

Aluminium Roof Outlets

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



Aluminium Roof Outlets - Benefits

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

Compliances

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

High Flow Performance

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

Robust and Secure

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

A Choice of Body and Grates

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

Low Maintenance

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

Easy and Quick to Install

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

Value for Money

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

Sustainable

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



Aluminium Roof Outlets - Product Range Summary

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

AV Vertical Spigot, Threaded Outlets and Extended Spigot

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

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AV Retro-Gully Outlets

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

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Detail Outlets

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

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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.

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

Aluminium Roof Outlets - Intro to AV Outlets

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

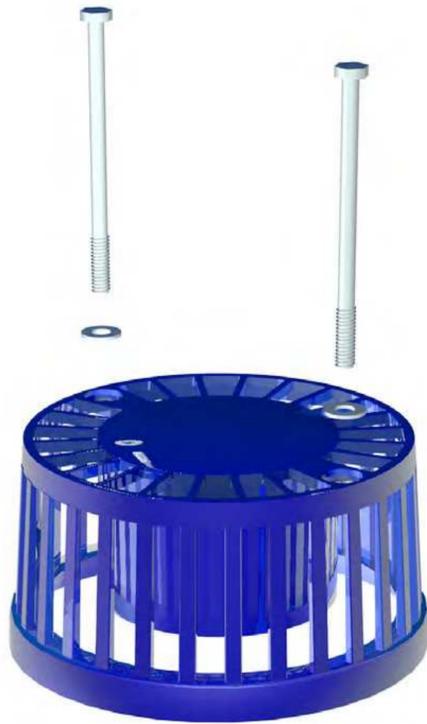
Main Characteristics

Enhanced Performance

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

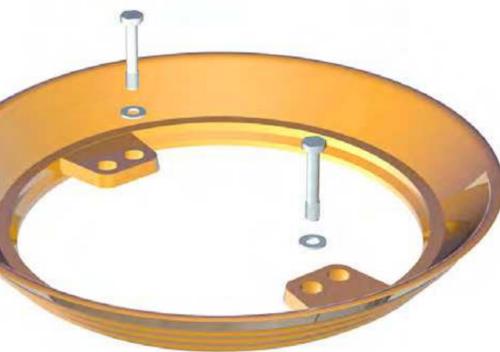


The performance of AV outlets increases as the depth of water at the outlet or rainfall intensity increases. The unique high flow performance of Harmer Roof AV outlets demands that each outlet is connected to a dedicated or individual rainwater stack. AV outlets should be used for securing optimum performance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



Bolts and Washers

Stainless steel



Patented Anti-Vortex Grating

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



Clamping Ring

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

Outlet Body

Deep sump body is secured through flange to supporting structure

Key Benefits of the Harmer AV Roof Outlet Range

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

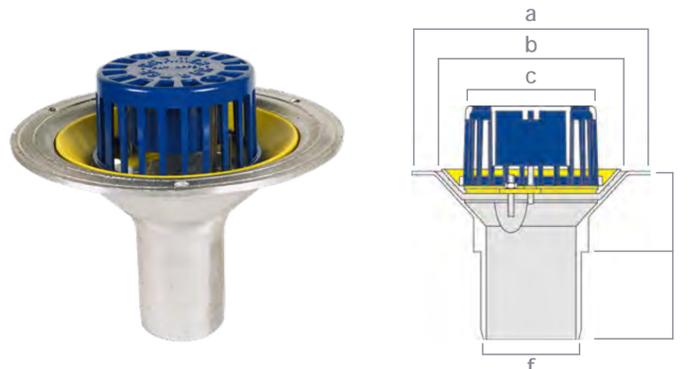
Aluminium Roof Outlets - AV Vertical Outlets

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



Vertical Spigot Outlet - Domical Grate

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



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

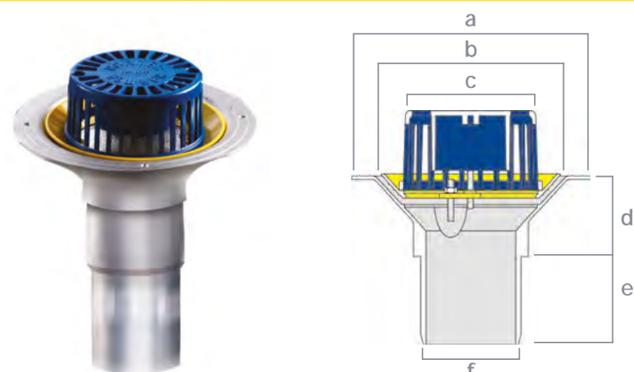
Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	292	239	137	121	77	60	1.69	2.5	86	AV200
75	292	239	137	85	112	83	4.97	2.7	86	AV300
100	380	305	210	133	114	110	10.71	4.9	110	AV400
150	380	305	210	118	129	160	14.07	5.0	110	AV600

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



Vertical Extended Spigot Outlet - Domical Grate

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



Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.

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

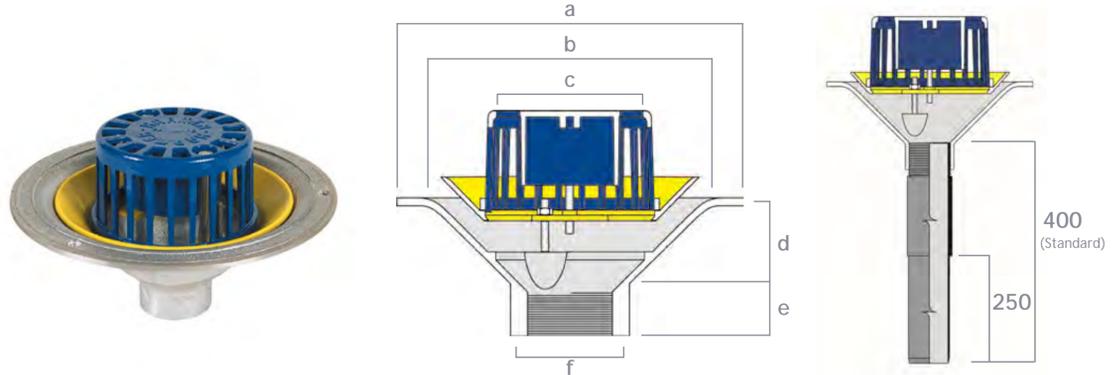
Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	292	239	137	121	200	63	1.69	2.6	86	AV200/EXT/200
50	292	239	137	121	400	63	1.69	2.8	86	AV200/EXT/400
50	292	239	137	121	600	63	1.69	2.9	86	AV200/EXT/600
50	292	239	137	121	800	63	1.69	3.0	86	AV200/EXT/800
50	292	239	137	121	1000	63	1.69	3.1	86	AV200/EXT/1000
75	292	239	137	85	200	82	4.97	3.0	86	AV300/EXT/200
75	292	239	137	85	400	82	4.97	3.2	86	AV300/EXT/400
75	292	239	137	85	600	82	4.97	3.5	86	AV300/EXT/600
75	292	239	137	85	800	82	4.97	3.8	86	AV300/EXT/800
75	292	239	137	85	1000	82	4.97	4.1	86	AV300/EXT/1000
100	380	305	210	133	200	110	10.71	5.5	110	AV400/EXT/200
100	380	305	210	133	400	110	10.71	6.0	110	AV400/EXT/400
100	380	305	210	133	600	110	10.71	6.6	110	AV400/EXT/600
100	380	305	210	133	800	110	10.71	7.2	110	AV400/EXT/800
100	380	305	210	133	1000	110	10.71	7.8	110	AV400/EXT/1000
150	380	305	210	118	200	152	14.07	5.6	110	AV600/EXT/200
150	380	305	210	118	400	152	14.07	6.3	110	AV600/EXT/400
150	380	305	210	118	600	152	14.07	6.9	110	AV600/EXT/600
150	380	305	210	118	800	152	14.07	7.7	110	AV600/EXT/800
150	380	305	210	118	1000	152	14.07	8.2	110	AV600/EXT/1000

Aluminium Roof Outlets - AV Vertical Outlets



Vertical Threaded Outlet - Domical Grate

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



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

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

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



Aluminium Threaded Spigot Adaptors

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



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	58	400	0.8	2ADPA
50	58	600	1.1	2ADPA/600
75	82.5	400	1.2	3ADPA
75	82.5	600	1.6	3ADPA/600
100	110	400	1.8	4ADPA
100	110	600	2.6	4ADPA/600
150	160	400	2.5	6ADPA
150	160	600	3.5	6ADPA/600

ABS Threaded Spigot Adaptors

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



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

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

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

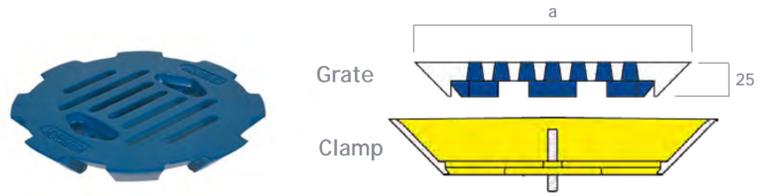
Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific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

Aluminium Roof Outlets - AV Vertical Outlets



Flat Grate

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

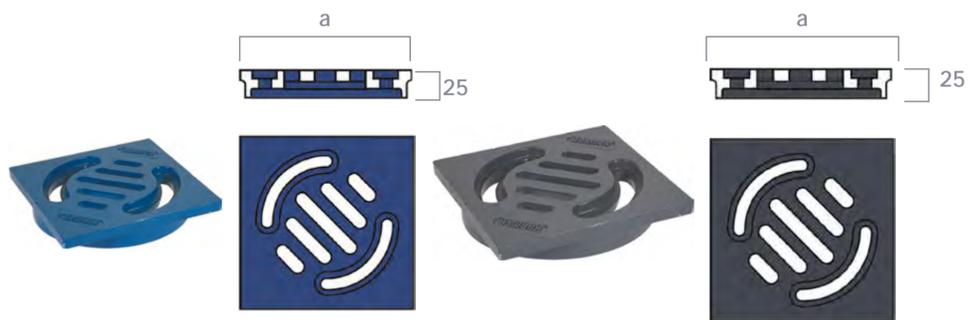


Outlet Size (mm)	a (mm)	Flow Rate ¹ (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
50	200	1.69	1.5	0.8	/F
75	200	4.97	1.5	0.8	/F
100	270	10.71	1.5	1.2	/F
150	270	15.55	1.5	1.2	/F



Terrace Grates

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



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

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

*Add suffix PPC to the product code to specify colour from our standard RAL range at point of order. Bespoke colours are also available - MOQ apply. Leadtimes and costs vary.

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



Grate Extension Pieces

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

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



Grate Extension Piece 2/3EP

Grate Extension Piece 4/6EP

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

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



Gravel Guard

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



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

Aluminium Roof Outlets - AV Retro-Gully Outlets

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



Application

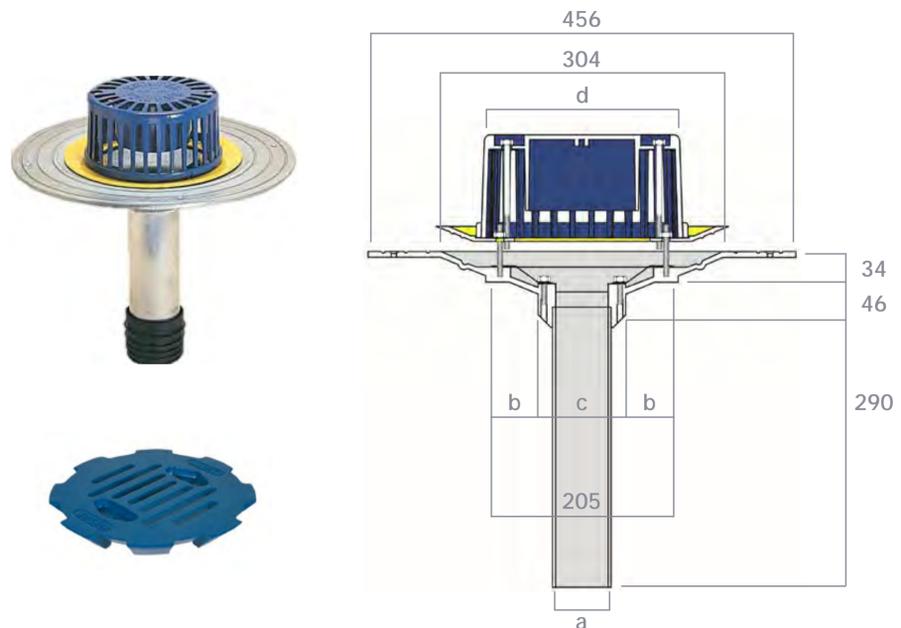
The use of AV increases flow performance at the outlet location regardless of pipe diameter downsizing.

There is no need to remove the old rainwater outlet.

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

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

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



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

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

Connection to Pipework

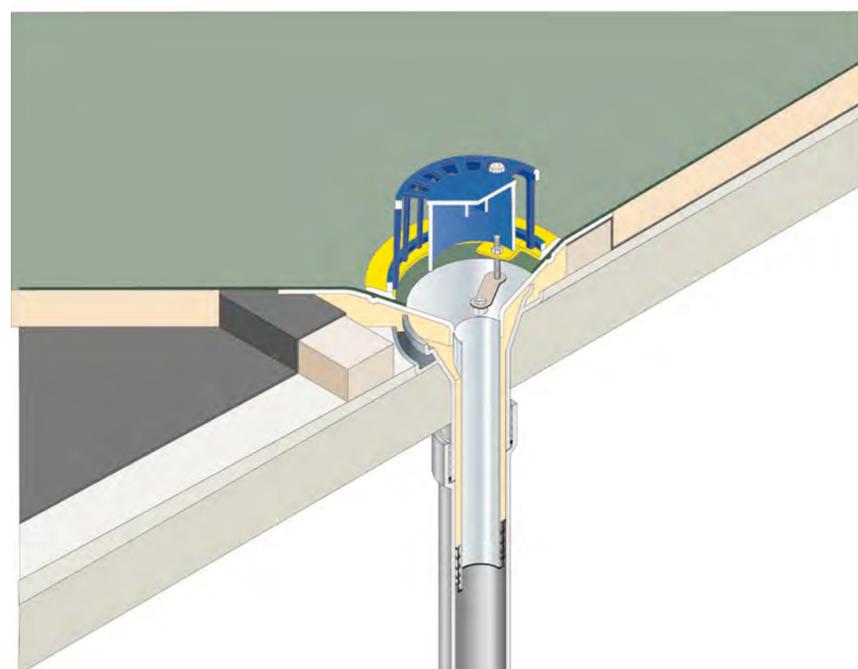
The Retro-Gully may be used for any type of warm roof refurbishment and with any flat roof waterproofing system. 75mm and 100mm pipework options are Available, and will accommodate variations on pipe internal diameter from PVC through to cast iron pipe systems.

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

Existing pipe diameters for connection

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

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



Aluminium Roof Outlets - Intro to Detail Outlets

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



Main Characteristics

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

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

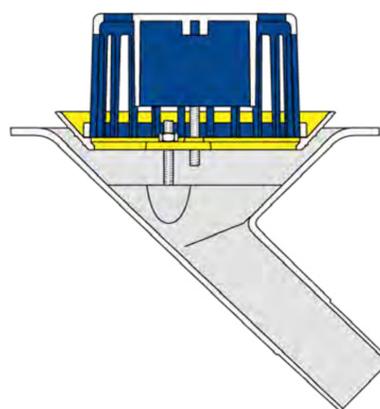
Areas of Application

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

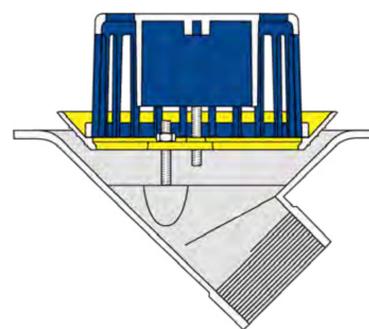
- Spigot, Extended Spigot or Screw threaded aluminium outlets cast in LM6 aluminium alloy for connection to drainage pipework at 45° and 90°.
- Two-way extended spigot and screw threaded outlets cast in LM6 aluminium alloy for connection to pipework through a parapet. Two-way outlets can be installed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

Bespoke Manufacture

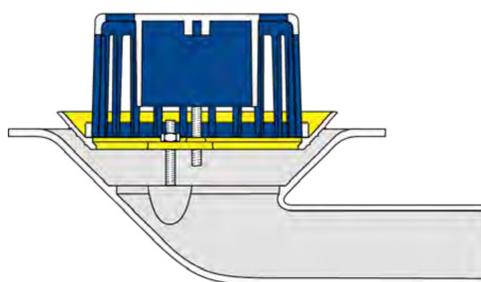
Rainwater outlets can be modified to have extended pipework as well as pipe conversions to co-ordinate with Alumasc colour coated, external rainwater pipe systems. Contact Harmer Technical Department for all bespoke requirements.



