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# Harmer Roof Drainage

Roof Outlets, Roof Channel Drains and Raised Deck Supports





# Maintaining a Flow of Information

### www.harmerdrainage.co.uk

The Harmer drainage website provides a wealth of information on all aspects of Harmer Drainage and compatible products. Also included are FAQs, file downloads for NBS specification clauses, COSHH information, a CAD library, and much more. <image><complex-block>



### Drainage Design Calculator

Architects and Building Services Engineers can now design and quantify all their Rainwater Drainage requirements using Alumasc's dedicated design software.

#### **Key Features**

- Category 2 and 3 Flat Roof Drainage Calculator linked in to local rainfall data
- Rainwater Drainage Drawing tool integrating Quantities Schedule
- Eaves Drainage Gutter sizing and pipe calculator for Cast and Contemporary gutter types
- Hyperlinks to Product Literature, DWG files and application specific NBS Specification Clauses

### **Technical Support**

Harmer drainage products are backed-up by comprehensive technical literature and by hands-on project support starting with technical and design advice, and extending through site installation to recommendation of appropriate maintenance regimes. Implementation is led by the Alumasc Drainage Manager appointed to the project.

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# Alumasc and Harmer - An Introduction

Alumasc Water Management Solutions (AWMS) is a part of the Alumasc Group plc. The Group has over 500 employees, generating a turnover of around £92 million. The aim is to focus on high quality, environmentally responsible building products within the construction arena in order to deliver first class customer service, technical support, long-term sustainable solutions and lasting relationships.

#### **About Alumasc**

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

All Alumasc businesses have strong UK market positions within their own individual market niches and several are market leaders. Alumasc sustains this strong strategic positioning by offering customers quality products, service and trust. For certain brands, Alumasc is seeking to leverage UK successes in international markets, with particular focus in America, the Middle and Far East, and Europe.

Alumasc fosters an entrepreneurial, achievement orientated culture whereby businesses are encouraged to innovate and respond quickly to local market needs within a cohesive group strategic and management framework. Alumasc businesses also benefit from the group's financial strength.



Alumasc Water Management Solutions (AWMS) is the new name in the industry for proven water management. It's a new joined-up brand that harnesses the expertise of five trusted brands in water management:



Alumasc has been promoting the efficient use, retention, recycling and disposal of water within the built environment for over 80 years. Now, it combines the knowledge and unique benefits of these four brands to provide one simple solution in water management.

### **BIM Overview**

Alumasc have now created BIM (Building Information Modelling) files for the core Harmer Building Drainage Range.

All AWMS BIM files to date have been created using Autodesk Revit 2014, allowing users the freedom to work in Revit 2014 or more recent versions of the software. BIM files created are Revit 'Family' files.

All of the AWMS Harmer BIM files are modelled to achieve an accurate external space envelope and connection detail, but with file sizes that increase with model detail, they have been stripped of non-essential details such as logos, small radii, internal strengthening ribs, fasteners & fixings.



### Services and Support

Alumasc leads the way in the field of construction product and system manufacture and the delivery of proven solutions. This success is founded on three key areas:

#### **Premium Products**

A constantly evolving range of quality proven, world class products and systems, fully accredited to UK, European and North American Standards.

#### **Technical Support**

Comprehensive data for specification and use of all products and systems is available in published form, and on the company website. This is backed up by proactive support on a project basis, led by specialist area managers and using the latest CAD and BIM calculation technology.

#### **Approved Stockists**

AWMS products are sold through a global network of approved suppliers.





# 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.



### Quality

Alumasc operates a quality assurance management system which is independently audited to BS EN ISO 9001: 2008. Alumasc extends this quality management to its 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: 2008

The ISO 9001 framework governs the management of many aspects of Alumasc 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.

### Sustainability

Alumasc actively pursues sustainability in the full range of products and systems the company offers through its accreditation to the ISO 14001: 2004 Environmental Management Standard. Alumasc, its partners and its suppliers are committed to putting consideration for the built and wider environment at the core of all aspects of their current business and future development.

#### ISO 14001: 2004

Alumasc's manufacturing sites at St Helens and Burton Latimer 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.

#### Development

Alumasc has within its portfolio a bedrock of environmentally sound products.

Development of these existing products and good practices is central to the success of Alumasc and key to the way in which it provides its proven solutions. Equally, the basis for any new and innovative development is grounded in the knowledge and experience Alumasc has of its core manufacturing materials.

#### **BRE Green Guide to Specification**

The Green Guide to Specification provides easy-to-use guidance on making the best environmental choices when selecting construction materials and components. Materials and components are assessed in terms of their environmental impacts, within comparable specifications, across their entire life cycles. This accessible and reliable information has been put together to assist those involved in the design, construction and management of buildings to reduce the environmental impacts of their properties.

High quality, long lasting products reduce the significant environmental and monetary cost of replacement during service life. Alumasc goods are able to contribute fully to achieving BREEAM credits for responsible sourcing of materials and as part of an overall water management scheme.





# 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 40 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. The Harmer Roof drainage range consists of aluminium, cast iron and insulated polyurethane 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.

#### Application

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 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 accelerates 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 and Two-Way Parapet configurations.

#### 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.

#### Balconies

Adaptable solutions are available for drainage of balcony areas in aluminium, cast iron and stainless steel. The new 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 products where colour matching and bespoke manufacture opens up endless design possibilities.

#### **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.

#### **Materials**

The Harmer Roof range consists of premium quality materials chosen for their inherent strength and durability, for ease of installation 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.

#### 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.

#### 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 in both materials to suit individual project requirements.

#### Polypropylene and Polyurethane

Polyurethane materials are used where insulated outlets are required to eliminate condensation in warm roof construction. The Harmer Roof range combines the use of UV-stable polypropylene domical grates with other low-maintenance materials.



# Harmer Roof Drainage Systems - 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 5 distinct product categories for ease of reference and selection.



#### Harmer Roof Aluminium

Harmer Roof Aluminium is a high performance rainwater drainage system suitable for all types of flat roof application. The Harmer AV range provides advanced flow characteristics for optimum rainwater disposal. Outlets for specific applications, such as two-way, car park and balcony outlets, can be found under the Harmer Detail range.

See pages 12 to 41

#### Harmer Roof Aluminium - Bespoke Solutions

Non-standard pipe and rainwater outlet configurations can be manufactured on a bespoke basis to suit the most complicated of design requirements.

See pages 42 to 45



#### Harmer Roof Cast Iron

Harmer Roof Cast Iron provides a wide variety of product configurations for use in all types of drainage installations. The cast iron permits the use of copper or lead roofing materials and is ideally suited for load bearing applications with vehicular traffic.

See pages 46 to 63

# Harmer Roof Drainage Systems - Range Summary

High quality materials like aluminium, cast iron and stainless steel have a proven track record in roof drainage applications where the integrity of the connection between the waterproofing membrane and roof outlet is critical to sustainable long-term use.



#### Harmer Roof Insulated

Harmer Roof insulated outlets have a rigid polyurethane foam body with high insulation value. They are ideal for installation in warm roofs to avoid any possibility of condensation forming as a result of thermal bridging.

