Fixed 100	MD38020
Closed	1000	Adjustable 80-130	MD38010
Closed	1000	Fixed 100	MD38000



## External and Internal Corner Connections

These prefabricated components provide a continuous change of direction and connect to the Channel lengths via a tongue and groove jointing mechanism.



Corner Type	Plan Size (mm)	Depth (mm)	Product Code
			Stainless Steel
External	200 x 200	Adjustable 80-130	MD38050
Internal	200 x 200	Adjustable 80-130	MD38055



## Maintenance Unit with Outlet

These units provide an efficient means of maintaining an unobstructed waterway within the channels and give direct access to an outlet pipe.



Size (mm)	Depth (mm)	Product Code
		Stainless Steel
500 x 100	Adjustable 81-130	MD38040



# Roof Channel Drains - Terrace Slot Channels



## Slot Inlay Grate

The slot inlay grate offers a visually unobtrusive method of providing drainage of rainwater run-off to terrace paving.



Size (mm)	Length (mm)	Product Code
		Stainless Steel
Square hole	1000	MD37956
Square hole	500	MD37955

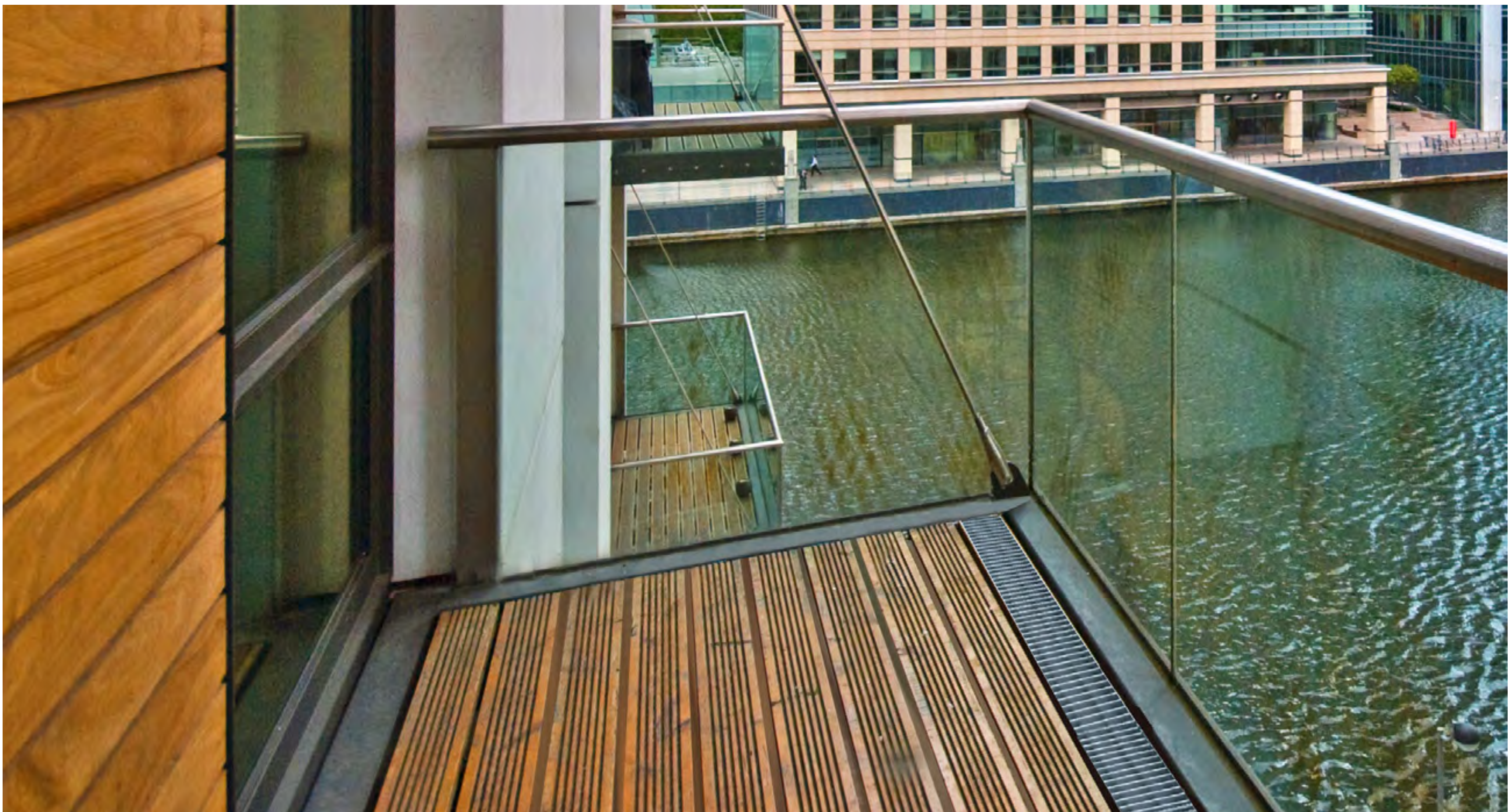


## End Plates

End Plates form a stop to the channel length. Vermin are prevented from using the channel as a means of escape.



Plate Type	Depth (mm)	Product Code
		Stainless Steel
Left or right hand	Adjustable 80-130	MD38060





# Roof Channel Drains - Installation Guide

## Installation Considerations for Straight and Slot Channels

These installation considerations conform to currently accepted workmanship standards.

Read the following items with the installation procedure set out on pages 81-82.

Modulock Channel Drains are set up on a waterproof membrane or in a gravel-bed or in drainage concrete appropriate for local conditions. Channels with a variable height can be adjusted to have a horizontal top edge and a sloping invert level.

The channels can be used in front of doors on escape routes or buildings with flush thresholds - in these positions use the mesh-type grates.

Set out the channels from the drainage outlet.

The joints between the individual channel bodies can be sealed or glued with suitable sealants.

90° connections (cross, corner or T pieces) for Straight Channels can be used to alter the configuration of the channel system.

Similarly, 90° connections (corner pieces only) for Slot Channels can be used to alter the configuration of the channel system.

Take care to avoid damaging the channels during the laying of the adjacent paving and bedding materials. Before laying the paving and bedding materials, make sure that the grates are temporarily inserted and the channels are braced adequately against compression.

A timber insert (Product Code: MD37961) is available for temporary use with Slot Channels to protect the channels from detritus during subsequent building works.

In areas where enhanced chemical attacks (eg de-icing agents, acids, bases, etc.) are to be expected, we recommend to install channels and gratings made out of stainless steel (eg 1.4571 - V4A).

### NOTE FOR GALVANISED CHANNELS:

Where galvanised steel has been cut, immediately apply a coating of cold galvanise paint to all exposed, clean surfaces.

## Care and Maintenance

Harmer Modulock Channels only require minimum maintenance but periodic inspection and in areas where leaf congestion might occur it is advisable to keep the channels free from blockage.

Carry out a visual inspection bi-annually.

Protect hands with industrial gloves when installing and inspecting.

Clear any builders rubbish from inside the drain.

Grates should only be cleaned with a plastic brush.

Jetting or flushing may be necessary - check outlet positions.

**DO NOT USE** bleach type drain cleaners or brick cleaning acids otherwise galvanised surfaces will be seriously damaged.



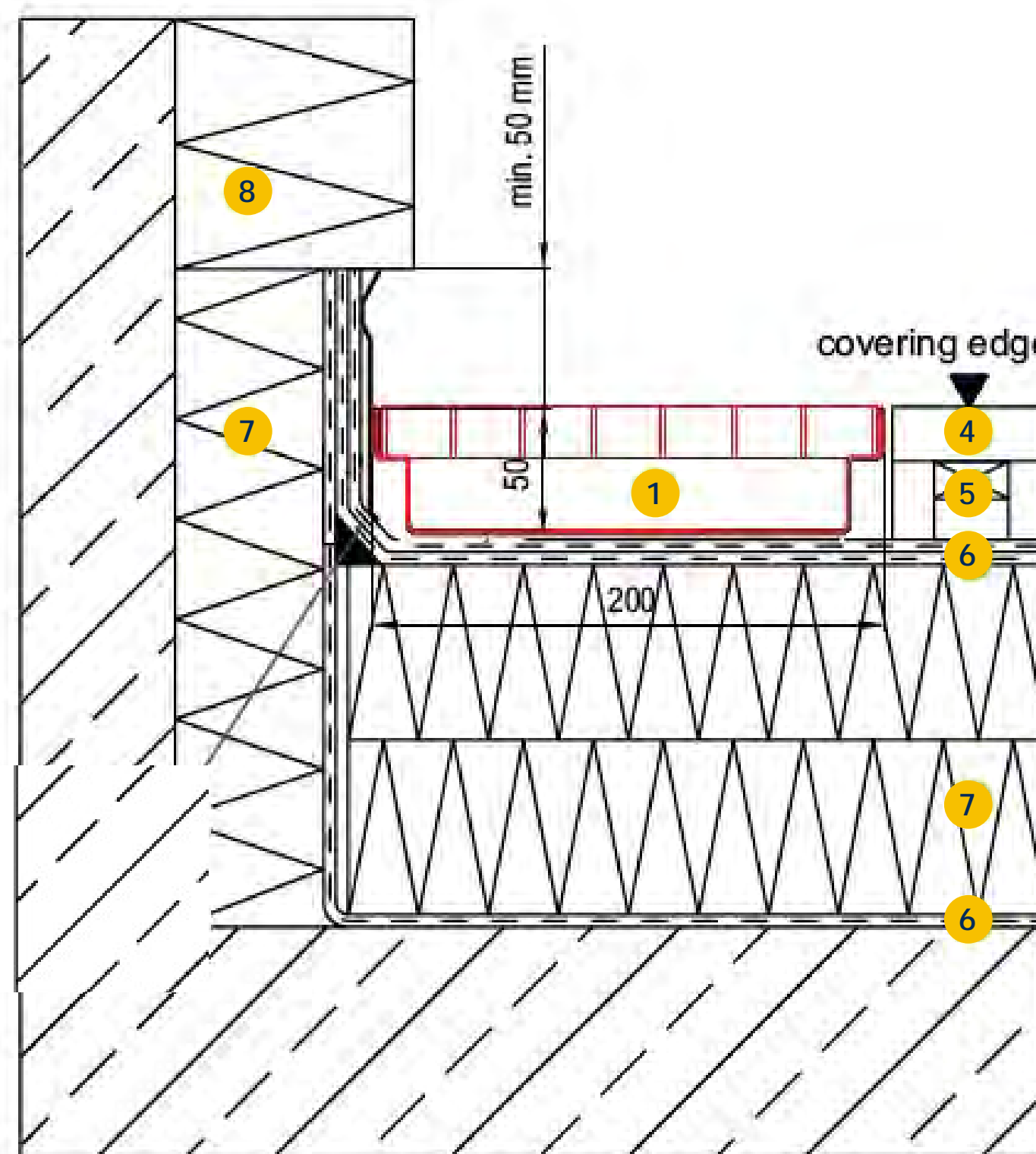
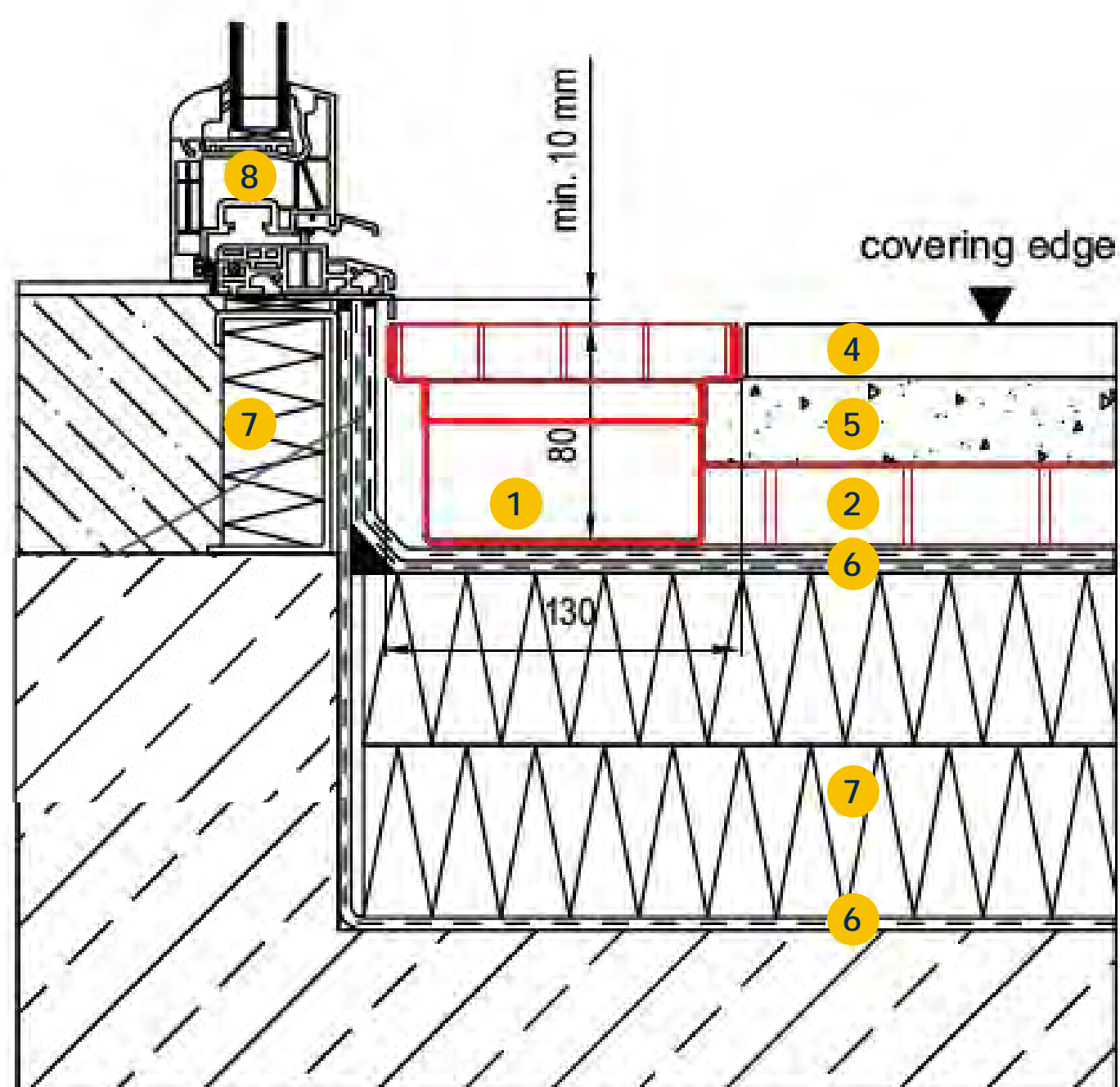
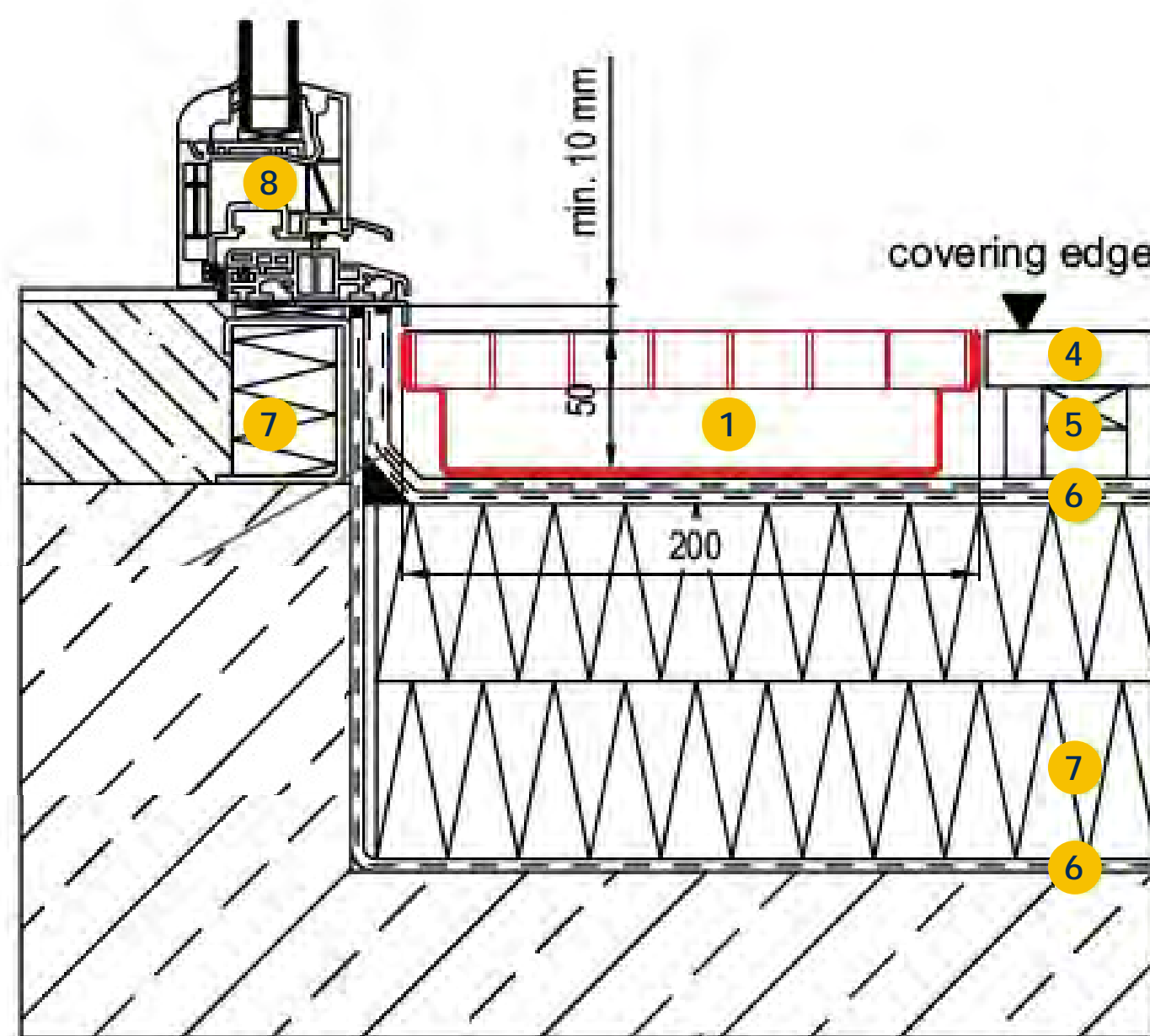


# Roof Channel Drains - Application Details

## Installation in areas without ground contact

- 1 Modulock roof channel fixed height 130mm or 200mm
- 2 Branch duct to outlet
- 3 Gully top element with mesh grating
- 4 Flooring/floor structure such as paving slabs or decking.
- 5 Construction according to planner such as gravel bed or drainage concrete
- 6 Waterproofing membrane
- 7 Thermal insulation
- 8 Door or facade construction

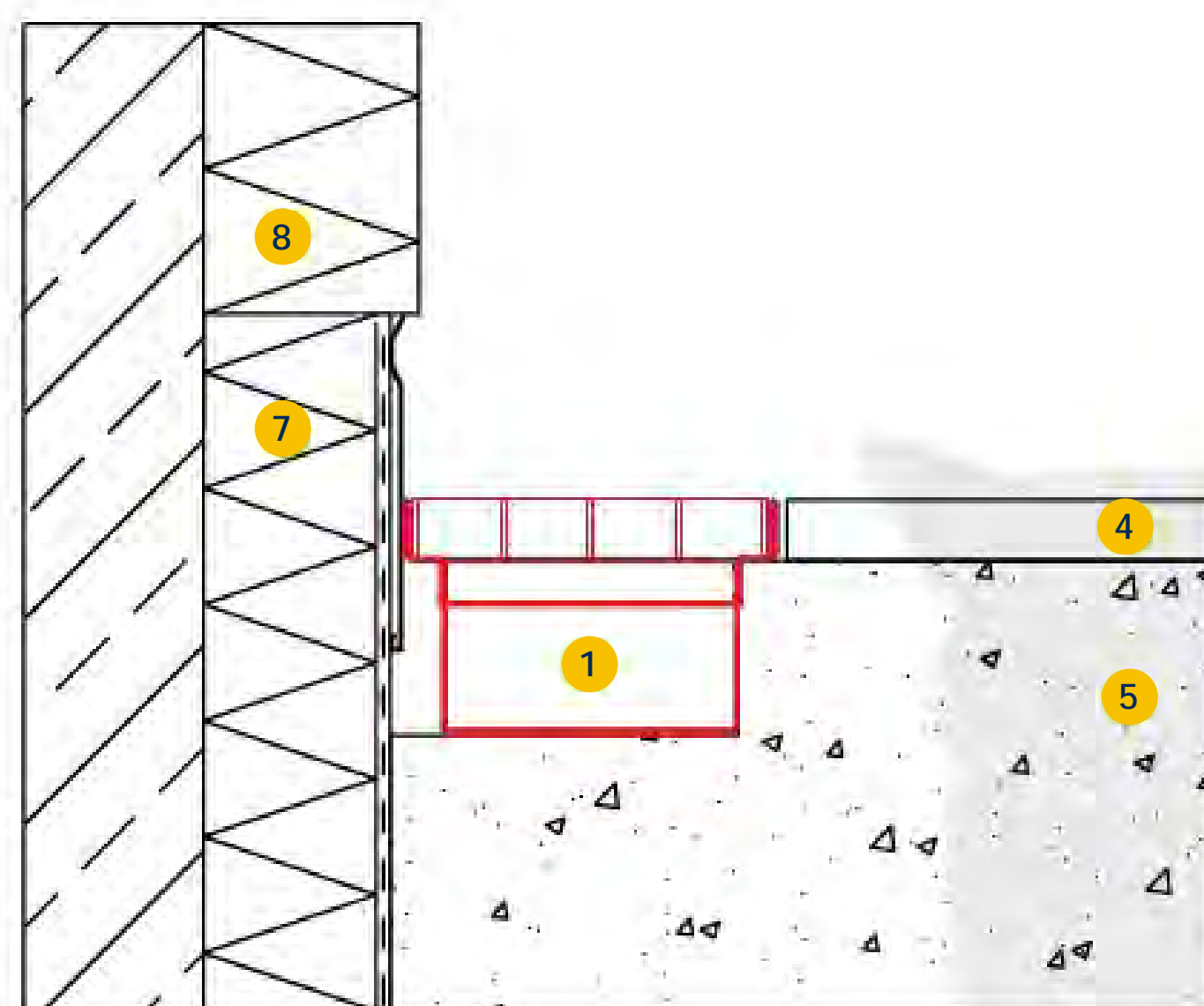
For installation of a Harmer Modulock Channel, the connection height in the door area can be reduced from 10cm to 1cm. The sealing heights specified must be adhered to during installation. The channel with branch duct can even be used at low installation heights, and is recommended in case of a larger distance to the next roof outlet (top attachment element).