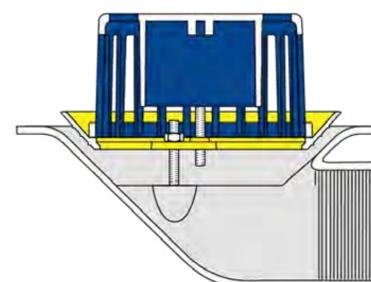
45° Spigot Outlet



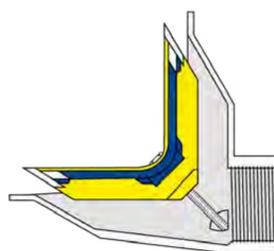
45° Screw Outlet



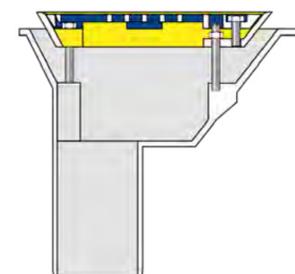
90° Spigot Outlet



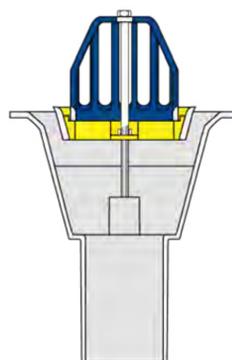
90° Screw Outlet



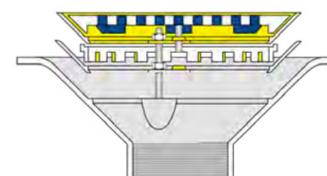
Two-way Outlet



Balcony Outlet



Gully Outlet



Car Park Outlet

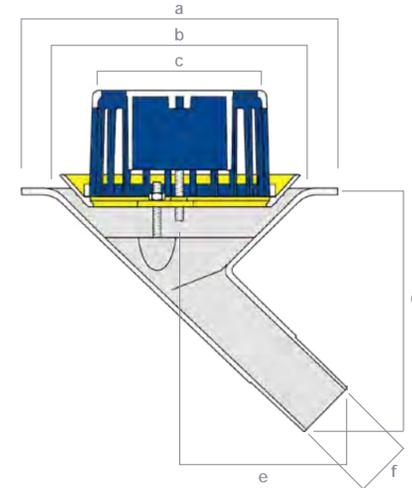
Aluminium Roof Outlets - 45° Detail Outlets

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



45° Spigot Outlet - Domical Grate

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



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

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

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

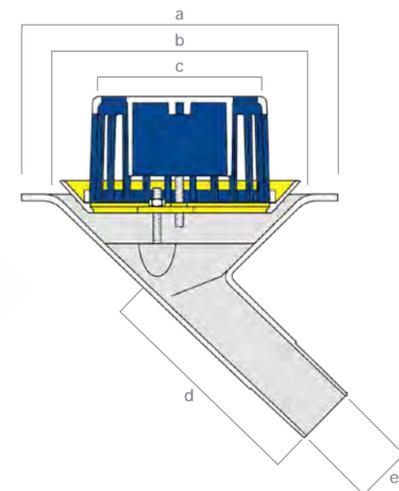


45° Extended Spigot Outlet - Domical Grate

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

Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.



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

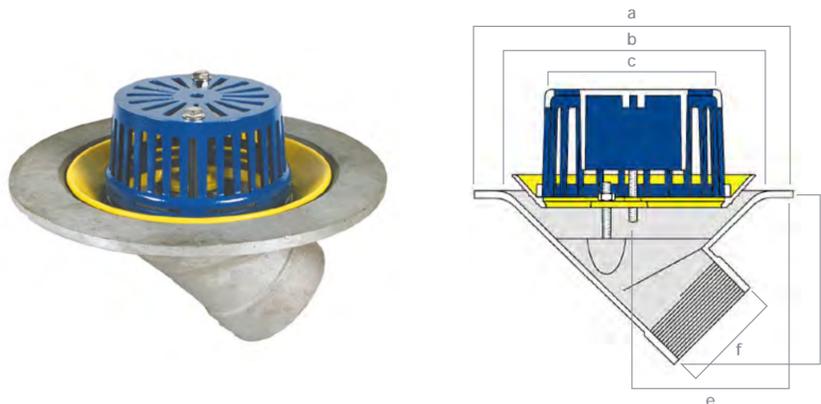
Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	305	229	137	400	63	1.69	3.9	86	245/EXT/400
50	305	229	137	600	63	1.69	4.0	86	245/EXT/600
50	305	229	137	800	63	1.69	4.1	86	245/EXT/800
50	305	229	137	1000	63	1.69	4.2	86	245/EXT/1000
75	305	229	137	400	82	4.97	4.7	86	345/EXT/400
75	305	229	137	600	82	4.97	5.0	86	345/EXT/600
75	305	229	137	800	82	4.97	5.3	86	345/EXT/800
75	305	229	137	1000	82	4.97	5.6	86	345/EXT/1000
100	372	305	210	400	110	10.66	7.1	110	445/EXT/400
100	372	305	210	600	110	10.66	7.7	110	445/EXT/600
100	372	305	210	800	110	10.66	8.3	110	445/EXT/800
100	372	305	210	1000	110	10.66	8.9	110	445/EXT/1000

Aluminium Roof Outlets - 45° Detail Outlets



45° Threaded Outlet - Domical Grate

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



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

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



Aluminium Threaded Spigot Adaptors

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



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	58	400	0.8	2ADPA
50	58	600	1.1	2ADPA/600
75	82.5	400	1.2	3ADPA
75	82.5	600	1.6	3ADPA/600
100	110	400	1.8	4ADPA
100	110	600	2.6	4ADPA/600
150	160	400	2.5	6ADPA
150	160	600	3.5	6ADPA/600

ABS Threaded Spigot Adaptors

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



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

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

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

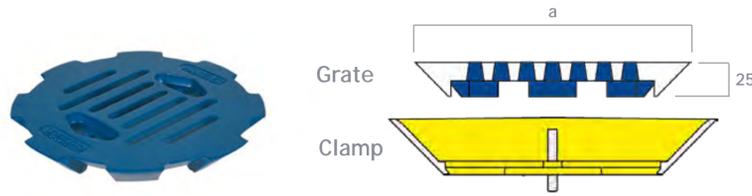
Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific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

Aluminium Roof Outlets - 45° Detail Outlets



Flat Grate

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

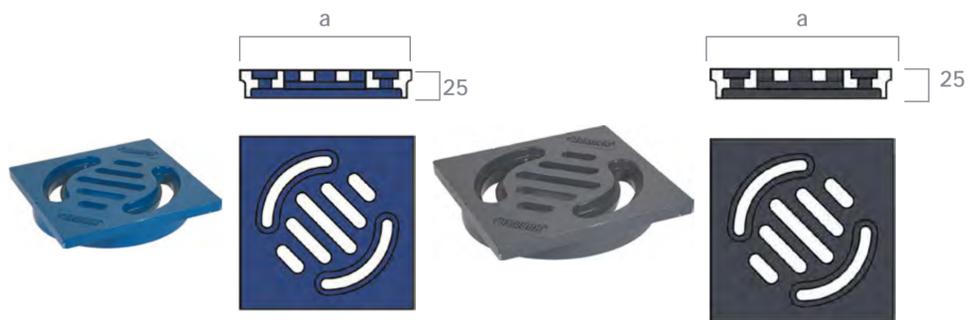


Outlet Size (mm)	a (mm)	Flow Rate ¹ (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
50	200	1.69	1.5	0.8	/F
75	200	4.97	1.5	0.8	/F
100	270	10.71	1.5	1.2	/F
150	270	15.55	1.5	1.2	/F



Terrace Grates

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



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

*Add suffix PPC to the product code to specify colour from our standard RAL range at point of order. Bespoke colours are also available - MOQ apply. Leadtimes and costs vary.

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



Grate Extension Pieces

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

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



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

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



Gravel Guard

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



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

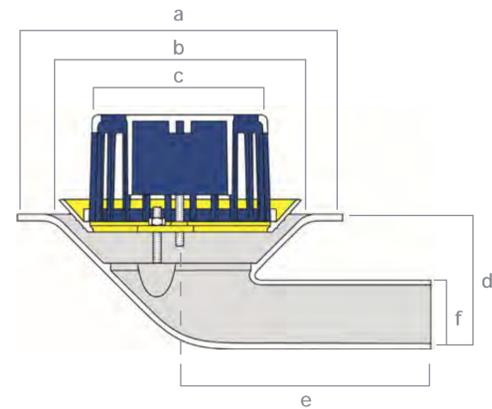
Aluminium Roof Outlets - 90° Detail Outlets

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



90° Spigot Outlet - Domical Grate

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



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

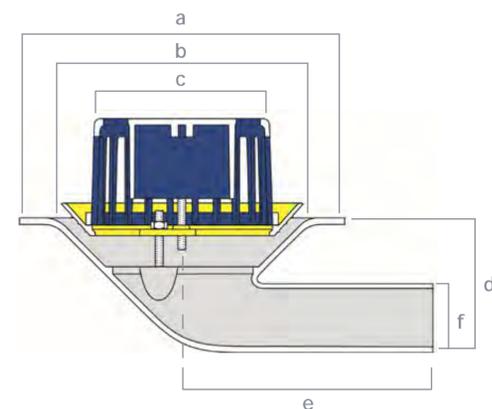
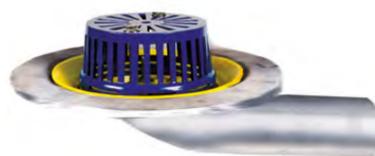
Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	305	229	137	124	232	62	1.69	4.0	86	290
75	329	229	121	267	83	137	3.31	3.8	86	390
100	405	305	210	142	285	110	7.19	5.5	110	490

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



90° Extended Spigot Outlet - Domical Grate

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



Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.

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

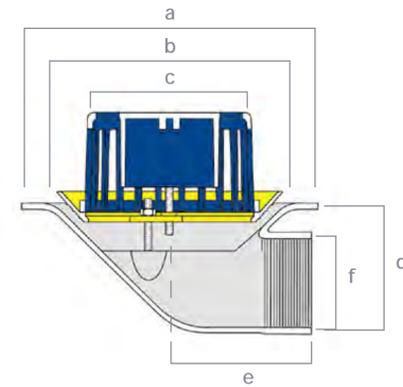
Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Grate Height (mm)	Product Code
50	305	229	137	127	400	63	1.69	4.3	86	290/EXT/400
50	305	229	137	127	600	63	1.69	4.4	86	290/EXT/600
50	305	229	137	127	800	63	1.69	4.5	86	290/EXT/800
50	305	229	137	127	1000	63	1.69	4.6	86	290/EXT/1000
75	329	226	137	139	400	82	3.39	4.3	86	390/EXT/400
75	329	226	137	139	600	82	3.39	4.6	86	390/EXT/600
75	329	226	137	139	800	82	3.39	4.9	86	390/EXT/800
75	329	226	137	139	1000	82	3.39	5.2	86	390/EXT/1000
100	356	305	210	172	400	110	7.29	6.6	110	490/EXT/400
100	356	305	210	172	600	110	7.29	7.2	110	490/EXT/600
100	356	305	210	172	800	110	7.29	7.8	110	490/EXT/800
100	356	305	210	172	1000	110	7.29	8.4	110	490/EXT/1000
150	356	305	210	225	400	152	10.01	8.3	110	690/EXT/400
150	356	305	210	225	600	152	10.01	8.9	110	690/EXT/600
150	356	305	210	225	800	152	10.01	9.7	110	690/EXT/800
150	356	305	210	225	1000	152	10.01	10.2	110	690/EXT/1000

Aluminium Roof Outlets - 90° Detail Outlets



90° Threaded Outlet - Domical Grate

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



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

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



Aluminium Threaded Spigot Adaptors

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



Nominal Bore (mm)	a (mm)	Length (mm)	Weight (kg)	Product Code
50	58	400	0.8	2ADPA
50	58	600	1.1	2ADPA/600
75	82.5	400	1.2	3ADPA
75	82.5	600	1.6	3ADPA/600
100	110	400	1.8	4ADPA
100	110	600	2.6	4ADPA/600
150	160	400	2.5	6ADPA
150	160	600	3.5	6ADPA/600

ABS Threaded Spigot Adaptors

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



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

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

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

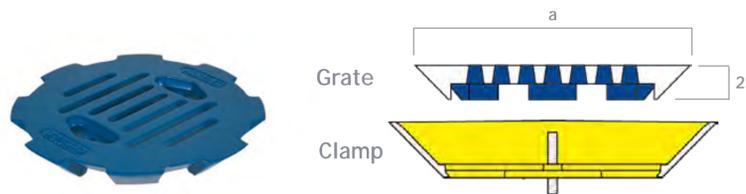
Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific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

Aluminium Roof Outlets - 90° Detail Outlets



Flat Grate

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

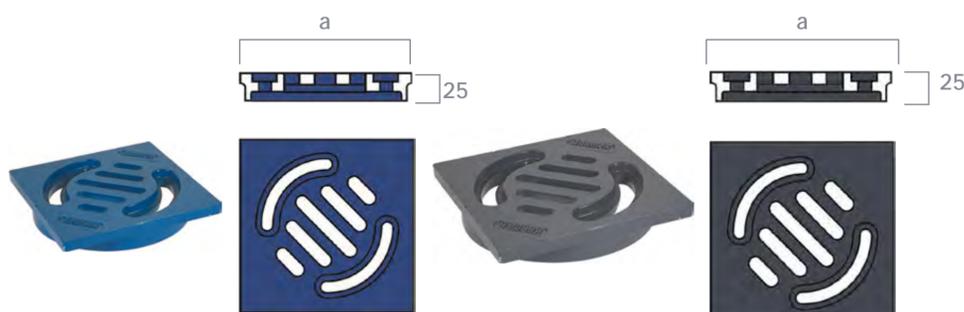


Outlet Size (mm)	a (mm)	Flow Rate ¹ (l/s)	Load Rating (tonne)	Weight (kg)	Suffix
50	200	1.69	1.5	0.8	/F
75	200	4.97	1.5	0.8	/F
100	270	10.71	1.5	1.2	/F
150	270	15.55	1.5	1.2	/F



Terrace Grates

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



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

*Add suffix PPC to the product code to specify colour from our standard RAL range at point of order. Bespoke colours are also available - MOQ apply. Leadtimes and costs vary.

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



Grate Extension Pieces

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

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



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

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

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



Gravel Guard

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



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

Aluminium Roof Outlets - Car Park Detail Outlets

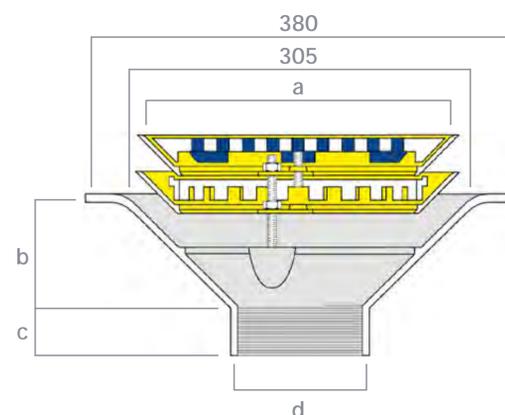
Harmer Roof Car Park Detail outlets have been specially designed for installation in parking decks for cars and light commercial vehicles (ie, where there is a maximum single wheel loading of 1.5 tonne). The threaded body is available in two types, flanged and flangeless.