See pages 64 to 73



#### Harmer Roof Modulock Channel Drainage

Harmer Roof Modulock Channel Drainage system provides a versatile drainage solution for collection of rainwater in raised deck structures such as terraces, balconies and landscaped roofs. Two Harmer Roof Slot Channel ranges are also available. The systems are made in either Stainless Steel or Galvanised Steel.

See pages 74 to 89



#### Harmer Roof Modulock Raised Deck Supports

A fully engineered range of pedestal supports for paving slabs and timber decking in a variety of heights from the substrate that allows percolation of rainwater. They are designed to suit a wide variety of applications, including terraces, walkways, balconies and landscaped roof construction. The Pedestal range includes self-levelling heads and a special timber decking head. Uni-Ring and Uni-Plus are economical paving supports, used where selflevelling adjustment is not required.

See pages 90 to 101

# Harmer Roof Drainage Systems - Project Gallery

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.







Project Listing Mossley Mill, Northern Ireland Walsgrave Hospital, Coventry Bishops Square, London

# Harmer Roof Drainage Systems - Project Gallery









Project Listing Institute of Life Sciences, Swansea I Gloucester Quays, Gloucester Chelsea Bridge, London

Aluminium Roof Outlets - Introduction

# Harmer Roof Drainage The Aluminium Range

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

1

# 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.

#### **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 spigot and threaded outlet connection, for vertical, horizontal or 45° discharge.
- The shallow sump balcony outlets incorporate Stainless Steel and Nickel Bronze 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 debis 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 wide range 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 Outlets**



#### **Detail Outlets**



Harmer Roof Detail outlets comprise a range designed to solve problematic detailing requirements.

The range includes  $45^{\circ}$  and  $90^{\circ}$  threaded or spigot outlets, used with either domical or flat grates.

Also included are two-way, balcony, car park and gully outlets.

See page 19.

### **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.

See page 32.

# Aluminium Roof Outlets - Introduction 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 accelerates 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.











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 fixing studs



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 gutters using bituminous, single ply and wet-applied waterproofing systems.
- High flow performance with increasing head of water at the outlet.
- Ensures optimum efficiency of outlet capacity.
- Special retro-gulley 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 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 32).

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 17)

A range of accessories is available for use with special detail requirements (See pages 17, 32 and 34)

### 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. This tube is supplied with BS EN 10255 taper male thread which ensures a completely watertight joint when screwed home into the socket outlet. 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 (page 34) with appropriate Harmer coupling (page 32).



Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (BSP)	f (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50	292	239	74	47.5	2"	137	1.69	2.3	AV200T
75	292	239	74	47.5	3"	137	4.97	2.3	AV300T
100	380	305	94.5	39	4"	210	10.71	4.5	AV400T
150	380	305	65.5	53	6"	210	14.07	4.5	AV600T

For flat grate versions add suffix /F to the product code (See page 17)

A range of accessories is available for use with special detail requirements (See pages 17, 32 and 34)

# 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 drainage system where concealed rainwater outlets are used. (See page 38)

To specify or order, add suffix /F to the product codes on page 16, e.g 100mm Vertical Spigot outlet with Flat Grate: AV400/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.





(For use with Extension Piece 4/6EP)

Outlet Size (mm)	a (mm)	b (mm)	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Product Code
50	150	25	1.69	1.5	0.7	2/3TG
75	150	25	4.97	1.5	0.7	2/3TG
100	232	25	10.71	1.5	1.6	4/6TG
150	232	25	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. (See page 38)

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.

### 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.



Extension Piece 2/3EP)



Grate Extension Piece 4/6EP



Grate Extension Piece 2/3EP

Outlet Size (mm)	a (mm)	b (mm)	c (mm)	Weight (kg)	Product Code
50	161	150	128	0.7	2/3EP
75	161	150	128	0.7	2/3EP
100	233	222	128	1.3	4/6EP
150	233	222	128	1.3	4/6EP

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



#### BIM available

# 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-Gulley 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.

### **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).

Flow Rate Note 1 (applies to table) 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 version add suffix /F to the product code (See page 17)

A range of accessories is available for use with special detail requirements (See pages 17, 32 and 34)

#### Existing Pipe Diameter Ranges Suitable for Connection to AV Retro-Gully

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



# Aluminium Roof Outlets - Introduction 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 or Screw threaded aluminium outlets cast in LM6 aluminium alloy for connection to drainage pipework at 45° and 90°.
- Two-way 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 take-off, and are particularly suitable for parapet type applications.
- Balcony 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 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.



#### BIM available

# 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 32).

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

а

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 21)

A range of accessories is available for use with special detail requirements (See pages 21, 32 and 34)

### 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. This tube is supplied with BS EN 10255 taper male thread which ensures a completely watertight joint when screwed home into the socket outlet. 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 (page 34) with appropriate Harmer coupling (page 32.



For flat grate versions add suffix /F to the product code (See page 21)

159

186

229

305

75

100

305

372

A range of accessories is available for use with special detail requirements (See pages 21, 32 and 34)

109

113

137

210

4.97

10.71

3.5

6.0

345T

445T

# 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 drainage system where concealed rainwater outlets are used. (See page 38)

To specify or order, add suffix /F to the product codes on page 20, e.g 100mm Vertical Spigot outlet with Flat Grate: AV400/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 (For use with Extension Pie	e 2/3TG ce 2/3EP)		Terra (For Exter	ace Grate 4/6TG use with nsion Piece 4/6EP	)	
Outlet Size (mm)	a (mm)	b (mm)	Flow Rate <sup>1</sup> (l/s)	Load Rating (tonne)	Weight (kg)	Product Code
50	150	25	1.69	1.5	0.7	2/3TG
75	150	25	4.97	1.5	0.7	2/3TG
100	232	25	10.71	1.5	1.6	4/6TG
150	232	25	15.55	1.5	1.6	4/6TG

a

Grate Extension Piece 4/6EP

С

### **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. (See page 38)

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.

### 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.





orace Ente					
Outlet Size (mm)	a (mm)	b (mm)	c (mm)	Weight (kg)	Product Code
50	161	150	128	0.7	2/3EP
75	161	150	128	0.7	2/3EP
100	233	222	128	1.3	4/6EP
150	233	222	128	1.3	4/6EP



#### BIM available

# 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 32).

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 23)

A range of accessories is available for use with special detail requirements (See pages 23, 32 and 34)

### 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. This tube is supplied with BS EN 10255 taper male thread which ensures a completely watertight joint when screwed home into the socket outlet. 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 (page 34) with appropriate Harmer coupling (page 32).



For flat grate versions add suffix /F to the product code (See page 23)

A range of accessories is available for use with special detail requirements (See pages 23, 32 and 34)

# 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 drainage system where concealed rainwater outlets are used. (See page 38)

To specify or order, add suffix /F to the product codes on page 22, e.g 100mm Vertical Spigot outlet with Flat Grate: AV400/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.





Extension Piece 2/3EP) Extension Piece 4/6EP) Outlet Size Flow Rate<sup>1</sup> Load Rating Weight Product b a (mm) (l/s) (tonne) (kg) Code (mm) (mm) 50 150 25 1.69 1.5 0.7 2/3TG 75 150 25 4.97 1.5 0.7 2/3TG 100 232 25 10.71 1.5 1.6 4/6TG 150 232 25 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. (See page 38)

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.