## Installation in areas with ground contact

Laid in a gravel bed or single-grained concrete, channels with two-sided perforation conduct accumulating rainwater into the ground below to seep off. Channels with a closed channel body are suitable for controlled rainwater drainage, and can be connected to the surface drainage system.

- 1 Modulock roof channel fixed height 130mm or 200mm
- 2 Branch duct to outlet
- 3 Gully top element with mesh grating
- 4 Flooring/floor structure such as paving slabs or decking.
- 5 Construction according to planner such as gravel bed or drainage concrete
- 6 Waterproofing membrane
- 7 Thermal insulation
- 8 Door or facade construction

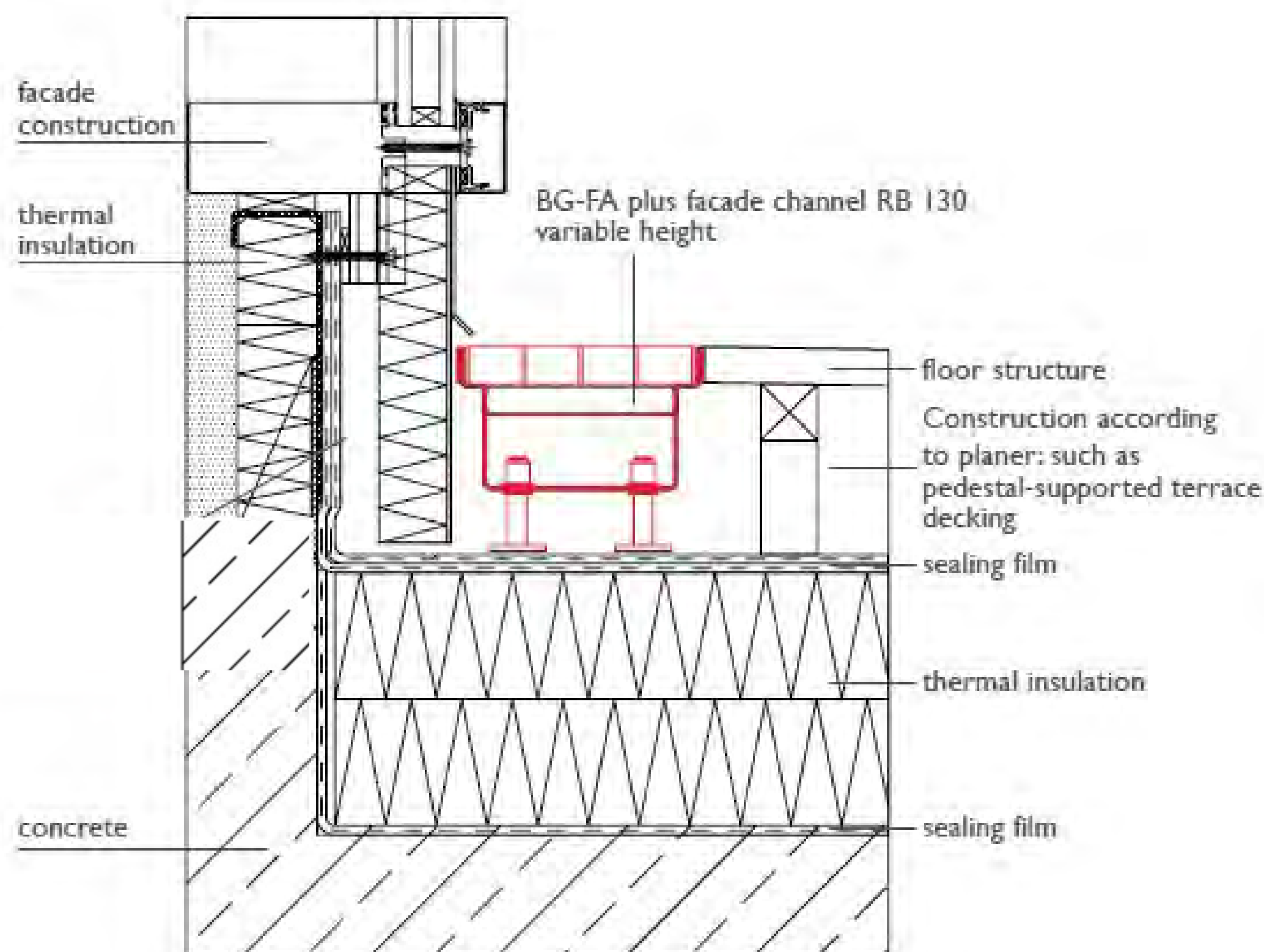




# Roof Channel Drains - Application Details

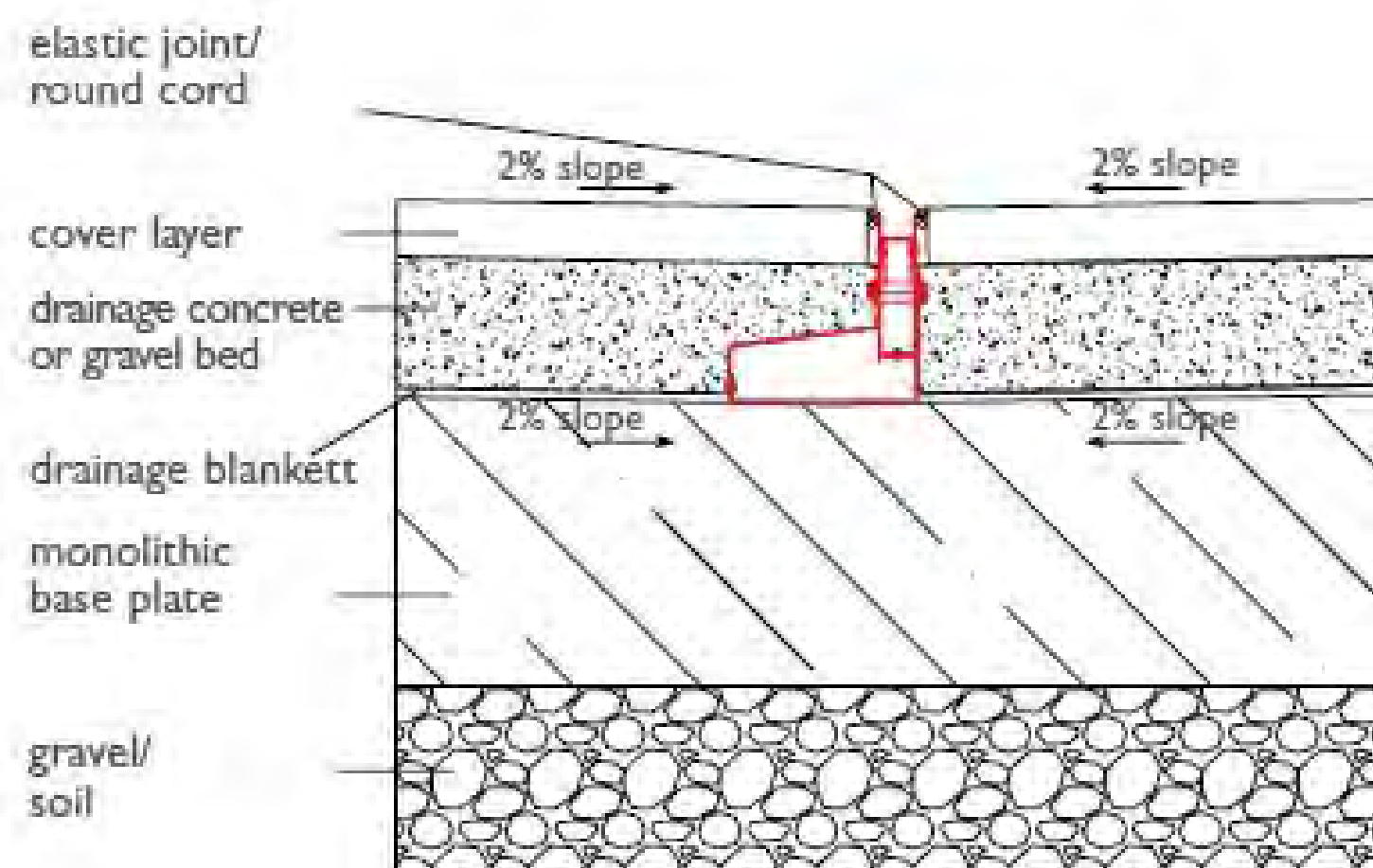
## Modulock Roof Channels

Harmer channels offer easy adjustable installation. This open-bottomed channel is factory-made with adjustable feet and hexagon socket allowing adjustment from above even after installation. Height flexibility allows precise adjustment for gradient differences and building construction tolerances.



## Terrace Slot Channels

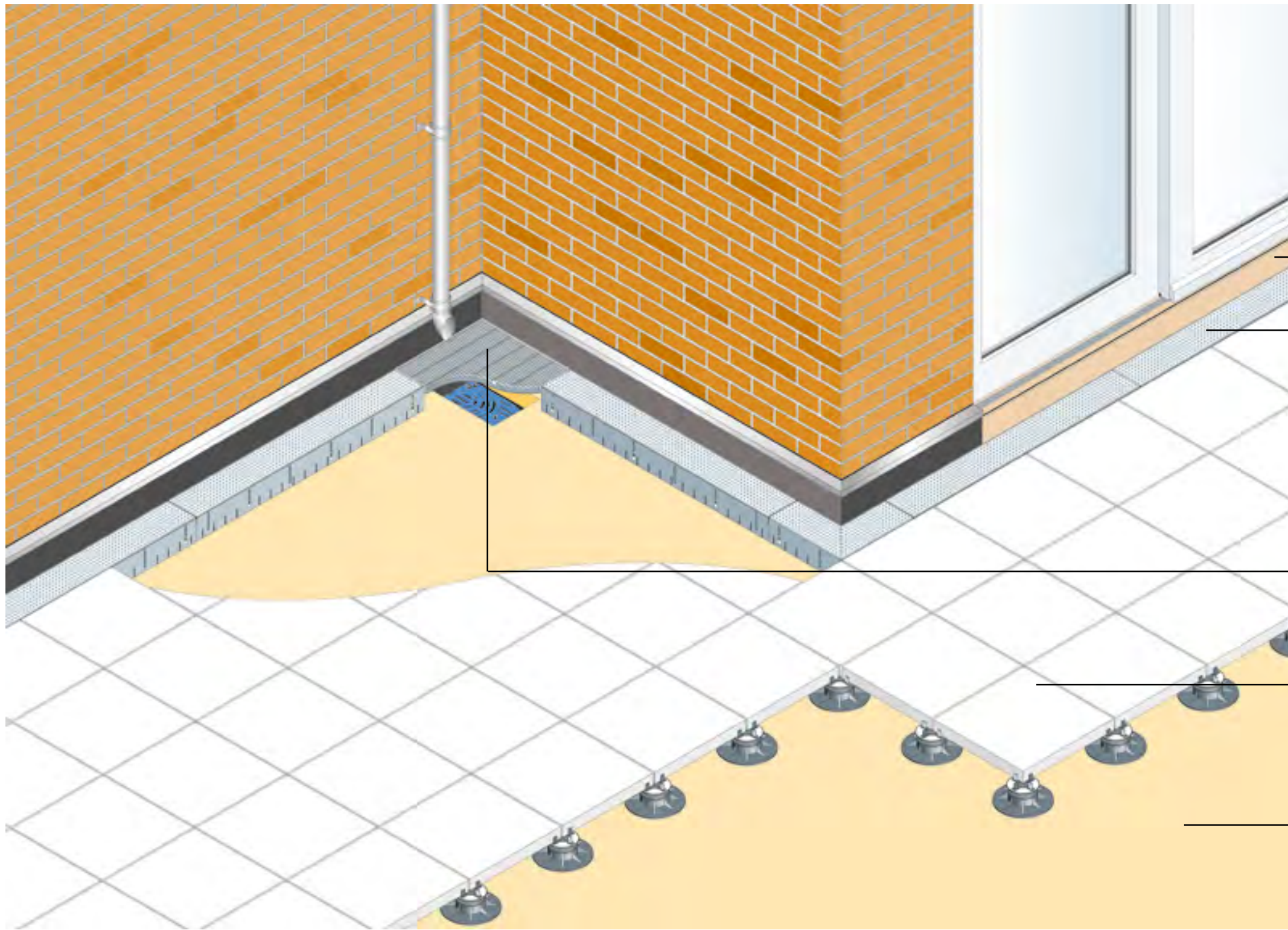
Slot Channels are primarily used for terrace and garden drainage. These channels offer a big advantage by allowing drainage on two levels: the floor covering and the underlying floor plates. Surface water is discharged through the narrow slot and with slot inlay. Penetrating water is captured in the slotted channel body. Height variability allows precise adjustment for level and gradient differences between floor covering and floor plates.





# Roof Channel Drains - Application Details

## Level Access Threshold using Straight Channel



- Level access threshold (Part M compliant)
- Harmer Modulock 130mm Straight Channel Drain (adjustable depth version) complete with stainless steel perforated grate
- Access cover
- Paving slabs on Harmer Modulock Pedestal Deck Supports
- Rigid insulation





# Modulock Pedestals

*Fully engineered, versatile, raised deck supports product range. Modulock pedestals offer a cost effective solution to both new build and refurb projects where level access is required.*





# Modulock Product Range Summary

Introduction

Aluminium Roof Outlets

Aluminium Bespoke

Cast Iron Outlets

Roof Channel Drains

Raised Deck Supports

Design & Specification

## Modulock Standard Pedestal



## Modulock Non-Combustible Pedestal

Reinforced height adjustment key



Locating blades can be removed if required

Self-Levelling Head

Coupling head

Screw coupling extension component

Supporting base with drainage holes



Locking Nut

Self-Levelling Head

Concave Head Base

Male Threaded Bar

Female Threaded section

Supporting base with drainage holes





# Modulock Product Range Summary

Fully engineered, versatile, raised deck supports product range. Modulock pedestals offer a cost effective solution to both new build and refurb projects where level access is required.

## Modulock Standard Pedestal Supports

Modulock Pedestal comprises 15 basic options, each with supporting head and base component, allowing a wide range of void heights. Pedestals are used to give floor voids ranging from 28mm to 550mm.

The Self-Levelling Head can accommodate gradients of up to 5°, and is provided with, or without, locating tabs.

The Timber Deck Head, also self-levelling, incorporates a stop to which timber deck supports are screwed, providing a secure fixing.

See page 88-95.

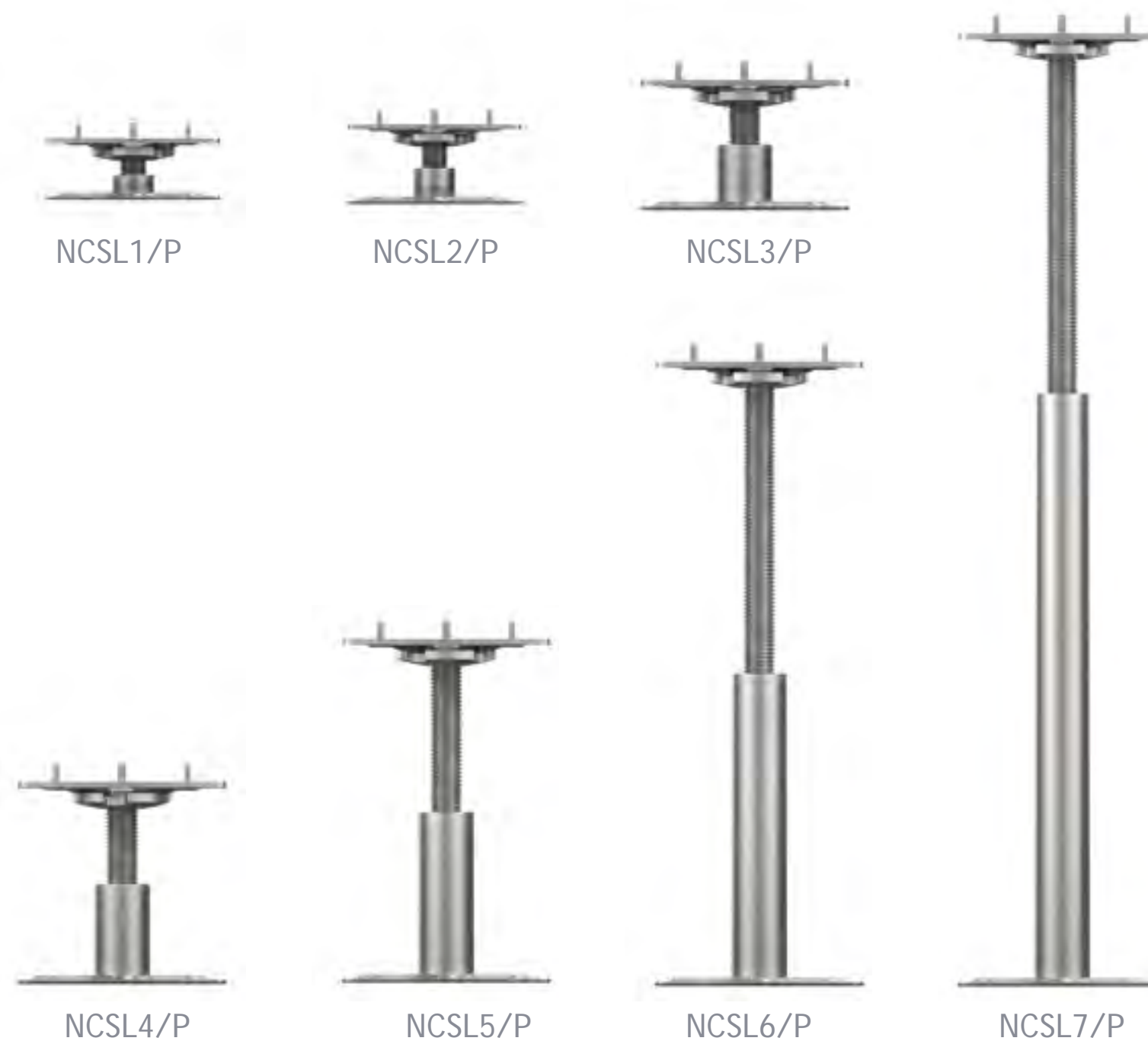


## Modulock Non-Combustible Pedestal Supports

In response to recent legislation changes, Harmer Modulock Non-Combustible Pedestals. Engineered to ensure fire safety in construction on roof, balcony, and terrace applications.