Car Park Outlet Flanged

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

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

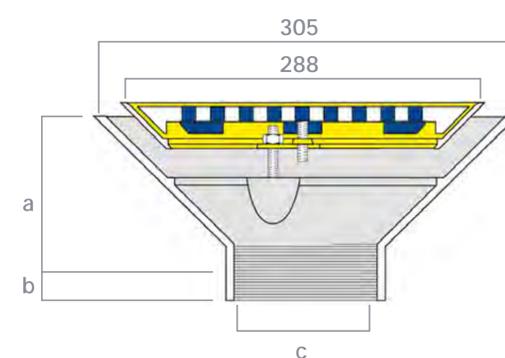


Outlet Size (mm)	a (mm)	b (mm)	c (mm)	d (BSP)	Flow Rate ¹ (l/s)	Weight (kg)	Product Code
100	288	95	38	4"	10.71	5.0	400CP
150	288	76	38	6"	15.55	5.1	600CP



Car Park Outlet Flangeless

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



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

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

Car Park Outlet Flangeless

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

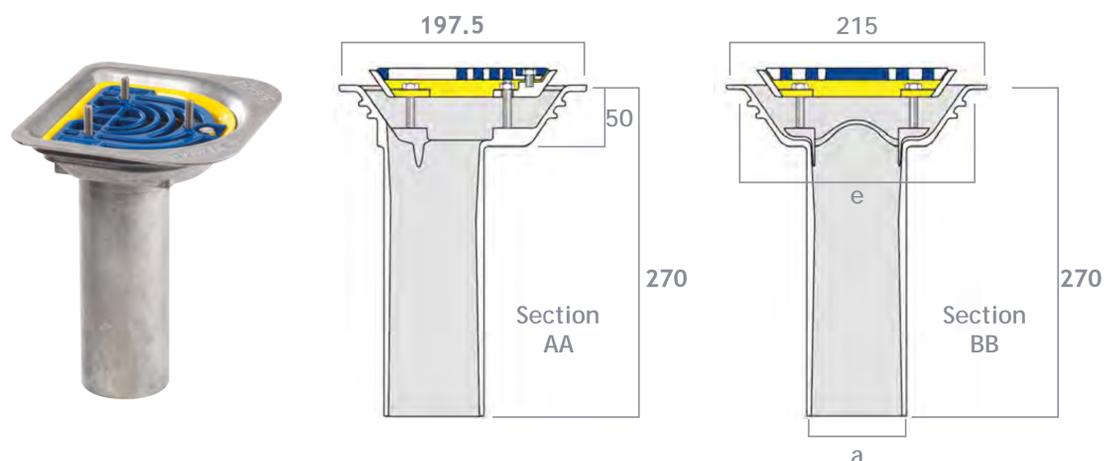
Car Park Outlets have a female socket with parallel thread to BS EN 10226-1 for direct connection to threaded tube conforming with BS EN 10255. The tube must be threaded in accordance with BS EN 10226-1 taper male thread to ensure a completely watertight joint when screwed home into the socket of the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

Aluminium Roof Outlets - Balcony Detail Outlets



Mini Balcony Outlet

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



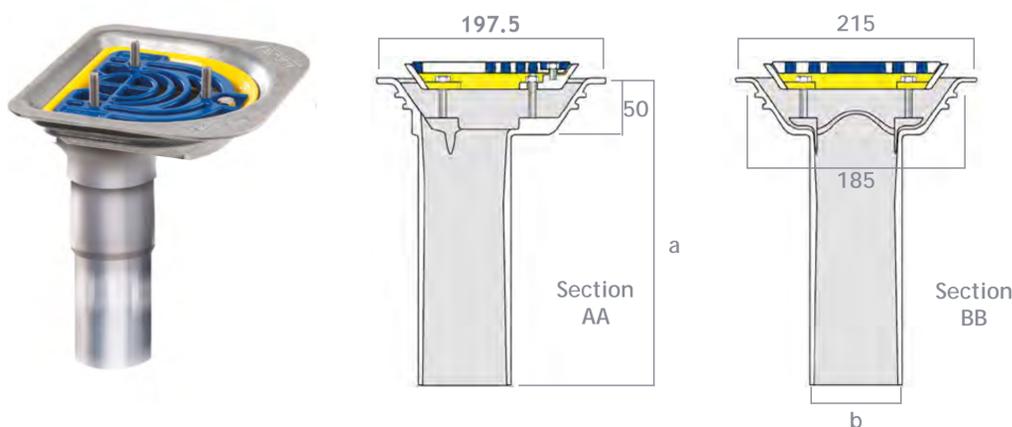
Flow Rate Note 1 (applies to all tables) Flow rates are in litres per second based on flow rate test data. Where tested flow rates are greater than pipe capacity limits of BS EN 12056, the pipe capacity limit has been shown. Contact Harmer Technical Services for variable outlet performance to specific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

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



Mini Extended Balcony Outlet

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



Outlet Size (mm)	a (mm)	b (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Product Code
50	400	63	1.69	1.9	2BO/M/EXT/400
50	600	63	1.69	2.0	2BO/M/EXT/600
50	800	63	1.69	2.1	2BO/M/EXT/800
50	1000	63	1.69	2.2	2BO/M/EXT/1000
75	400	82	3.39	2.2	3BO/M/EXT/400
75	600	82	3.39	2.5	3BO/M/EXT/600
75	800	82	3.39	2.8	3BO/M/EXT/800
75	1000	82	3.39	3.1	3BO/M/EXT/1000

Standard Grate

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

Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.

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

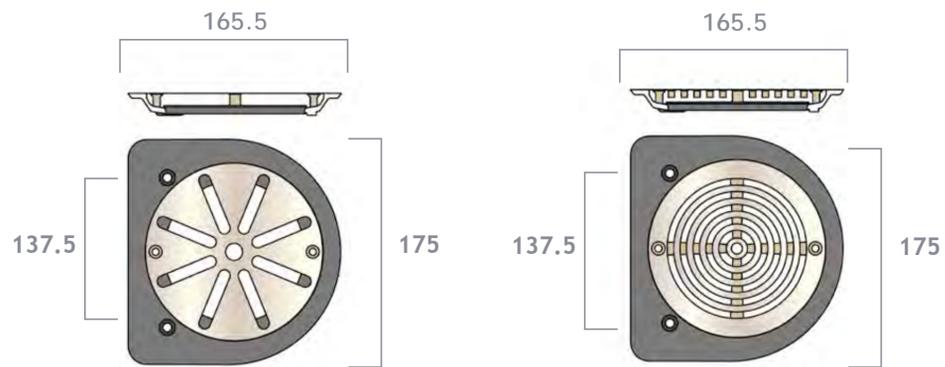
Aluminium Roof Outlets - Balcony Detail Outlets



Fixed Height Grate Options

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

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



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

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

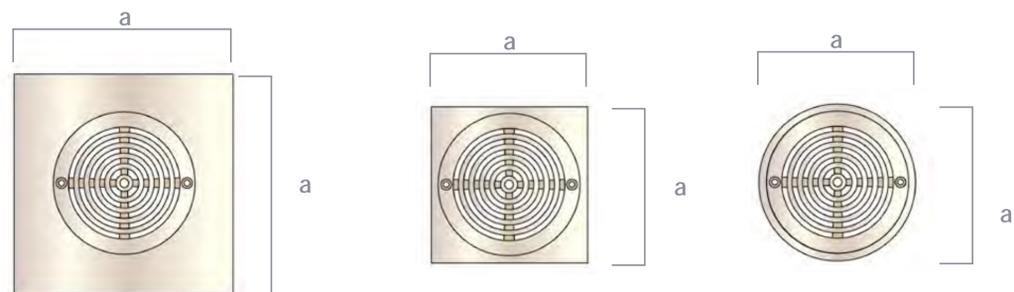


Adjustable Height Grate Options

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

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

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



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

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

Aluminium Roof Outlets - Balcony Detail Outlets

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



Large Balcony Outlet

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

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

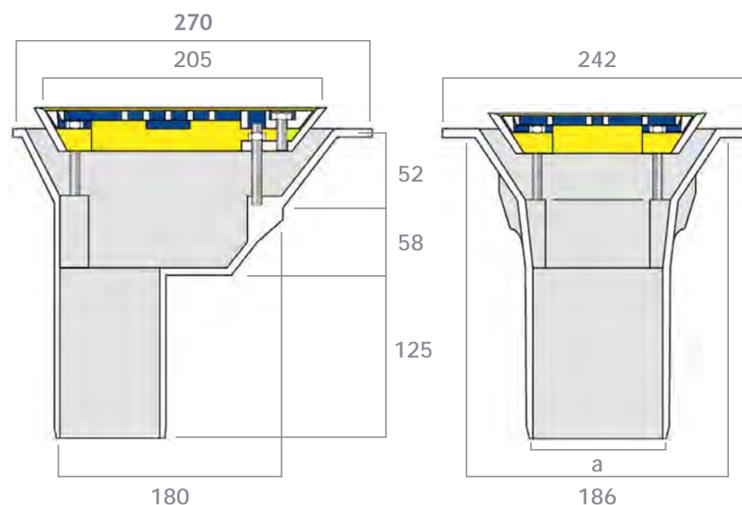
Flat grates can be supplied with holes punched out to receive 50, 75 or 100mm nominal bore rainwater downpipes. When ordering pre-punched grates, add the following suffixes shown in blue to the product codes:

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

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

The Balcony outlet can be used with an extension piece.

Please see Harmer couplings available (page 41).



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

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



Grate Extension Piece

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

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



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

Aluminium Roof Outlets - Balcony Detail Outlets



Large Balcony Extended Spigot Outlet

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

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

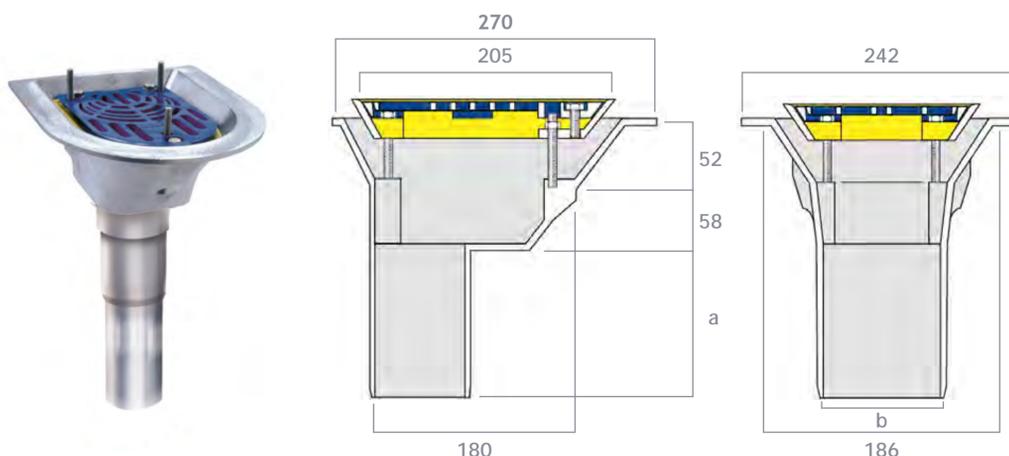
- 2BO/2H for 50mm pipe
- 3BO/3H for 75mm pipe
- 4BO/4H for 100mm pipe

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

The balcony outlet can be used with an extension piece.

Please see harmer couplings available (page 41).

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



Outlet Size (mm)	a (mm)	b (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Product Code
50	200	63	1.69	2.9	2BO/EXT/200
50	400	63	1.69	3.1	2BO/EXT/400
50	600	63	1.69	3.2	2BO/EXT/600
50	800	63	1.69	3.3	2BO/EXT/800
50	1000	63	1.69	3.4	2BO/EXT/1000
75	200	82	4.97	3.4	3BO/EXT/200
75	400	82	4.97	3.6	3BO/EXT/400
75	600	82	4.97	3.9	3BO/EXT/600
75	800	82	4.97	4.2	3BO/EXT/800
75	1000	82	4.97	4.5	3BO/EXT/1000
100	200	110	8.41	3.9	4BO/EXT/200
100	400	110	8.41	4.4	4BO/EXT/400
100	600	110	8.41	5.0	4BO/EXT/600
100	800	110	8.41	5.6	4BO/EXT/800
100	1000	110	8.41	6.2	4BO/EXT/1000

Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.

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

Aluminium Roof Outlets - Balcony Detail Outlets



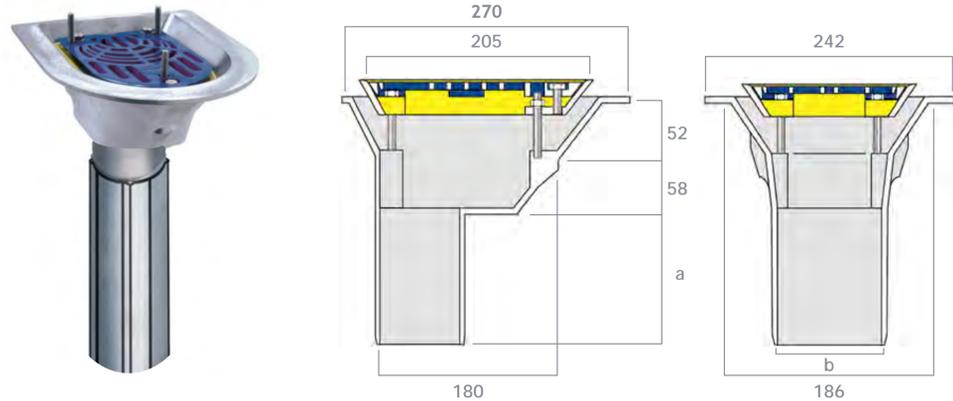
Large Balcony Extended Flushjoint Circular Spigot Outlet

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

Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.

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



Outlet Size (mm)	a (mm)	b (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Product Code
50	200	60	1.69	3.0	2BO/EXT/200/CP25
50	400	60	1.69	3.2	2BO/EXT/400/CP25
50	600	60	1.69	3.5	2BO/EXT/600/CP25
50	800	60	1.69	3.7	2BO/EXT/800/CP25
50	1000	60	1.69	3.9	2BO/EXT/1000/CP25
75	200	73.5	4.97	3.4	3BO/EXT/200/CP30
75	400	73.5	4.97	3.6	3BO/EXT/400/CP30
75	600	73.5	4.97	3.9	3BO/EXT/600/CP30
75	800	73.5	4.97	4.1	3BO/EXT/800/CP30
75	1000	73.5	4.97	4.4	3BO/EXT/1000/CP30
100	200	97.5	8.41	3.7	4BO/EXT/200/CP40
100	400	97.5	8.41	4.0	4BO/EXT/400/CP40
100	600	97.5	8.41	4.4	4BO/EXT/600/CP40
100	800	97.5	8.41	4.7	4BO/EXT/800/CP40
100	1000	97.5	8.41	5.1	4BO/EXT/1000/CP40

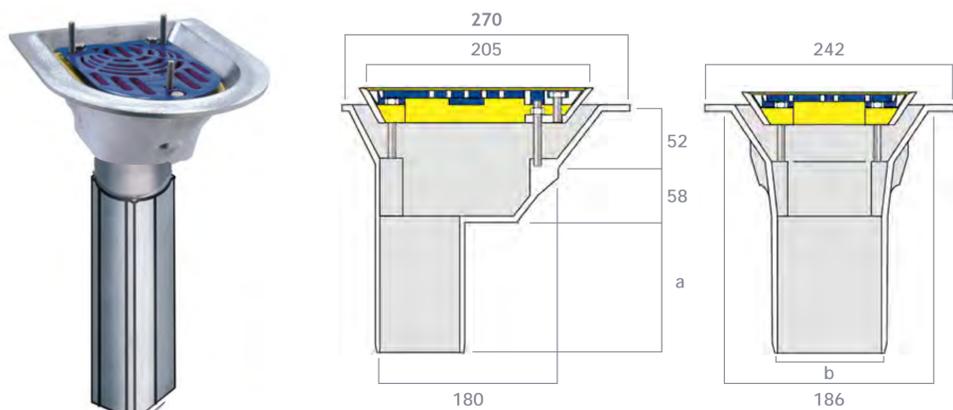


Large Balcony Extended Flushjoint Square Spigot Outlet

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

Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.