### **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.



Grate Extension Piece 2/3EP





С

Grate Extension Piece 4/6EP

Outlet Size (mm)	a (mm)	b (mm)	c (mm)	Weight (kg)	Product Code
50	161	150	128	0.7	2/3EP
75	161	150	128	0.7	2/3EP
100	233	222	128	1.3	4/6EP
150	233	222	128	1.3	4/6EP



# 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.



### 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.



#### Connections

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.

150

380

305

76

38

288

15.55

5.1

600CP

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 (page 34) with appropriate Harmer coupling (page 32).

# Aluminium Roof Outlets - Balcony Detail Outlets

Harmer Roof Balcony Detail outlets are designed for use with concrete balcony structures and are fitted with flat grates for safe drainage in pedestrian accessed areas. Balconies provide additional living space both in new build and refurbishment projects. AWMS can manufacture bespoke products especially for modern balconies on high-rise commercial developments.

### Introduction

The range consists of the traditional large sump outlet and a NEW shallow sump range which incorporates a wide selection of grating options in Stainless Steel and Nickel Bronze for use with epoxy resin finishes and tiled areas. Harmer Balcony outlets are ideal for use with all types of waterproofing membranes including mastic asphalt, elastomeric felts, liquid plastics and most single ply systems.

The Harmer Balcony Detail range can be combined with Alumasc rainwater products including Flushjoint and Heritage pipework to provide continuous drainage in series on multi-storey buildings. Colour matching and bespoke manufacture of the rainwater system are catered for through Alumasc's made to order service.

The balcony outlet range is also suitable for use with the Modulock range of drainage channels and paving supports in areas where level access or permeable drainage is required.

Mini Balcony Outlet

The new 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.

#### 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 40)

Flow Rate Note 1 (applies to table) 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.





BIM available

# Aluminium Roof Outlets - Balcony Detail Outlets

#### **Fixed Height Grate Options**

For added quality and finished appearance of any Harmer Mini Balcony outlet installation, a choice of stainless steel or nickel bronze gratings 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.

Gratings are available in stainless steel or nickel bronze.



Material	Grate Type	a	b	С	Flow Rate <sup>1</sup>	Load	Weight	Product
		(mm)	(mm)	(mm)	(l/s)	Class	(kg)	Code
Stainless steel	Star	165.5	175	137.5	3.3*	K3	1.1	/SS
Stainless steel	Concentric ring	165.5	175	137.5	2.1*	K3	1.1	/RS
Nickel bronze	Star	165.5	175	137.5	3.3*	K3	1.1	/SN
Nickel bronze	Concentric ring	165.5	175	137.5	2.1*	K3	1.1	/RN

\*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 or nickel bronze are also 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.



\*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 32).

### **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.

Flow Rate Note 1 (applies to table) 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>b</b> (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
50	270	60	1.69	2.8	2BO
75	270	83	4.97	3.1	3BO
100	270	110	8.41	3.3	4BO



Outlet Size (mm)	a (mm)	b (mm)	Product Code
50	220	115	BO/EP
75	220	115	BO/EP
100	220	115	BO/EP



# 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 32).

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





# Aluminium Roof Outlets - Two-Way Detail Outlets

Harmer Roof Two-Way Detail outlets are 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 and are suitable for use with most types of waterproofing membrane.

### Two-Way Detail Outlets

Two-Way Detail 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. This tube is supplied with BS EN 10255 taper male thread which ensures a completely watertight joint when screwed home into the socket outlet. Screw outlets are particularly recommended where a connection to the outlet occurs within the thickness of a concrete slab. In such cases a threaded connection, achieved by use of a Harmer Roof Threaded Spigot Adaptor, will create a completely gas-tight seal within the slab. Harmer Two-Way Detail 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 (page 34) with appropriate Harmer coupling (page 32).

A welded spigot version of the Two-Way Detail outlet can also be manufactured on request.

### 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.

Flow Rate Note 1 (applies to table) 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 - 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.



Note on special modifications
Roof outlets can have special modifications
applied such as welded aluminium tail pipe to
eliminate the typical jointing detail as
associated within a concrete slab. Please refer
to page 43.

Outlet Size (mm)	a (mm)	Flow F vertical	Rate¹ (l/s) horizontal	Weight (kg)	Product Code
50	75	1.69	1.69	2.4	2TW
75	107	3.94	1.47	2.6	3TW
100	130	6.00	2.05	2.5	4TW

### Large Two-Way

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



# 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.



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

# Aluminium Roof Outlets - Accessories and Connections

#### Harmer Couplings

Ductile Iron	Due	0
Coupling Type	Pipe Dia (mm)	Product Code
SML Ductile Iron	50	235849
SML Ductile Iron	100	235357
SML Ductile Iron	150	235358
SML Duo	50	3140/50
SML Duo	100	3140/100
SML Duo	150	3140/150

#### **Adaptor Couplings**



### **Metal Deck Support Plates**

Harmer Roof pressed Metal Deck Support Plates are recommended for use where Harmer Roof metal and insulated rainwater outlets are installed in metal deck roof construction. They are designed to provide a secure and stable junction between roof deck and rainwater outlet.

The Support Plates incorporate pre-punched holes for ease of fixing. Two sizes are available. The 335 x 335mm plate will suit 50 and 75mm metal outlets and all insulated outlets. The 415 x 415mm plate is designed for all 100 and 150mm metal outlets.

#### 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.

# Aluminium Roof Outlets - Accessories and Connections

### **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.





# Aluminium Roof Outlets - Accessories and Connections

#### **Threaded Spigot Adaptors**

The Threaded Spigot Adaptor has been designed to facilitate the connection of Harmer Roof AV and Detail threaded 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 ABS plastic are supplied in 400mm lengths, taperthreaded 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 (page 32).



Nominal bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	55	400	0.4	2ADP
50	55	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

### 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:

- 1. Inspect all threads and ensure they are free of dirt, grease and foreign matter.
- 2. 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.
- 3. Securely tighten the adapter into the outlet, using chains or similar equipment.

#### Connecting Adapter - Method 2

Using silicone sealant (DOW CORNING 791 recommended):

- 1. Inspect all threads and ensure they are free of dirt and foreign matter.
- 2. Allow for ventilation and degrease the threads of the outlet using a degreasing agent and fine brush.
- 3. 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.
- 5. A surplus of sealant will squeeze out indicating that all the thread void areas have filled.
- 6. Clean up with paper towels and dispose of appropriately.
- 7. 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 - NBS Specification

A typical NBS Specification for Harmer Aluminium Roof Outlets. A full range of NBS specifications and roof drainage calculators are available via the Harmer online NBS Specification Builder at www.harmerdrainage.co.uk. For project specific specification advice, contact Harmer Technical Services.