With a range of pedestals in heights from 28 to 457mm, A1 fire rated Non-Combustible Pedestals guarantee safety and when used with self-leveling heads, fast installation.

See page 96-99.





# Modulock Pedestal Benefits

The Modulock Pedestals are designed for use in terraces, walkways, balconies and ballasted flat roof constructions. They provide unique solutions for drainage and accessibility issues as well as the following advantages.

## Hidden Services

- The void between the waterproofing layer and raised flooring is ideal for hiding services
- Especially useful on refurbishment projects to avoid having to move pipes, vents or ductwork



## Maintains Expansion Gaps

- The tabs on the pedestals allow for independent movement of the slabs and the supports individually
- Allows the absorption of expansion and structural movements
- Locating blades on Modulock Pedestal Self-Levelling Head assist positioning of slabs and maintaining open joints when required
- Locating blades can be removed



## Precision Adjustment

- Utilising the threaded components of the Modulock Pedestals allow for precise adjustment
- Using this fine adjustment or shims can compensate for an uneven roof surface to ensure the finished roof level is always flat

## Speed of installation

- Modulock Pedestals are quick and easy to install, and provide fast, efficient drainage through the open joints of the slabs to the concealed drainage way below
- A stable sub-base and an adequate means of surface water drainage are virtually the only prerequisites for the use of the Modulock Pedestal system
- When using pedestals with self-levelling heads installation time is reduced by an estimated 30%



## Strength in Design

- The sturdy structure of the pedestals accompanied by the compound used and continuous thread ensures a strong, safe and long lasting product
- Resists temperatures from -40° to +120°C
- UV stable and resistant to acids
- 20-year life expectancy

## Compatibility

- Harmer Modulock Pedestal and Uni-Ring product ranges are fully compatible with the Modulock Channel Drain ranges



## Protection

- Plastic pedestals offer superior sound insulation properties through its bi-component anti-slip and anti-noise head
- The cavity between the waterproofing and raised flooring offers a constant passage of air offering better thermal insulation
- Having a raised flooring system protects the waterproofing membrane from UV rays which can cause damage

## Environmental

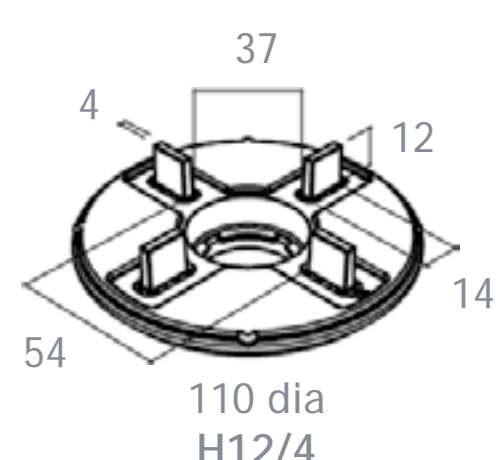
- Modulock pedestals, both plastic and non-combustible are 100% recyclable
- There are no chemicals or adhesives used in the installation of the system as it is a dry install system



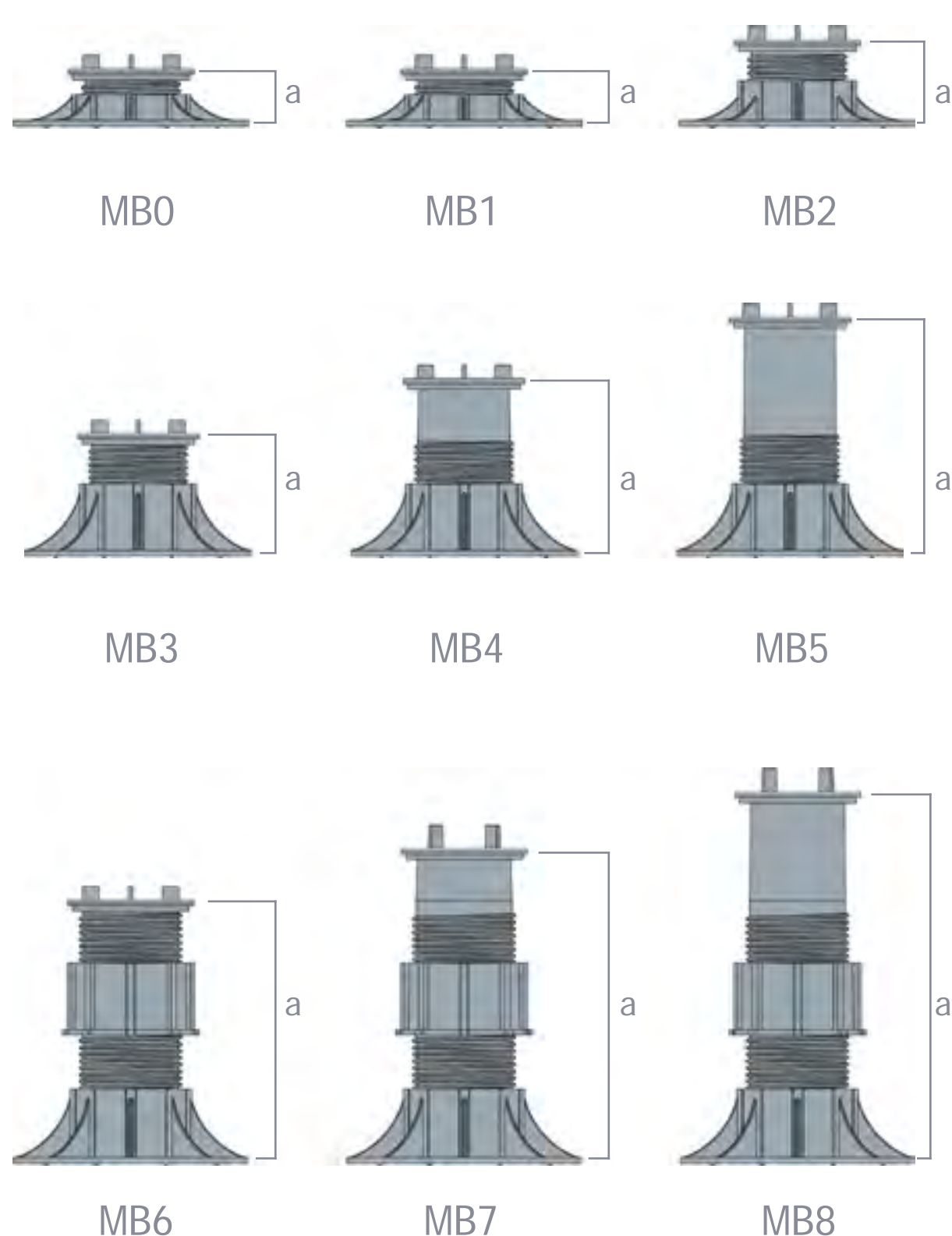
# Self-Levelling Standard Pedestals

The Pedestal range of deck supports provides a comprehensive range of adjustment from 28mm to 550mm. The system features self-levelling heads with a variety of dividers for preset drainage gaps in supported paving as well as heads without dividers for screw fixing decking battens. An extended key allows for fine adjustment of supports after slab laying.

## Self-Levelling Height Adjustable Pedestals 28-325mm



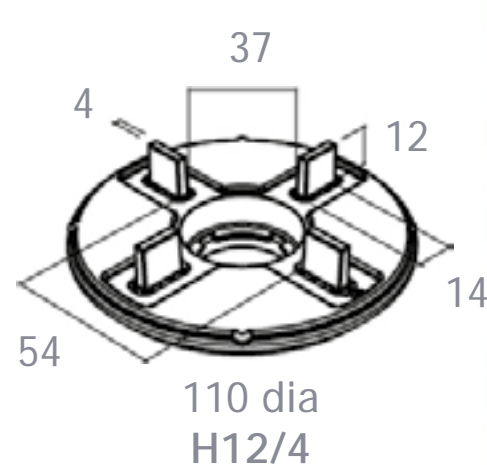
As standard, each pedestal is complete with Self-Levelling Head H12/4 which has 12mm high x 4mm thick Tabs  
See page 90 for table of other Self-Levelling Head options available



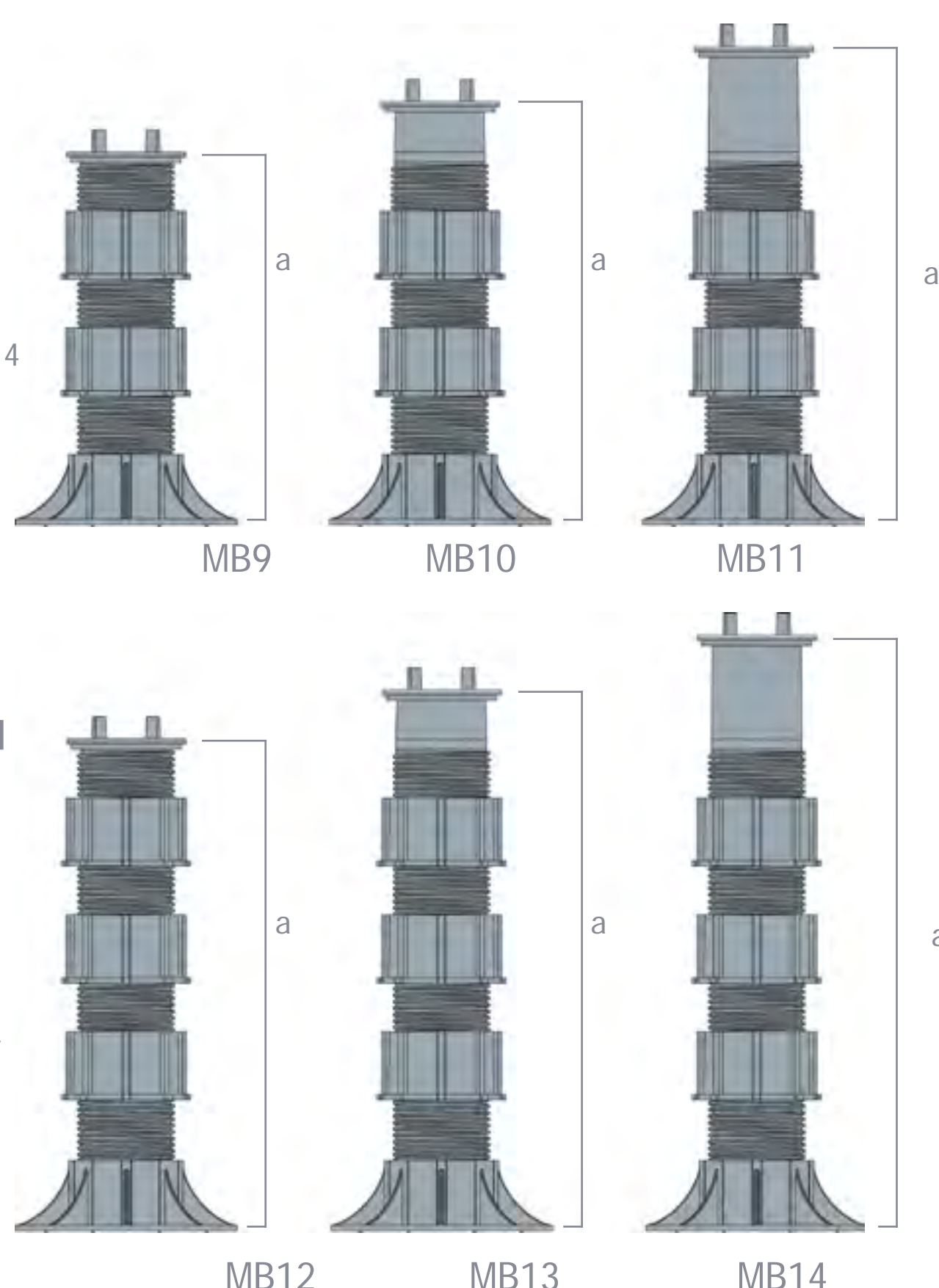
Each pedestal has a 205mm dia base

Pedestal Height Adjustment a (mm)	Standard Head* Type H12/4	Pedestal Product Code
28-38	Head with 12mm x 4mm tabs	MB0
35.5-50	Head with 12mm x 4mm tabs	MB1
50-75	Head with 12mm x 4mm tabs	MB2
75-120	Head with 12mm x 4mm tabs	MB3
120-170	Head with 12mm x 4mm tabs	MB4
170-215	Head with 12mm x 4mm tabs	MB5
140-230	Head with 12mm x 4mm tabs	MB6
185-275	Head with 12mm x 4mm tabs	MB7
235-325	Head with 12mm x 4mm tabs	MB8

## Self-Levelling Height Adjustable Pedestals 205-550mm



As standard, each pedestal is complete with Self-Levelling Head H12/4 which has 12mm high x 4mm thick Tabs  
See page 90 for table of other Self-Levelling Head options available



Each pedestal has a 205mm dia base

Pedestal Height Adjustment a (mm)	Standard Head* Type H12/4	Pedestal Product Code
205-345	Head with 12mm x 4mm tabs	MB9
250-385	Head with 12mm x 4mm tabs	MB10
300-400	Head with 12mm x 4mm tabs	MB11
270-455	Head with 12mm x 4mm tabs	MB12
315-500	Head with 12mm x 4mm tabs	MB13
365-550	Head with 12mm x 4mm tabs	MB14

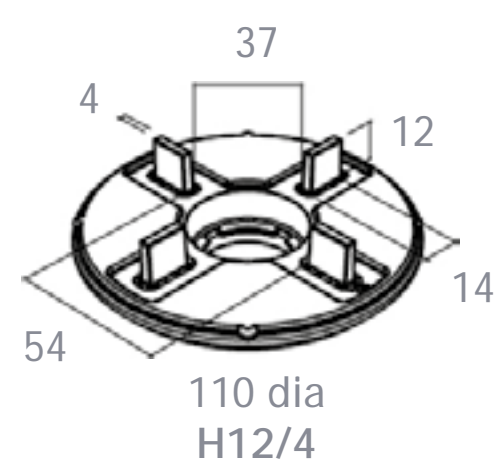
**Specifying Pedestals with Self-Levelling Heads other than Standard H12/4:** To specify or order an optional head, please add the appropriate head product code (see table on page 95) to the pedestal product code as shown in the following typical examples:  
If MB1 is wanted, but using a head with 20mm high x 2mm thick tabs, the complete product code will be MB1/H20/2.  
If MB7 is wanted, but using a head with 12mm high x 3mm thick tabs, the complete product code will be MB7/H12/3.  
If MB10 is wanted, but using the Flat Head, the complete product code will be MB10/H/F.  
If MB12 is wanted, but using the Timber Deck Head, the complete product code will be MB12/DH.



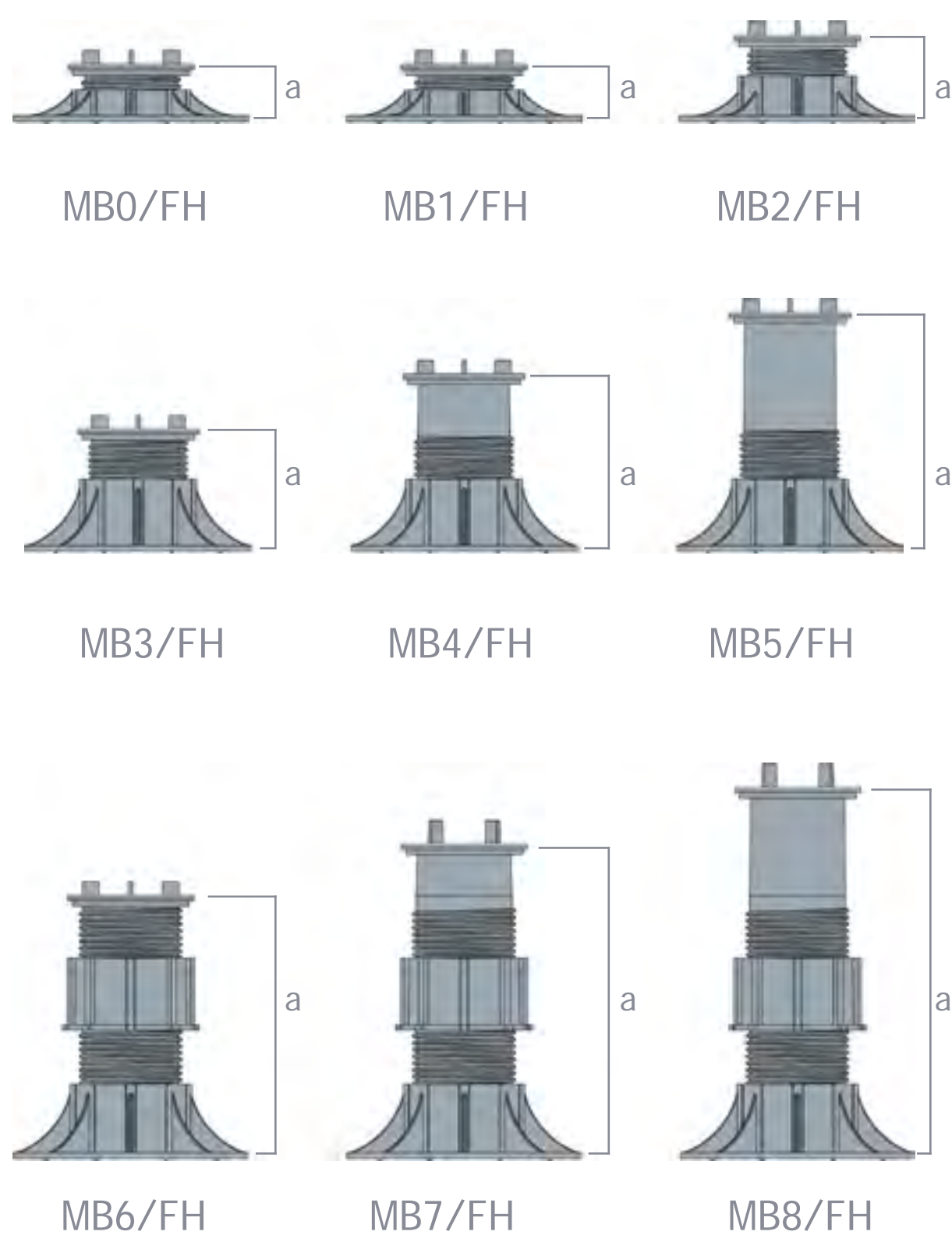
# Fixed Head Standard Pedestals

The Pedestal range of deck supports provides a comprehensive range of adjustment from 28mm to 550mm. The pedestals below feature fixed heads with dividers for preset drainage gaps in supported paving as well as heads without dividers for screw fixing decking battens. An extended key allows for fine adjustment of supports after slab laying.