Outlet Size (mm)	a (mm)	b (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Product Code
75	200	67.5 x 67.5	4.97	3.5	3BO/EXT/200/CP33
75	400	67.5 x 67.5	4.97	3.9	3BO/EXT/400/CP33
75	600	67.5 x 67.5	4.97	4.3	3BO/EXT/600/CP33
75	800	67.5 x 67.5	4.97	4.7	3BO/EXT/800/CP33
75	1000	67.5 x 67.5	4.97	5.1	3BO/EXT/1000/CP33
100	200	97 x 71	8.41	3.8	4BO/EXT/200/CP43
100	400	97 x 71	8.41	4.3	4BO/EXT/400/CP43
100	600	97 x 71	8.41	4.8	4BO/EXT/600/CP43
100	800	97 x 71	8.41	5.3	4BO/EXT/800/CP43
100	1000	97 x 71	8.41	5.8	4BO/EXT/1000/CP43
100	200	97 x 71	8.41	3.9	4BO/EXT/200/CP44
100	400	97 x 97	8.41	4.6	4BO/EXT/400/CP44
100	600	97 x 97	8.41	5.2	4BO/EXT/600/CP44
100	800	97 x 97	8.41	5.9	4BO/EXT/800/CP44
100	1000	197 x 97	8.41	6.5	4BO/EXT/1000/CP44

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

Aluminium Roof Outlets - Gully Detail Outlets

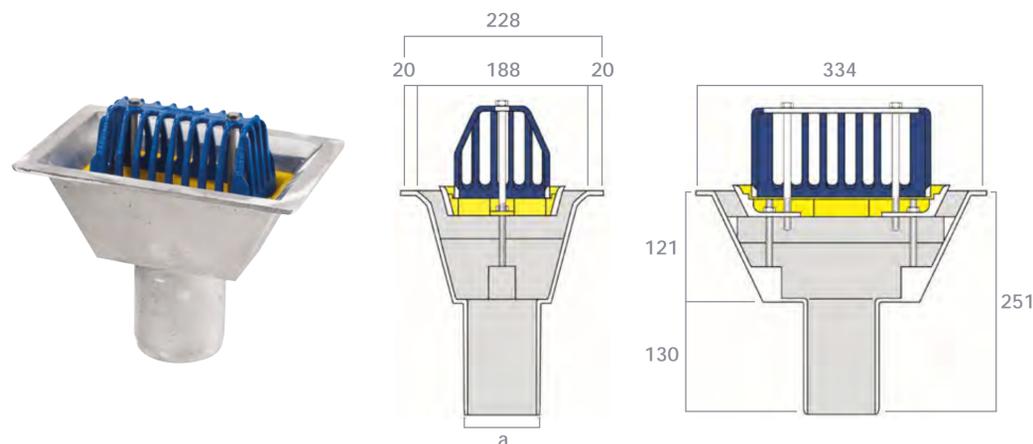
Harmer Roof Gully Detail outlets should be used in roof constructions incorporating formed drainage channels. They are specially designed to suit internal flat roof gutters.



Gully Outlet

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

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



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

Outlet Size (mm)	a (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Product Code
75	83	4.97	3.7	3GO
100	110	10.41	3.9	4GO

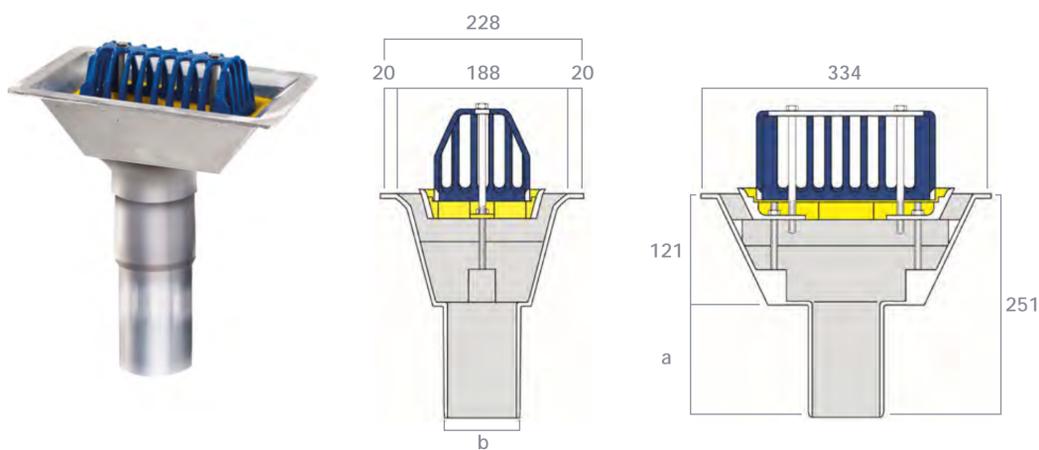


Gully Extended Spigot Outlet

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

Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.



Outlet Size (mm)	a (mm)	b (mm)	Flow Rate ¹ (l/s)	Weight (kg)	Product Code
75	200	83	4.97	4.0	3GO/EXT/200
75	400	83	4.97	4.2	3GO/EXT/400
75	600	83	4.97	4.5	3GO/EXT/600
75	800	83	4.97	4.8	3GO/EXT/800
75	1000	83	4.97	5.0	3GO/EXT/1000
100	200	110	10.41	4.5	4GO/EXT/200
100	400	110	10.41	5.0	4GO/EXT/400
100	600	110	10.41	5.6	4GO/EXT/600
100	800	110	10.41	6.2	4GO/EXT/800
100	1000	110	10.41	6.8	4GO/EXT/1000

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

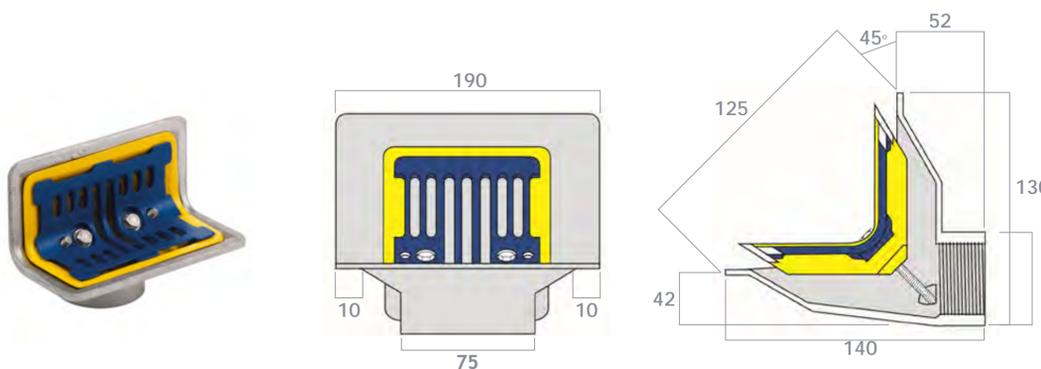
Aluminium Roof Outlets - Two-Way Detail Outlets



Mini Two-Way

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

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



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

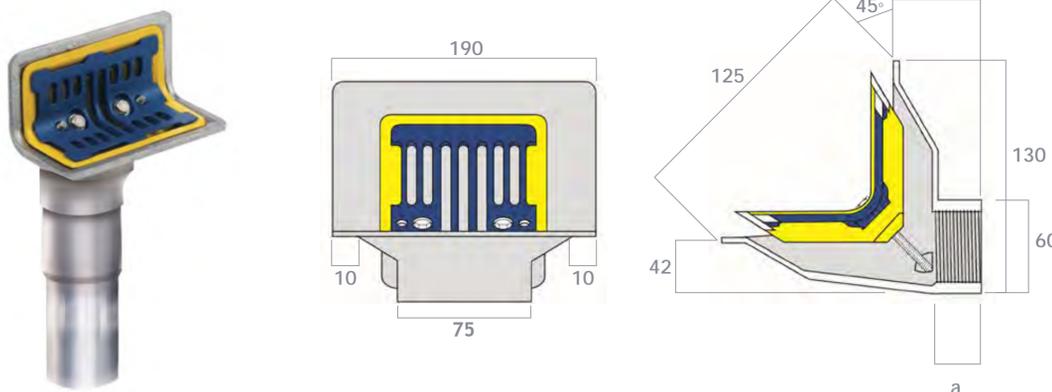


Mini Two-Way Extended Spigot Outlet

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

Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.



Outlet Size (mm)	a (mm)	Flow Rate ¹ (l/s)		Weight (kg)	Product Code
		Vertical	Horizontal		
50	200	1.69	1.13	1.5	2TW/M/EXT/200
50	400	1.69	1.13	1.7	2TW/M/EXT/400
50	600	1.69	1.13	1.8	2TW/M/EXT/600
50	800	1.69	1.13	1.9	2TW/M/EXT/800
50	1000	1.69	1.13	2.0	2TW/M/EXT/1000

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

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

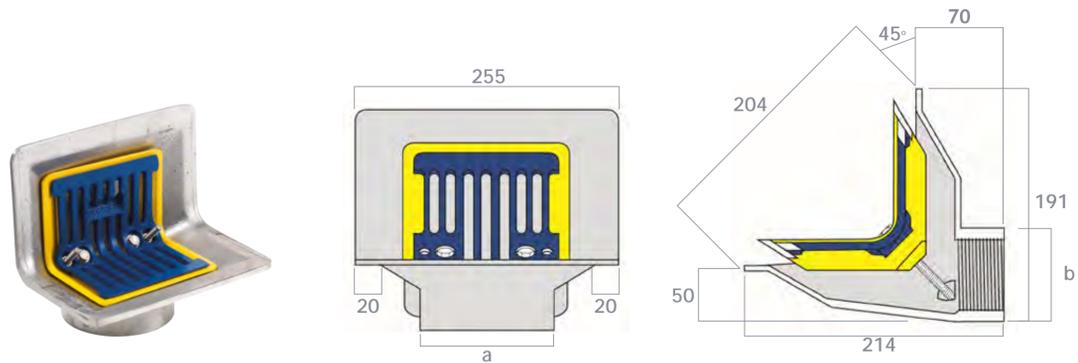
Aluminium Roof Outlets - Two-Way Detail Outlets



Regular Two-Way

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

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



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

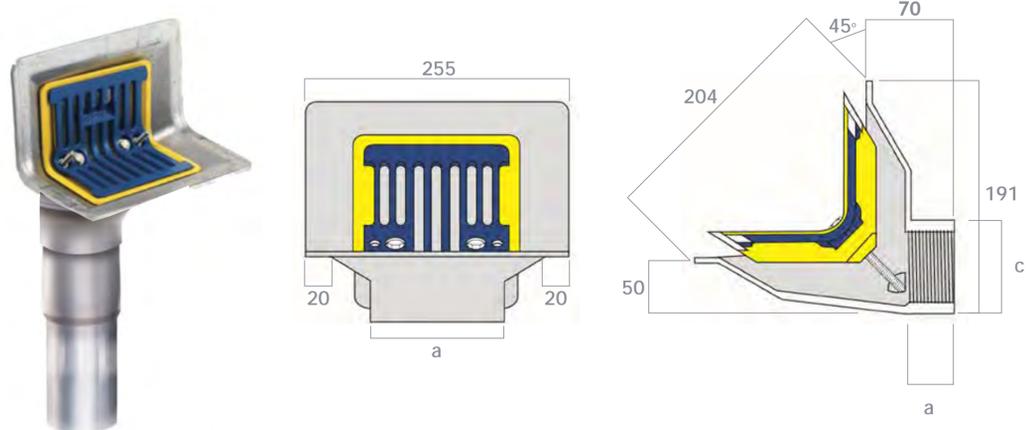


Regular Two-Way Extended Spigot Outlet

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

Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.



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

Outlet Size (mm)	a (mm)	b (mm)	c (mm)	Flow Rate ¹ (l/s)		Weight (kg)	Product Code
				Vertical	Horizontal		
50	75	200	63	1.69	1.69	2.5	2TW/EXT/200
50	75	400	63	1.69	1.69	2.7	2TW/EXT/400
50	75	600	63	1.69	1.69	2.8	2TW/EXT/600
50	75	800	63	1.69	1.69	2.9	2TW/EXT/800
50	75	1000	63	1.69	1.69	3.0	2TW/EXT/1000
75	107	200	82	3.94	1.47	2.9	3TW/EXT/200
75	107	400	82	3.94	1.47	3.1	3TW/EXT/400
75	107	600	82	3.94	1.47	3.4	3TW/EXT/600
75	107	800	82	3.94	1.47	3.7	3TW/EXT/800
75	107	1000	82	3.94	1.47	4.0	3TW/EXT/1000
100	130	200	97.5	6.00	2.05	3.1	4TW/EXT/200
100	130	400	97.5	6.00	2.05	3.6	4TW/EXT/400
100	130	600	97.5	6.00	2.05	4.2	4TW/EXT/600
100	130	800	97.5	6.00	2.05	4.8	4TW/EXT/800
100	130	1000	97.5	6.00	2.05	5.4	4TW/EXT/1000

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

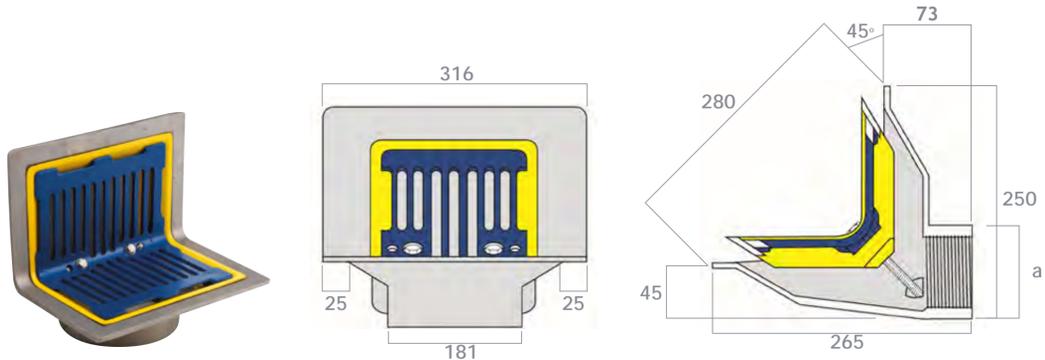
Aluminium Roof Outlets - Two-Way Detail Outlets



Large Two-Way

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

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



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

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

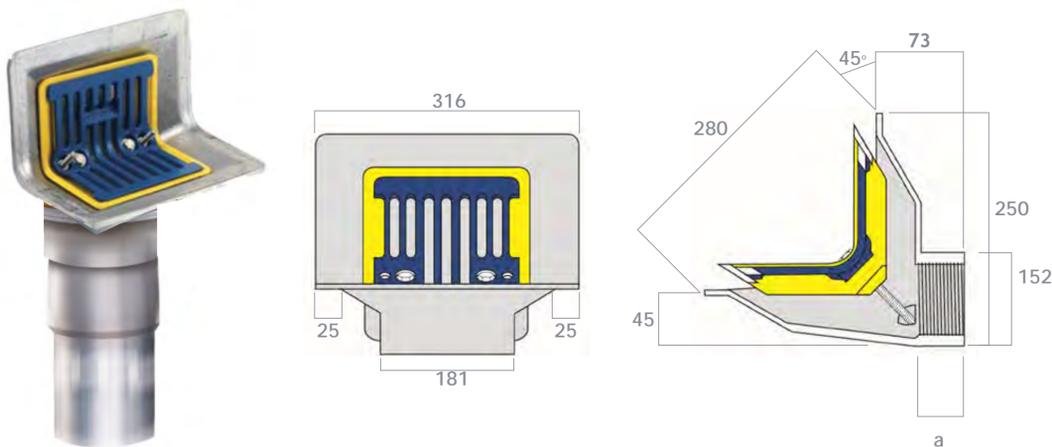


Large Two-Way Extended Spigot Outlet

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

Bespoke Lengths

All extended outlets come as standard with 200mm, 400mm, 600mm, 800mm and 1000mm spigots. For bespoke lengths please use the table below to specify the correct product code, and clearly state the dimension required when specifying or placing an order. For bespoke lengths a drawing for approval will be issued prior to manufacture. For example an AV400 with a spigot length of 362mm, please specify AV400/EXT/400 and clearly state 362mm spigot on your specification and/or order. If no specific dimension is provided, spigot length will be supplied as shown in column "e" of the product table.