### R10 Gravity Rainwater Drainage Systems

### GENERAL

- GRAVITY RAINWATER DRAINAGE SYSTEM
  - Roof Outlets, Pipework and Accessories: As per detail sections below

#### SYSTEM PERFORMANCE

DESIGN

#### 210

110

- Design: Complete the design of the rainwater drainage system
- Standard: To BSEN12056-3:2000, clauses 3-7 and National Annexes
- Proposals: Submit Drawings, technical information, calculations and manufacture's literature

#### PRODUCTS

365	HARMER ALUMINIUM ROOF OUTLETS
	Manufacturer: Alumasc Water Management Solutions, Station Road, Burton Latimer, Kettering, NN15 5JP Tel: 01536 383810 Website: www.harmerdrainage.co.uk, Email: info@alumascwms.co.uk
Outlet:	Harmer AV Aluminium
Туре:	AV Spigot Outlets
Grate Type:	Domed Grate
Size:	150mm
Product Code:	AV600
Reference:	Harmer Roof Outlets



Create Harmer Drainage NBS specifications by selecting the required product range, profile, size and finish by visiting: www.harmerdrainage.co.uk

Product Type	Harmer Roof Outlets	
Outlet	Harmer AV Aluminium	-
Туре	AV Spigot Outlets	-
Grate Type	Domed Grate	

Accessories: Flat grate, domed grate, trafficable grate



### Drainage Design Calculator

Architects and Building Services Engineers can now design and quantify all their Rainwater Drainage requirements using Alumasc's dedicated design software.

#### Key Features

- Category 2 and 3 Flat Roof Drainage Calculator linked in to local rainfall data
- Rainwater Drainage Drawing tool integrating Quantities Schedule
- Eaves Drainage Gutter sizing and pipe calculator for Cast and Contemporary gutter types
- Hyperlinks to Product Literature, DWG files and application specific NBS Specification Clauses



# **ია**იPlus

# Aluminium Roof Outlets - Installation

#### Introduction

The Harmer Roof Aluminium 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, 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 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 37-41. 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.


#### Harmer AV Vertical Threaded Outlet in Warm Roof Concrete Deck Construction with Asphalt Waterproofing

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



## 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





## Harmer AV Retro-Gully Roof Refurbishment, Retaining

**Existing Cast Iron Outlet** 

## Installing Harmer AV Retro-Gully



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



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



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



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



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



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



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



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



#### Harmer Mini Balcony Outlet with Standard Grate

## Harmer Mini Balcony Outlet with Stainless Steel Tile Grate





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

Section Showing Rainwater Discharge Via ADP Adaptor



## Harmer Flanged Car Park Detail Outlet with Flat Grate



Harmer Two-Way Outlet

Aluminium Roof Outlets - Bespoke Solutions Introduction

# Harmer Roof Drainage The Bespoke Service

The Harmer range of roof drainage products is amongst the widest available anywhere in the marketplace. But the variety of drainage conditions encountered in modern refurbishment and newbuild work means that a standard rainwater outlet will not always be available to address a particular detailing requirement. In such circumstances, a bespoke solution is the only answer.

By combining Harmer technical expertise with the advanced manufacturing capabilities in Alumasc's workshops, non-standard pipe and rainwater outlet configurations can be manufactured on a bespoke basis to suit the most complicated of design requirements.

The Harmer technical team works alongside Architect and Contractor to produce fully engineered solutions from first concept through to finished product.

# Aluminium Roof Outlets - Bespoke Solutions Introduction

#### No matter what the drainage problem - we have the answer

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 **N⊮HBC** 

Housebuilding Council (NHBC). 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.

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



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 though 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.



#### **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



## Aluminium Roof Outlets - Bespoke Solutions Application Detail 1



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

#### 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 is it 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.

- 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



## Aluminium Roof Outlets - Bespoke Solutions Application Detail 2



Retrofit Harmer bespoke scupper drain installation for drainage at a parapet without disturbing the existing concrete slab

#### Design challenge

Need for a retro installation of parapet drainage where installing a standard two-way outlet was not feasible through fear of exposing the existing deck reinforcement.

#### Unique and innovative Harmer solution

A special scupper drain design with flanged connection to avoid risks associated with disturbing the existing concrete 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.

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





# Harmer Roof Drainage 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 debis 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 - Product Range Summary

The Harmer Cast Iron range of roof outlets provides the ideal drainage combinations to accommodate insitu construction, drainage performance and finishes.

#### **Medium Sump Outlets**



The Harmer cast iron medium sump range comprises compact outlet bodies in vertical and horizontal variations for connection to 50, 75 and 100mm pipework. Vertical bodies come with either spigot or threaded outlets and horizontal body versions are available in threaded only.

A comprehensive range of grates is available for use in different types of application including domical grates and load bearing circular and square grates which are suitable for areas with vehicular access.

See page 50.

## Large Sump Outlets



The Harmer cast iron large sump range provides deep outlet sump bodies for 100 and 150mm vertical pipe connections. The outlets are threaded to 4" and 6" BSP and can be used with Harmer adaptors for connection to Cast Iron, HDPE, PVCu and Stainless Steel pipework systems.

A comprehensive range of grates is available for use in different types of application including domical grates, and heavy duty ductile iron circular and square grates which are suitable for areas with vehicular access.

See page 528.

# Cast Iron Roof Outlets - Product Range Summary

Harmer Cast Iron rainwater outlets provide the ideal drainage solution in conjunction with ease of installation, practical aesthetics and choice of metals.

#### **Two-Way Outlets**



#### The Harmer cast iron Two-Way outlet is unobtrusive and suitable for use in a parapet wall construction. It can be used vertically or horizontally for connecting to 50, 75 and 100mm pipework making it suitable for use in balcony installations. A choice of flat or rectangular grates is available in cast iron, nickel bronze or aluminium.

See page 54.

#### **Balcony Outlets**



The Harmer cast iron Balcony outlet is 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.

See page 55.

#### Accessories and Pipe Connections



A comprehensive range of accessories for the Harmer Cast Iron Roof outlet system is 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

See page 57.

## 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 58 for appropriate Harmer coupling selection.

Note:

For Flat Grate version add suffix /F to the product code (see page 51) A range of accessories is available for use with special detail requirements (See page 51, 57 and 58)

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 (page 57) with appropriate Harmer coupling (page 58).

Note:

For Flat Grate version add suffix /F to the product code (see page 51) A range of accessories is available for use with special detail requirements (See page 51, 57, 58 and 59)

## 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 (page 57) with appropriate Harmer coupling (page 58).

Note:

For Flat Grate version add suffix /F to the product code (see page 51) A range of accessories is available for use with special detail requirements (See page 51, 57, 58 and 59)



Outlet Size (mm nominal)	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

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



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



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

# Cast Iron Roof Outlets - Medium Sump Grates, Extension Pieces, & Double Flange Body Options

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 50. 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.

## 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 62 for application details.



\*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.



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

	)	Grate 🗖		⊐ 15
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.



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

See page 626 for application details. For other insulation thicknesses, please contact Harmer Technical Helpline.



\*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 (page 57) with appropriate Harmer coupling (page 58).

#### Note:

A range of accessories is available for use with special detail requirements (See page 53, 57, 58 and 59)

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 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.