## Fixed Head Height Adjustable Pedestals 28-325mm



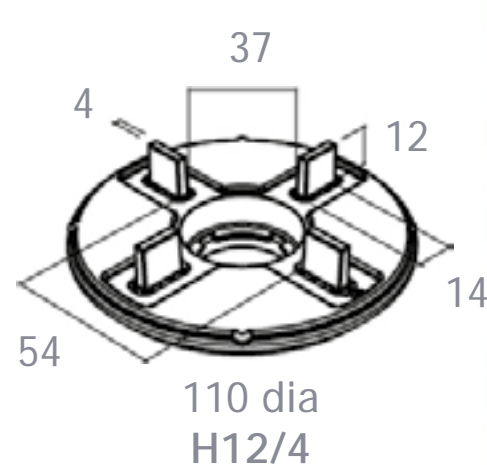
As standard, each pedestal is complete with Fixed Head which has 12mm high x 4mm thick Tabs



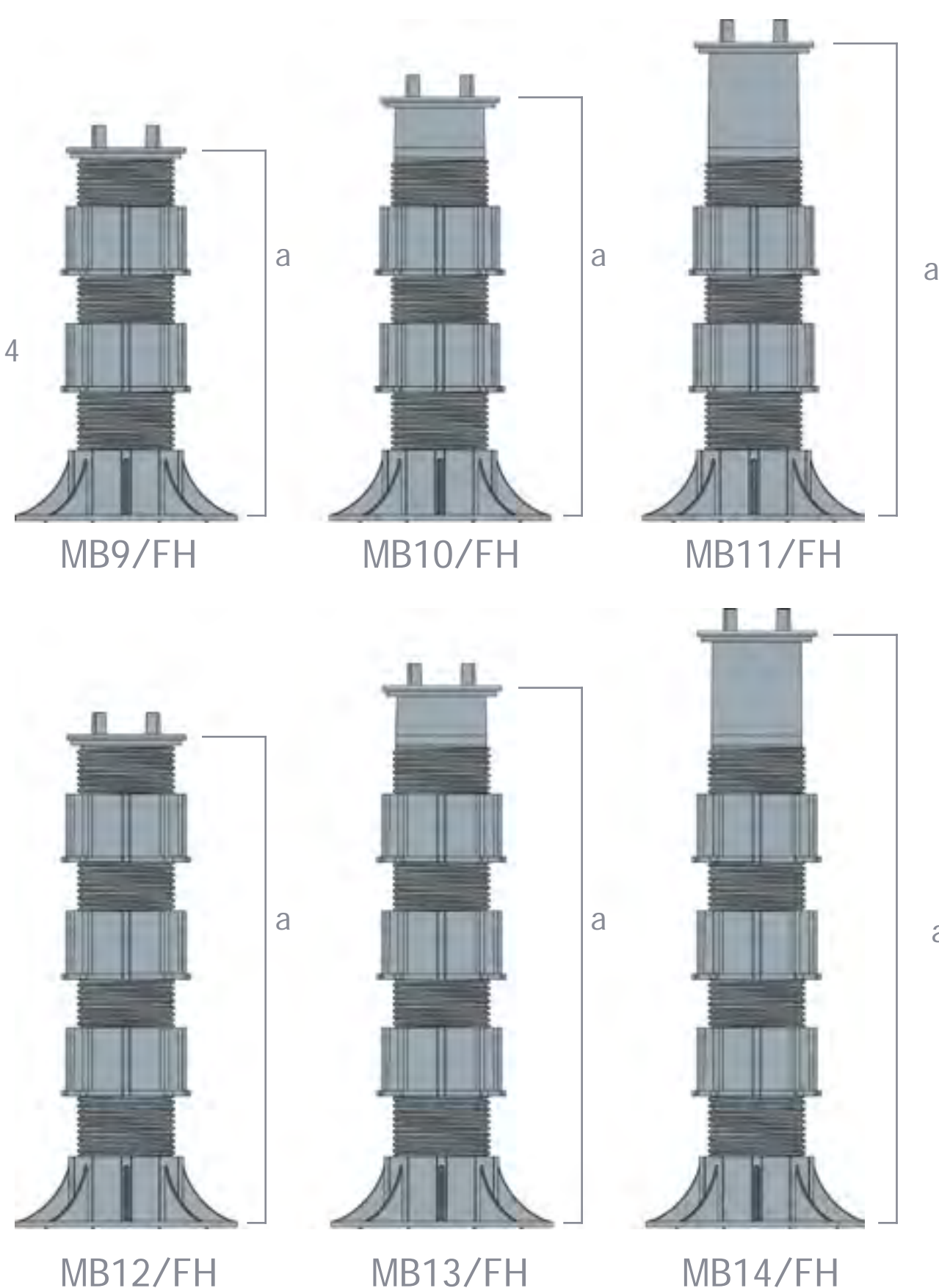
Each pedestal has a 205mm dia base

Pedestal Height Adjustment a (mm)	Standard Head* Type H12/4	Pedestal Product Code
28-38	Head with 12mm x 4mm tabs	MB0/FH
35.5-50	Head with 12mm x 4mm tabs	MB1/FH
50-75	Head with 12mm x 4mm tabs	MB2/FH
75-120	Head with 12mm x 4mm tabs	MB3/FH
120-170	Head with 12mm x 4mm tabs	MB4/FH
170-215	Head with 12mm x 4mm tabs	MB5/FH
140-230	Head with 12mm x 4mm tabs	MB6/FH
185-275	Head with 12mm x 4mm tabs	MB7/FH
235-325	Head with 12mm x 4mm tabs	MB8/FH

## Fixed Head Height Adjustable Pedestals 205-550mm



As standard, each pedestal is complete with Fixed Head which has 12mm high x 4mm thick Tabs



Each pedestal has a 205mm dia base

Pedestal Height Adjustment a (mm)	Standard Head* Type H12/4	Pedestal Product Code
205-345	Head with 12mm x 4mm tabs	MB9/FH
250-385	Head with 12mm x 4mm tabs	MB10/FH
300-400	Head with 12mm x 4mm tabs	MB11/FH
270-455	Head with 12mm x 4mm tabs	MB12/FH
315-500	Head with 12mm x 4mm tabs	MB13/FH
365-550	Head with 12mm x 4mm tabs	MB14/FH

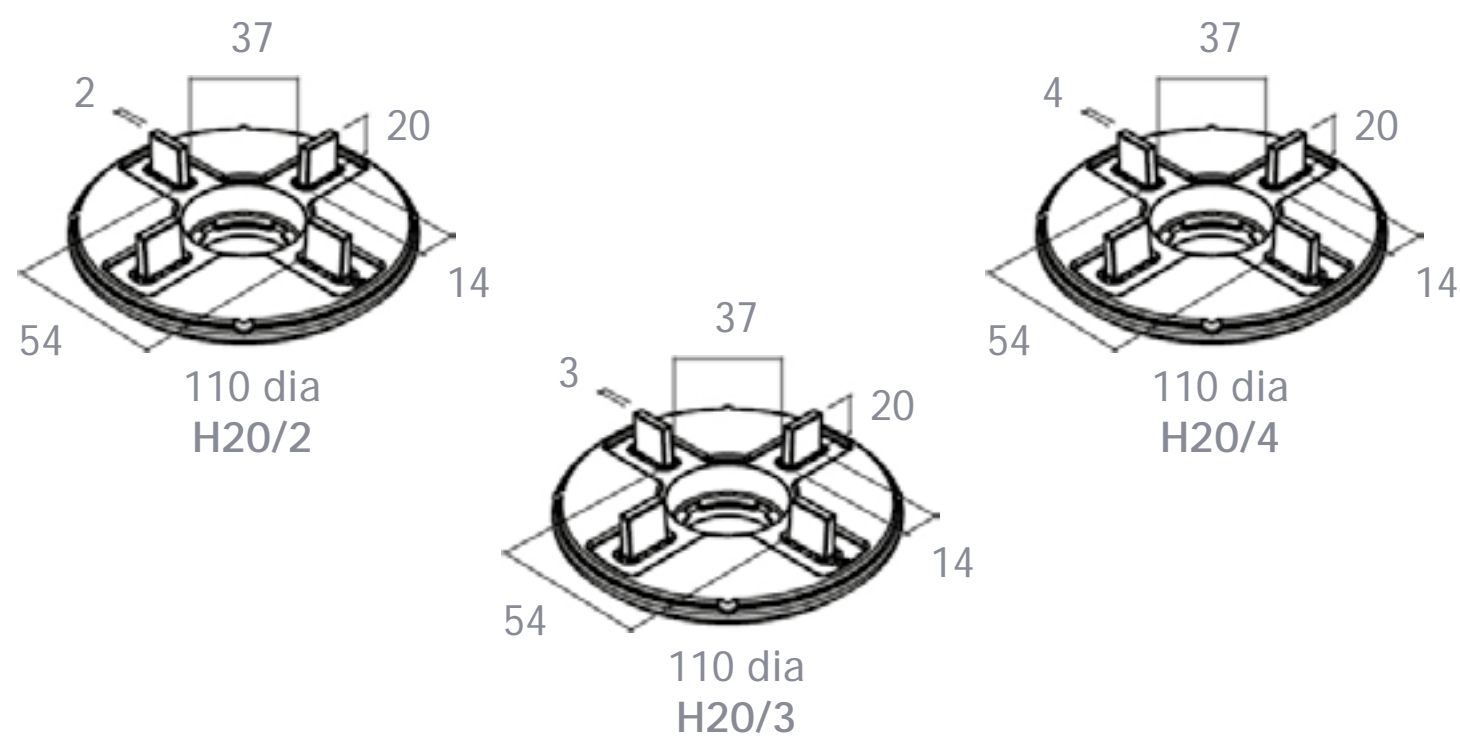
If MB12/FH is wanted, but using the Timber Deck Head, the complete product code will be MB12/DFH.



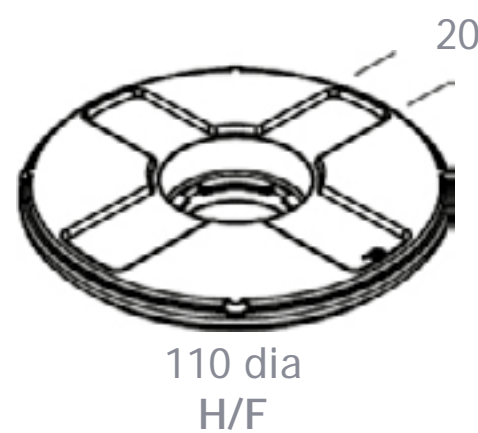
# Standard Pedestals Product Tables

## Pedestal Self-Levelling Head Options

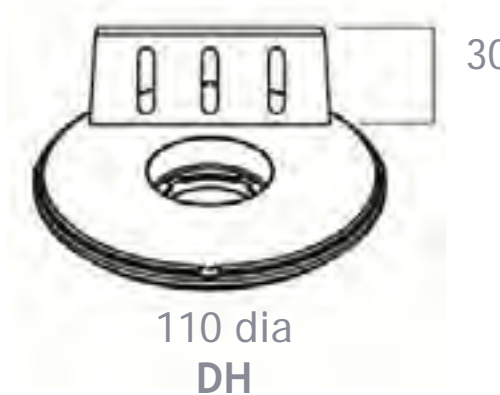
Self-Levelling Heads with 20mm high tabs



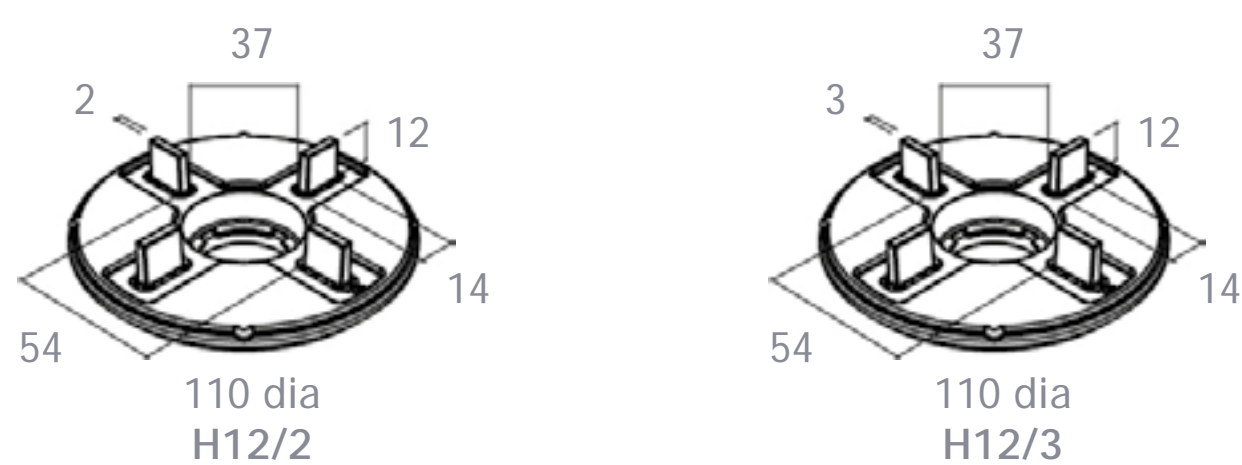
Self-Levelling Flat Head (no tabs)



Self-Levelling Timber Deck Head



Self-Levelling Heads with 12mm high tabs



Optional Head Types	Head Product Code
Self-Levelling Head with 20mm high x 2mm thick Tabs	H20/2
Self-Levelling Head with 20mm high x 3mm thick Tabs	H20/3
Self-Levelling Head with 20mm high x 4mm thick Tabs	H20/4
Self-Levelling Head with 12mm high x 2mm thick Tabs	H12/2
Self-Levelling Head with 12mm high x 3mm thick Tabs	H12/3
Self-Levelling Flat Head (No Tabs)	H/F
Self-Levelling Timber DeckHead	DH

## Extension Coupler

The versatility of Modulock pedestals comes from their modular design. Each is made up of individual components with male and female threaded connections. In order to provide as much adjustment as possible when installing our Extension Coupler can be purchased after an initial order of pedestals to increase the overall height.



Item Description	Pedestal Product Code
Extension Coupler	C1

## Key

Adjusting the height of the pedestals once installed is made easy via the Adjustment Key. This is slotted between the opening of the slabs into the top of the pedestal and can be rotated for precision adjustment in height.



Item Description	Pedestal Product Code
Adjustment Key	KEY

## Standard Perimeter Spacer

The standard perimeter spacers allow for elegant and uniform spacing of the tiles/slabs from the perimeter walls allowing a consistent 10mm gap between the flooring and wall. This provides stability for the flooring as well as a consistent aesthetically pleasing edge detail for the system.



Item Description	Pedestal Product Code
Standard perimeter spacer	MB/PPS

## Standard Rubber Base

Incorporating the rubber base allows protection for the waterproofing membrane beneath the base of the pedestal.

Item Description	Pedestal Product Code
Standard Rubber Base	MB/RB



# Uni-Ring & Uni-Plus Product Tables

Uni-Ring and Uni-Plus are versatile and economic paving supports. Uni-Ring supports provide a 16mm deck void and can be stacked in combination with 3mm Uni-Shims for additional height correction. Uni-Plus is a low level height adjustable system providing a deck void from 25mm to 40mm.

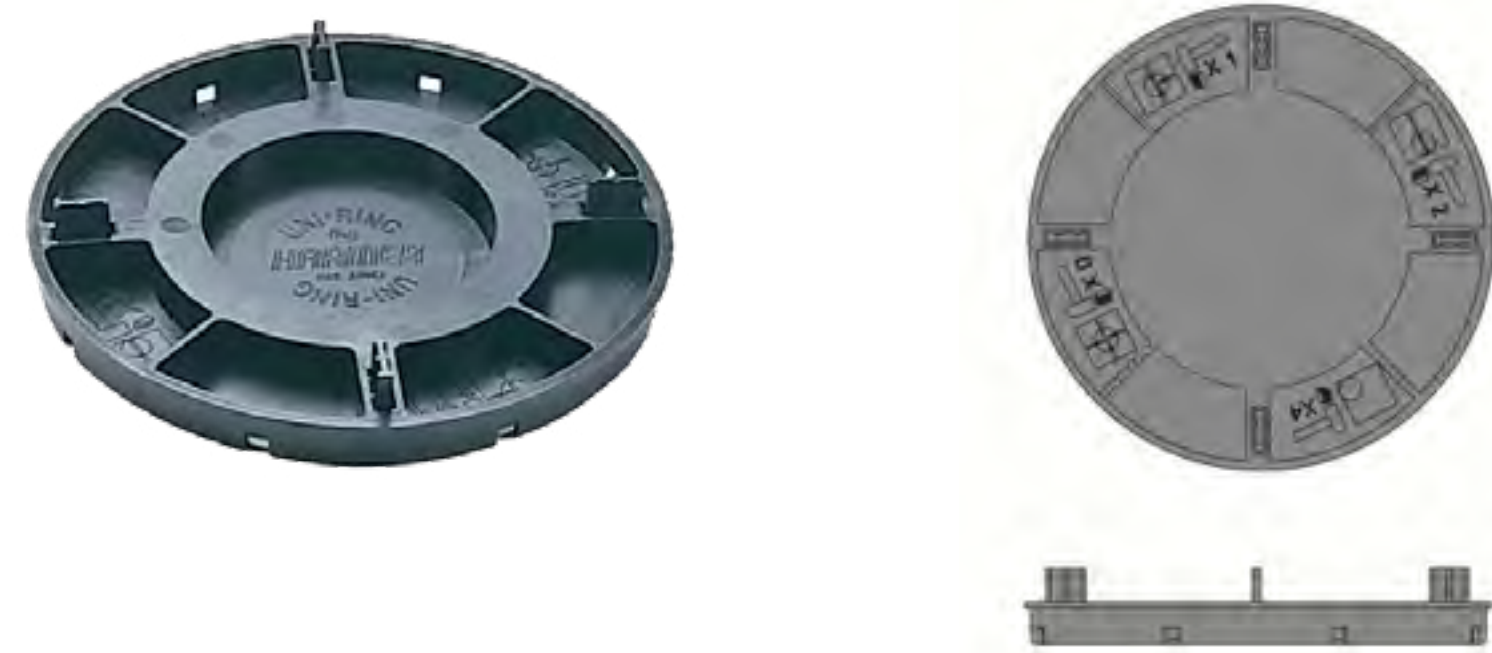
## Uni-Ring

Harmer Uni-Ring is quick and easy to install, and provides fast, efficient drainage through the open joints of the slabs to the concealed drainage below. The system is ideal for any waterproofed substructure and especially for inverted roof constructions where ballasted insulation is laid onto the waterproofing layer of the flat roof. Traditional bedding and grouting materials are not required, and once installed, the paving slabs can be easily lifted for simple inspection of the drainage outlets and for substructure maintenance.