Outlet Size (mm)	a (mm)	Flow Rate ¹ (l/s)		Weight (kg)	Product Code
		Vertical	Horizontal		
150	Up to 200	6.37	2.91	5.7	6TW/EXT/200
150	201 to 400	6.37	2.91	6.4	6TW/EXT/400
150	401 to 600	6.37	2.91	7.0	6TW/EXT/600
150	601 to 800	6.37	2.91	7.8	6TW/EXT/800
150	801 to 1000	6.37	2.91	8.3	6TW/EXT/1000

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

Aluminium Roof Outlets - Parapet Downspouts

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

Introduction

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

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

Application

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

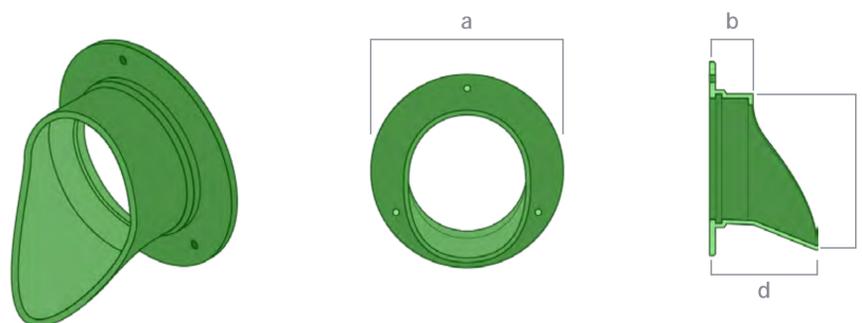
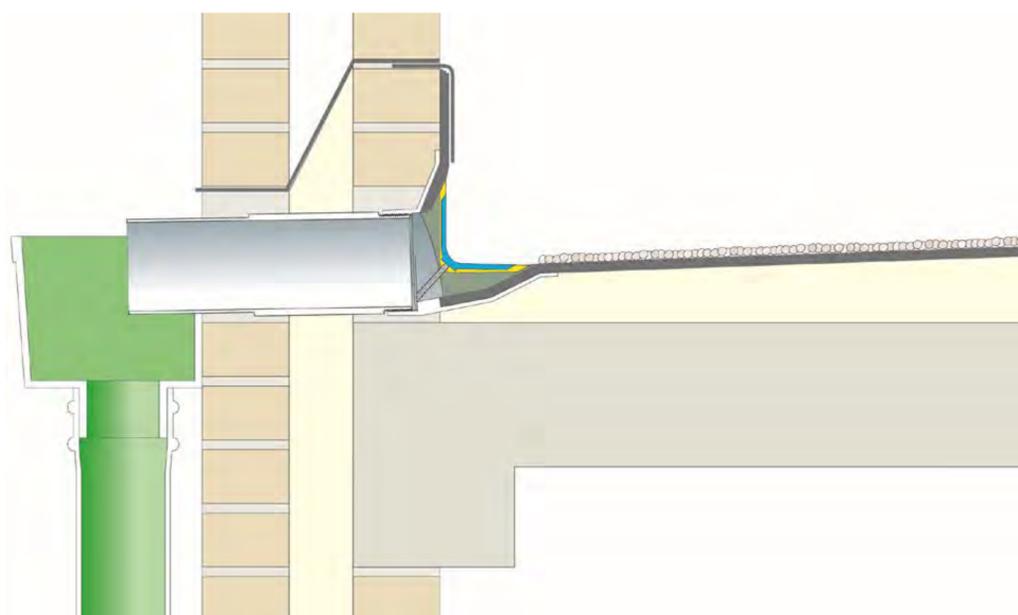
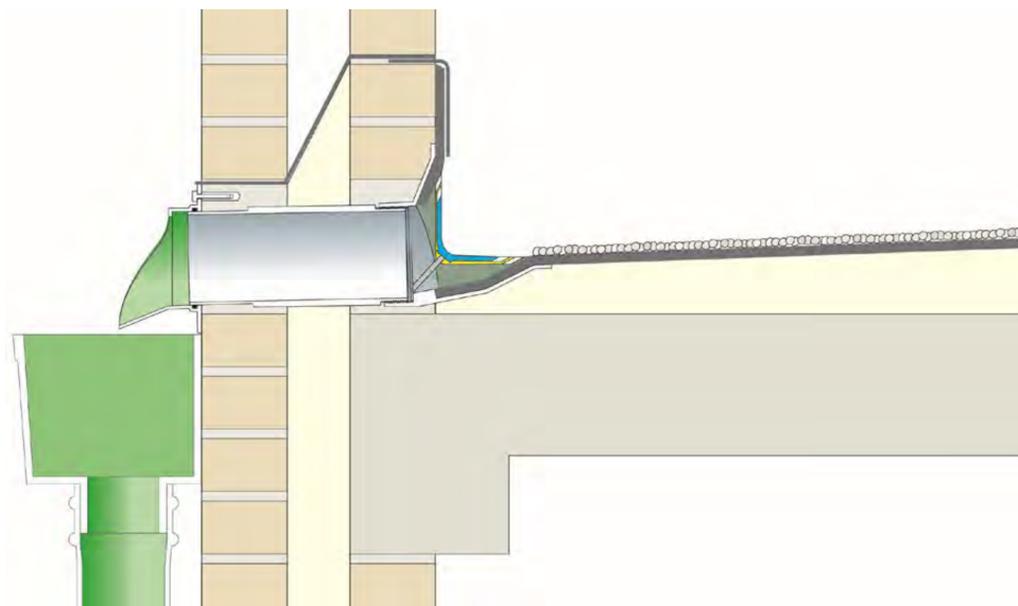
Material - Siliconised Cast Aluminium LM6

Finish

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

Connection

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



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

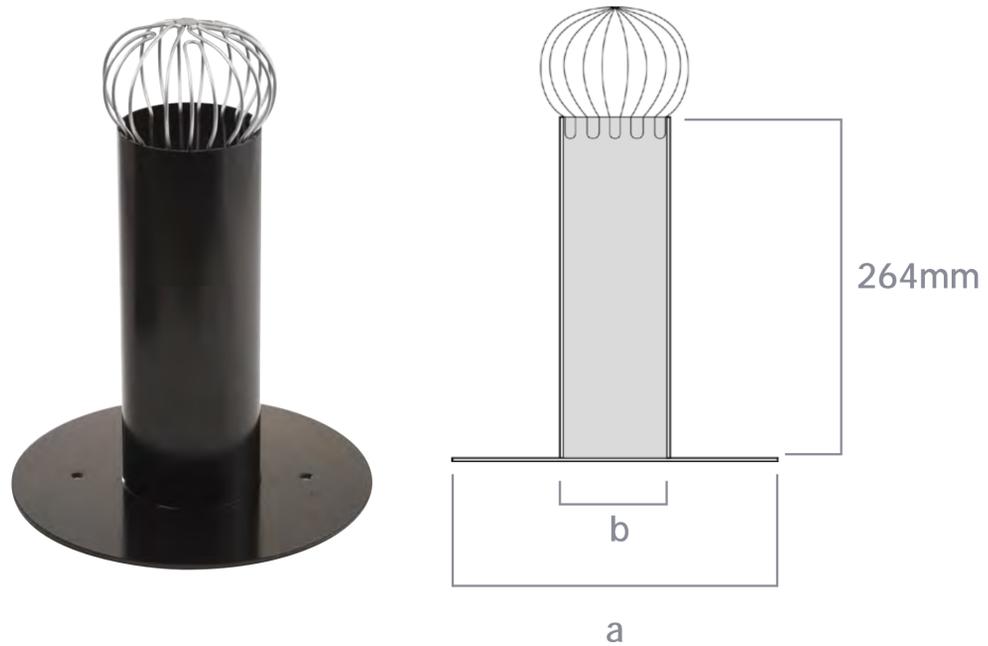
*Also available in polyester powder coated finish to Alumasc standard colour range or RAL.

Aluminium Roof Outlets - Overflow Outlets



Overflow Outlet

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



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

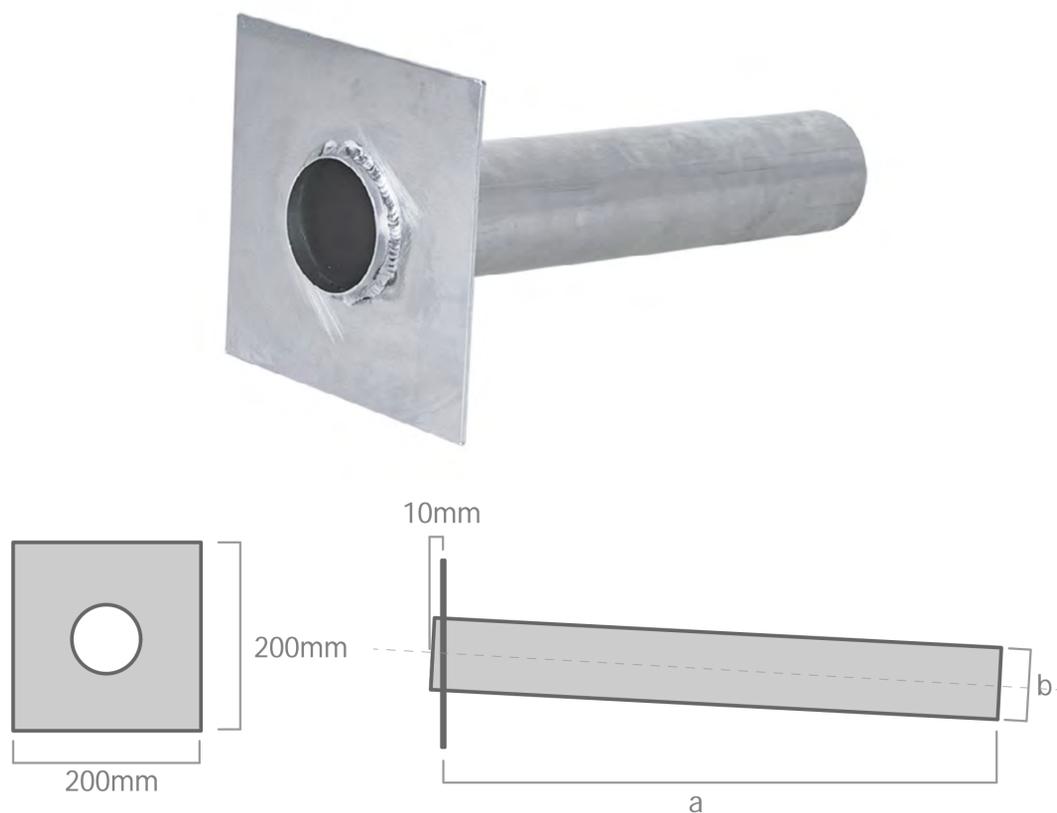


Horizontal Overflow Outlet

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

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

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



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

Aluminium Roof Outlets - Accessories & Connections

Harmer Couplings

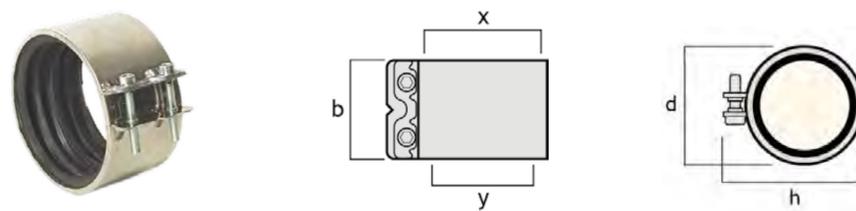
Harmer SML couplings are available in either ductile iron or stainless steel and meet the requirements of BS EN 877. The internal pressure performance of couplings ranges from 0.5 bar to 10 bar. All couplings feature EPDM elastomeric seals as standard. Neoprene rubber seals are available on request.



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

Adaptor Couplings

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



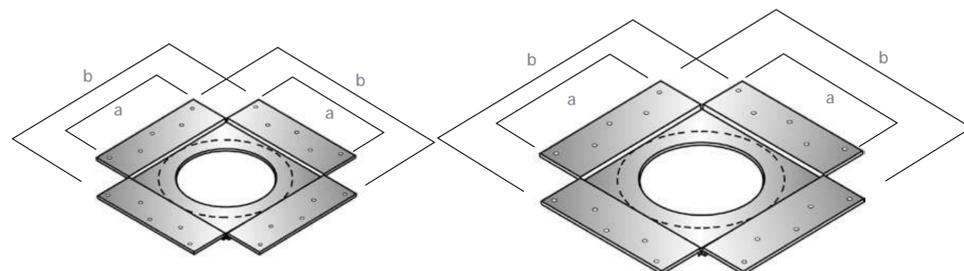
Pipe Dia (mm)	Bolts	d	h	b	x	y	Product Code
70	2	95	110	70	83-84	75-76	3151/010075
100	2	130	145	70	116-119	108-113	3102/100
150	4	180	215	70	168	159	3102/150

Metal Deck Support Plates

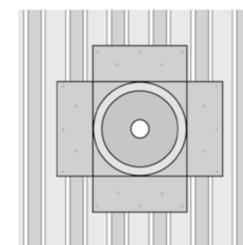
Recommended for use where Harmer cast aluminium rainwater outlets are installed in metal deck roofs. They are designed to provide a secure and stable junction between the roof deck and rainwater outlet.

Materials

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



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



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

Aluminium Roof Outlets - Accessories & Connections

Threaded Spigot Adaptors

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

Materials

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

Connection to Pipework

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

Please see Harmer couplings available (pages 41).



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

Nominal Bore (mm)	a (mm)	b (mm)	Length (mm)	Aluminium Adaptors		ABS Adaptor	
				Weight (kg)	Product Code	Weight (kg)	Product Code
50	63	58	400	0.8	2ADPA	0.4	2ADP
50	63	58	600	1.1	2ADPA/600	0.6	2ADP/600
75	83	83	400	1.2	3ADPA	0.6	3ADP
75	83	83	600	1.6	3ADPA/600	0.9	3ADP/600
100	110	110	400	1.8	4ADPA	1.2	4ADP
100	110	110	600	2.6	4ADPA/600	1.8	4ADP/600
150	160	160	400	2.5	6ADPA	2.0	6ADP
150	160	160	600	3.5	6ADPA/600	3.0	6ADP/600

Fitting the Harmer Threaded Spigot Adaptor

Materials

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

Preparation

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

Connecting Adapter - Method 1

Using PTFE tape:

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

Connecting Adapter - Method 2

Using silicone sealant (DOW CORNING 791 recommended):

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

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

Aluminium Roof Outlets - Installation

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

Components

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

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

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

Materials

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

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

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

Installation and Sitework

Each site application will require careful assessment by the installer.