#### **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.

#### 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.



(mm nominal)	(mm)	(BSP)	(l/s)	Rating	(kg)	Code
100	154	4"	8.56	n/a	14.3	C400LT
150	154	6"	10.35	n/a	12.6	C600LT



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

	Gr Cla	ate amp 32	U 3 x 323	25
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 Grates, Extension Pieces & Double Flange Body Options

The Harmer Cast Iron Large 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 52. For example, 150mm Vertical Threaded Outlet with Stainless Steel Adjustable Height Grate: C600LT/ESS.

## 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 62 for application details.



## **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.



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





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



\*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 (page 57) and Downspouts (page 56).

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.

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 (page 57) and Downspouts (page 56).

Flat Grates are available in Cast Iron (painted black).



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



Outlet Size (mm)	Grate Material	a (mm)	b (BSP)	<b>Flow F</b> vertical	Rate¹ (l/s) horizontal	Load Rating (tonne)	Weight (kg)	Product Code
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.

#### 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 (page 57) with the appropriate Harmer coupling (page 58).



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



Outlet Size (BSP)	Grate Type	a (mm)	b (mm)	c (mm)	Flow Rate <sup>1</sup> (l/s)	Weight (kg)	Product Code
2"	Full	36	127.3	121.0	1.7	6.63	C2BO/T
2"	Aperture	36	127.3	121.0	1.7	6.31	C2BO/T/4
3"	Full	36	127.3	121.0	5.0	5.81	C3BO/T
3"	Aperture	36	127.3	121.0	5.0	5.49	C3BO/T/4
4"	Full	36	127.3	116.0	5.8	4.63	C4BO/T
4"	Aperture	36	127.3	116.0	5.8	4.31	C4BO/T/4

# 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.

## 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 and Connections

#### **Threaded Spigot Adaptors**

The Threaded Spigot Adaptor has been designed to facilitate the connection of Harmer Roof AV and Detail threaded cast iron 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 ABS plastic are supplied in 400mm lengths, taperthreaded 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.

Refer to pipework connections on page 58. for appropriate couplings selection.



Nominal bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	55	400	0.4	2ADP
50	55	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

## 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:

- 1. Inspect all threads and ensure they are free of dirt, grease and foreign matter.
- 2. 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.
- 3. Securely tighten the adapter into the outlet, using chains or similar equipment.

#### Connecting Adapter - Method 2

Using silicone sealant (DOW CORNING 791 recommended):

- 1. Inspect all threads and ensure they are free of dirt and foreign matter.
- 2. Allow for ventilation and degrease the threads of the outlet using a degreasing agent and fine brush.
- 3. 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.
- 5. A surplus of sealant will squeeze out indicating that all the thread void areas have filled.
- 6. Clean up with paper towels and dispose of appropriately.
- 7. 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 - Accessories and Connections

#### **Planter Drain**

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.



## **Pipe Connections**



## Harmer Couplings

For appropriate couplings selection refer to the pipe connections table below.

Duo	Adaptor Ductile Iro	n
Coupling Type	Pipe Dia (mm)	Product Code
SML Ductile Iron	50	235849
SML Ductile Iron	100	235357
SML Ductile Iron	150	235358
SML Duo	50	3140/50
SML Duo	100	3140/100
SML Duo	150	3140/150
SML Adaptor	75	3151/070075

Outlet Type	Nominal Size	Outlet Dia		Pipe Material and Conection Type				
	(mm)	(mm)	Cast Iron EN877	Stainless Steel	HDPE	PVCu		
Vertical	50	60	SML Duo coupling	Post formed socket OR flexible coupling	SML Duo coupling	Post formed socket OR flexible coupling		
Spigot	75	83	SML Adaptor coupling	"O" ring socket OR SML Duo coupling	SML Adaptor coupling	"O" ring socket OR SML Duo coupling		
T	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 3	3ADP + SML Adapter coupling	3ADP to "O" ring socket OR SML Duo coupling	3ADP + SML Adaptor 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 "O" ring socket OR SML Duo coupling		

# Cast Iron Roof Outlets - Accessories and 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.



## **Underdeck Clamp**

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



## **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.



## **Metal Deck Support Plates**

Recommended for use where Harmer cast iron 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.



Code reference SP1

Code reference SP2

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

# Cast Iron Roof Outlets - NBS Specification

A typical NBS Specification for Harmer Cast Iron Roof Outlets. A full range of NBS specifications and roof drainage calculators are available via the Harmer online NBS Specification Builder at www.harmerdrainage.co.uk. For project specific specification advice, contact Harmer Technical Services.

#### **R10 Gravity Rainwater Drainage Systems**

#### GENERAL

- GRAVITY RAINWATER DRAINAGE SYSTEM
  - Roof Outlets, Pipework and Accessories: As per detail sections below

#### SYSTEM PERFORMANCE

DESIGN

#### 210

110

- Design: Complete the design of the rainwater drainage system
- Standard: To BSEN12056-3:2000, clauses 3-7 and National Annexes
- Proposals: Submit Drawings, technical information, calculations and manufacture's literature

#### PRODUCTS

365	HARMER CAST IRON ROOF OUTLETS
	Manufacturer: Alumasc Water Management Solutions, Station Road, Burton Latimer, Kettering, NN15 5JP Tel: 01536 383810 Website: www.harmerdrainage.co.uk, Email: info@alumascwms.co.uk
Outlet:	Harmer Cast Iron
Туре:	Spigot Outlets
Grate Type:	Domed Grate
Size:	150mm
Product Code:	C600LT
Reference:	Harmer Roof Cast Iron
Accessories:	Flat grate domed grate trafficable grate



Create Harmer Drainage NBS specifications by selecting the required product range, profile, size and finish by visiting: www.harmerdrainage.co.uk

Product Type	Harmer Roof Outlets	•
Dutket	Harmer Cast Iron	•
Туре	Large Sump Spigot Outlet	•
Grate Type	Domed Grate	•
Size	150mm	

Accessories: Flat grate, domed grate, trafficable grate



#### Drainage Design Calculator

Architects and Building Services Engineers can now design and quantify all their Rainwater Drainage requirements using Alumasc's dedicated design software.

#### **Key Features**

- Category 2 and 3 Flat Roof Drainage Calculator linked in to local rainfall data
- Rainwater Drainage Drawing tool integrating Quantities Schedule
- Eaves Drainage Gutter sizing and pipe calculator for Cast and Contemporary gutter types
- Hyperlinks to Product Literature, DWG files and application specific NBS Specification Clauses



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# Cast Iron Roof Outlets - Installation

## Introduction

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, 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



Harmer Medium Sump Vertical Spigot Double Flanged Outlet in Warm Roof Metal Deck Construction

Harmer Medium Sump Vertical Threaded Outlet with Square Grate in Inverted Roof Concrete Deck Construction



# **Cast Iron Roof Outlets - Application Details**

# Alumasc Heritage aluminium rainwater pipe Two-coat asphalt Harmer Aperture Grate Harmer Balcony Outlet with spigot connection Screed to falls Concrete slab Alumasc Heritage aluminium pipe system

# Harmer Balcony Spigot Outlet with Aperture Grate in Concrete Deck Construction

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



# Harmer Roof Drainage The Modulock Channel Drain Ranges

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.



# Modulock 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 surface meets 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.









# Modulock Roof Channel Drains - Product Range 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, 200mm and 250mm widths, with either variable or fixed depths.