Ring with collapsible spacers

Height adjustment shims

A maximum of two Uni-Shims can be used per Uni-Ring



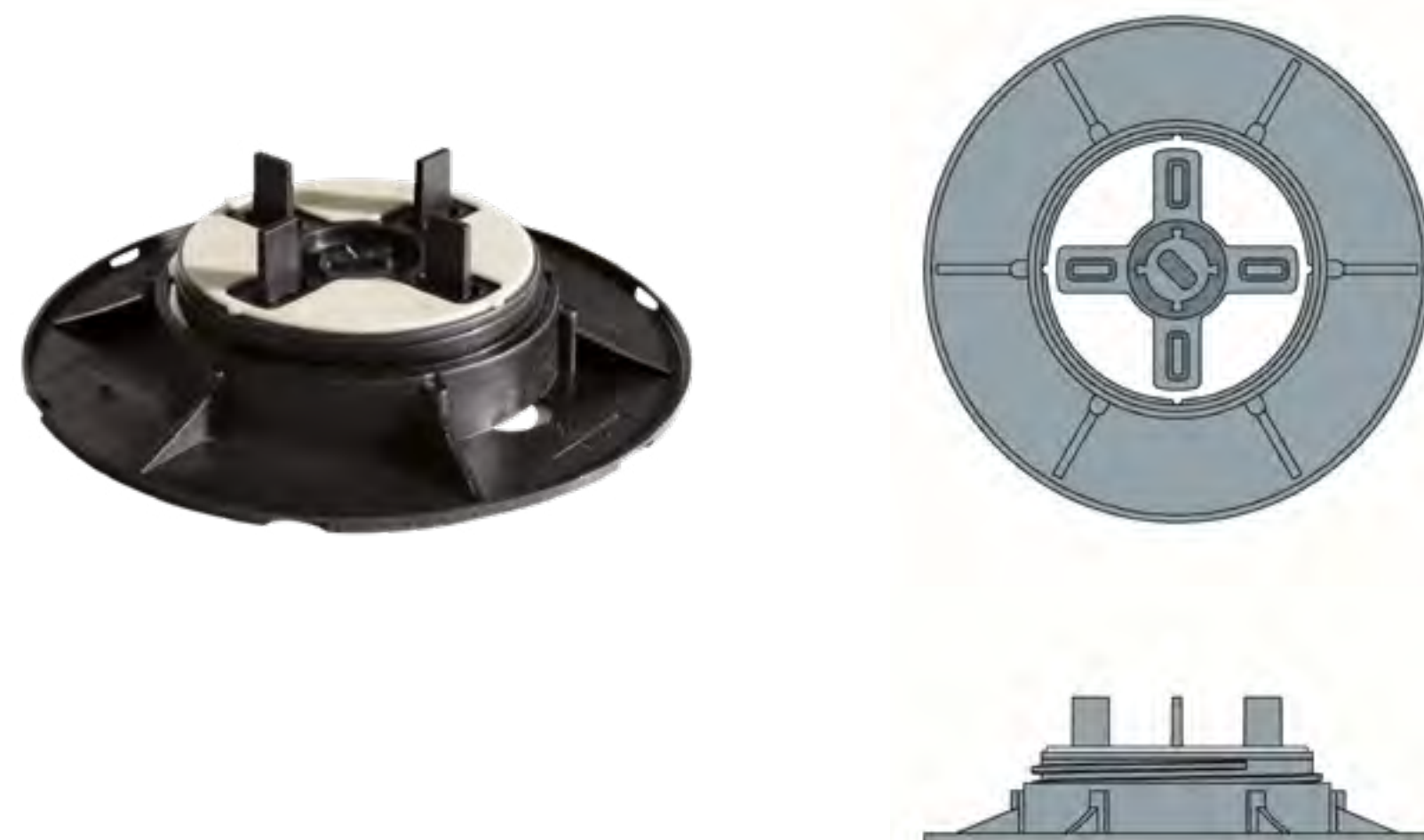
Product	a (mm)	b (mm)	c (mm)	Code
Uni-Ring	176	25	16	Uni-Ring



Product	a (mm)	b (mm)	Code
Uni-Shim	110	3	Uni-Shim

## Uni-Plus

Harmer Uni-Plus is an economical low level height adjustable system that is adjusted on a screw mechanism to provide height adjustments from 25mm to 40mm. The head features collapsible spacers for ease of installation in corners and perimeter wall situations. Uni-Plus is suitable for use where the floating deck is to be laid parallel to the roof deck i.e. does not have any slope correcting features..



Product	a (mm)	b (mm)	c (mm)	d (mm)	Code
Uni-Plus	205	110	25 - 40	25	Uni-Plus



# Project Gallery

Introduction

Aluminium  
Roof Outlets

Aluminium  
Bespoke

Cast Iron  
Outlets

Roof Channel  
Drains

Raised Deck  
Supports

Design &  
Specification





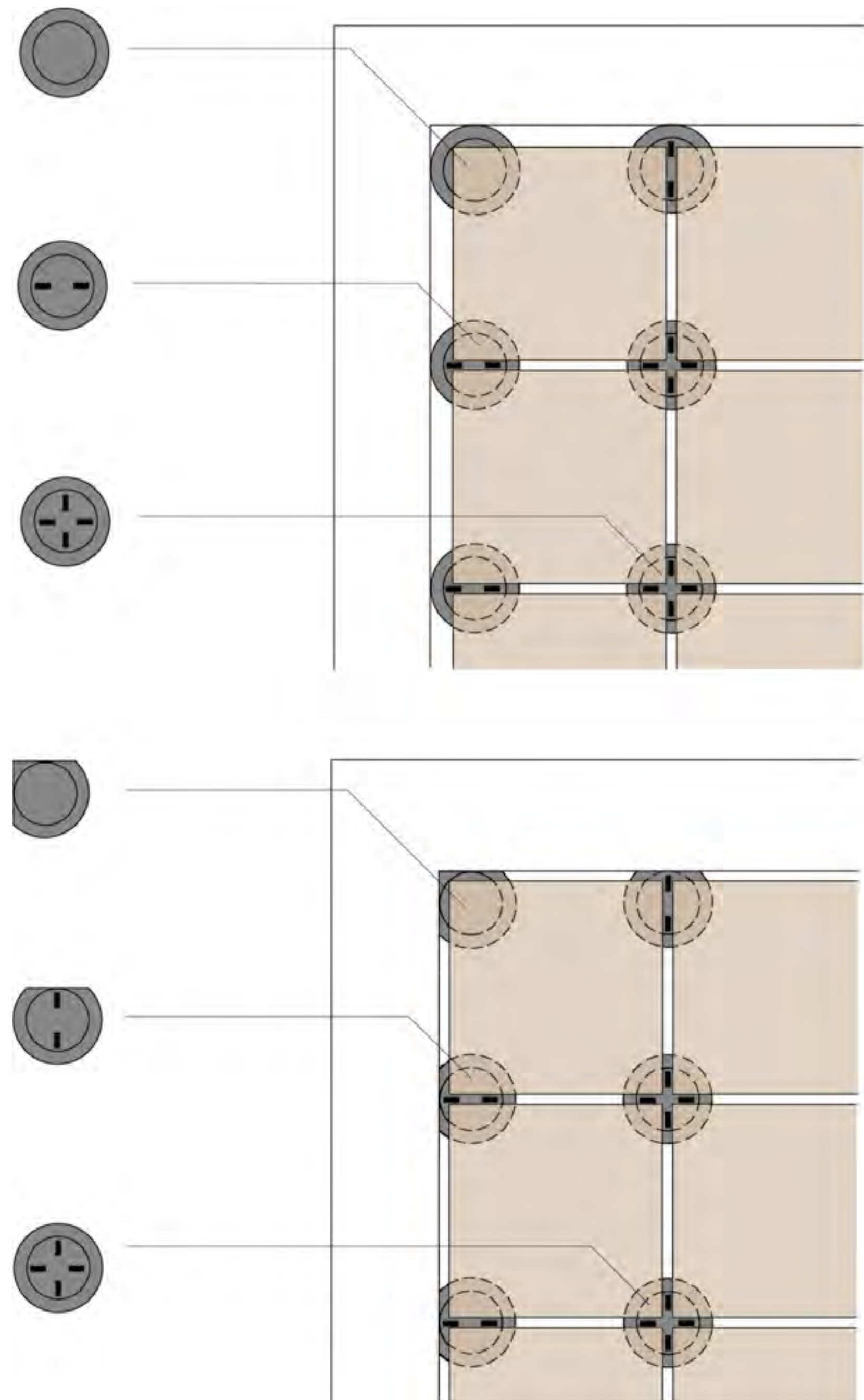
# Standard Pedestal Installation

## Harmer Pedestal

A stable sub-base and, in the case of exposed external use, an adequate means of surface water drainage are virtually the only prerequisites for the use of the Harmer Modulock system. Irregular, stepped, uneven or sloping sub-bases can usually be easily surmounted by the system resulting in a new level raised floor. The broad sequences of installation are illustrated in relation to a typical paved pedestrian deck erected over an existing drained sub-base.

### Installation Sequence

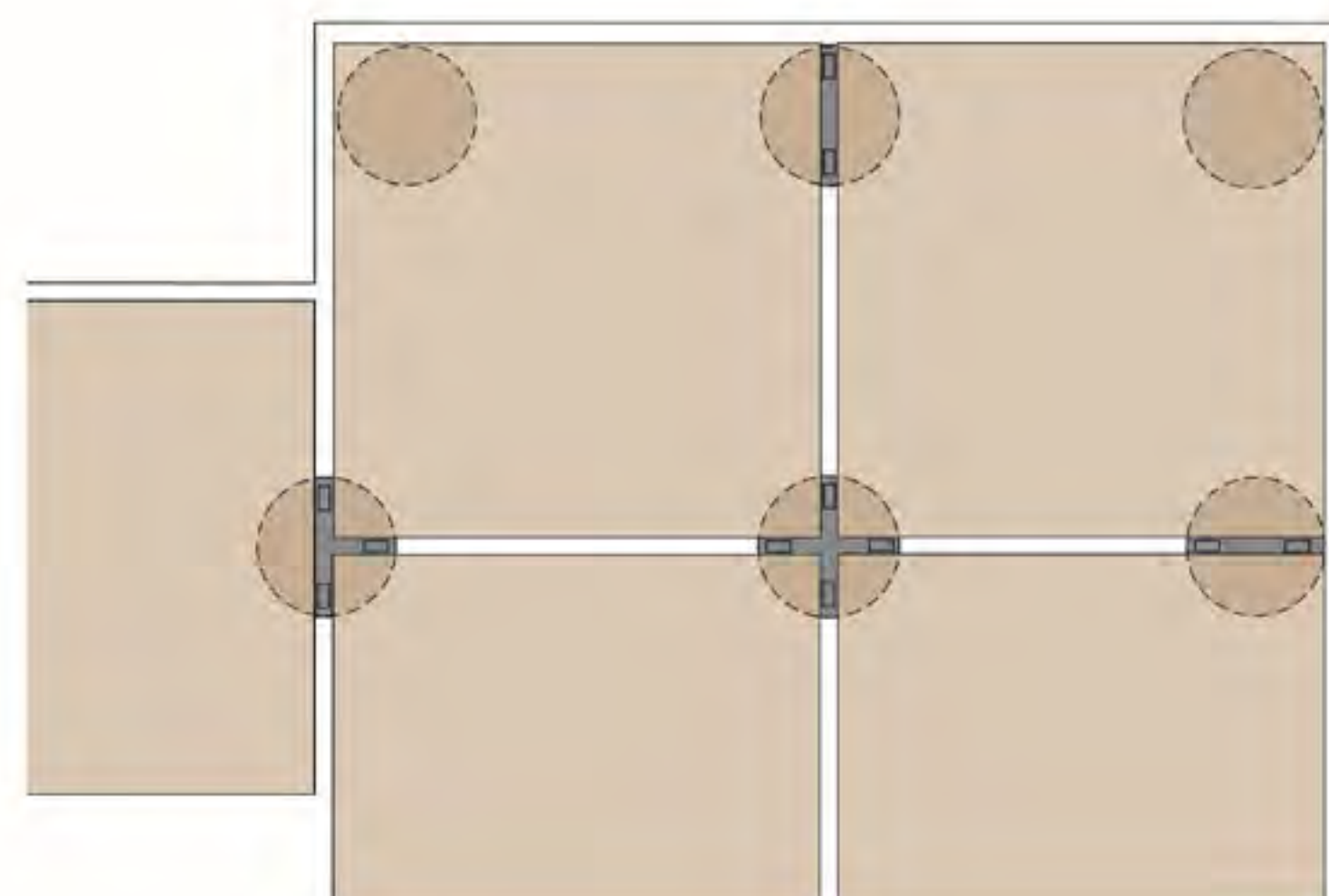
1. Check condition of sub-base, waterproofing and drainage points. Rectify any defects and clear drainage outlets as a preliminary measure.
2. Set out pattern of pedestal supports, selected to suit new deck height and paving modules.
3. Use supporting heads with linear blade configurations at edges of deck and at any intermediate surface interruptions.
4. Adjust pedestal screwjacks to the approximate height required, checking for level and alignment.
5. Finalise the layout of the pedestals. For convenience, use a lightweight template for checking positions and to avoid undue lifting of heavy paving slabs.
6. Proceed to lay the paving slabs, ensuring that each slab corner is firmly seated on the pedestal head and butted up to the locating blades.
7. Final adjustment to level can be made by using the adjustment key.



## Harmer Uni-Ring

1. All four optional spacers hammered down flush with ring at perimeter of enclosing wall or parapet.
2. Two optional spacers hammered down at junction of two slabs.
3. One optional spacer hammered down at junction of three slabs.
4. All four optional spacers left upstanding at junction of four slabs.

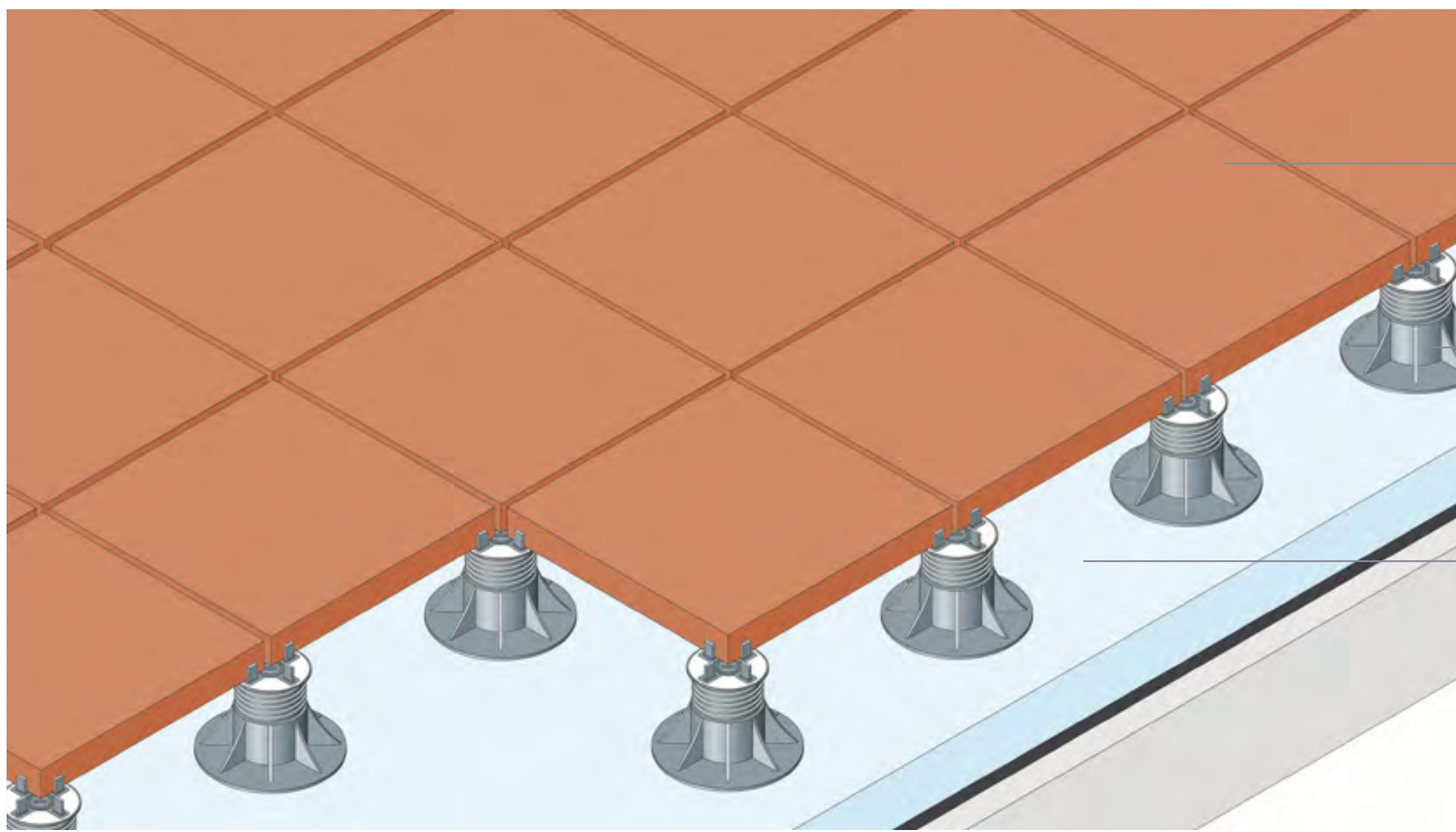
Harmer Uni-Ring can accommodate a variety of paving slab thicknesses. The unit sizes, spanning capacity and loading of the slabs will determine the spacing and layout pattern of a paving slab support system.