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

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

Care and Maintenance

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

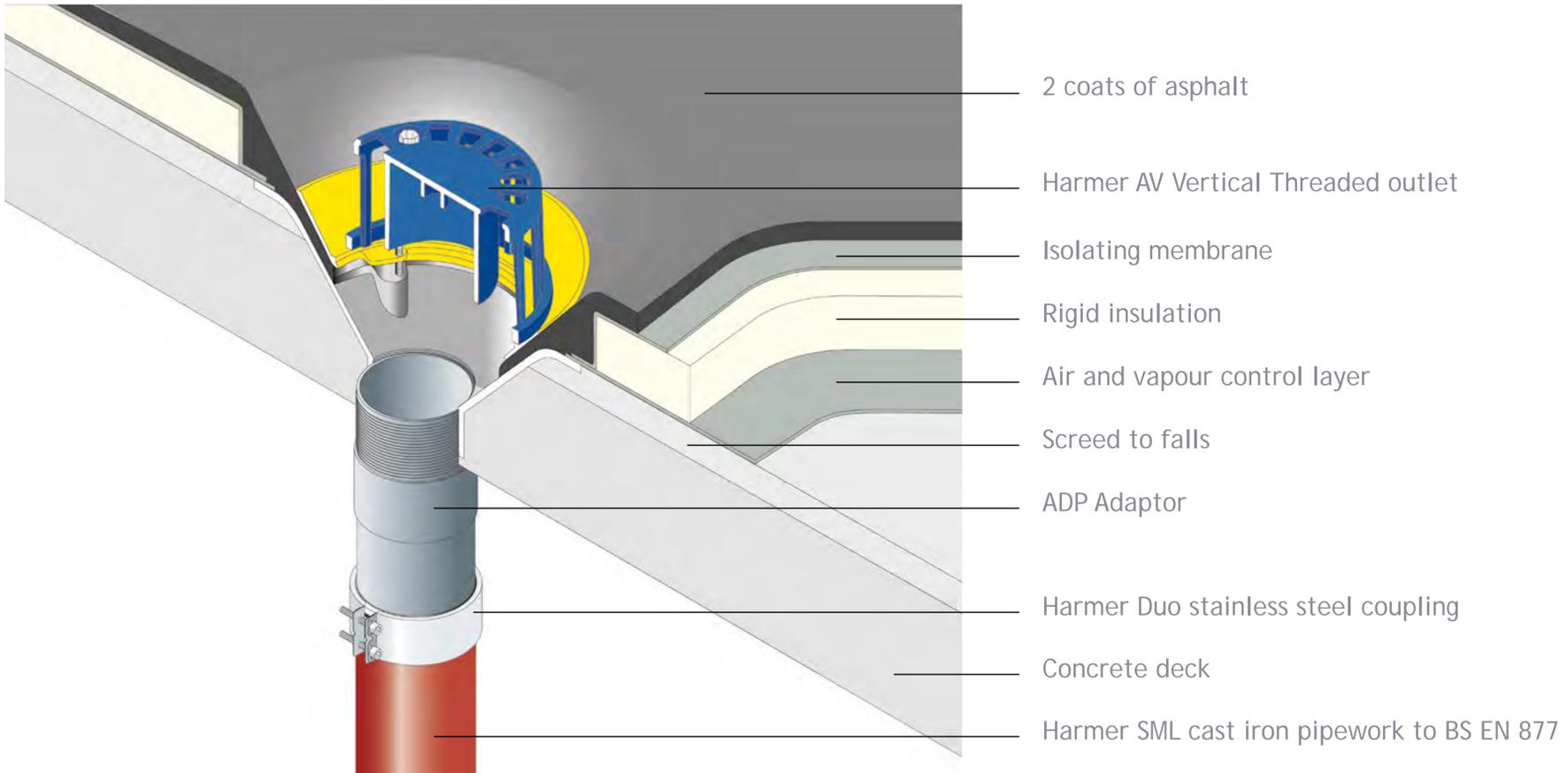
- Before completion of any drainage scheme:
- Check if overflows have been provided.
- Anticipate blockage - never have a single rainwater outlet.
- Once the rainwater outlets have been installed they should be inspected to ensure that all parts have been correctly fitted, that no parts are missing and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

Health & Safety

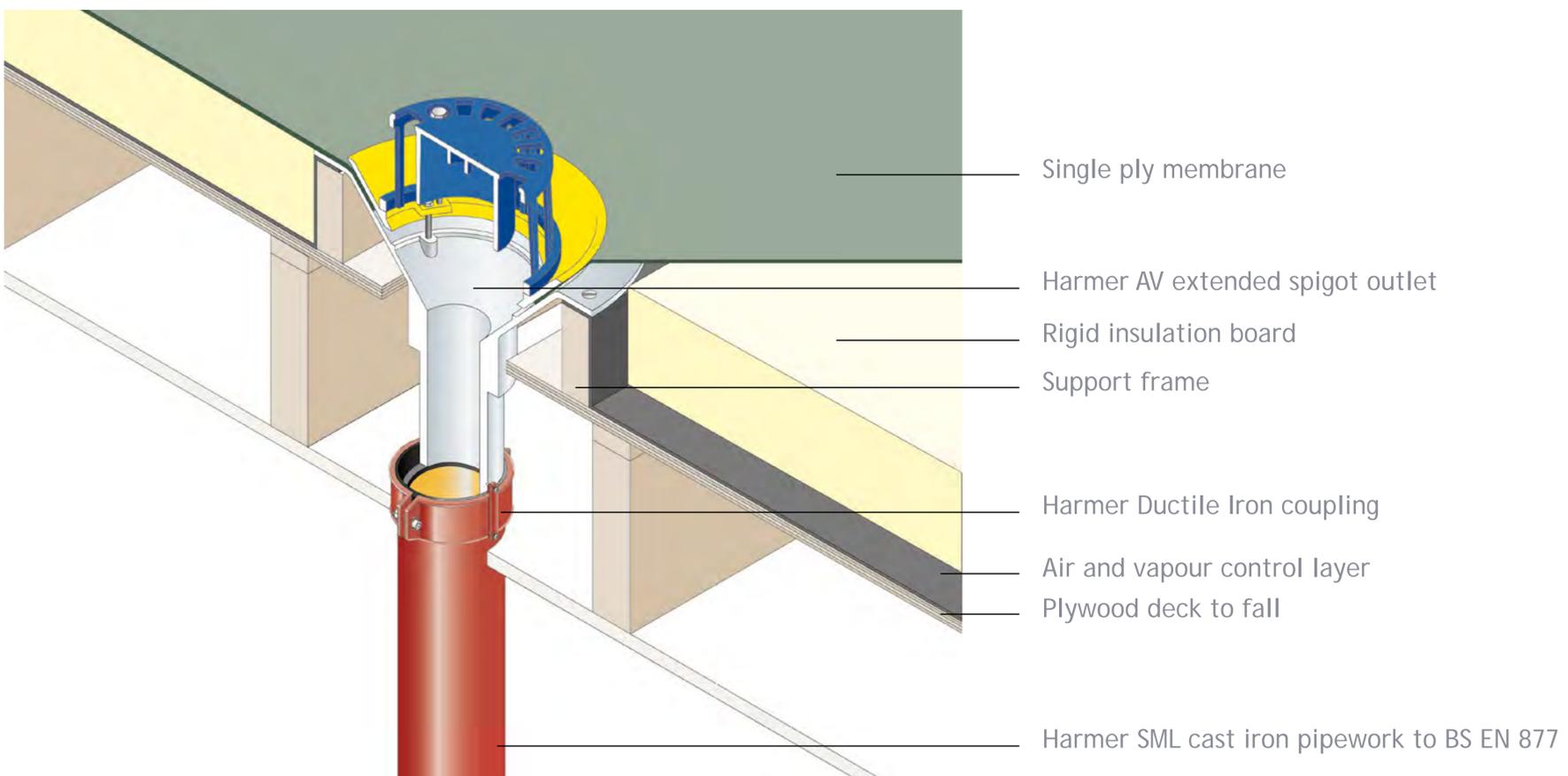
Always refer to current Health & Safety legislation, safe systems of work and the relevant material safety data sheets.

Aluminium Roof Outlets - Application Details

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

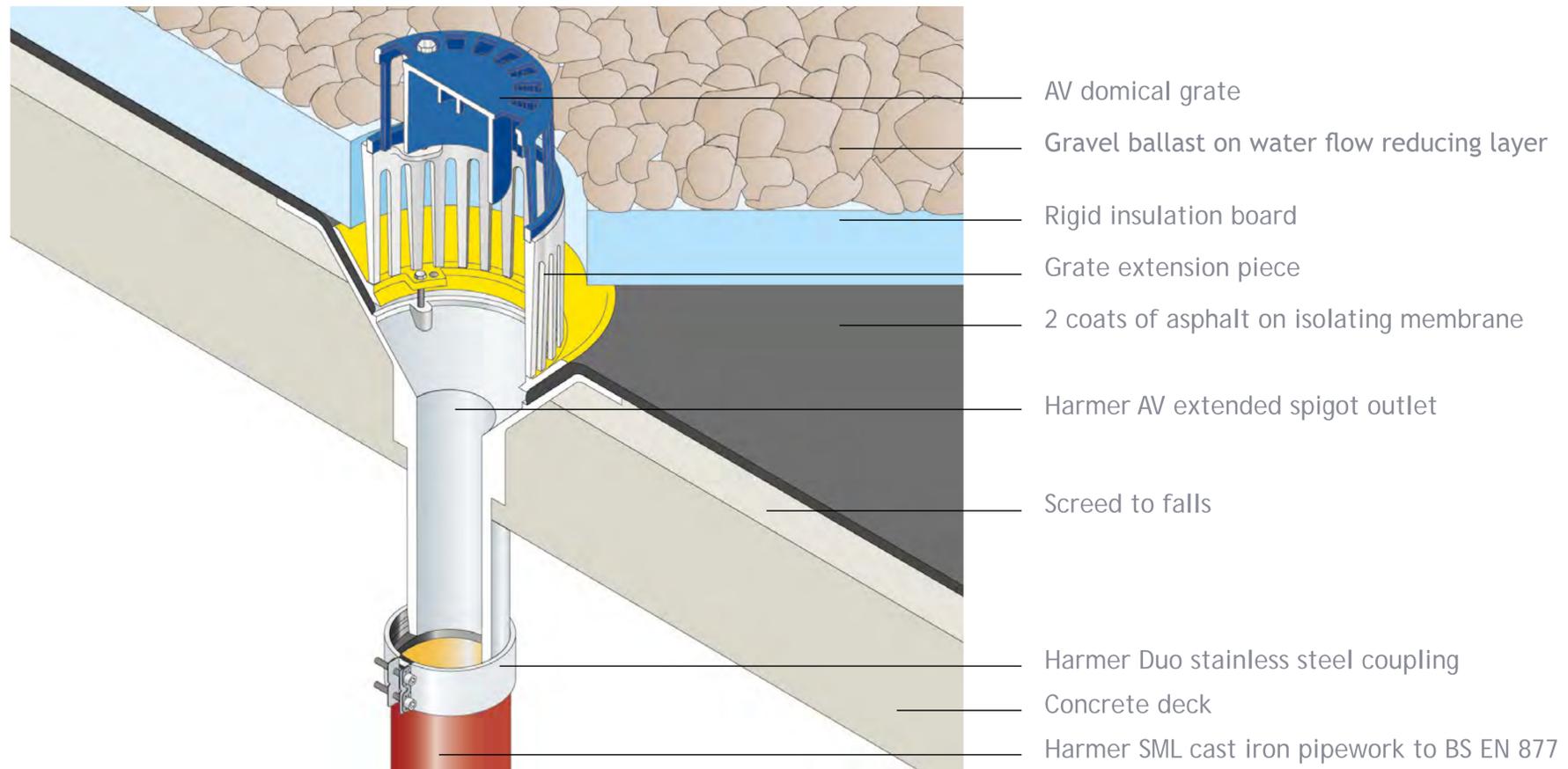


Harmer AV Vertical Spigot Outlet in Warm Roof Timber Deck Construction with Single Ply Waterproof Membrane

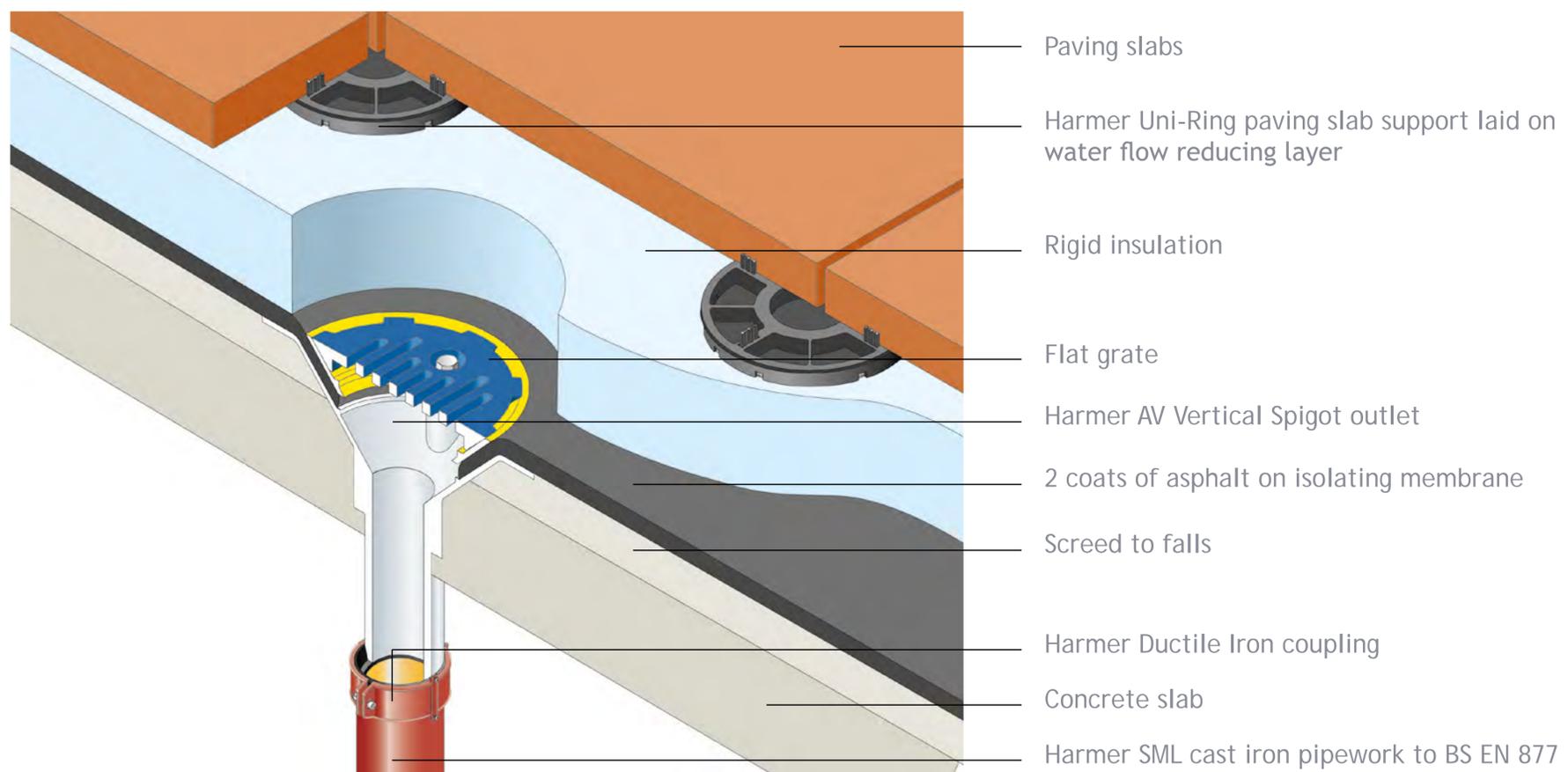


Aluminium Roof Outlets - Application Details

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

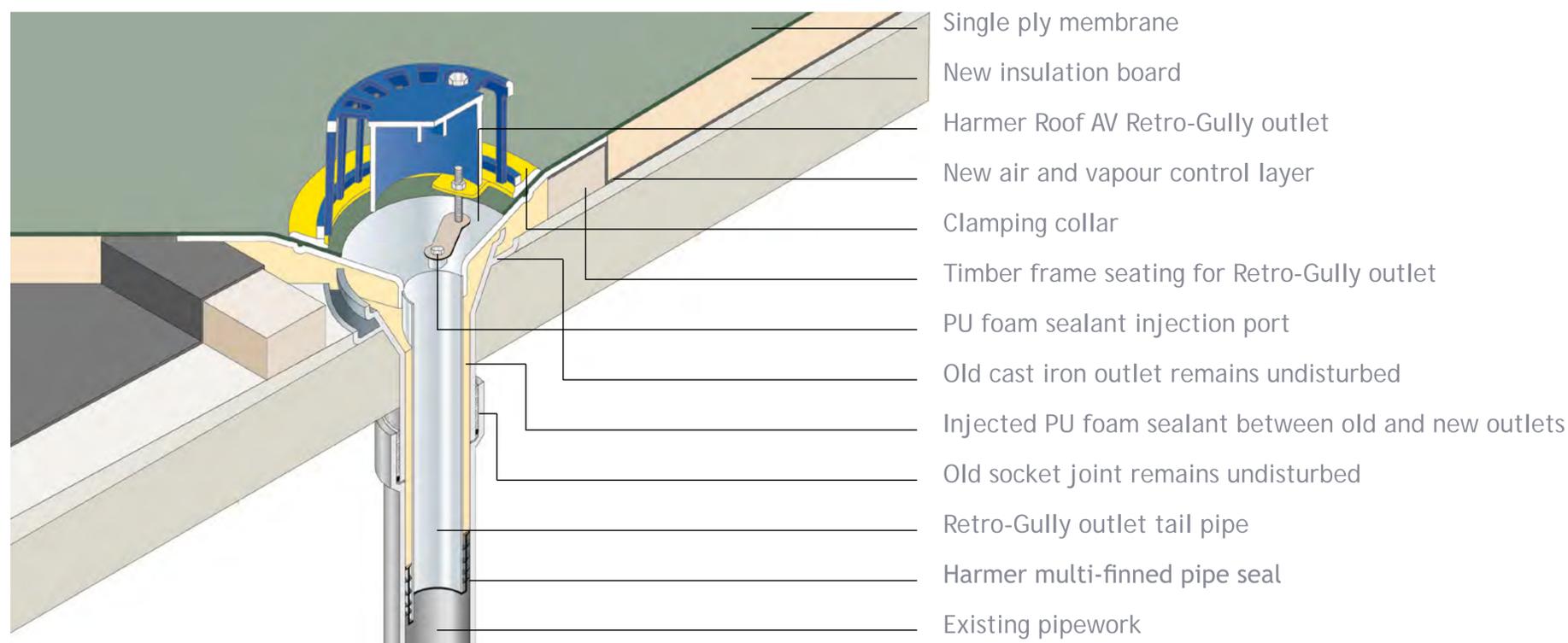


Harmer AV Vertical Spigot Outlet with Flat Grate in Inverted Roof Concrete Deck Construction with Paving Slabs on Uni-Ring Raised Deck Supports