Two types of Harmer Modulock Slot Channel are also available - Facade and Terrace. The Facade range is manufactured in either stainless or galvanised steel. The Terrace range is manufactured in stainless steel only.

## Straight Channels and Grates





#### 90° Connections - Corner Pieces, Cross Pieces and T-Pieces for Straight Channels

Prefabricated 90° Corners, Cross Pieces and T-pieces are used with the 130mm and 250mm wide channels. They have adjustable heights ranging from 55-90mm and 90-150mm. The 90° connections are manufactured in stainless steel Grade 304 or galvanised mild steel.

As with the channels, the  $90^\circ$  connections slot together via tongue and groove joints.

See pages 78 and 80.

## Outlet Channels and Drain Trap for Straight Channels



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

See pages 79 and 81.

# Modulock Roof Channel Drains - Product Range Summary

130mm and 250mm wide Straight Channels are available in either fixed depth versions or as versions that can be altered in depth using the integral adjustment mechanism. The 200mm wide Straight Channel is only available in a fixed depth version. For the 130mm and 250mm wide Straight Channels, grates are available in six and four different profiles respectively. The 200mm wide version has just one grate profile. All grates can be made in stainless steel or galvanised mild steel. Facade Slot Grates are available in stainless or galvanised steel. Terrace Slot Grates are available in stainless steel only. Laid directly on the structural deck, all Straight and Slot Channels are rated Load Class K3.



## Facade & Terrace Slot Channels, Grate and 90° Corner Pieces

Facade Slot Channels are located directly against a facade where an architectural, narrow slot is required. Channels, Corner Pieces and Grates are available in stainless or galvanised steel. No height adjustment is provided.

Terrace Slot Channels are used for small terrace areas where paving construction depth is shallow (80-130mm). See pages 83 and 84.

#### **End Plates**



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.

See pages 79, 81, 83 and 84.

## **Standard Accessories**



## **Green Roof Accessories**



## Modulock Roof Channel Drains - Product Tables Straight Channels: 130mm Wide

#### 130mm Straight Channels

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

## Corner, Cross & T Connections

These prefabricated components provide a continuous change of direction and slot together with the Straight Channels. Depths are adjustable.





	(mm)	Galvanised Steel	Stainless Steel
Corner	Adjustable 55-90	MD39731	MD39741
Corner	Adjustable 90-150	MD39736	MD39746
Cross	Adjustable 55-90	MD39733	MD39743
Cross	Adjustable 90-150	MD39738	MD39748
Т	Adjustable 55-90	MD39732	MD39742
Т	Adjustable 90-150	MD39737	MD39747

# Modulock Roof Channel Drains - Product Tables Straight Channels: 130mm and 200mm Wide

#### Grates

Grates are 130mm wide and available in 6 different designs in either stainless steel or galvanised steel. 90° corners can be butt jointed or mitred on site.



Grate Type	Grate Length	Product Code		
	(mm)	Galvanised Steel	Stainless Steel	
Slotted	1000	MD37302	MD37332	
Slotted	500	MD37303	MD37333	
Mesh	1000	MD37300	MD37330	
Mesh	500	MD37301	MD37331	
Perforated	1000	MD37304	MD37334	
Perforated	500	MD37305	MD37335	
Longitudinal Bar	1000	MD37306	MD37336	
Longitudinal Bar	500	MD37307	MD37337	
Cross Bar	1000	MD37308	MD37338	
Cross Bar	500	MD37309	MD37339	
Ray	1000	MD37310	MD37340	
Ray	500	MD37311	MD37341	

## 200mm Straight Channel + Grate + End Plate

#### Outlet Channels & Trap

The Outlet Channels slot together with the Straight Channels. The depths can be adjustable or fixed, with a choice of perforated or open sides. The trap fits inside the outlet of the channel.



## **End Plates**

End Plates form a stop to the channel drain and are available to suit fixed height or adjustable height Straight Channels. Vermin are prevented from using the channel as a means of escape.

	13	30 55-90 or 90-150 ustable depths	130 55 or 75 or 140 Fixed depths
Depth (mm)		<b>Produ</b> Galvanised Steel	i <b>ct Code</b> Stainless Steel
Adjustable 55-90		MD39373	MD39383
Adjustable 90-150		MD39374	MD39384
Fixed 55		MD39370	MD39380
Fixed 75		MD39371	MD39381
Fixed 140		MD39372	MD39382

2000, 1000 or 500	200	Component	Туре	Length	Depth	Produc	t Code
						Galvanised Steel	Stainless Steel
		Channel	Perforated	2000	Fixed 55	MD42432	MD42532
Perforated sides & fixed 55 depth Mesh grate	195	Channel	Perforated	1000	Fixed 55	MD42431	MD42531
		Channel	Perforated	500	Fixed 55	MD42430	MD42530
		Grate	Mesh	1000	-	MD42600	MD42630
	End plate	Grate	Mesh	500	-	MD42601	MD42631
		End Plate	-	_	Fixed 55	MD42670	MD42680

## Modulock Roof Channel Drains - Product Tables Straight Channels: 250mm Wide

#### 250mm Straight Channels

The Channel Drains are 250mm wide and made in 2000mm, 1000mm and 500mm lengths, with a choice of perforated or open sides. The depths of the Channels can be adjustable or fixed. The Channel lengths are slotted together.



These prefabricated components provide a continuous change of direction and slot together with the Straight Channels. Depths are adjustable.





Туре	Depth	Product Code		
	(mm)	Galvanised Steel	Stainless Steel	
Corner	Adjustable 55-90	MD39751	MD39761	
Cross	Adjustable 55-90	MD39753	MD39763	
Т	Adjustable 55-90	MD39752	MD39762	

# Modulock Roof Channel Drains - Product Tables Straight Channels: 250mm Wide

#### Grates

Grates are 250mm wide and available in 4 different designs in either stainless steel or galvanised steel. 90° corners can be butt formed or mitred on site.



Grate Type	Grate Length	Product Code			
	(mm)	Galvanised Steel	Stainless Steel		
Mesh	1000	MD39600	MD39630		
Mesh	500	MD39601	MD39631		
Perforated	1000	MD39606	MD39636		
Perforated	500	MD39607	MD39637		
Longitudinal Bar	1000	MD39602	MD39632		
Longitudinal Bar	500	MD39603	MD39633		
Cross Bar	1000	MD39604	MD39634		
Cross Bar	500	MD39605	MD39635		

#### **Outlet Channels & Trap**

The Outlet Channels slot together with the Straight Channels. The depths can be adjustable or fixed, with a choice of perforated or open sides. The trap fits inside the outlet of the channel.



## **End Plates**

End Plates form a stop to the channel drain and are available to suit fixed height or adjustable height Straight Channels. Vermin are prevented from using the channel as a means of escape.