# Standard Pedestal Application Details

## Paving Slabs with Open Joints on Harmer Modulock Pedestal with Self-levelling Head

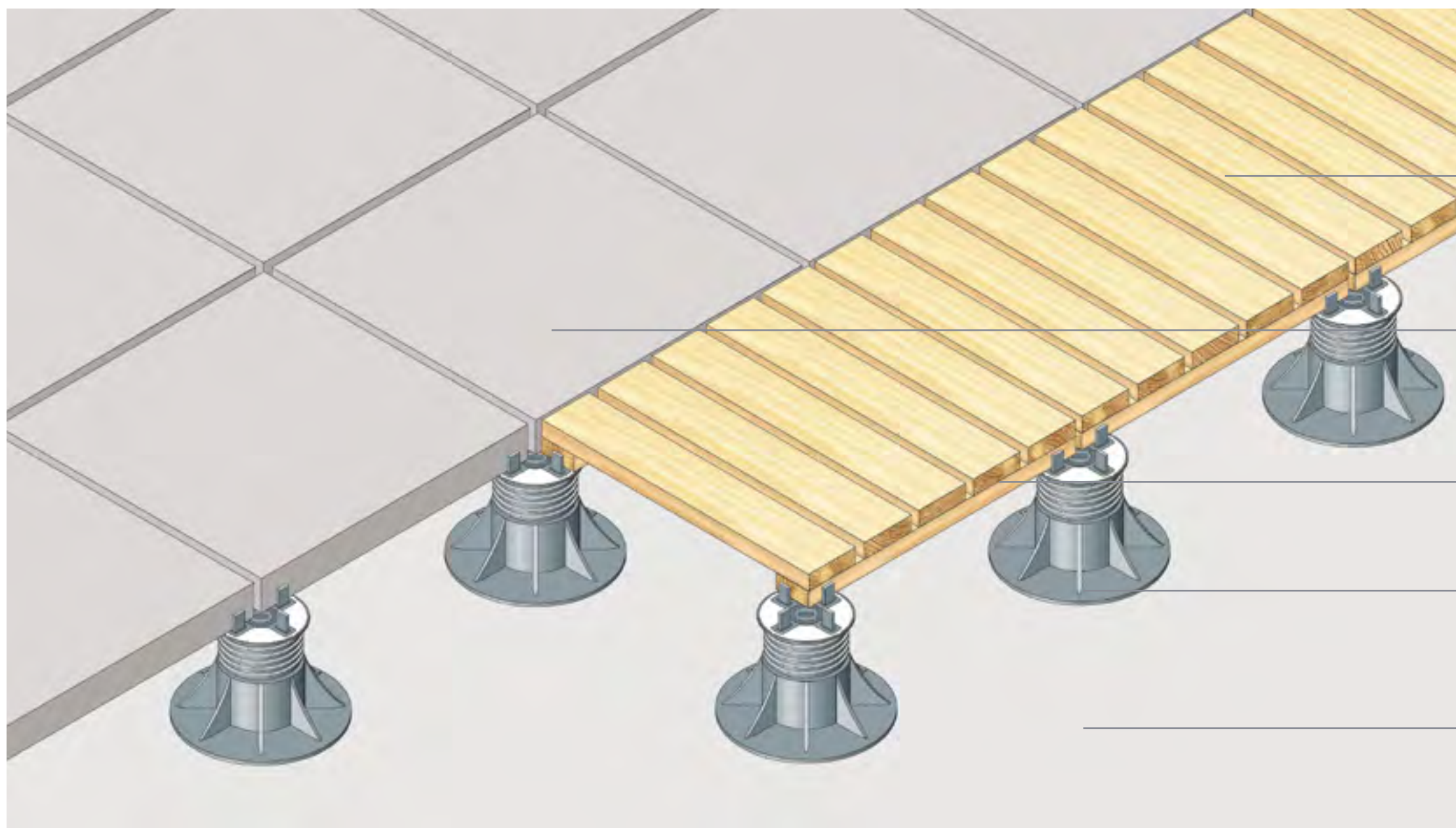


Cement-based paving slabs with open drain joints

Harmer Modulock Pedestal deck support

Rigid insulation and waterproofing over concrete deck

## Timber Slats on Battens + Paving Slabs on Harmer Modulock Pedestal with Self-levelling Head



Treated timber slats screwed to cross battens

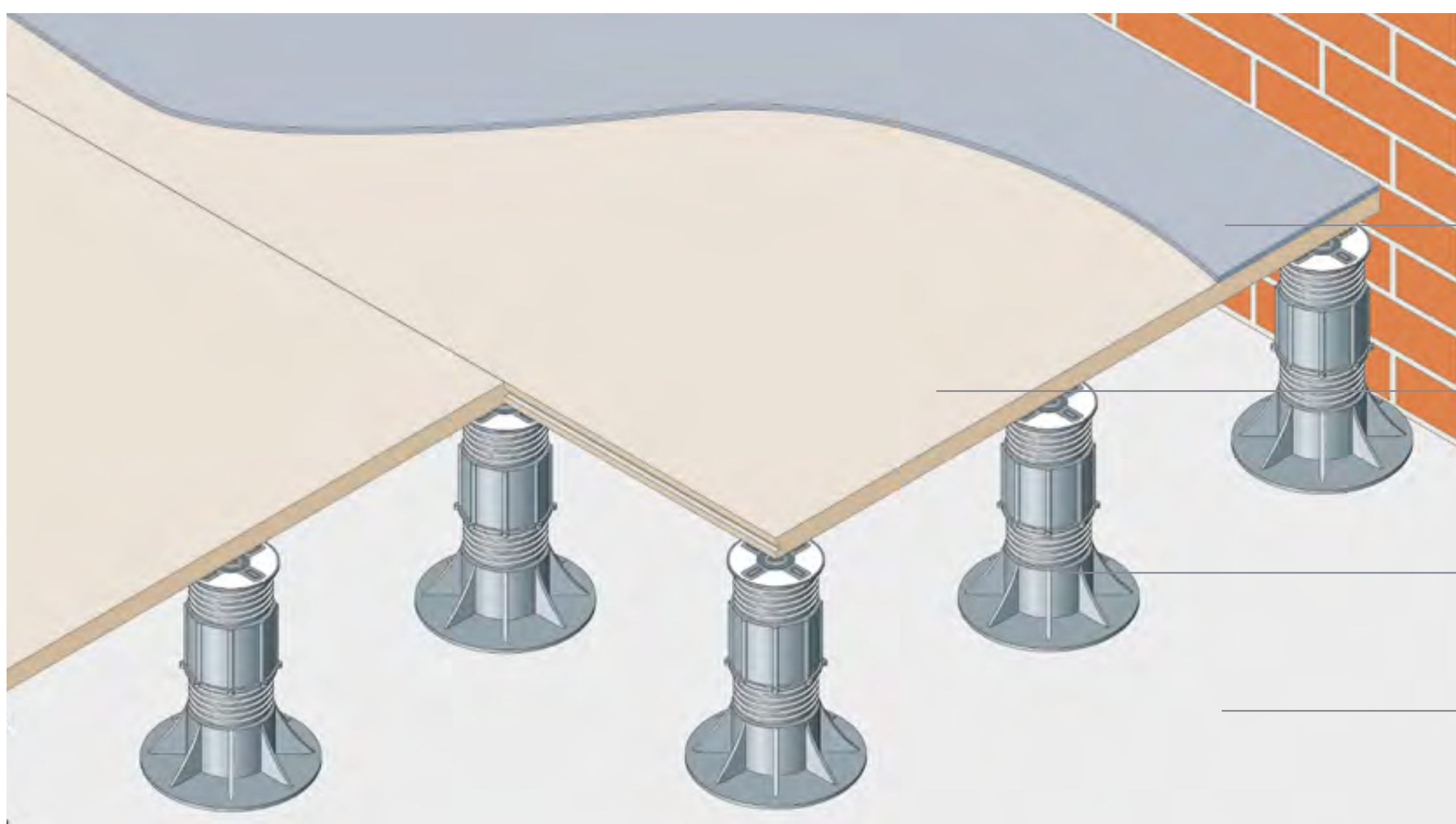
Paving slabs

Cross battens mechanically fixed to Harmer Modulock deck support heads

Harmer Modulock Pedestal deck support

Concrete sub-base

## Sheet Decking on Harmer Modulock Pedestal with Self-levelling Flat Head



Continuous flexible sheet deck covering

Floor deck screw-fixed to Harmer Modulock Pedestal deck support flat heads (no tabs)

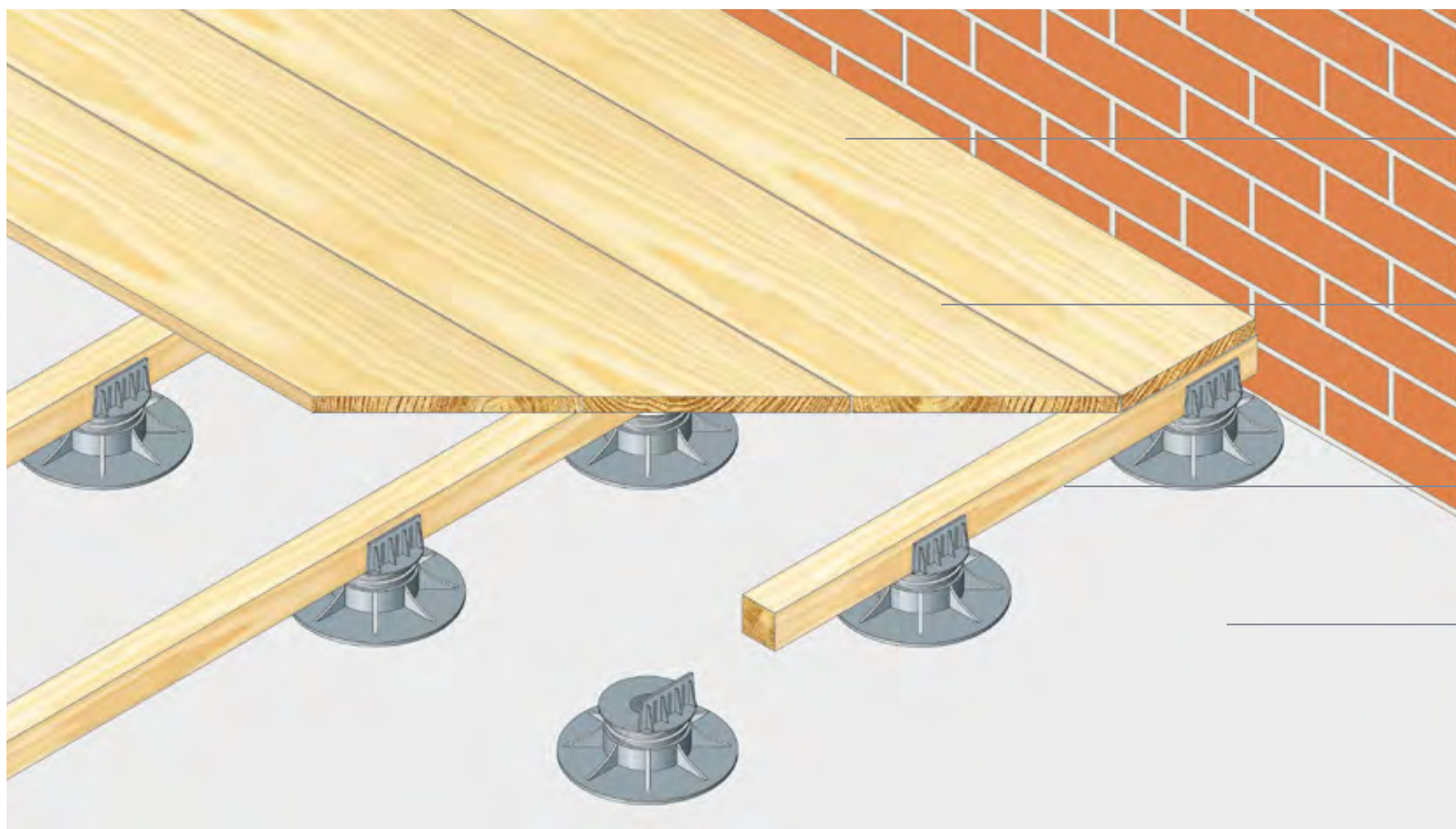
Harmer Modulock Pedestal deck support

Concrete sub-base



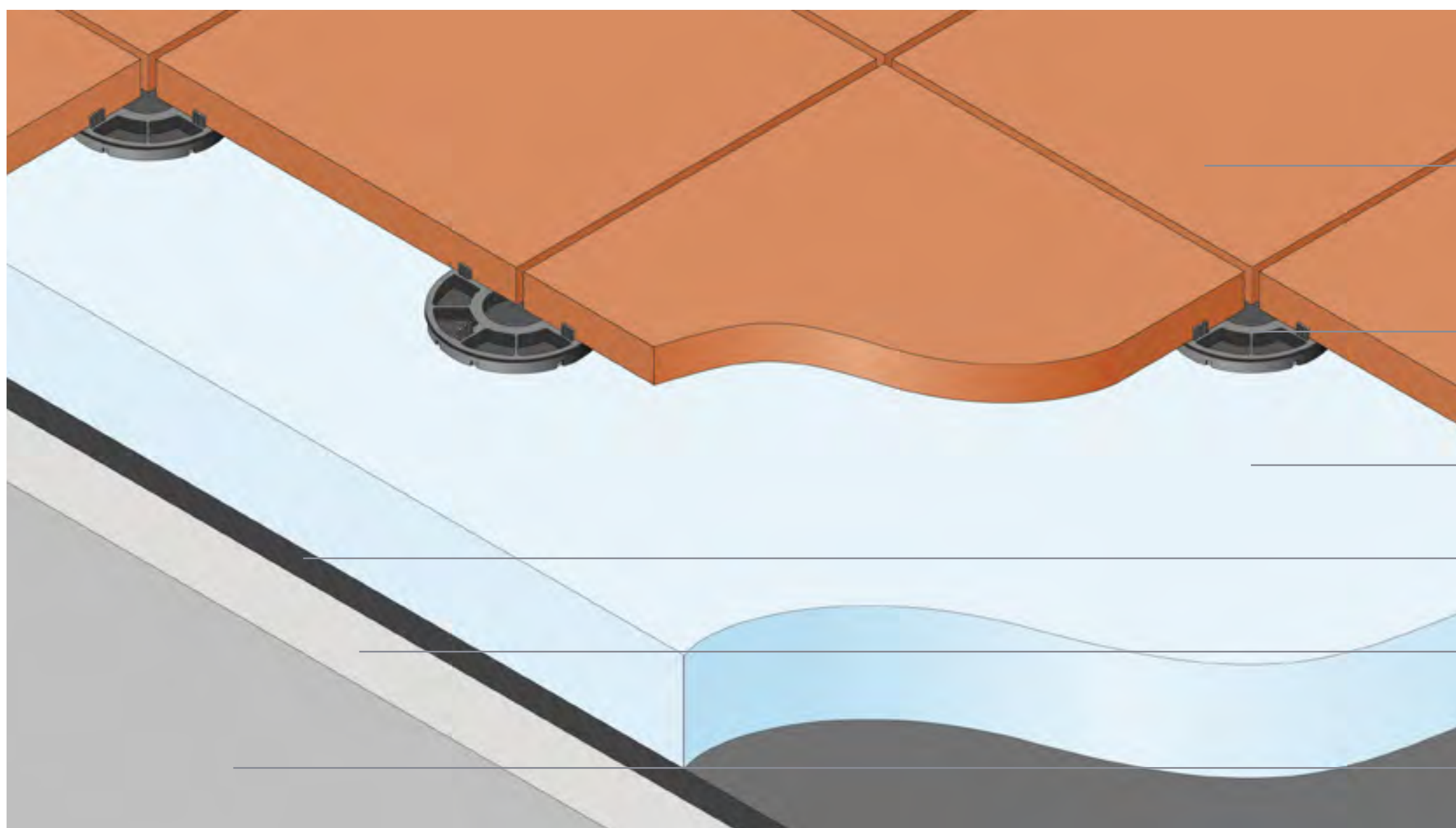
# Standard Pedestal Application Details

## Open Jointed Boards on Battens on Harmer Modulock Pedestal with Timber Deck Head



- Treated timber boards screwed to cross battens
- Cross battens mechanically fixed to Harmer Modulock Pedestal Timber Deck Heads
- Harmer Modulock Pedestal with Timber Deck Head
- Concrete sub-base

## Paving Slabs on Harmer Modulock uni-Ring



- Paving slabs
- Harmer Modulock Uni-Ring paving support
- Rigid insulation
- Asphalt on isolating membrane
- Screed
- Concrete deck





# Non-Combustible Pedestal Product Tables

The self-levelling range of non-combustible pedestals can compensate slopes up to 5% and incorporates 4mm tabs to allow space between the paving for drainage and an anti-tilting locking ring also. Adjusting the height of the pedestal can be done manually or by means of a 4mm hex key between the minimum and maximum heights shown in the tables below. The pedestal base is 100x100mm, and more importantly, is non-penetrative. Our non-combustible pedestals are manufactured entirely from steel and are rated A1 in accordance with BS EN 13501 and conform with BS EN 8579.



## Self-Levelling Paving Head

Paving heads are available as standard for our non-combustible self-levelling pedestals. There are tabs on the head of the pedestal to secure slabs in place, they can also be folded for installation against the perimeter wall.

Pedestal Height Adjustment a (mm)	Standard Head	Pedestal Product Code
28-35	Self-levelling tilting head with 4mm tabs	NCSL1/P
34-46	Self-levelling tilting head with 4mm tabs	NCSL2/P
44-62	Self-levelling tilting head with 4mm tabs	NCSL3/P
61-97	Self-levelling tilting head with 4mm tabs	NCSL4/P
95-165	Self-levelling tilting head with 4mm tabs	NCSL5/P
163-300	Self-levelling tilting head with 4mm tabs	NCSL6/P
298-458	Self-levelling tilting head with 4mm tabs	NCSL7/P



NCSL1/P



NCSL2/P



NCSL3/P



NCSL4/P



NCSL5/P



NCSL6/P



NCSL7/P



## Self-Levelling Decking Head

Decking heads are also available for our non-combustible self-levelling pedestals. The head of the pedestal has been designed to allow a joint to be fully supported and also fixed to the pedestal via the screw holes on the flanges provided.

Pedestal Height Adjustment a (mm)	Standard Head	Pedestal Product Code
28-35	Self-levelling tilting head with perforated tabs	NCSL1/D
34-46	Self-levelling tilting head with perforated tabs	NCSL2/D
44-62	Self-levelling tilting head with perforated tabs	NCSL3/D
61-97	Self-levelling tilting head with perforated tabs	NCSL4/D
95-165	Self-levelling tilting head with perforated tabs	NCSL5/D
163-300	Self-levelling tilting head with perforated tabs	NCSL6/D
298-458	Self-levelling tilting head with perforated tabs	NCSL7/D





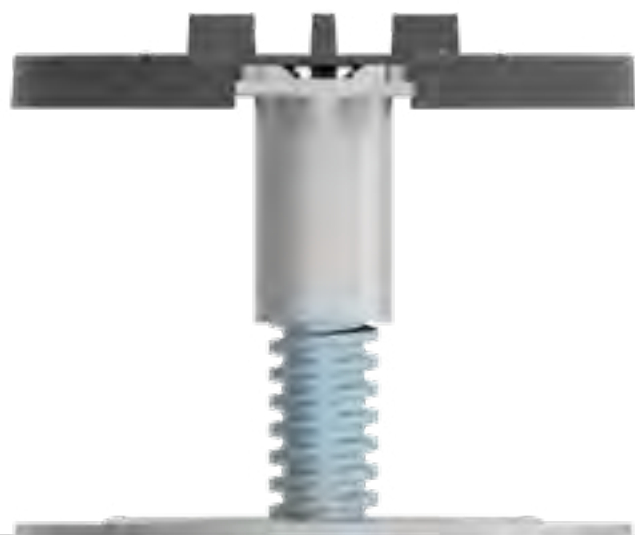
# Non-Combustible Pedestal Product Tables

Modulock fixed head non-combustible pedestals are an economic alternative to the self-levelling version of the system where there is no requirement for slope compensation. However, use of the rubber shims listed below will allow for a small degree of slope. The support is completed with a fixed head and rubber gasket incorporating 4mm tabs which allow drainage through the gaps in the paving. Adjusting the height of the pedestal can be done manually or with a 4mm hex key between the minimum and maximum heights shown in the table below. The pedestal base is 100x100mm, and more importantly is non-penetrative. Our non-combustible pedestals are manufactured entirely from steel and are rated A1 in accordance with BS EN 13501 and conform with BS EN 8579.



## Fixed Paving Head

Fixed head pedestals come as standard with a head for paving which includes a rubber gasket. The gasket helps to reduce movement in the paving as well as assisting with sound insulation.



Pedestal Height Adjustment a (mm)	Standard Head	Pedestal Product Code
28-35	Fixed head with 4mm tabs	NCFH1/P/G
34-46	Fixed head with 4mm tabs	NCFH2/P/G
44-62	Fixed head with 4mm tabs	NCFH3/P/G
61-97	Fixed tilting head with 4mm tabs	NCFH4/P/G
95-165	Fixed tilting head with 4mm tabs	NCFH5/P/G
163-300	Fixed tilting head with 4mm tabs	NCFH6/P/G
298-458	Fixed tilting head with 4mm tabs	NCFH7/P/G



## Stainless Steel Perimeter Spacer

The stainless steel perimeter spacers allow for elegant and uniform spacing of the tiles/slabs from the perimeter wall, allowing a consistent 10mm gap between the flooring and the wall. This provides stability for the flooring as well as a consistent, aesthetically pleasing edge detail for the system.



Item Description	Pedestal Product Code
Stainless steel perimeter spacer	MB/SPS



## Galvanised Steel Base Plate

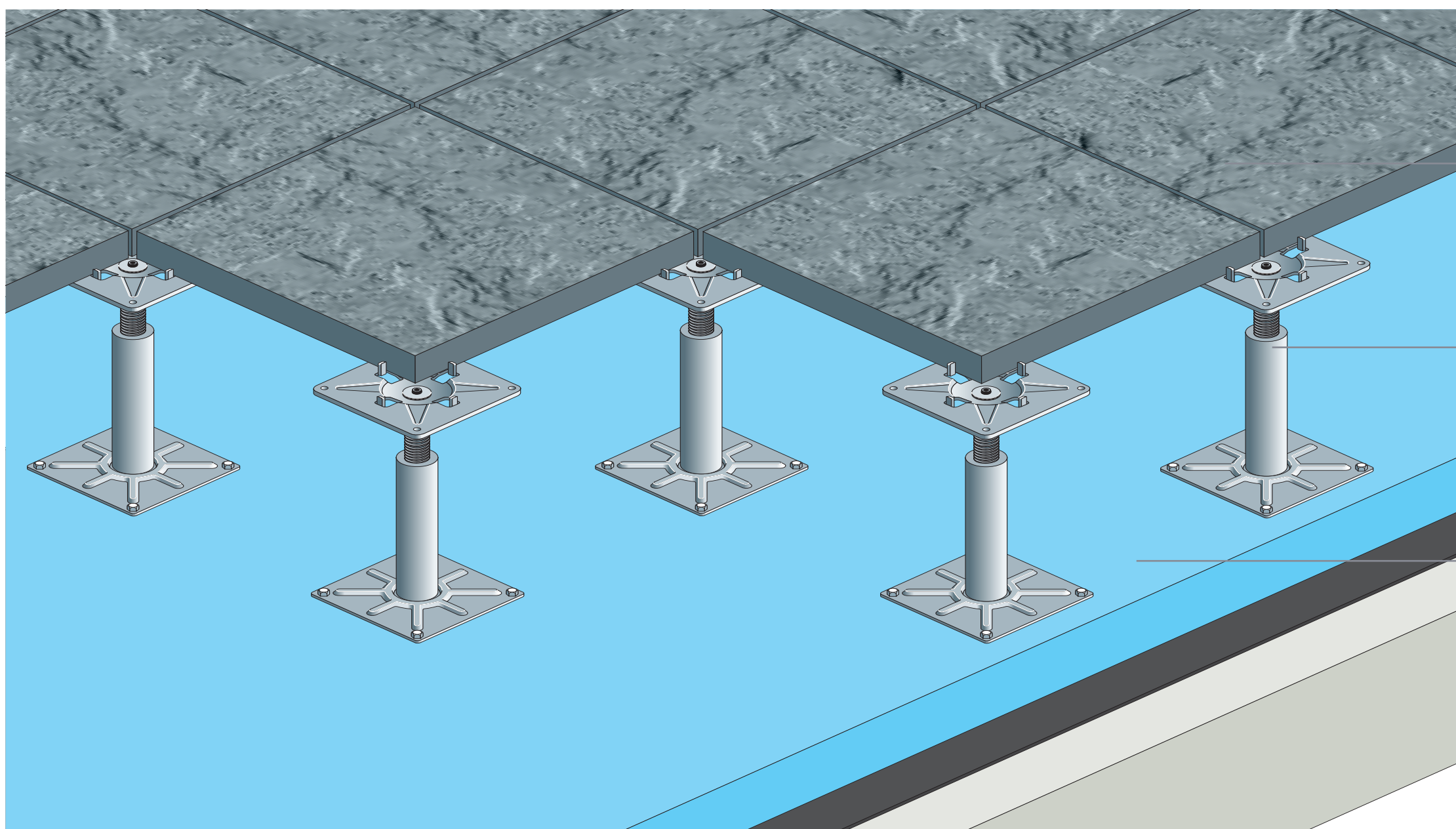
Incorporating the galvanised steel base allows protection for the waterproofing membrane beneath the base of the pedestal. The plate is 1mm thick and 184x184mm in size. Its special shape allows the support to be placed in the centre or the corner of the plate, enabling faster installation without the need for any cuts or modifications on site.