Aluminium Roof Outlets - Application Details

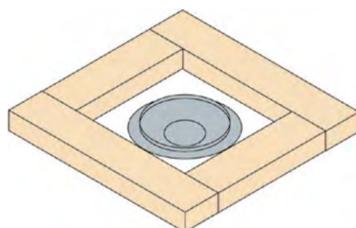
Harmer AV Retro-Gully Roof Refurbishment, Retaining Existing Cast Iron Outlet



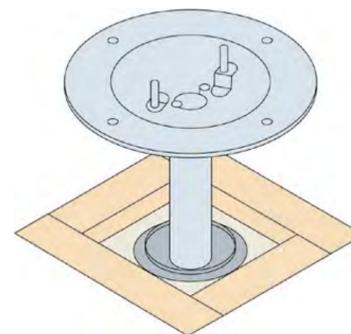
Installing Harmer AV Retro-Gully



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



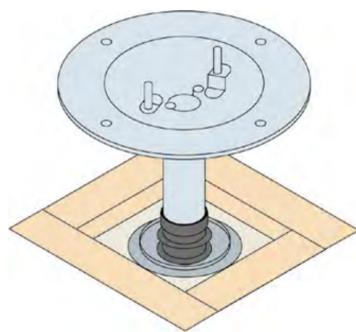
2. Form timber frame around old roof outlet, lay vapour barrier/insulation board (35mm+).



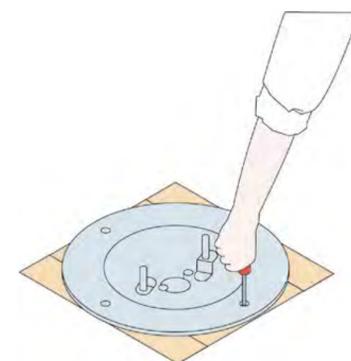
3. Check clearance, and cut tail pipe to required length if necessary.



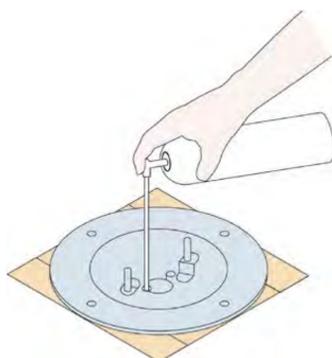
4. Once correct length of tail pipe has been established fit Harmer multi-finned pipe seal.



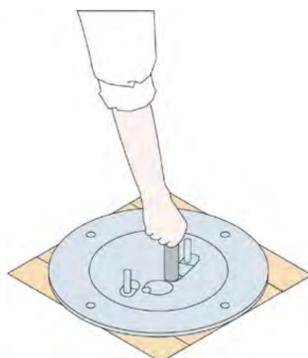
5. Repeat clean water flush. Insert tail pipe into existing pipework with flange seated on timber frame.



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



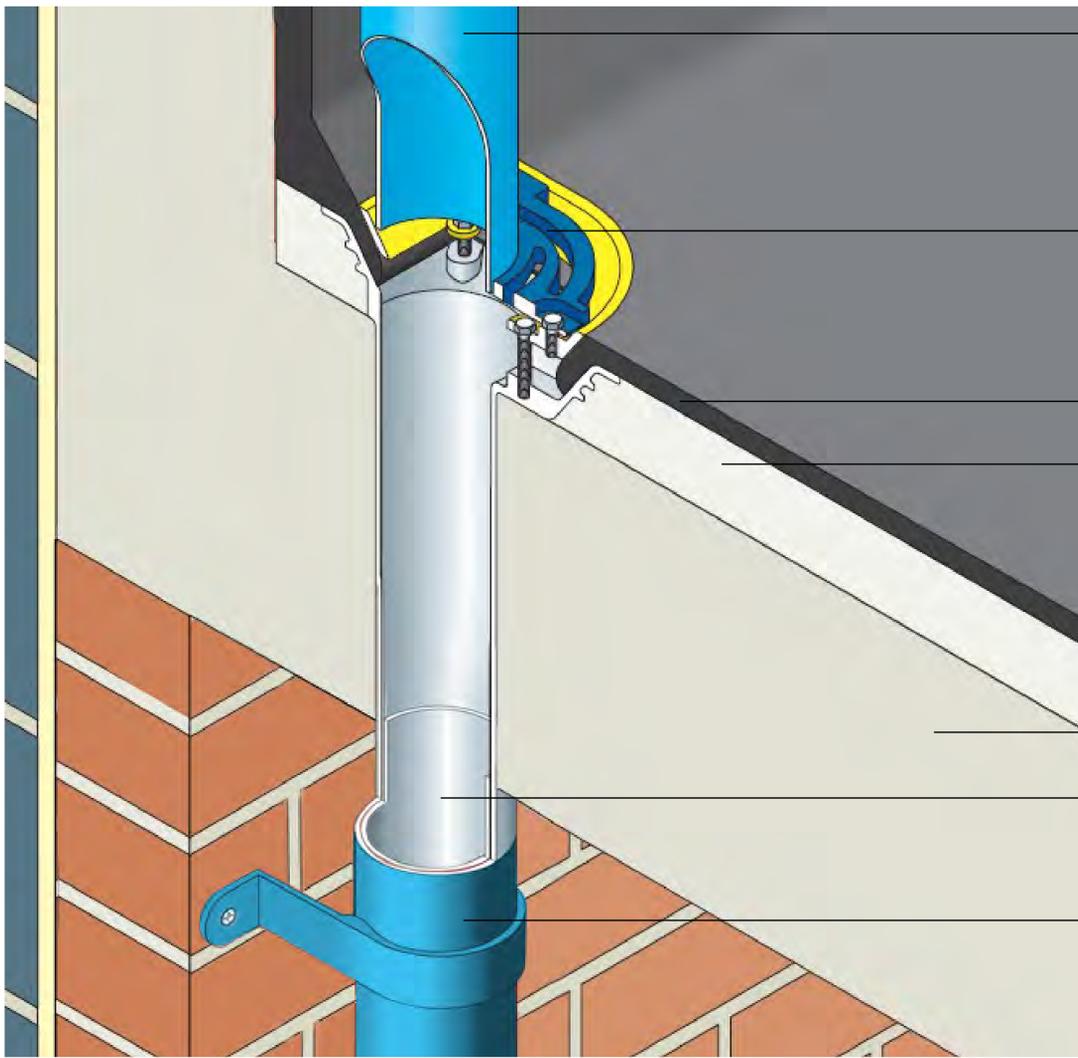
7. Inject intumescent PU foam in one injection port for up to 5 seconds. Wipe away surplus foam.



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

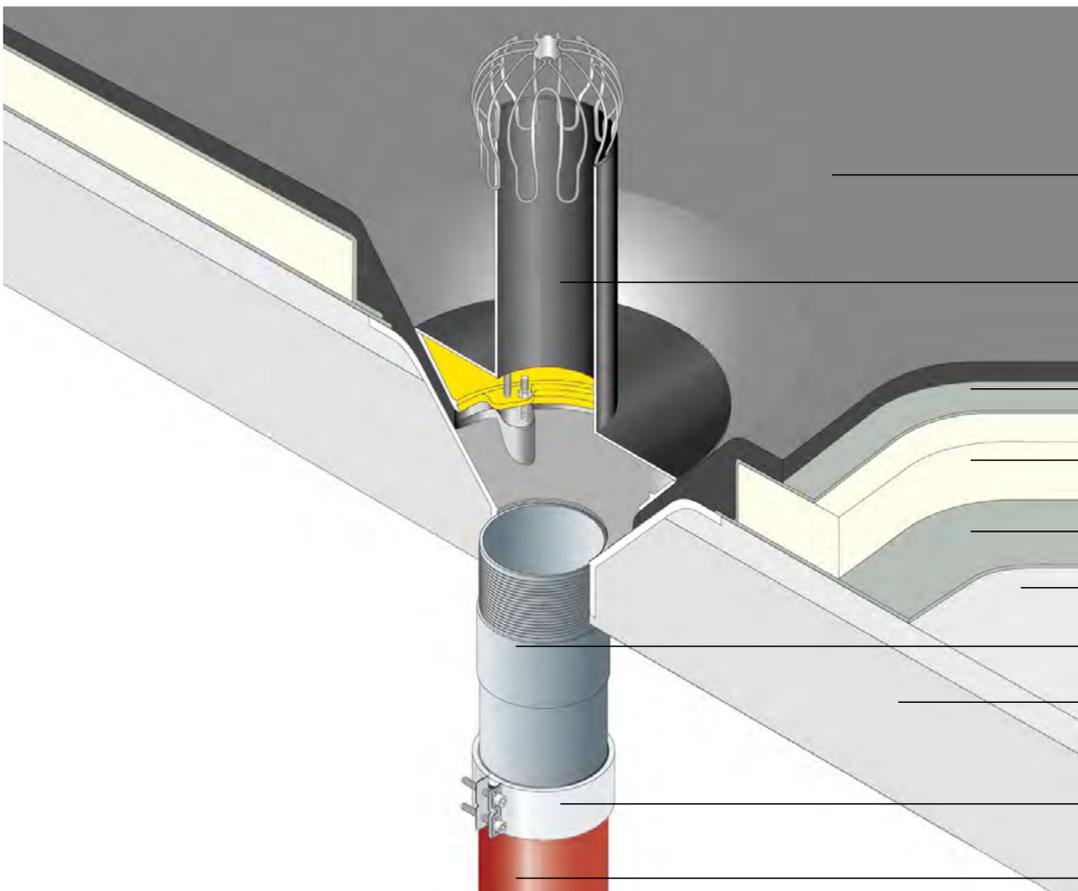
Aluminium Roof Outlets - Application Details

Flushjoint Extended Spigot Application Detail



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

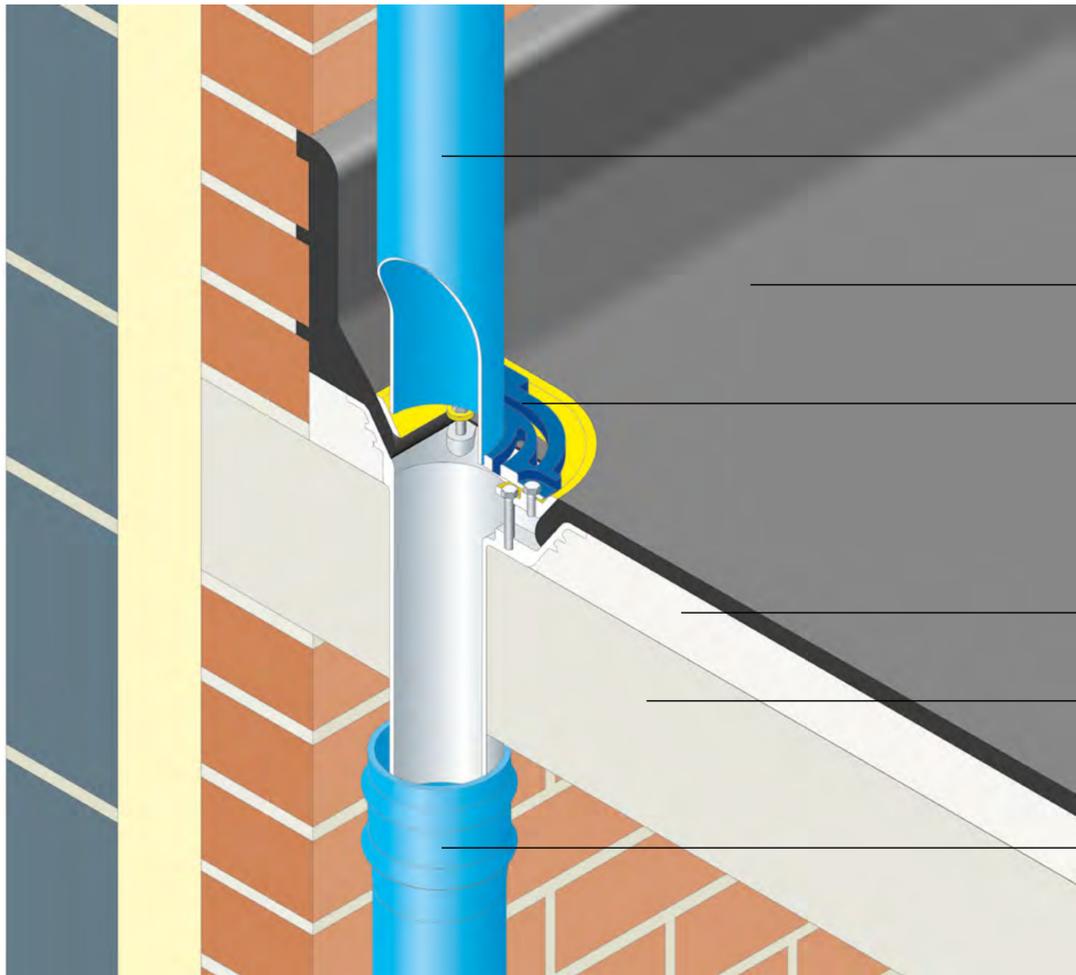
Harmer Overflow Outlet in Warm Roof Concrete Deck Construction with Waterproofing Membrane - 3 Layer, 2 Layer, Asphalt and Hot Melt