## Modulock Roof Channel Drains - Product Tables Accessories for 130mm/200mm/250mm Straight Channels

#### Maintenance Access Units

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



JIZE	Deptii	riouuci coue	
(mm)	(mm)	Galvanised Steel	Stainless Steel
230 x 230	Adjustable 55-90	MD37801	MD37821
230 x 230	Adjustable 90-150	MD37804	MD37824
400 x 400	Adjustable 55-90	MD37802	MD37822
400 x 400	Adjustable 90-150	MD37805	MD37825

## Gravel Guard (Perforated)

A mesh galvanised steel retaining strip 70mm to 110mm upstand for edge detailing to channel sections where gravel ballast is required.



#### **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.



## **Drainage Duct**

A slotted drainage duct is laid within the deck build-up to connect between channels and rainwater outlet positions. They can be used as an economical alternative to channels.


# Modulock Roof Channel Drains - Product Tables Facade Slot Channels

### Facade Slot Channels

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



Channel	Channel Length	Channel Depth	Produc	t Code
Side Type	(mm)	(mm)	Galvanised Steel	Stainless Steel
Perforated	2000	Fixed 170	MD37905	MD37925
Closed	2000	Fixed 170	MD37902	MD37922
Perforated	1000	Fixed 170	MD37904	MD37924
Closed	1000	Fixed 170	MD37901	MD37921
Perforated	500	Fixed 170	MD37903	MD37923
Closed	500	Fixed 170	MD37900	MD37920

### 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.



### 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.



### Slot Grate

The Slot Grate offers a visually unobtrusive method of providing drainage of rainwater run-off to facade elements.



### **End Plates**

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



Note: For Drainage Duct details see page 82.

### Modulock Roof Channel Drains - Product Tables 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.



### 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.



### 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.



### Slot Grate

The Slot Grate offers a visually unobtrusive method of providing drainage of rainwater run-off to terrace paving.



### End Plates

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



Note: For Drainage Duct details see page 82.

# Modulock Roof Channel Drains - Product Tables Green Roof Accessories

Harmer Green Roof Access Chambers are suitable for use with most Harmer Roof outlets. The Access Chamber provides an ideal solution for access to rainwater outlets for inspection and maintenance. It also acts as a collection point for surface water drainage and structural level drainage of the green roof.



### Access Chamber Extension Piece

Stackable PU access frame extension 400mm x 400mm with



### Adjustable Access Cover

Moulded PU access frame 400mm x 400mm with galvanised mild steel 9mm x 32mm aperture grating and fitted with adjustable feet for fine height adjustment on-site. Can be combined with Access Chamber Extension Piece to raise the height in increments of 50-80mm.



### Access Chamber

Moulded PU access frame 400mm x 400mm with galvanised mild steel 9mm x 32mm aperture grating. The perforated 600mm high chamber can be cut down on site to 220mm. Adjustable feet also allow fine height adjustment during installation.



# Modulock Roof Channel Drains - NBS Specification

A typical NBS Specification for Harmer Modulock Channel Drains. A full range of NBS specifications and roof drainage calculators are available via the Harmer online NBS Specification Builder at www.harmerdrainage.co.uk. For project specific specification advice, contact Harmer Technical Services.

# **೧১ភ**Plus

#### **R10 Gravity Rainwater Drainage Systems**

#### GENERAL

- GRAVITY RAINWATER DRAINAGE SYSTEM
  - Roof Outlets, Pipework and Accessories: As per detail sections below

#### SYSTEM PERFORMANCE

DESIGN

210

110

- Design: Complete the design of the rainwater drainage system
- Standard: To BSEN12056-3:2000, clauses 3-7 and National Annexes
- Proposals: Submit Drawings, technical information, calculations and manufacture's literature

#### PRODUCTS

365	HARMER MODULOCK CHANNEL DRAINAGE SYSTEM
	Manufacturer: Alumasc Water Management Solutions, Station Road, Burton Latimer, Kettering, NN15 5JP Tel: 01536 383810 Website: www.harmerdrainage.co.uk, Email: info@alumascwms.co.uk
Outlet:	Harmer Stainless Steel Channel Drain
Grate Type:	Slotted MD37332
Grate Size:	130mm wide x 50mm deep x 1000mm long
Product Code:	Channel MD39261, adjustable 55-90
Reference:	Harmer Modulock Channel Drains
Accessories:	90° Corner Connection, End Plates, Drainage Duct



Create Harmer Drainage NBS specifications by selecting the required product range, profile, size and finish by visiting: www.harmerdrainage.co.uk

Product Type	Harmer Modulock	•
Range	Channel Drainage	
Material	Stainless Steel	
Grate Type	Grid	
Channel Depth	40mm	



#### Drainage Design Calculator

Architects and Building Services Engineers can now design and quantify all their Rainwater Drainage requirements using Alumasc's dedicated design software.

#### **Key Features**

- Category 2 and 3 Flat Roof Drainage Calculator linked in to local rainfall data
- Rainwater Drainage Drawing tool integrating Quantities Schedule
- Eaves Drainage Gutter sizing and pipe calculator for Cast and Contemporary gutter types
- Hyperlinks to Product Literature, DWG files and application specific NBS Specification Clauses



# Modulock Roof Channel Drains - Installation

# 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 page 88.

- 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.



### Modulock Roof Channel Drains - Installation

1. Channels are connected together with the integral tongue and groove joints. No tools are necessary. Set out the channels from the drainage outlet. To adjust the overall length of the drainage line, cut the last channel of the line.

Fixed heights available are: For 130mm Channel: 55, 75 and 140mm For 200mm Channel: 55mm For 250mm Channel: 55 and 90mm



**2.** Loosen the screws inside the channel to adjust the height of the channel. Tighten the screws to fix the height.

\* Variable heights available are: For 130mm Channel: 55 - 90mm and 90 - 150mm For 250mm Channel: 55 - 90mm



**3.** The end plate can easily be adjusted to the required height by sliding the two metal sheets together. The end plate can then be fitted onto the channel.



**4.** If a drainage duct is required to discharge water to a gully to optimize the outflow rate of the channel, an opening (about 70mm wide and 30mm high) should be cut in the side of the channel at the required position.



**5.** Corner, Cross and T pieces are available and are fitted in a similar way as the channels. If two tongues are together cut off one of the tongues and then connect the components.



6. Finally, place the grate of choice on to the channel.

# Modulock Roof Channel Drains - Application Details



### Level Access Threshold using Straight Channels



# Harmer Roof Drainage The Modulock Raised Deck Support Ranges

Fully engineered, versatile, raised deck product ranges, Modulock Pedestal and Modulock Uni-Ring/Uni-Plus are ideal for concealed drainage and the support of paving slabs, timber or sheet decks at varying heights from the sub-structure. Two types of pedestal head are available: Self-Levelling and Timber Deck.



# Modulock Raised Deck Supports - Benefits

The Modulock Pedestal and Modulock Uni-Ring/Uni-Plus raised deck supports are designed for use in terraces, walkways, balconies and ballasted flat roof constructions. They provide unique solutions for drainage and accessibility issues.

### **Modulock Pedestal**

- Wide range of height adjustment from 28mm-550mm.
- Fine adjustment for both height and level are possible.
- There are 2 different types of head.

#### Modulock Pedestal Self-Levelling Head

- The Modulock Pedestal Self-Levelling Head compensates for gradients up to 5°.
- Made of polypropylene and rubber to provide an anti-noise and anti-slip bedding surface.