Item Description	Pedestal Product Code
Galvanised steel base plate	MB/SB



# Non-Combustible Application Details

## Paving Slabs with Open Joints - on Harmer Modulock Pedestal with Self-Levelling Head

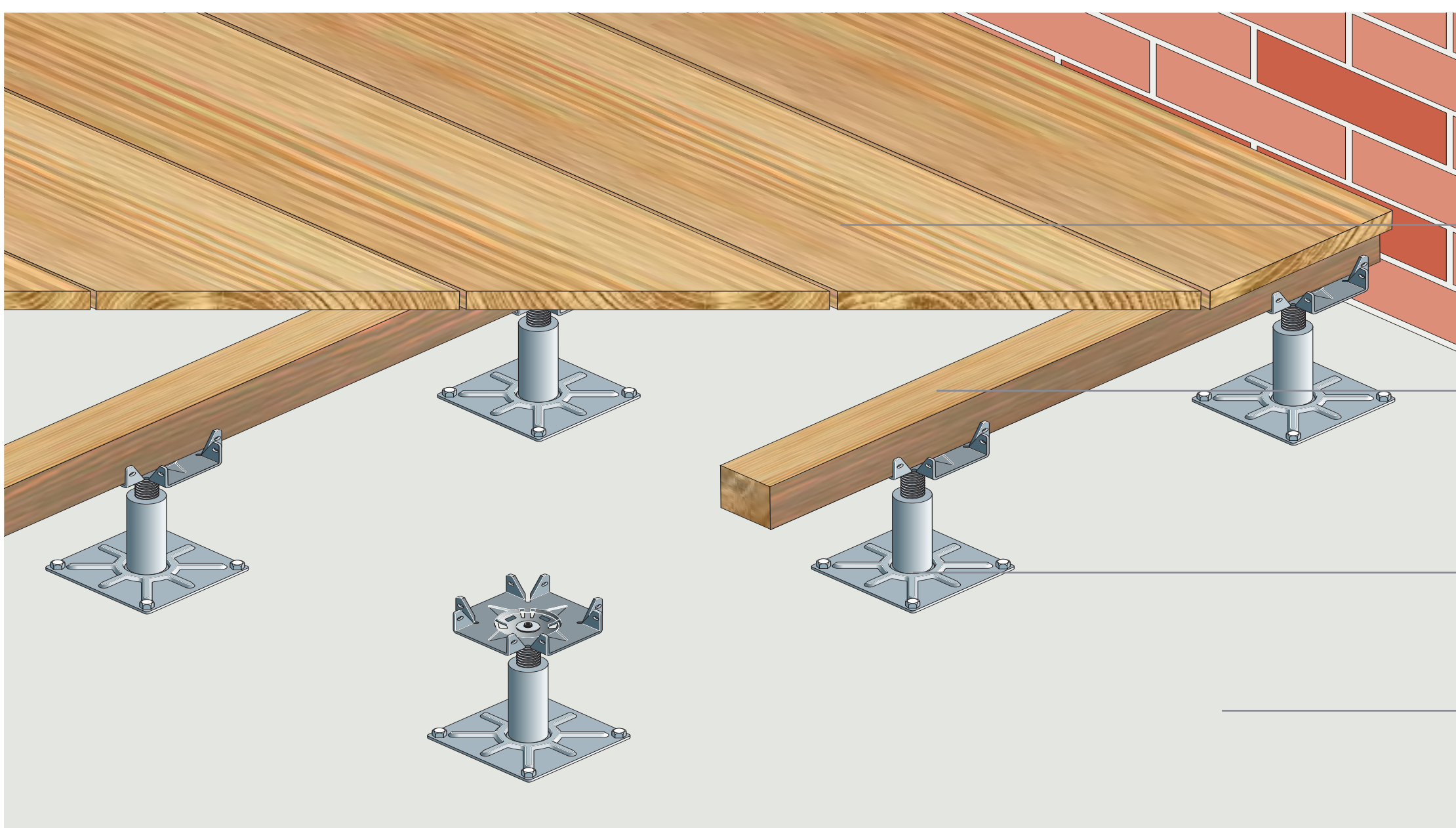


Cement-based paving slabs with open drain joints

Harmer Modulock Pedestal deck support

Rigid insulation and waterproofing over concrete deck

## Open Jointed Boards on Battens - on Harmer Modulock Pedestal with Timber Deck Head



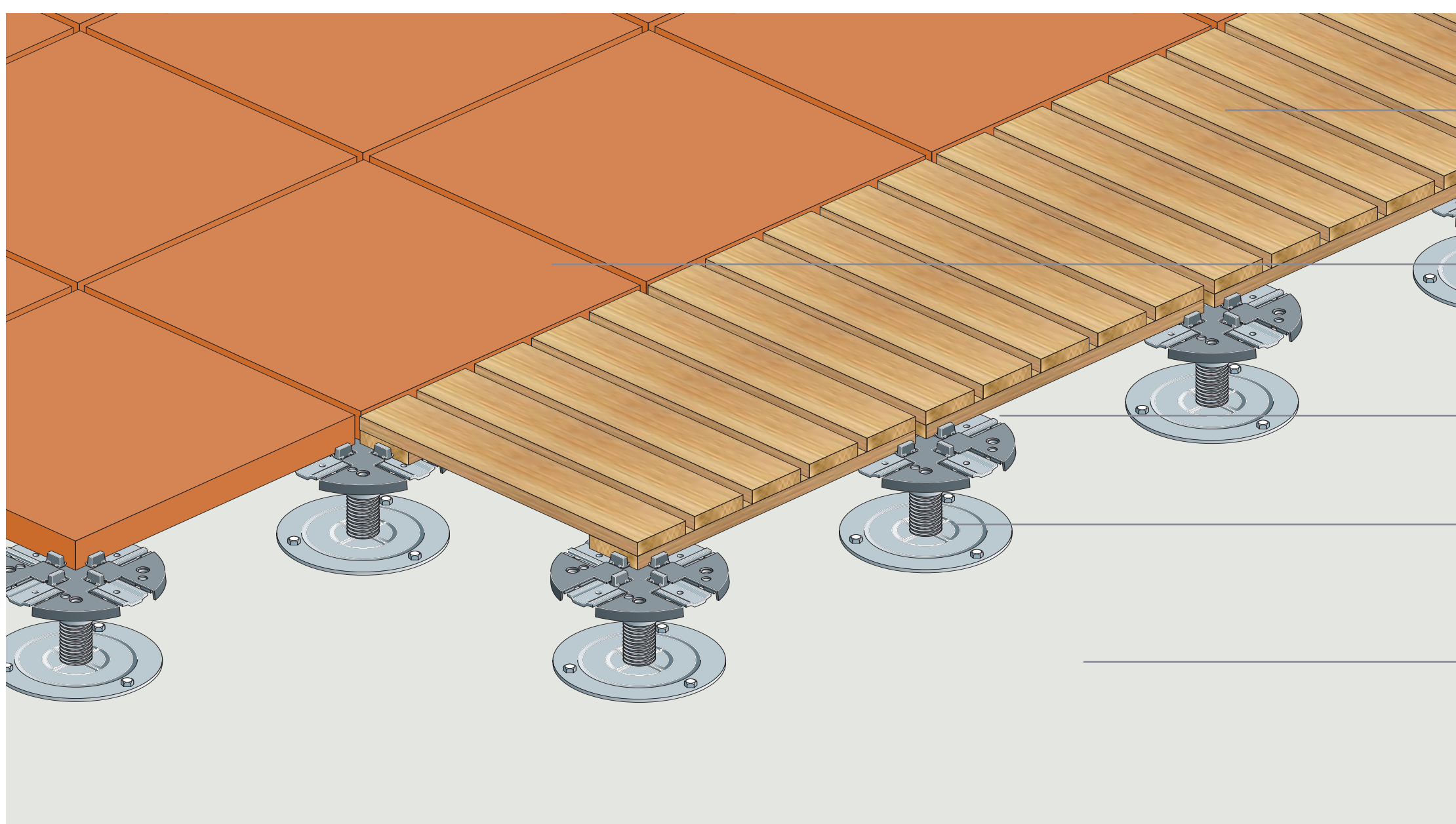
Treated timber boards screwed to cross battens

Cross battens mechanically fixed to Harmer Modulock Pedestal Timber Deck Heads

Harmer Modulock Pedestal with Timber Deck Head

Concrete sub-base

## Paving Slabs and Timber Slats on Battens - on Harmer Modulock Pedestal with Fixed Head



Treated timber slats screwed to cross battens

Paving slabs

Cross battens mechanically fixed to Harmer Modulock deck support heads

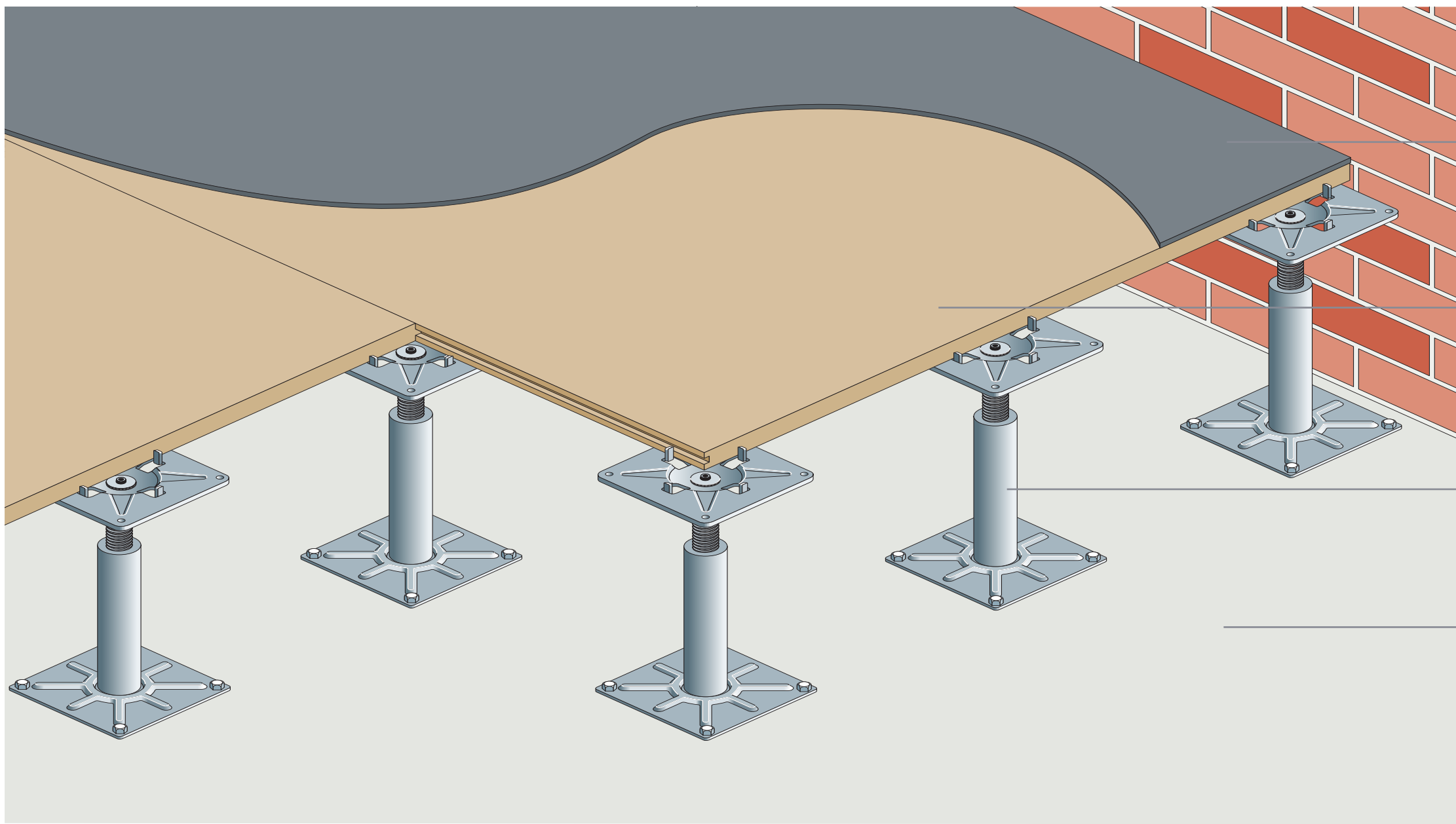
Harmer Modulock Pedestal deck support

Concrete sub-base



# Non-Combustible Application Details

## Sheet Decking - on Harmer Modulock Pedestal with Self-Levelling Flat Head



Continuous flexible sheet deck covering

Floor deck screw-fixed to Harmer Modulock Pedestal deck support flat heads (no tabs)

Harmer Modulock Pedestal deck support

Concrete sub-base





# Pedestal Estimation Guidelines

## Estimated Number of Pedestals Per M<sup>2</sup>

Note: This table is indicative of the number of pedestals required per square metre. This number should be used as a guideline only. There are a number of site variables which would affect this figure, such as the size of the tile/slab being used and the method of installation. We recommend a percentage allowance is made above the values shown, to account for installation variables.

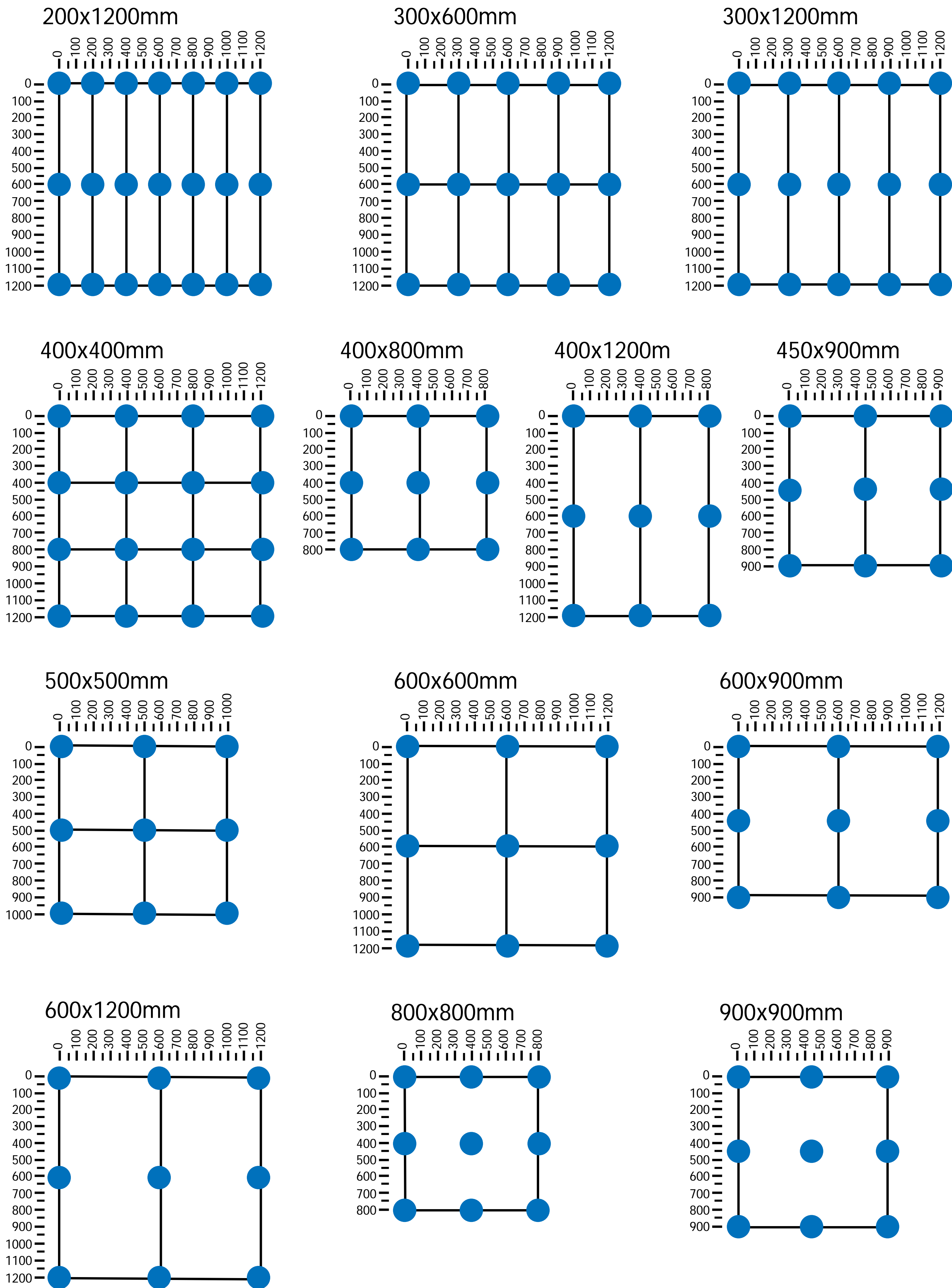
Tile/Slab Size (mm)	200	300	400	450	500	600	700	750	800	900	1000
200	25	16.67	12.5	11.11	10	8.33	14.29	13.33	12.5	11.11	10
300	16.67	11.11	8.33	7.41	6.67	5.56	9.52	8.89	8.33	7.41	6.67
400	12.5	8.33	6.5	5.56	5	4.17	7.14	6.67	6.65	5.56	5
450	11.1	7.41	5.56	4.94	4.44	3.7	6.35	5.63	5.56	4.94	4.44
500	10	6.67	5	4.44	4	3.33	5.71	5.33	5	4.44	4
600	8.3	5.56	4.17	3.7	3.33	2.78	4.76	4.44	4.17	3.7	3.33
700	14.29	9.52	7.14	6.35	5.71	4.76	4.08	3.81	3.57	3.17	2.86
750	13.33	8.89	6.67	5.93	5.33	4.44	3.81	3.56	3.33	2.96	2.67
800	12.5	8.33	6.25	5.56	5	4.17	3.57	3.33	6.25	5.56	5
900	11.11	7.41	5.56	4.94	4.44	3.7	3.17	2.96	5.56	4.94	4.44
1000	10	6.67	5	4.44	4	3.33	2.86	2.67	5	4.44	4
1200	8.33	5.56	4.17	3.7	3.33	2.78	2.38	2.22	4.17	3.7	3.33
1400	14.29	9.52	7.14	6.35	5.71	4.76	2.04	1.9	3.57	3.17	2.86
1600	12.5	8.33	6.25	5.56	5	4.17	3.57	3.33	6.25	5.56	5
1800	8.33	5.56	4.17	3.7	3.33	2.78	2.38	2.22	4.17	3.7	3.33



# Pedestal Positioning Guidelines

## Positioning of Pedestals Dependant on the Size of Tile/Slab

Note: The above layouts are indicative dependant on the size of the tile/slab being used. We recommend consulting the tile/slab manufacturer to get confirmation on the number of pedestals required as this will depend on the thickness and material of the tile/slab being used.





# Design & Specification

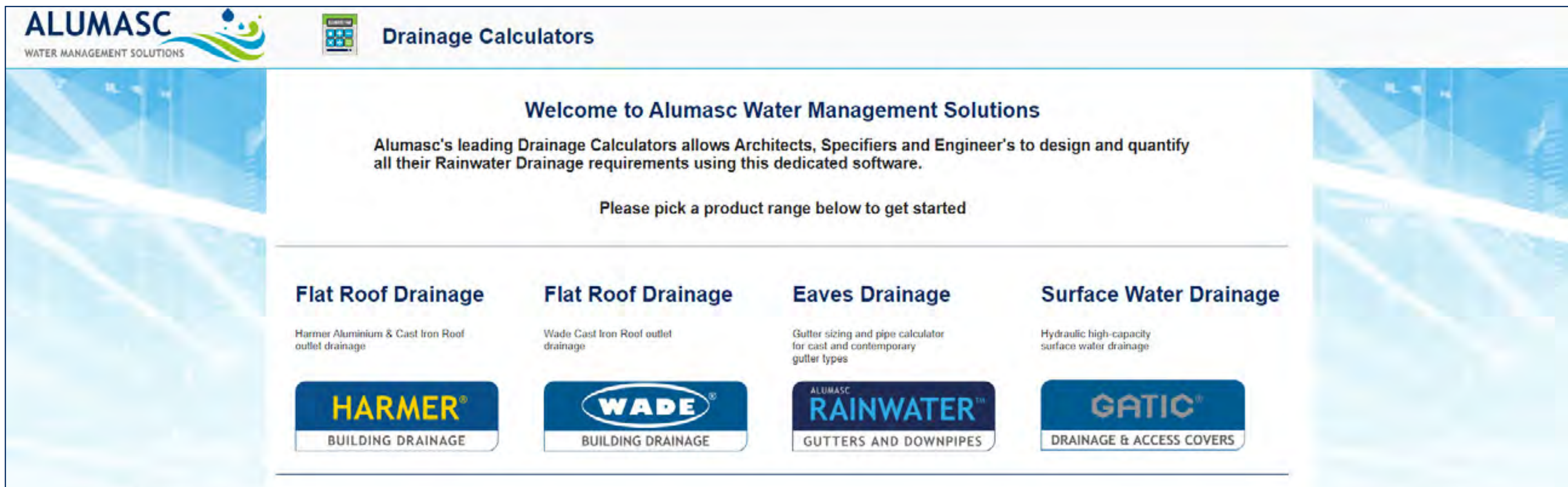
*In addition to Roof Outlets, Roof Channel Drains and Raised Deck Supports, Harmer offers complementary drainage systems.*





# Drainage Calculation Software

Architects and Building Services Engineers can now design and quantify all their rainwater drainage requirements using Alumasc's dedicated free drainage calculation software.

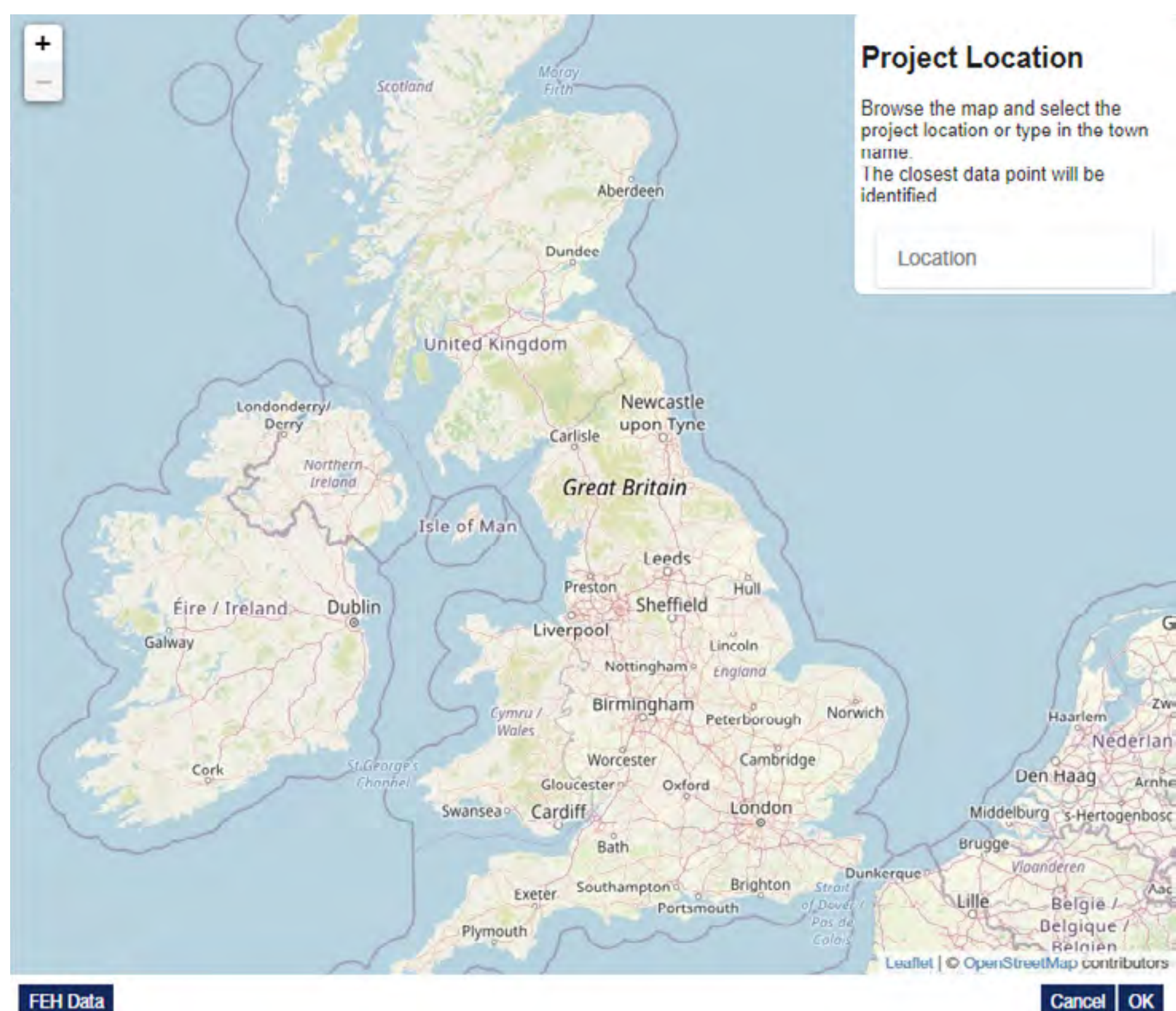


## Key Features

- Category 2 and 3 Flat Roof Drainage linked to local rainfall data
- Eaves drainage gutter sizing and pipe calculator, for cast and contemporary gutter types
- Slotdrain hydraulic surface water drainage calculator
- New rainfall map allowing customer to define exact location for rainfall data
- Ability to import FEH data sets for client's personal use
- Online login with ability to save progress and return at a later date, from any device and any location
- No installation required, just an internet connection
- "Practise" feature allowing engineers, architects and contractors to share and view calculations with their colleagues
- Regular updates & new features
- Links to NBS Specification, detailed drawings and help pages
- Contact Us gives customer the correct point of contact for the brand
- Export to PDF & Excel Calculation Document provides a printout of the calculation and product selection



[Click here](#) to visit the website or scan the QR code and register for full access.





# NBS Specification



In collaboration with NBS Source, Alumasc products are listed on the NBS library to allow architects and specifiers quick and easy access to the correct product specification and respective clauses. The table below lists applicable clauses for each of the Rainwater products; some products fall into one or more category and will vary by application. Typical clauses are listed below; for specific advice and guidance on specification clauses, please contact the Rainwater technical team on 01536 383810.

Product Range	Classification	Uniclass		CAWS	
		Uniclass Code	Title	CAWS Code	Title
Aluminium Roof Outlets	Primary	Pr_65_50_35_37	Gravity rainwater outlets	R10/26	Proprietary rainwater outlets
	Additional			R10/365	Proprietary rainwater outlets
Cast Iron Roof Outlets	Primary	Pr_65_50_35_37	Gravity rainwater outlets	R10/26	Proprietary rainwater outlets
	Additional			R10/365	Proprietary rainwater outlets
Modulock Channels	Primary	Pr_65_52_24_24	Drainage channels with gratings	Q10/35	Linear slot drainage channel systems
	Additional			Q10/170	Linear slot drainage channel systems
Modulock Pedestals	Primary	Pr_20_85_47_22	Decking and paving pedestals	J21/467	Support system for precast concrete paving slabs
	Additional			Q37/460	Support pedestals

## Aluminium Roof Outlet Example

**Manufacturer:** Alumasc Water Management Solutions, Station Road, Burton Latimer, Kettering, Northants NN15 5JP. 01536 383810.

**Email:** info@alumascwms.co.uk

**Product reference:** Use product name and product code e.g., Harmer 4" AV Outlet, AV400

**Material/grade:** Made from LM6 grade of Aluminium alloy to BS EN 1559:1997, BS EN 1676:1997 and BS EN 1706:1998

**Size/Profile:** Standard sizes and profiles

**Finish/Colour:** Polyester powder coated to BS EN 12206-1:2004. Coating to have BBA certificate

**Accessories:** Flat Grating, Dome Grating, Terrace Grating, Grate Extension Pieces, Gravel Guard, Threaded Spigot Adaptor

**Other requirements:** Ensure that outlets are fixed before connecting pipework

**Method of jointing:** Ensure junctions between outlets and pipework can accommodate all movement in the structure and pipework

**Method of support/fixing:** Refer to individual range installation guide

## Modulock Channel Example

**Manufacturer:** Alumasc Water Management Solutions, Station Road, Burton Latimer, Kettering, Northants NN15 5JP. 01536 383810.

**Email:** info@alumascwms.co.uk

**Product reference:** Use product name and product code e.g., Harmer Galvanised Modulock Channel, MD21013202

**Material/grade:** Made from Galvanised Steel

**Size/Profile:** Standard sizes and profiles

**Finish/Colour:** Galvanised Steel. Where galvanised steel has been cut, immediately apply a coating of cold galvanise paint to all exposed, clean surfaces

## Modulock Channel Example continued

**Accessories:** Corner, T Junction, Maintenance Unit with Outlet, End Plates, Access unit

**Other requirements:** The channels can be used in front of doors on escape routes or buildings with flush thresholds - in these positions use the mesh-type grates. Temporary Timber Insert to be used when installing Terraces Slot Channel

**Method of jointing:** The joints between the individual channel bodies can be sealed or glued with suitable sealants

**Method of support/fixing:** Refer to individual range installation guide

## Modulock Pedestal Example

**Manufacturer:** Alumasc Water Management Solutions, Station Road, Burton Latimer, Kettering, Northants NN15 5JP. 01536 383810.

**Email:** info@alumascwms.co.uk

**Product reference:** Use product name and product code e.g., Harmer Adjustable Deck Supports, MB1

**Material/grade:** Plastic

**Size/Profile:** Standard sizes and profiles

**Finish/Colour:** Black plastic pedestal with white rubber finish to head of pedestal

**Accessories:** Extension Coupler, Key, Decking Head, Uni-Ring, Uni-Shim, Shims, Perimeter Spacer, Base Plate

**Other requirements:** Every installation of plastic pedestals requires at least one red key to adjust the height once installed to ensure finished floor is level

**Method of jointing:** Each component of the Modulock system is threaded, components are interchangeable and can be adjusted once installed with a locking feature to ensure the pedestals do not come apart

**Method of support/fixing:** Refer to individual range installation guide



# Other Drainage Products - Flushjoint Pipework

For detailed information on the systems shown below, please contact Rainwater Technical Services or visit the Rainwater website.



## Alumasc Rainwater Flushjoint Pipework System

The Harmer AV® and Detail Aluminium Roof Outlets are now available with extended spigot options compatible with the Flushjoint aluminium downpipe range. Flushjoint is based on concealed spigots which give a smooth, clean appearance that complements modern building design. It is a contemporary range of extruded aluminium downpipes that are mounted on brackets to stand clear of the structure. Flushjoint circular pipes are available in 4 sizes, whilst square and rectangular pipes are available in 3 sizes. All sizes are available in 3 pipe lengths, together with a complete range of fittings. The system offers flush spigot pipe connection for virtually undetectable joints, and is factory finished in a choice of coloured BBA approved powder coatings.

### Applications

- Contemporary pipework system suitable for new build and refurbishment projects
- Compatible with Heritage, Aqualine and GX gutter systems
- Flushjoint is not designed for use in underground drainage or as part of a soil or waste system

### Features & Performance

- Choice of circular, square and rectangular pipes
- Hidden spigot jointing arrangement used to achieve completely smooth external appearance
- Material hardness and fixing mechanisms give excellent rigidity and high impact resistance
- Lightweight, durable and non-corrodible
- Life expectancy of aluminium: 40 years (rural/suburban areas); up to 25 years (industrial/marine areas)
- Easy to handle and fix
- Aluminium is 100% recyclable

### Colours & Finishes

- BBA approved polyester powder coatings, factory applied at Alumasc
- 26 standard colours with additional BS or RAL colours available to special order
- Also available in plain mill finish for on-site painting

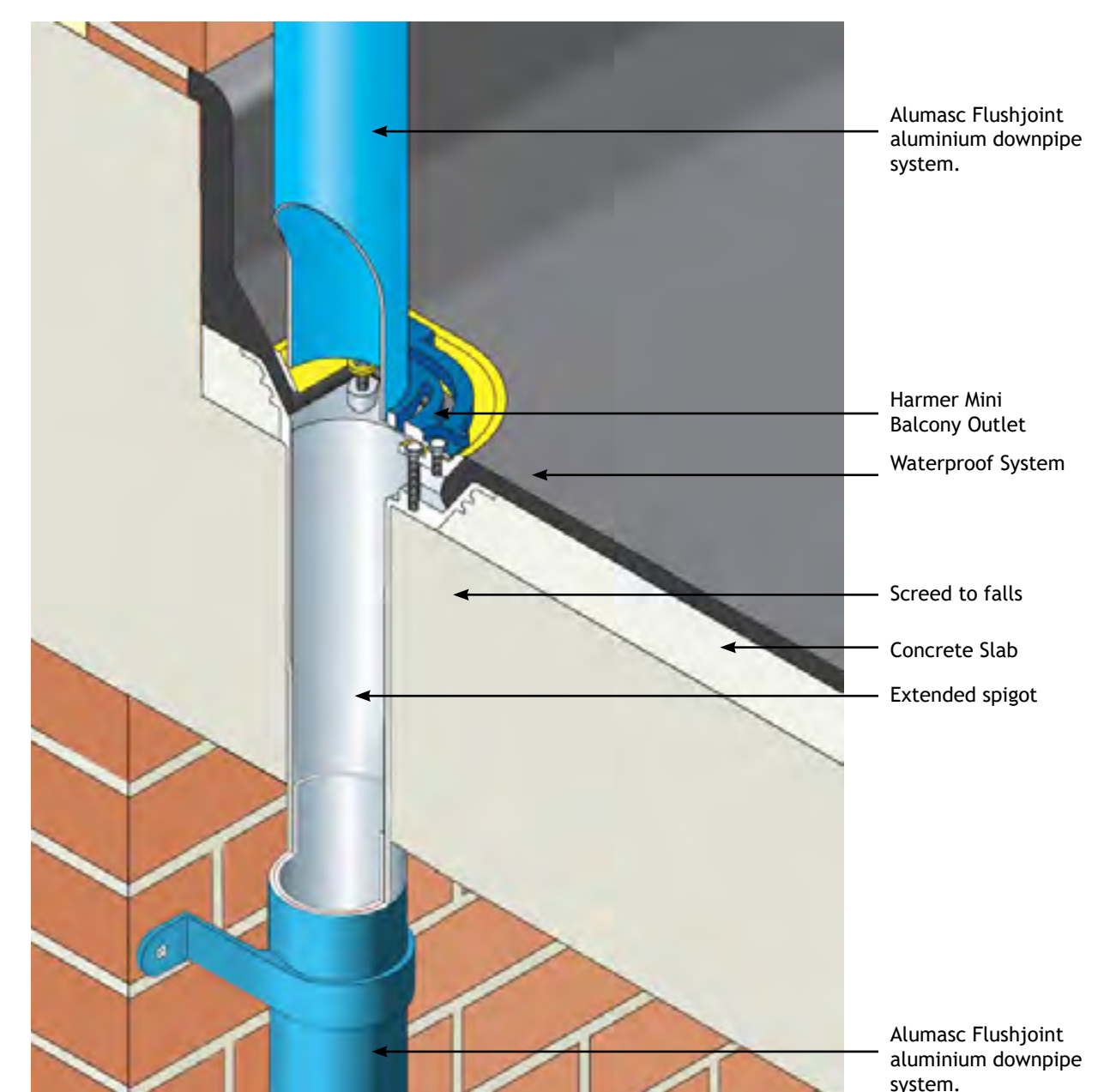


### Manufacture

- UK manufactured
- Made from extruded aluminium to BS EN 12020:2001, BS EN 515:1993, BS EN 573:1995 and BS EN 755, from grade 6063 T6 alloy

### Installation & Fixing

- Flushjoint pipework is built from the gutter downwards starting with the offsets and bends
- A choice of brackets is available to give varying projections
- Brackets secure pipework with minimum visual intrusion
- Minimal maintenance requirements





# Other Drainage Products - SML & Shower Drains

For detailed information on the below systems, please contact Harmer Technical Services or visit the Harmer Drainage website.



## Harmer SML Above and Below Ground Soil and Waste Systems

Harmer SML Above-Ground is a lightweight, dry-jointed cast iron soil and waste system that is Agrément certified and fully compliant with BS EN 877. This high performance pipework system combines an excellent fire classification with the latest acoustic performance requirements for building materials. Harmer SML has a proven track record of use over the lifetime of the building and is manufactured using 95% recycled material.

The SML Below-Ground system is a similarly high performing pipework system eminently suitable for below ground conditions and is fully compatible with the SML Above-Ground system.

The Harmer SML systems consist of coated, socketless cast iron pipes and fittings simply joined with either ductile iron or stainless steel rubber-lined couplings, allowing ease of installation. The range also includes bracketry for restraining the pipework vertically and supporting it horizontally, along with a choice of special connectors for linking with other materials.

### Key Features

- Meets European Standard BS EN 877
- Excellent noise attenuation
- Non-combustible
- High tensile strength
- Choice of ductile or stainless steel couplings
- CE Mark conformity and Kitemark Accreditation
- Secure socket-less fixing between pipe and fitting
- Quick to assemble, low maintenance and 100% recyclable



## Harmer Floor and Shower Drains

Drain bodies in cast iron, stainless steel and polyester powder coated aluminium, together with elegant grates, combine to create a range of floor and shower drains to suit virtually any interior drainage application and all types of flooring. Stainless steel linear drainage components add to the range.

Harmer Floor and Shower Drains show marked advances in design sophistication and performance. With minimum complexity, they are versatile and efficient. Straightforward installation methods mean Harmer Floor and Shower Drains are synonymous with speed and cost effectiveness in any application.

Finely engineered manufacture and enhanced features bring many benefits, including corrosion resistance and durability, with smooth and attractive finishes that are tough and hygienic. Harmer Floor and Shower Drains are available either trapped or untrapped. The range of grates includes stainless steel and nickel bronze, available in a choice of attractive finishes.







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**HARMER**  
BUILDING DRAINAGE



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