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

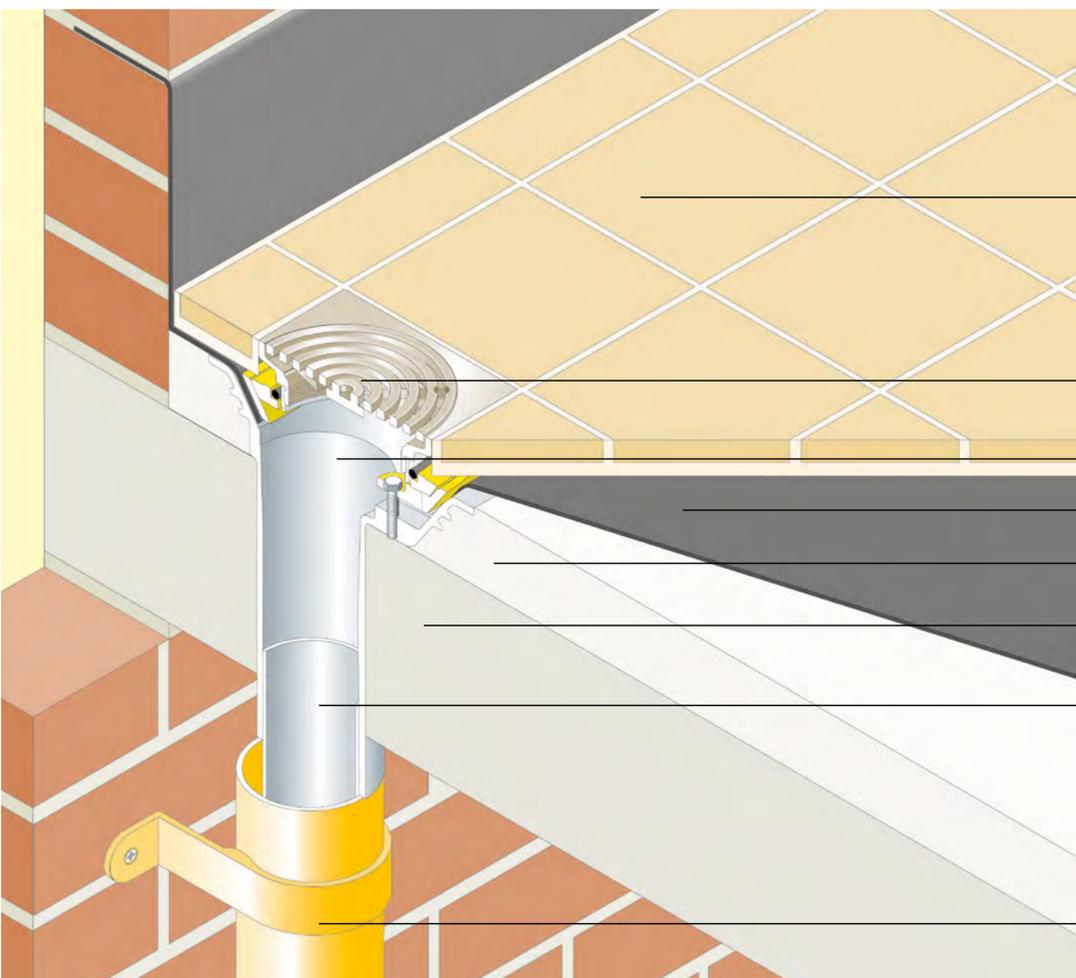
Aluminium Roof Outlets - Application Details

Harmer Mini Balcony Outlet with Standard Grate



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

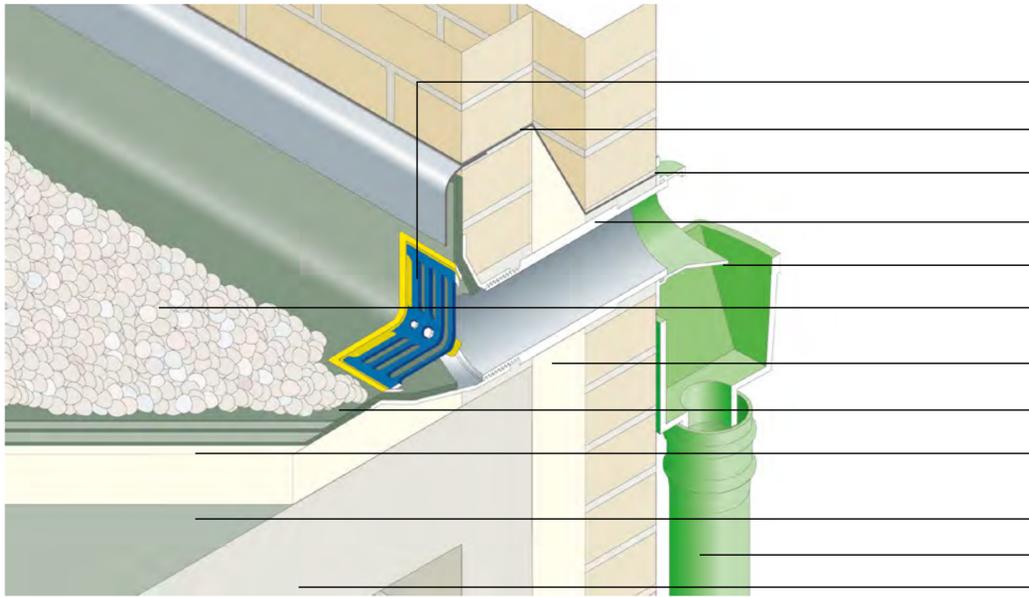
Harmer Mini Balcony Outlet with Stainless Steel Tile Grate



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

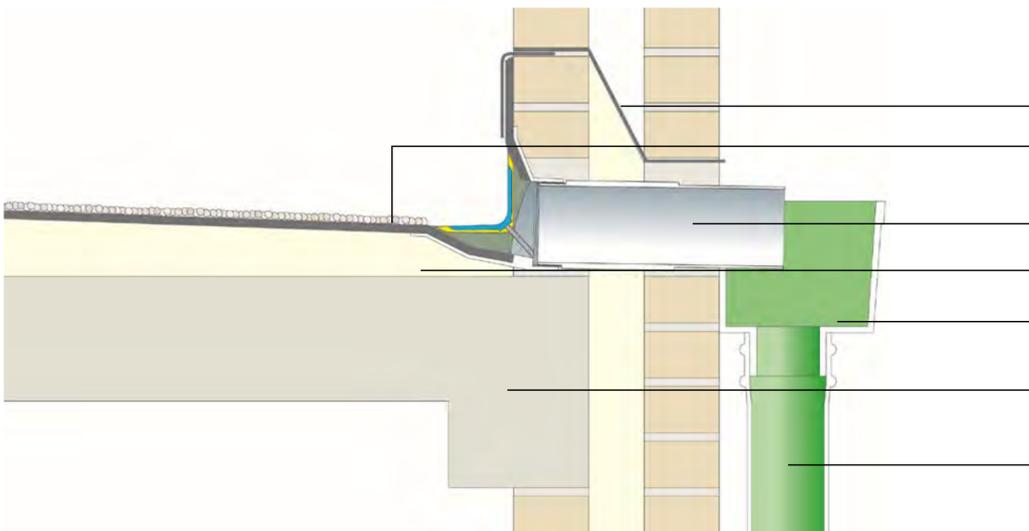
Aluminium Roof Outlets - Application Details

Harmer Two-Way Outlet in Warm Roof Concrete Deck Construction



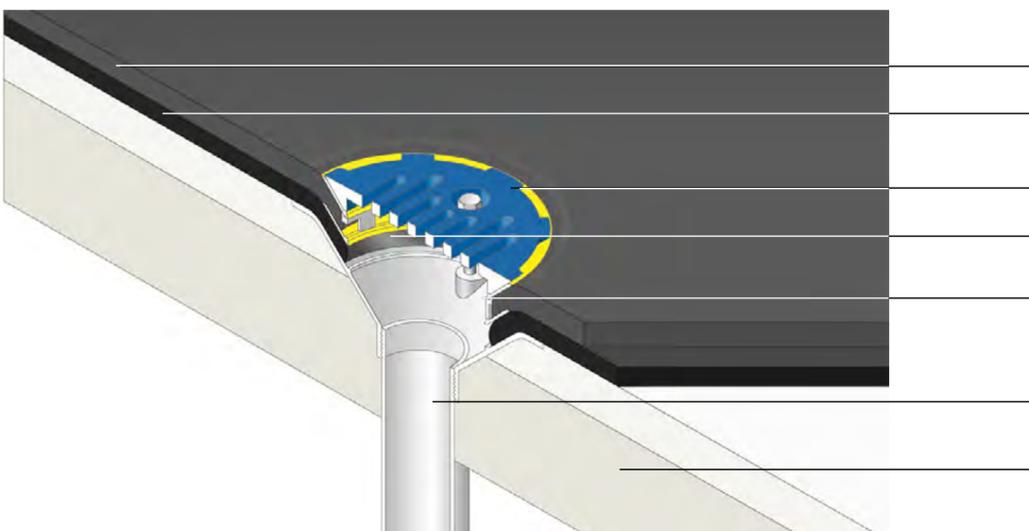
- Harmer Two-Way outlet
- DPC
- Harmer Roof aluminium Downspout
- Harmer Threaded ADP Adaptor
- Alumasc Rectangular Rainwater Head Outlet
- Reflective layer of chippings
- Cavity insulation
- Three-layer felt
- Tapered rigid insulation board
- Vapour barrier
- Alumasc Heritage aluminium downpipe
- Concrete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

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



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

Harmer Flanged Car Park Detail Outlet with Flat Grate



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

Bespoke Aluminium Service

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



Bespoke Aluminium Service

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

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



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

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



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



Meeting NHBC requirements

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

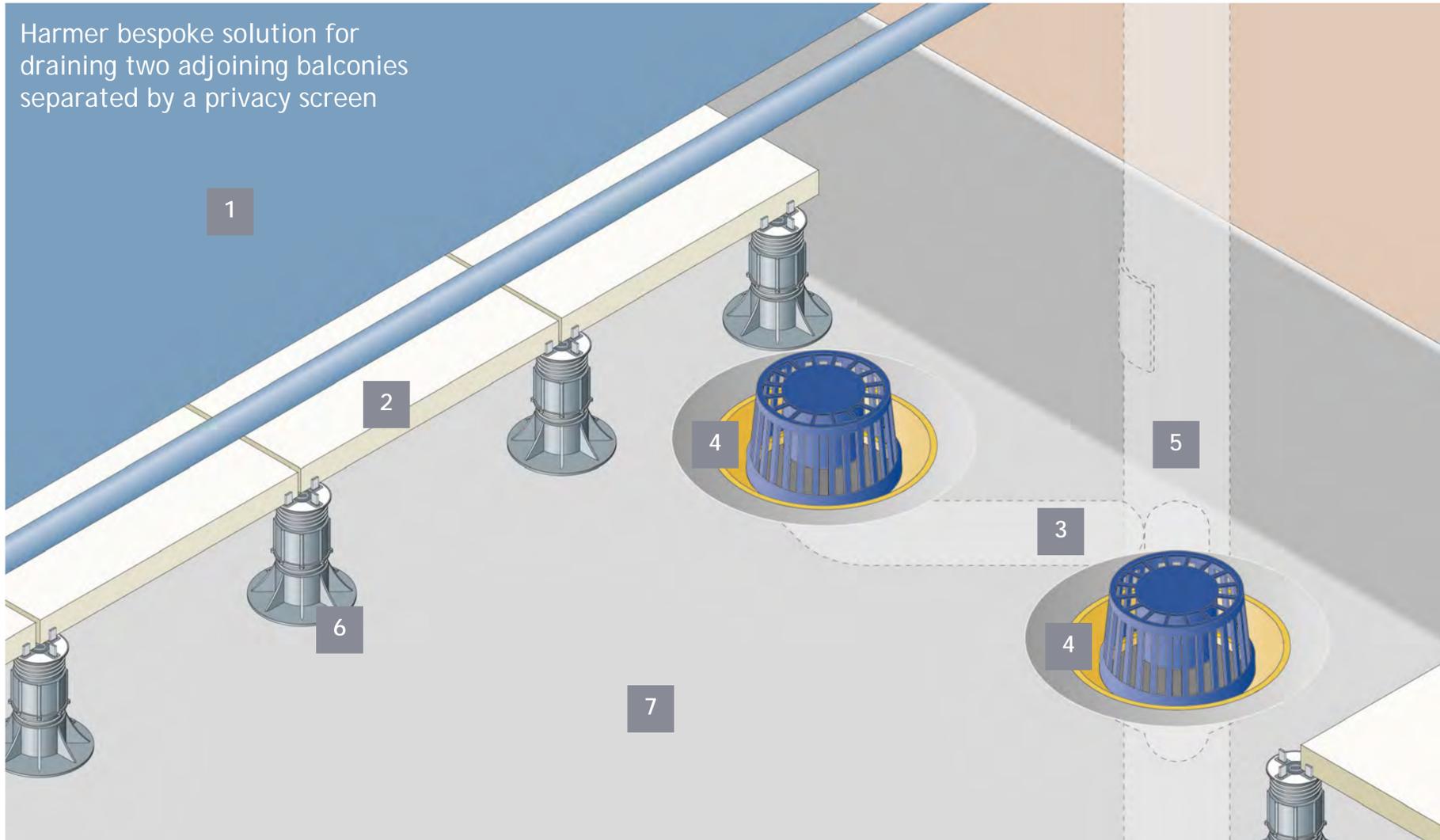
1 Bespoke baffle, factory-welded to the clamping collar. Baffle height designed to coincide with the flooding danger level



Bespoke Aluminium Service - Application Details

Aluminium Roof Outlets - Bespoke Solutions Application Detail 1

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



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

Design challenge

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

Unique and innovative Harmer solution

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

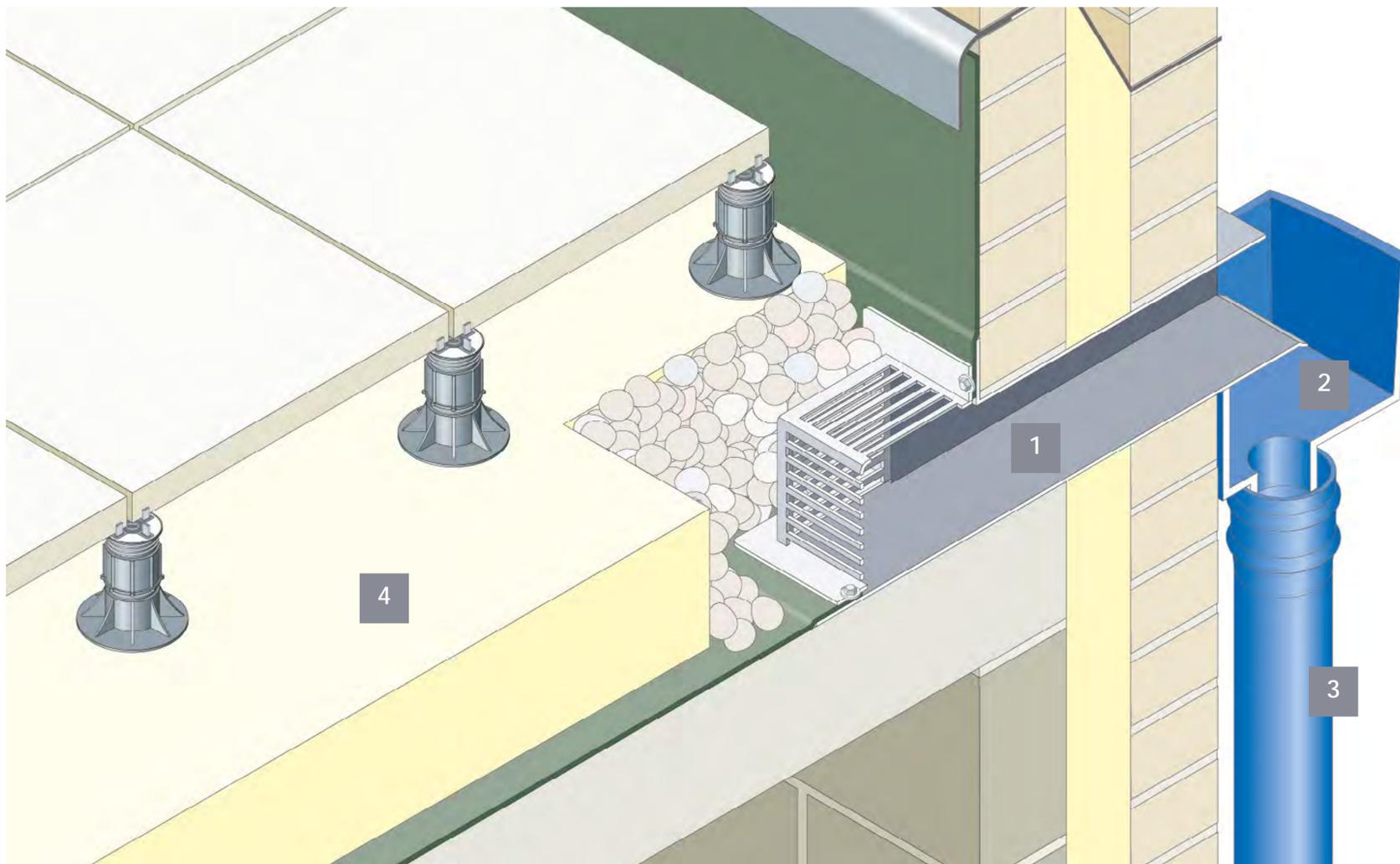
Commentary

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

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

Bespoke Aluminium Service - Application Details

Aluminium Roof Outlets - Bespoke Solutions Application Detail 2



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

Design challenge

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

Unique and innovative Harmer solution

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

Commentary

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

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