#### Modulock Pedestal Timber Deck Head

 This head is specifically designed for use with timber decking construction and is also self-levelling.

#### Modulock Uni-Ring & Uni-Plus

- Uni-Ring gives a fixed height of 16mm.
- Shims offer fine adjustment in increments of 3mm.
- Uni-Plus provides adjustment of 25-40mm.
- Both are economical paving supports, used where self-levelling adjustment is not required.

#### Self-Locating

- Locating blades on Modulock Pedestal Self-Levelling Head assist positioning of slabs and maintaining open joints when required.
- Locating blades can be removed.

### Compatibility

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

### **Robust Construction**

- Resists temperatures from -40° to +120°C.
- UV stable and resistant to acids.
- 20-year life expectancy.



Pedestal Timber Deck Head

#### Versatile Installation

- Modulock Pedestal and Modulock Uni-Ring 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.
- Irregular, stepped, uneven or sloping sub-bases can usually be easily surmounted by the system resulting in a new level raised floor

Hidden Services





# Modulock Raised Deck Supports - Product Range Summary



# Modulock Raised Deck Supports - Product Range Summary



### Modulock Pedestal Adjustable Height Supports

#### **Modulock Pedestal Heads**



The Self-Levelling Head can accommodate gradients of up to  $5^{\circ}$ , 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 95.

### Modulock Uni-Ring and Uni-Plus Height Supports



The basic Modulock Uni-Ring system within the range is based on shallow injection moulded polyethylene rings that are positioned to support adjoining slabs at each corner whilst maintaining open joints for drainage. It includes shims for fine height adjustment.

Modulock Uni-Plus is part of the Uni-Ring system and gives floor voids between 25-40mm. See page 96.

#### BIM available

### Modulock Raised Deck Supports - Product Tables 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.



Pedestal Height Adjustment a (mm)	Standard Head* Type H12/4	Pedestal Product Code
28 - 38	Head with 12mm x 4mm tabs	MBO
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



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  $\rm MB10$  is wanted, but using the  $\rm Flat$  Head, the complete product code will be  $\rm MB10/\rm H/F.$ 

If  $\mathsf{MB12}$  is wanted, but using the Timber Deck Head, the complete product code will be  $\mathsf{MB12/DH}.$ 

# Modulock Raised Deck Supports - Product Tables Pedestals



#### Pedestal Self-Levelling Head Options

#### Accessories





## Modulock Raised Deck Supports - Product Tables Uni-Ring and Uni-Plus

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.





#### 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.



110

25-40

25

Uni-plus

Uni-Plus

205

# Modulock Raised Deck Supports



# Modulock Raised Deck Supports - NBS Specification

A typical NBS Specification for Harmer Modulock raised deck supports. A full range of NBS specifications are available via the Harmer online NBS Specification Builder at www.harmerdrainage.co.uk. For project specific specification advice, contact Harmer Technical Services.

# **ია**sPlus

### J41 Reinforced Bitumen Membrane Roof Coverings

#### GENERAL

110

REINFORCED BITUMEN MEMBRANE ROOF COVERINGS ALUMASC WATERPROOFING MEMBRANE SYSTEM

#### SYSTEM PERFORMANCE

- 210 GENERAL
  - Secure, free draining and weathertight

#### PRODUCTS

467	SUPPORT SYSTEMS FOR PRECAST CONCRETE PAVING SLABS	
	Manufacturer: Alumasc Water Management Solutions, Station Road, Burton Latimer, Kettering, NN15 5JP Tel: 01536 383810 Website: www.harmerdrainage.co.uk, Email: info@alumascwms.co.uk	
Туре:	Adjustable deck supports	
Size:	MB1: 32-50 mm high/MB2: 50-75 mm high/MB3: 75-120 mm high /MB4: 120-170 mm high/MB5: 170-215 mm	
Product Code:	MB1 -MB5	
Reference:	Harmer Deck Modulock	
Accessories:	Adjustment Key	



Product Type	Harmer Modulock	16
Range	Adjustable Deck Supports	
Height	75 - 120mm	
Head Type	Self Levelling Flat Head	

Create Harmer Modulock NBS specifications by selecting the required product range, profile, size and finish by visiting: www.harmerdrainage.co.uk

### **Design Support**

Harmer has developed dedicated design software to assist architects, specifiers and contract engineers to quantify the exact specification and detailed layout of Modulock Pedestals on a project. Complex roof layouts with multiple falls and awkward detailing can also be calculated. Simply send through your CAD drawings to Harmer's Technical Department and we will do the rest.

#### Key Features

- Design software is AutoCAD-compatible allowing seamless interpretation of project design
- Multiple roof areas and complex roof layouts can be mapped using colour-coded layout to show the exact specification and height requirement of each Modulock Pedestal
- Assists specification by accurately quantifying the exact number and type of Modulock Pedestals required on a project
- Improves the interface between designers and installer through accurate specification and product selection

Contact: modulock@alumasc-exteriors.co.uk



### Modulock Raised Deck Supports - 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.
- 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.

#### Alternative Edge Details

1. With wide open joint at perimeter.



#### 2. With narrow open joint at perimeter.



#### 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.
- 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.



# Modulock Raised Deck Supports - Application Details



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

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



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



# Modulock Raised Deck Supports - Application Details



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

### Paving Slabs on Harmer Modulock Uni-Ring



## Other Harmer Drainage Products

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

For detailed information on these 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**

- BBA Agrément certified
- 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 socketless 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.



## Alumasc Water Management Solutions







Skyline's high performance weatherproofing and integrated guttering systems provide industry leading rainwater protection.

Skyline includes fascia and soffits, copings, cills and surrounds manufactured from high quality, in-house, BBA certified powder-coated aluminium.

Alumasc is the UK market leader for Aluminium, Cast Iron and Steel gutters and downpipes,

From cutting edge-contemporary to tradition heritage, Alumasc's metal rainwater systems outperform others whatever the weather.

Harmer Building Drainage manages water inside and outside the building.

Its systems allow designers, contractors and clients to realise the design performance and installation benefits of fully integrated drainage solutions.

Gatic Civil Drainage specialises in integrated surface water management.

For over 90 years Gatic drainage systems have been used to capture, control and return run-off safely into the natural water cycle.

Gatic Engineered Access Covers, the proven international standard for engineered heavy duty access cover solutions.

With a history of installations dating back more than 90 years Gatic offers an engineered solution for all types of applications.

# SKYLINE®

Fascia

- Soffits
- Copings
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- www.alumascskyline.co.uk

# GUTTERS AND DOWNPIPES

- Aluminium Rainwater Systems
- Cast Iron Rainwater Systems
- Steel Rainwater Systems
  www.alumascrainwater.co.uk



- Roof, Floor and Shower Drains
- Cast Iron Soil and Waste Systems
- Rainwater Management Systems
- Paving and Decking Supports
- www.harmerdrainage.co.uk



- Slotdrain
- Filcoten
- Proslot
- Kerb Drainage and Flow Controls
  www.gatic.com



- Access Covers
- COEX
- Assist Lift / LFA
- Pave
- Composite
- www.gatic.com



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ALUMASC WATER MANAGEMENT SOLUTIONS

A division of:

