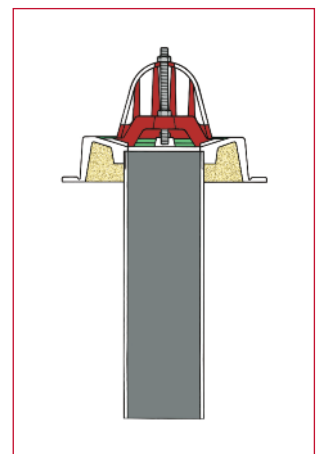
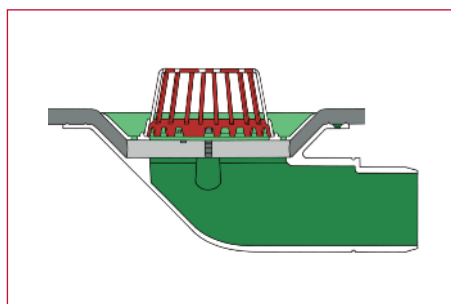
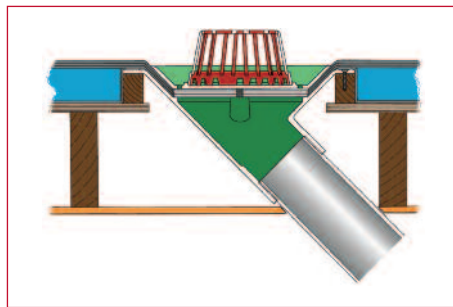
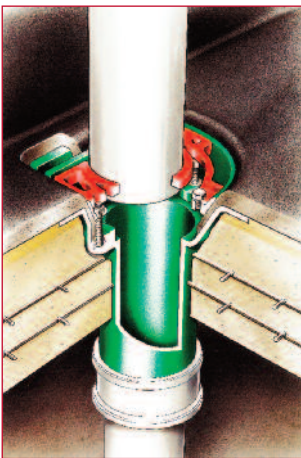


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May 2015

# CAROFLOW<sup>®</sup>

## Roof Drainage Products



CAROFLOW Flat Roof and Floor Drainage Outlets ensure a watertight connection between the water/damp proofing membranes and the drainage pipework, thereby removing the problem of water penetration at this critical junction. The outlets provide a ready made, engineered sump that is mechanically sealed to the membranes and then connect that sump securely to the pipework.

## Vertical, 45° and 90° – Spigot and Threaded Outlets – pages 3–8

A range of different sizes and take off angles, to connect to 50mm, 75mm, 100mm and 150mm nominal bore pipework.

## Balcony and Kompact Balcony Outlets – pages 9–10

Traditional Caro Balcony outlets – designed to be installed against wall/upstand and to receive pipework from higher levels into grating that will accommodate 50mm, 75mm and 100mm nominal bore downpipes. Kompact Caro Balcony outlets – available in 50mm and 75mm sizes and, being smaller in size, allow easier less 'destructive' installation.

## Two Way and Gully Outlets – pages 11–12

Caro Two Ways are designed for use at the junction of the horizontal roof/balcony and the vertical parapet/wall and have the added flexibility of draining vertically or horizontally. The Caro Gully Outlet can be used in narrow width channels.

## Car Park and Overflow Outlets – pages 13–14

Caro Car Park outlets, as with all other outlets, connect to most proprietary pipework and will cope with 1 tonne or 25 tonne loadings. The Caro Overflow units alleviate potential "blind spot" problems of protecting against blocked drainage outlets.

## Carolet Refurbishment Outlets – pages 15–16

Carolet outlets are designed to be inserted into existing outlet and pipework, without the need for removal of the original and the potential damage that could be caused internally, whilst still ensuring a totally watertight junction between the insulated roof area and the pipework.

## Accessories – pages 17–18

Further enhancing the range and flexibility of the Caro Roof Drainage products.

## Connections / Drainage Data / Typical Details – pages 19–20

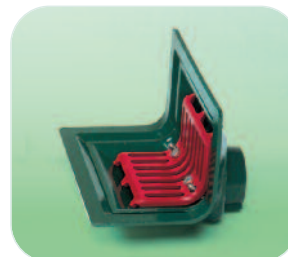
Showing typical installation details, drainage rates to BS EN 12056-3:2000 and suggested connection criteria.



Vertical, 45° and 90° – Spigot and Threaded Outlets – pages 3–8



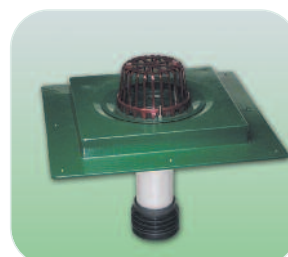
Balcony and Kompact Balcony Outlets – pages 9–10



Two Way and Gully Outlets – pages 11–12



Car Park and Overflow Outlets – pages 13–14



Carolet Refurbishment Outlets – pages 15–16



The CARO name has become familiar to most specifiers since 1985 and has established itself with quality products and economic pricing.

The formation of CAROFLOW LIMITED, with personnel having many years experience in the design and manufacture of roof and floor drainage products, enabled this accrued knowledge to be brought together and resulted in a comprehensive range of high quality, engineered outlets, that give added security to the problems of the safe and secure removal of water, both on and within today's higher specification buildings.

CAROFLOW is a BS EN ISO 9001:2008 Quality Assured company and as such is able to give complete confidence to the specifier.

The following pages detail the current range of CAROFLOW Roof Drainage products, full dimensions, connection recommendations and some typical applications.

It cannot, however, show all the "specials" that have been produced over the years to suit certain specifier's requirements.

CAROFLOW, being part of the Caro Group of Companies, has access to its own, in-group, UK production and is able to design and provide quick and easy solutions to awkward details.

Should you have any problem where we can help or any questions that are not answered by this brochure, please contact the Caroflow Technical Enquiries Department by telephone, or in writing, at the address shown on the back cover.

A full selection of downloadable CAD and PDF drawings can be found on the Caroflow website ([www.caroflow.co.uk](http://www.caroflow.co.uk))



ISO 9001:2008  
GB 00227

Caroflow Limited maintains a policy of continual product development and improvement and, as such, retains the right to alter designs shown within this brochure. All reasonable care has been taken in preparing this information, but Caroflow Limited is unable to guarantee against actual working practices that are outside of its control.



# Roof Outlets

## Vertical Spigot Outlets

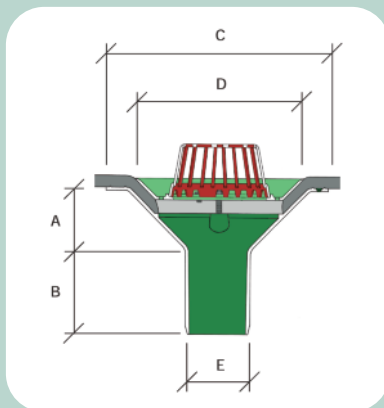


**Caroflow** Vertical Spigot roof outlets are available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 for most roof finishes or in leaded gunmetal to BS EN 1982:2008 for use with lead or copper-clad roofs or for connection to copper pipework. Foam insulation coating can be applied to both aluminium and gunmetal vertical spigot outlets for 'warm-roof' installation.

**Performance and Connections** see page 19.

Suitable for connection to:

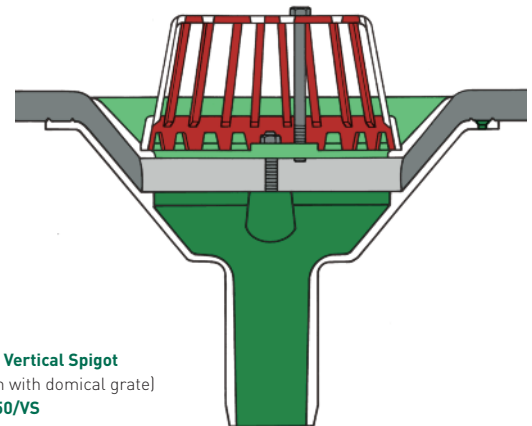
- PVC (50/VS will not connect directly – use heat shrink adaptor or flexible coupling)
- Aluminium
- Cast iron
- Copper (gunmetal only)



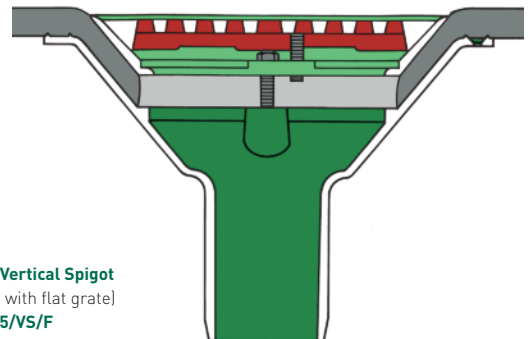
Order Code	50/VS	75VS	100/VS	150/VS
Pipe size (nom)	50	75	100	150
A	92	92	110	85
B	108	108	135	160
C	300	300	380	380
D	250	250	305	305
E	60	83	110	160

### Example specification

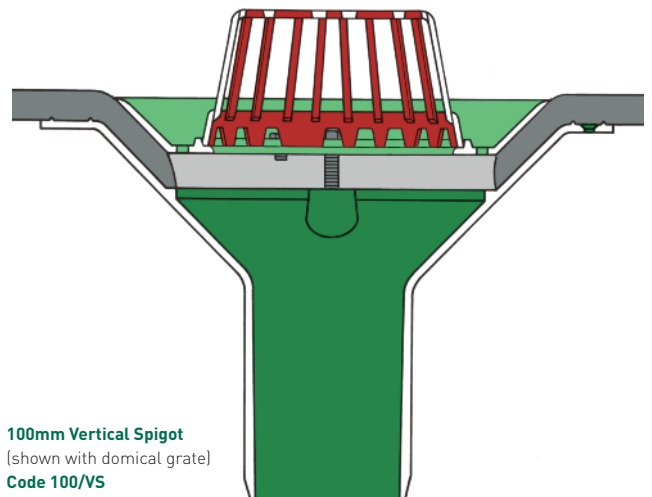
100mm nominal bore CAROFLOW Vertical Spigot aluminium (or leaded gunmetal) rainwater outlet with domical grating Code 100/VS (100/VS/F for flat grate option) as manufactured by Caroflow Limited  
Tel: 01763 244446.



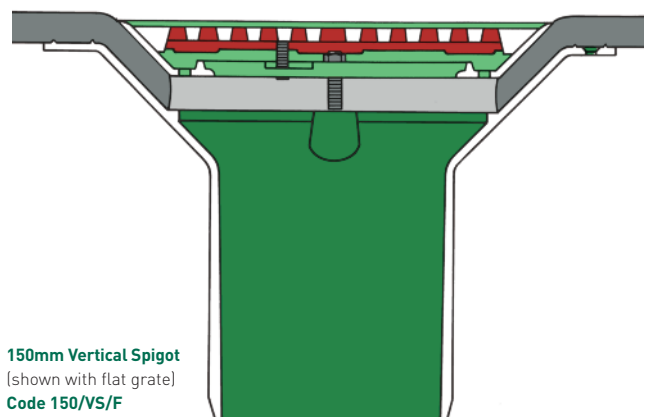
**50mm Vertical Spigot**  
(shown with domical grate)  
**Code 50/VS**



**75mm Vertical Spigot**  
(shown with flat grate)  
**Code 75/VS/F**



**100mm Vertical Spigot**  
(shown with domical grate)  
**Code 100/VS**

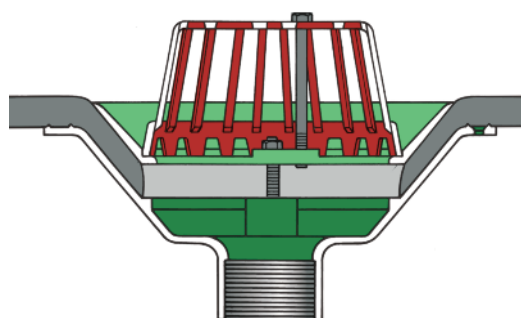


**150mm Vertical Spigot**  
(shown with flat grate)  
**Code 150/VS/F**

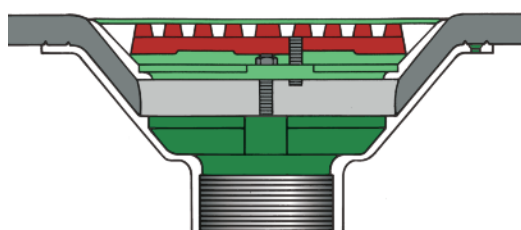
All drawings above are shown 1:5 scale

# Roof Outlets

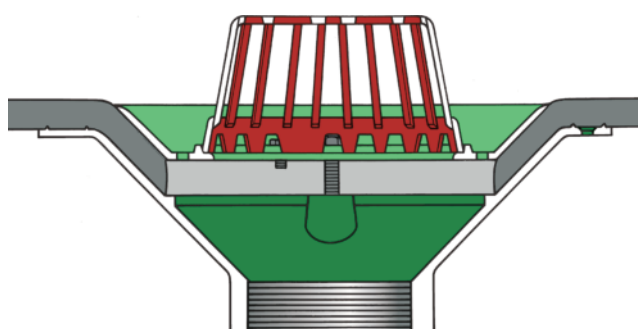
## Vertical Threaded Outlets



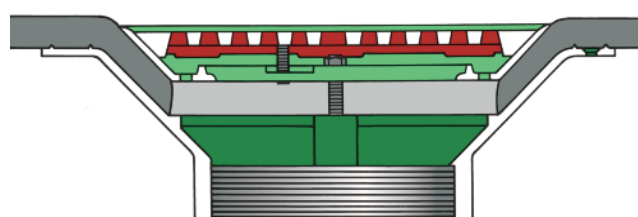
**50mm Vertical Threaded**  
(Shown with domical grate) Code 50/VT



**75mm Vertical Threaded**  
(Shown with flat grate) Code 75/VT/F



**100mm Vertical Threaded**  
(Shown with domical grate) Code 100/VT



**150mm Vertical Threaded**  
(Shown with flat grate) Code 150/VT/F

All drawings above are shown 1:5 scale



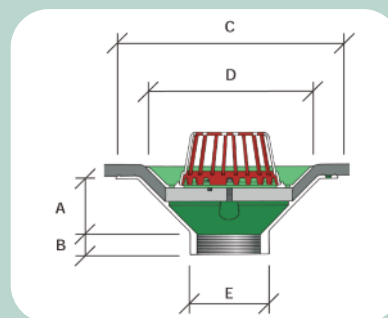
**Caroflow** Vertical Threaded roof outlets are available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 for most roof finishes or in leaded gunmetal to BS EN 1982:2008 for use with lead or copper-clad roofs or for connection to copper pipework. They are female parallel threaded to BS21:1985. Foamed insulation coating can be applied to both aluminium and gunmetal vertical threaded outlets for "warm-roof" installation.

**Performance and Connections** see page 19.

Suitable for connection to:

- Screw Threaded Steel
- Copper (Gunmetal only)
- PVC\*
- Aluminium\*
- Cast Iron\*

(\*with CAROFLOW Threaded adaptors see page 17)



Order Code	50/VT	75/VT	100/VT	150/VT
Pipe size (nom)	50	75	100	150
A	75	75	90	70
B	50	50	45	45
C	300	300	380	380
D	250	250	305	305
E	70	105	134	185

### Example specification

100mm nominal bore CAROFLOW Vertical Threaded aluminium (or leaded gunmetal) rainwater outlet with domical grating Code 100/VT (100/VT/F for flat grate option) as manufactured by Caroflow Limited  
Tel: 01763 244446.

# Roof Outlets

## 45° Spigot Outlets

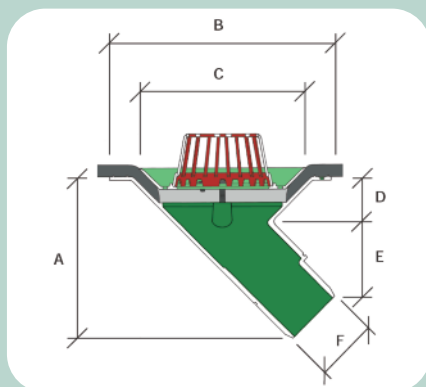


**Caroflow** 45° Spigot roof outlets are available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 for most roof finishes or in leaded gunmetal to BS EN 1982:2008 for use with lead or copper-clad roofs or for connection to copper pipework.

**Performance and Connections** see page 19.

Suitable for connection to:

- PVC (directly or use heat shrink adaptor or flexible coupling)
- Aluminium
- Cast iron
- Copper (gunmetal only)

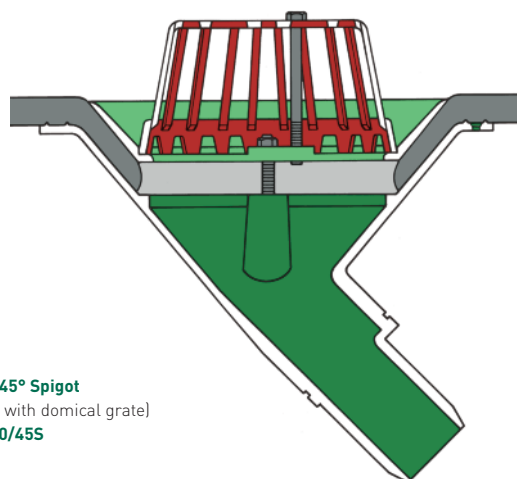


Order Code	50/45S	75/45S	100/45S
Pipe size (nom)	50	75	100
A	245	260	275
B	300	300	380
C	250	250	305
D	100	80	80
E	105	125	125
F	60	83	110

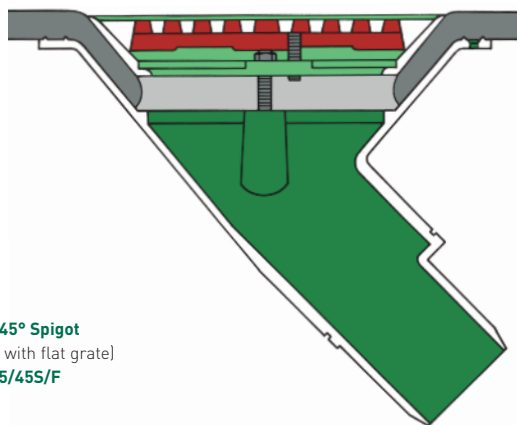
### Example specification

100mm nominal bore CAROFLOW 45° Spigot aluminium (or leaded gunmetal) rainwater outlet with domical grating Code 100/45S (100/45S/F for flat grate option) as manufactured by Caroflow Limited  
Tel: 01763 244446.

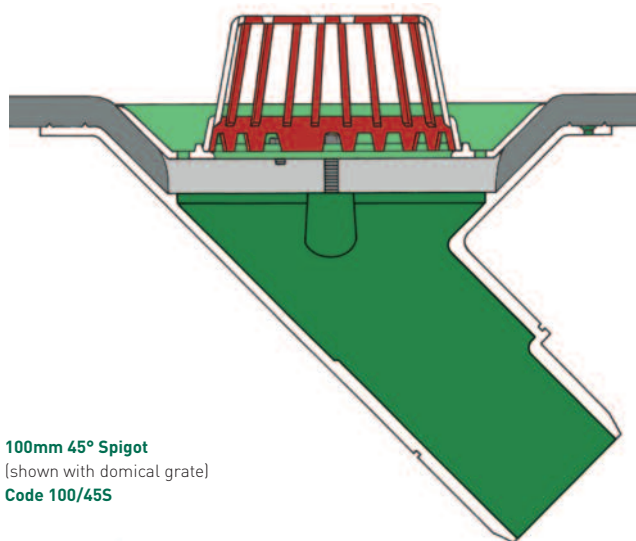
**CAROFLOW®**



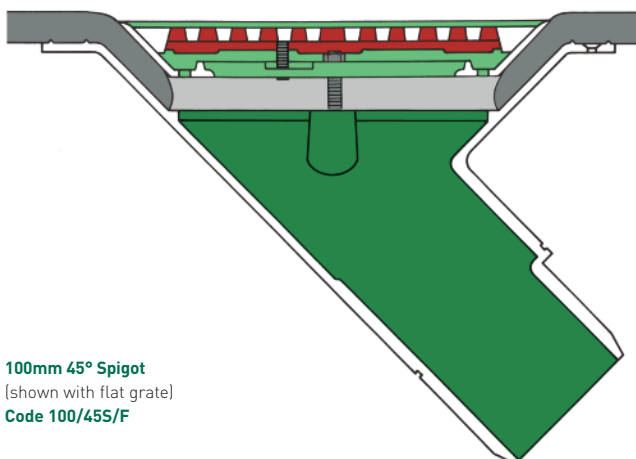
**50mm 45° Spigot**  
(shown with domical grate)  
**Code 50/45S**



**75mm 45° Spigot**  
(shown with flat grate)  
**Code 75/45S/F**



**100mm 45° Spigot**  
(shown with domical grate)  
**Code 100/45S**

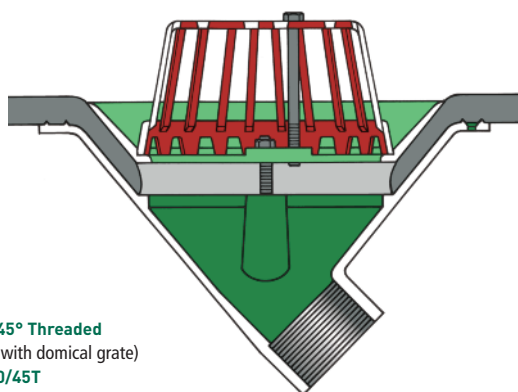


**100mm 45° Spigot**  
(shown with flat grate)  
**Code 100/45S/F**

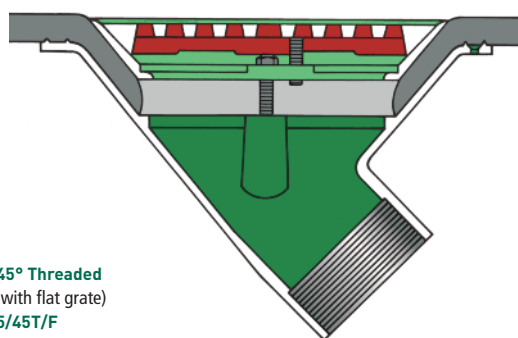
All drawings above are shown 1:5 scale

# Roof Outlets

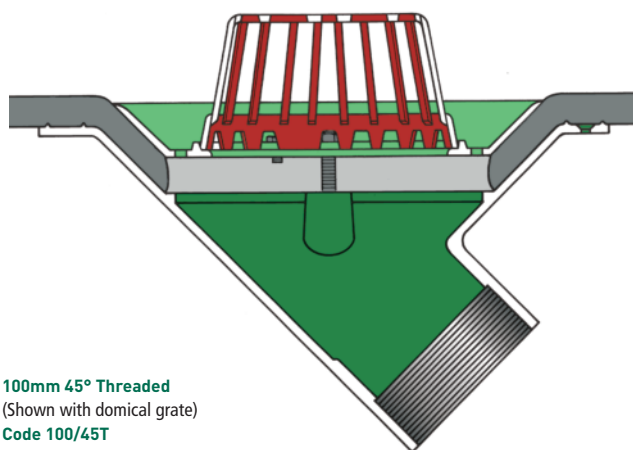
## 45° Threaded Outlets



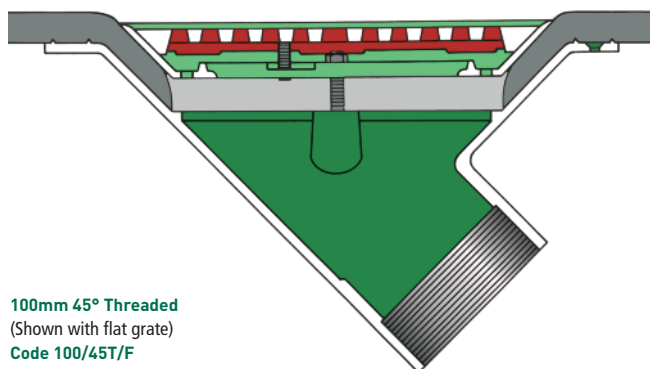
**50mm 45° Threaded**  
(Shown with domical grate)  
Code 50/45T



**75mm 45° Threaded**  
(Shown with flat grate)  
Code 75/45T/F



**100mm 45° Threaded**  
(Shown with domical grate)  
Code 100/45T



**100mm 45° Threaded**  
(Shown with flat grate)  
Code 100/45T/F

All drawings above are shown 1:5 scale



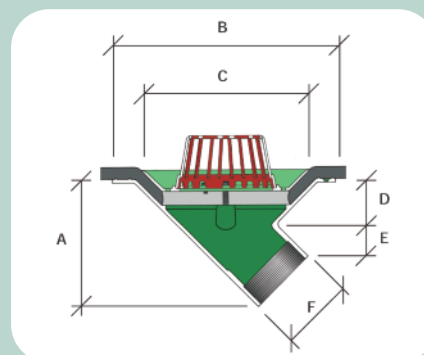
**Caroflow** 45° Threaded roof outlets are available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 for most roof finishes or in leaded gunmetal to BS EN 1982:2008 for use with lead or copper-clad roofs or for connection to copper pipework. They are female parallel threaded to BS21:1985.

**Performance and Connections** see page 19.

Suitable for connection to:

- Screw Threaded Steel
- Copper (Gunmetal only)
- PVC\*
- Aluminium\*
- Cast Iron\*

(\*with CAROFLOW Threaded adaptors see page 17)



Order Code	50/45T	75/45T	100/45T
Pipe size (nom)	50	75	100
A	180	200	215
B	300	300	380
C	250	250	305
D	100	80	78
E	28	48	54
F	75	105	125

### Example specification

100mm nominal bore CAROFLOW Vertical Threaded aluminium (or leaded gunmetal) rainwater outlet with domical grating Code 100/VT (100/VT/F for flat grate option) as manufactured by Caroflow Limited  
Tel: 01763 244446.

# Roof Outlets

## 90° Spigot Outlets

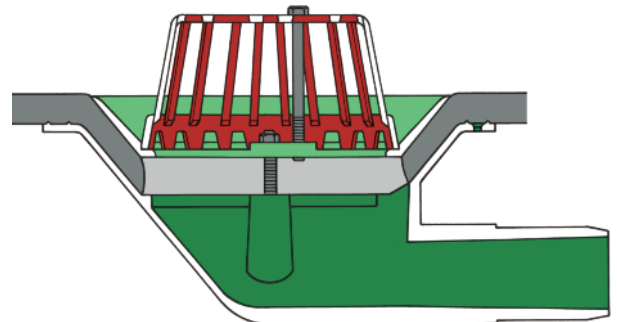
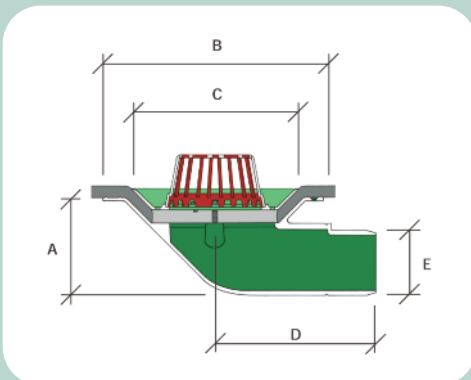


**Caroflow** 90° Spigot roof outlets are available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 for most roof finishes or in leaded gunmetal to BS EN 1982:2008 for use with lead or copper-clad roofs or for connection to copper pipework.

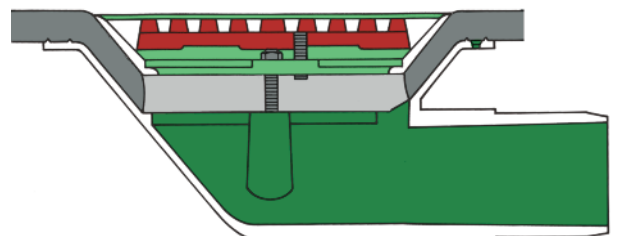
**Performance and Connections** see page 19.

Suitable for connection to:

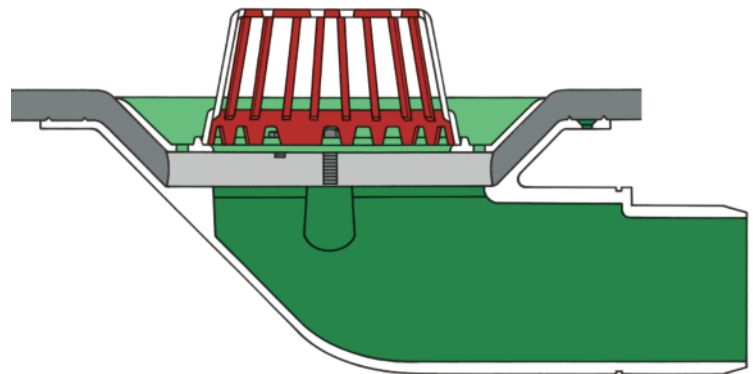
- PVC (directly or use heat shrink adaptor or flexible coupling)
- Aluminium
- Cast iron
- Copper (gunmetal only)



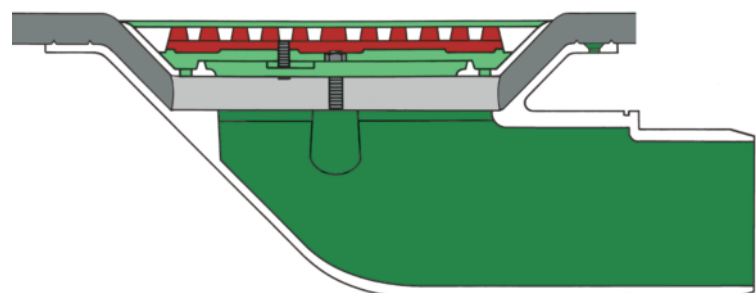
**50mm 90° Spigot**  
(shown with domical grate) **Code 50/90S**



**75mm 90° Spigot**  
(shown with flat grate) **Code 75/90S/F**



**100mm 90° Spigot**  
(shown with domical grate) **Code 100/90S**



**100mm 90° Spigot**  
(shown with flat grate) **Code 100/90S/F**

Order Code	50/90S	75/90S	100/90S
Pipe size (nom)	50	75	100
A	132	132	165
B	300	300	380
C	250	250	305
D	225	225	280
E	60	83	110

### Example specification

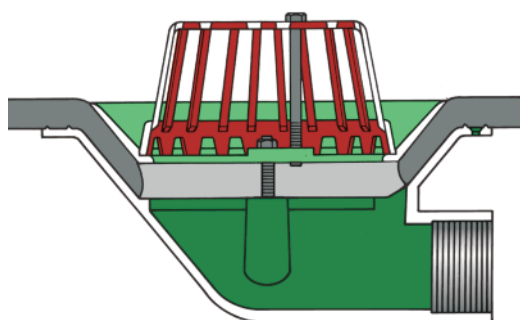
100mm nominal bore CAROFLOW 90° Spigot aluminium (or leaded gunmetal) rainwater outlet with domical grating Code 100/90S (100/90S/F for flat grate option) as manufactured by Caroflow Limited  
Tel: 01763 244446.

All drawings above are shown 1:5 scale

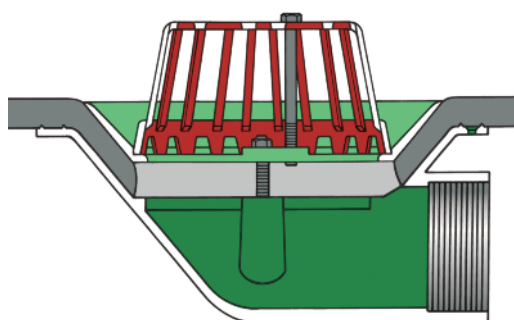


# Roof Outlets

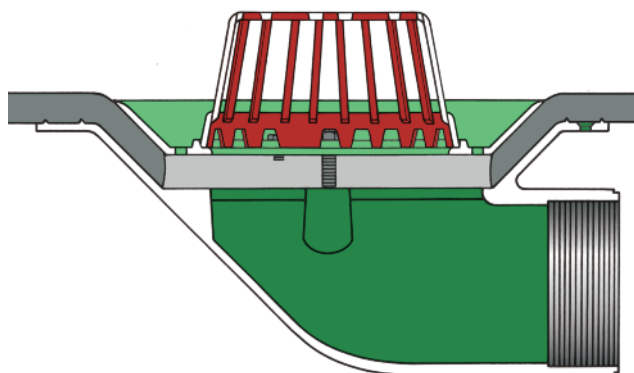
## 90° Threaded Outlets



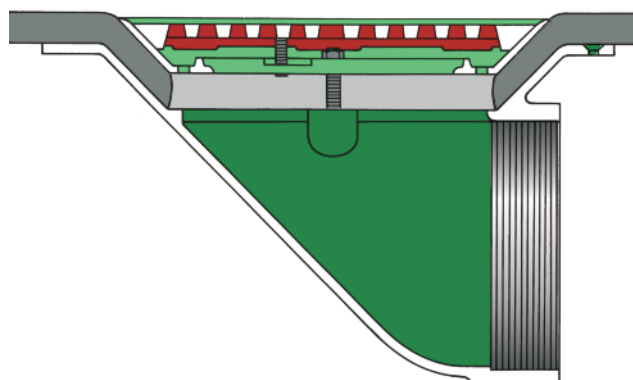
**50mm 90° Threaded**  
(shown with domical grate) **Code 50/90T**



**75mm 90° Threaded**  
(shown with domical grate) **Code 75/90T**



**100mm 90° Threaded**  
(shown with domical grate) **Code 100/90T**



**150mm 90° Threaded**  
(shown with flat grate) **Code 150/90T/F**

All drawings above are shown 1:5 scale



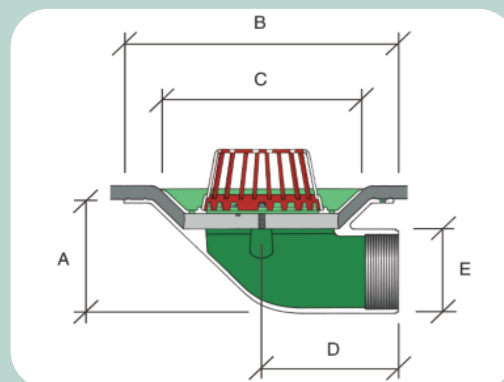
**Caroflow** 90° Threaded roof outlets are available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 for most roof finishes or in leaded gunmetal to BS EN 1982:2008 for use with lead or copper-clad roofs or for connection to copper pipework. They are female parallel threaded to BS21:1985.

**Performance and Connections** see page 19.

Suitable for connection to:

- Screw Threaded Steel
- Copper (Gunmetal only)
- PVC\*
- Aluminium\*
- Cast Iron\*

(\*with CAROFLOW Threaded adaptors see page 17)



Order Code	50/90T	75/90T	100/90T	150/90T
Pipe size (nom)	50	75	100	150
A	130	130	165	223
B	300	300	380	380
C	250	250	305	305
D	150	150	192	150
E	76	100	125	185

### Example specification

100mm nominal bore CAROFLOW 90° Threaded aluminium (or leaded gunmetal) rainwater outlet with domical grating Code 100/90T (100/90T/F for flat grate option) as manufactured by Caroflow Limited  
Tel: 01763 244446.

## Roof Outlets

### Balcony Outlets

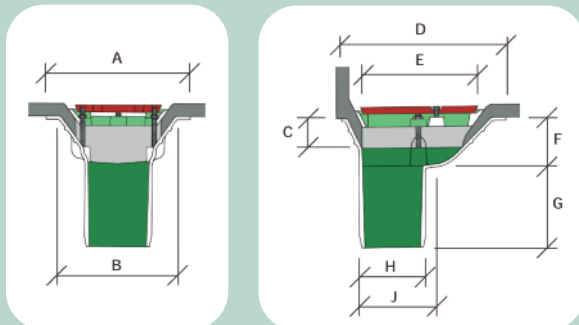


**Caroflow** Balcony Spigot roof outlets are designed to allow the unit to be installed against a wall/upstand and the grating, which can be cut on site or prior to delivery, will allow various sizes of pipework to drain into the outlet from upper levels to give a continuous drainage line from top to bottom storey. Available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 for most roof finishes or in leaded gunmetal to BS EN 1982:2008 for use with lead or copper-clad roofs or for connection to copper pipework.

**Performance and Connections** see page 19.

Suitable for connection to:

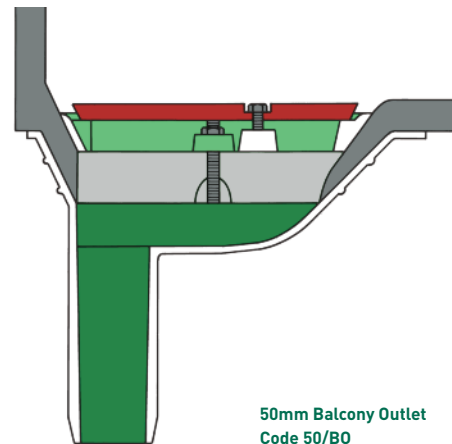
- PVC (50/BO will not connect directly – use heat shrink adaptor or flexible coupling)
- Aluminium
- Cast Iron
- Copper (Gunmetal only)



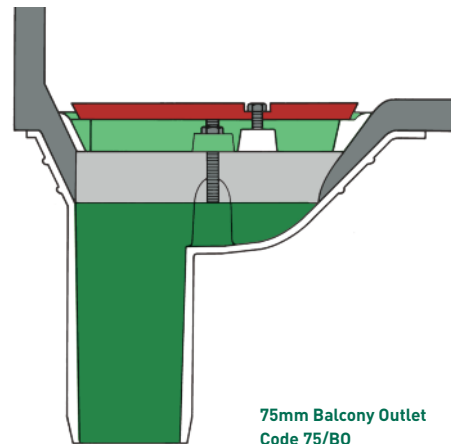
Order Code	50/BO	75/BO	100/BO
Pipe size (nom)	50	75	100
A	230	230	230
B	190	190	190
C	50	50	50
D	265	265	265
E	206	206	206
F	85	85	85
G	130	130	130
H	60	83	110
J	142	142	142

#### Example specification

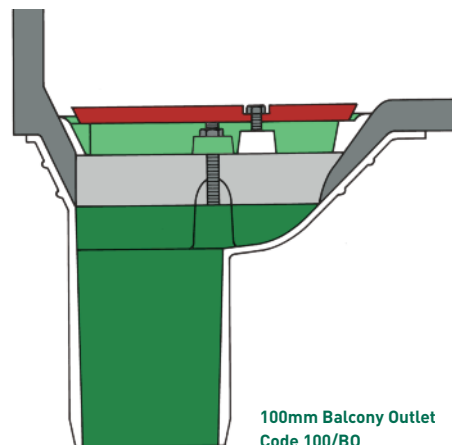
100mm nominal bore CAROFLOW Balcony Spigot aluminium (or leaded gunmetal) rainwater outlet with a flat grating Code 100/BO (100/BO/100H to indicate that the grating must be cut to receive 100mm pipe) as manufactured by Caroflow Limited Tel: 01763 244446.



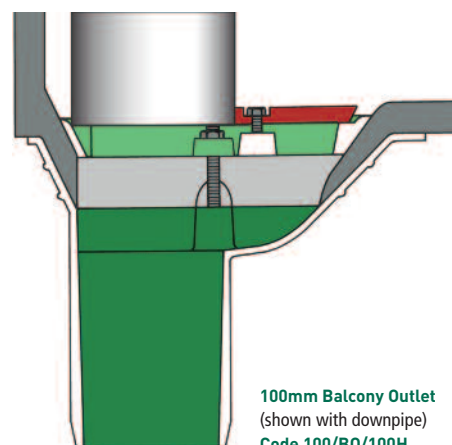
50mm Balcony Outlet  
Code 50/BO



75mm Balcony Outlet  
Code 75/BO



100mm Balcony Outlet  
Code 100/BO



100mm Balcony Outlet  
(shown with downpipe)  
Code 100/BO/100H

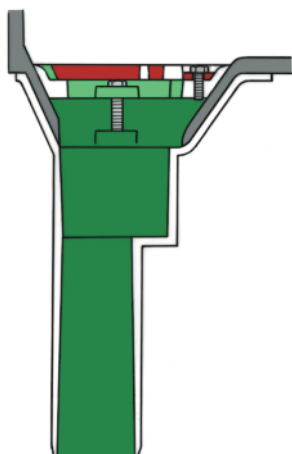
All drawings above are shown 1:5 scale



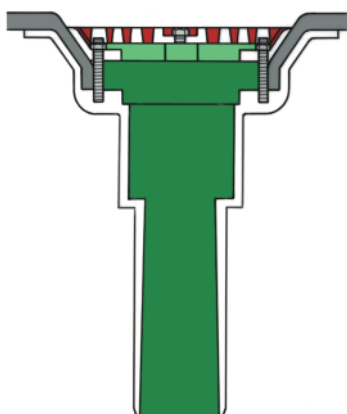
# Roof Outlets

## Kompact Balcony Outlets

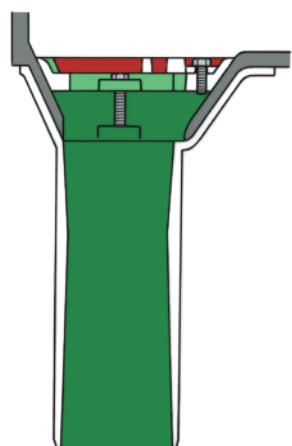
50mm Kompact  
Balcony Outlet  
(Side Elevation)  
Code 50/KBO



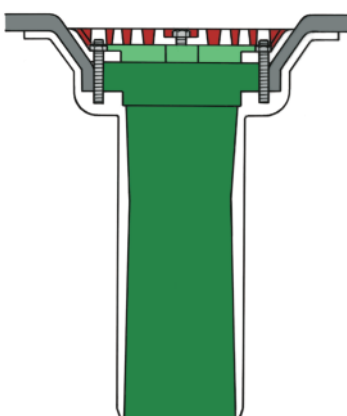
50mm Kompact  
Balcony Outlet  
(Front Elevation)  
Code 50/KBO



75mm Kompact  
Balcony Outlet  
(Side Elevation)  
Code 75/KBO



75mm Kompact  
Balcony Outlet  
(Front Elevation)  
Code 75/KBO



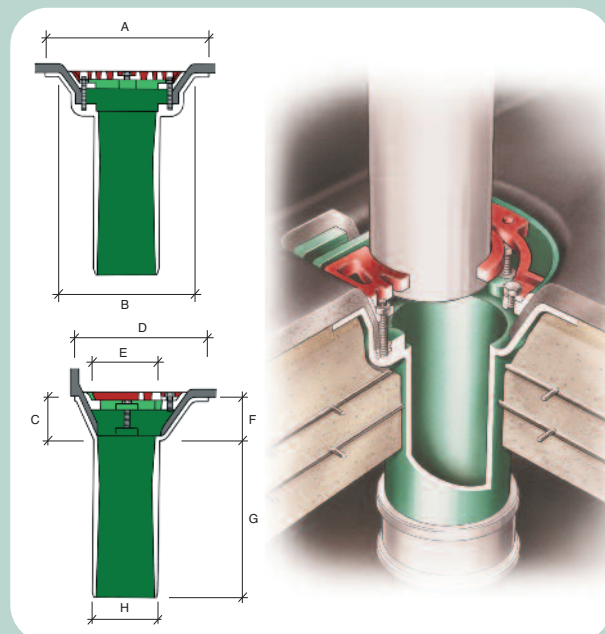
All drawings above are shown 1:5 scale



Offering all the benefits of our standard Balcony Outlets, the **Caroflow** Kompact Balcony outlet is sized to allow easier, less 'destructive', installation in refurbishment as well as new Balcony installations.

It will still allow various sizes of pipework to drain into the outlet from upper levels.

Available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 for most roof finishes or in leaded gunmetal to BS EN 1982:2008 for use with lead or copper-clad roofs or for connection to copper pipework.



Order Code	50/KBO	75/KBO
Pipe size (nom)	50	75
A	210	210
B	175	175
C	55	55
D	170	170
E	110	110
F	55	55
G	220	220
H	60	83

# Roof Outlets

## Two Way Outlets

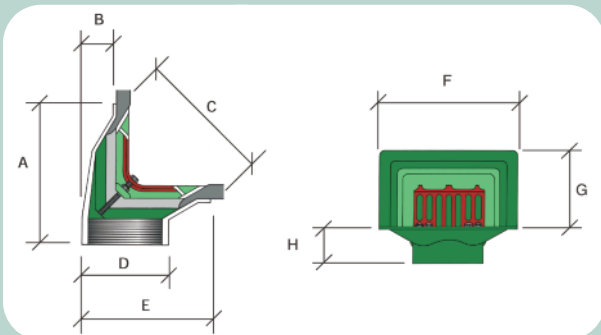


**Caroflow** Two Way Threaded roof outlets are designed for use at the intersection of horizontal and vertical surfaces, i.e. a balcony and parapet wall, and can be used to drain off vertically or horizontally. Available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 for most roof finishes or in leaded gunmetal to BS EN 1982:2008 for use with lead or copper-clad roofs or for connection to copper pipework. They are female parallel threaded to BS21:1985

**Performance and Connections** see page 19.

Suitable for connection to:

- Screw Threaded Steel
- PVC (with Caroflow Threaded adaptors see page 17)
- Aluminium (with Caroflow Threaded adaptors see page 17)
- Cast Iron (with Caroflow Threaded adaptors see page 17)
- Copper (Gunmetal only)

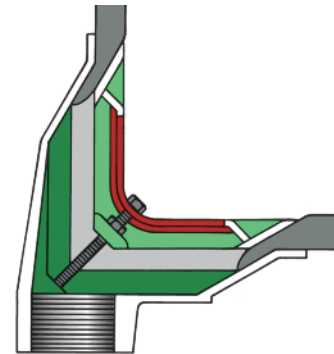


Order Code	50/TW	75/TW	100/TW	150/TW
Pipe size (nom)	50	75	100	150
A	213	213	213	278
B	50	50	50	50
C	202	202	202	290
D	76	105	130	181
E	193	193	193	250
F	255	255	255	316
G	143	143	143	200
H	70	70	70	73

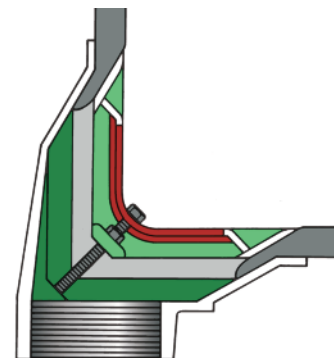
### Example specification

100mm nominal bore CAROFLOW Two-Way Threaded aluminium (or leaded gunmetal) rainwater outlet Code 100/TW, as manufactured by Caroflow Limited  
Tel: 01763 244446.

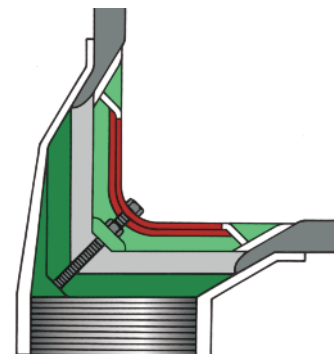
50mm Two Way  
Code 50/TW



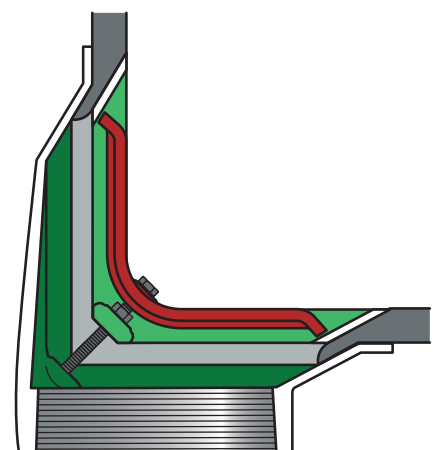
75mm Two Way  
Code 75/TW



100mm Two Way  
Code 100/TW



150mm Two Way  
Code 150/TW



All drawings above are shown 1:5 scale

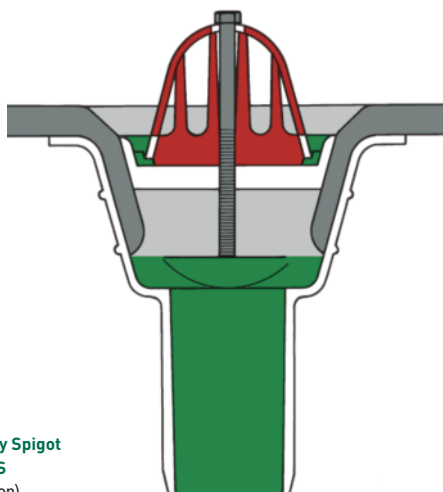


# Roof Outlets

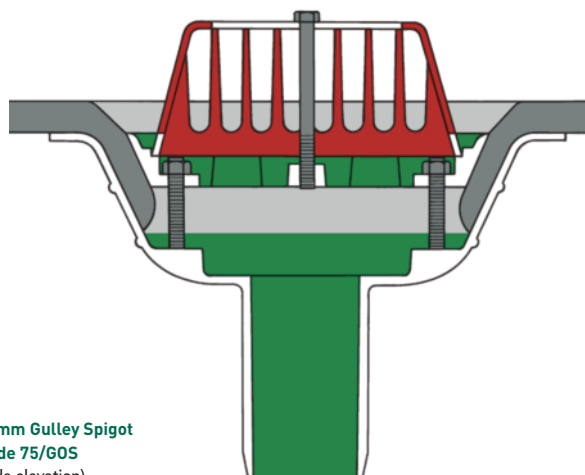
## Gulley Outlets



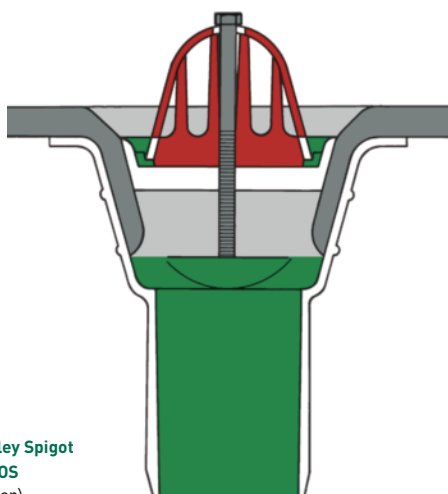
75mm Gulley Spigot  
Code 75/GOS  
(Front elevation)



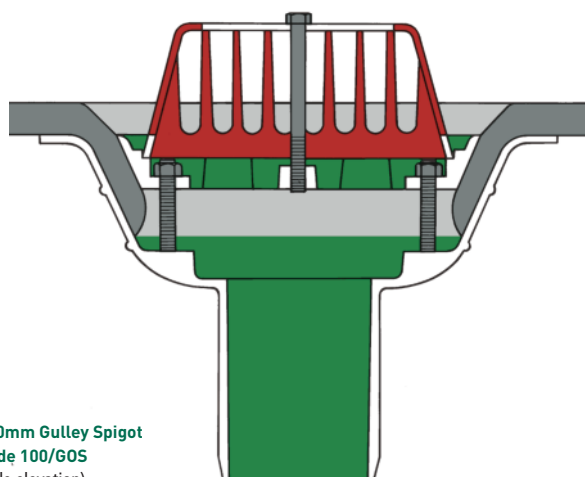
75mm Gulley Spigot  
Code 75/GOS  
(Side elevation)



100mm Gulley Spigot  
Code 100/GOS  
(Front elevation)



100mm Gulley Spigot  
Code 100/GOS  
(Side elevation)



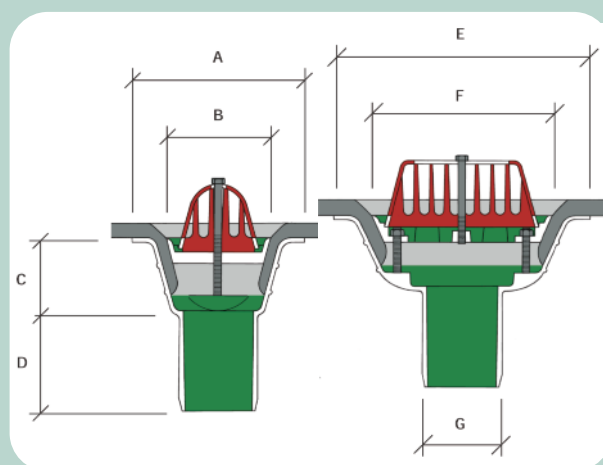
All drawings above are shown 1:5 scale

**Caroflow** Gulley outlets are designed for use in narrow width drainage channels, within which larger outlets would not be suitable. Available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 for most roof finishes or in leaded gunmetal to BS EN 1982:2008 for use with lead or copper-clad roofs or for connection to copper pipework.

**Performance and Connections** see page 19.

Suitable for connection to:

- PVC
- Aluminium
- Cast Iron
- Copper (Gunmetal only)



Order Code	75/GOS	100/GOS
Pipe size (nom)	75	100
A	238	238
B	144	144
C	105	105
D	125	125
E	344	344
F	240	240
G	83	110

### Example specification

100mm nominal bore CAROFLow Gulley Outlet with spigot connection in aluminium (or leaded gunmetal) with domical grating Code 100/GOS as manufactured by Caroflow Limited Tel: 01763 244446.

# Roof Outlets

## Car Park Outlets

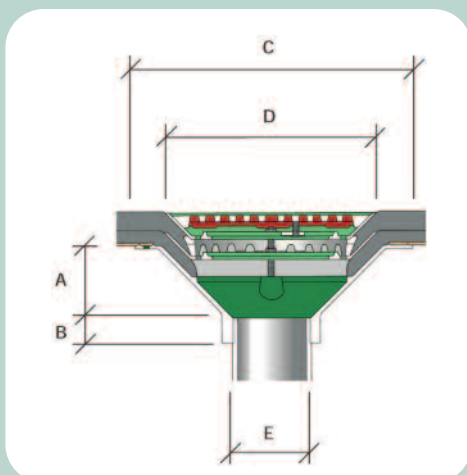


**Carflow** Car Park Outlets have been designed to cope with two different installation requirements with the 'Standard' version allowing for 1 tonne loadings whilst the newly introduced 'Heavy Duty' will allow for up to 25 tonnes.

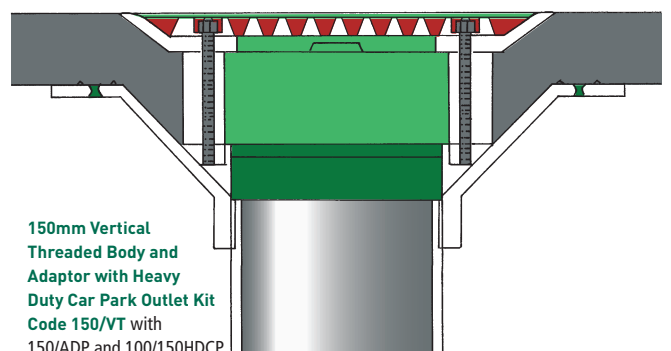
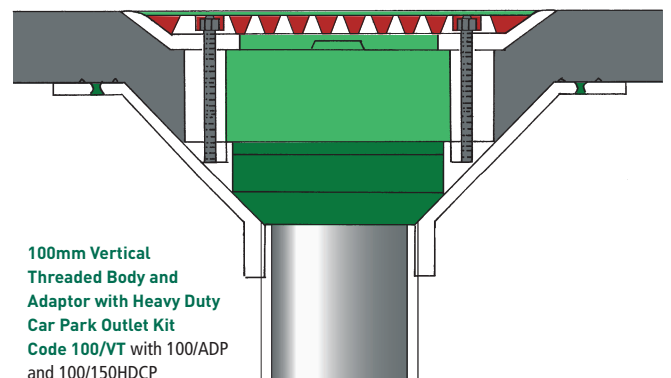
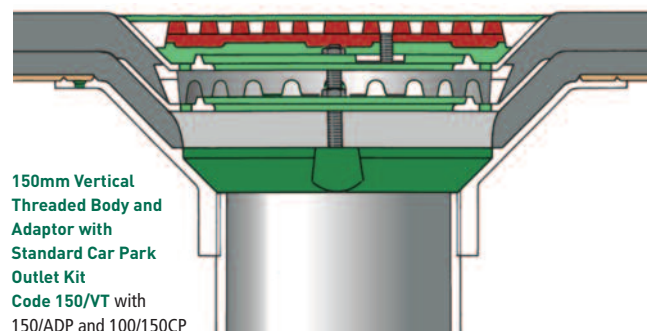
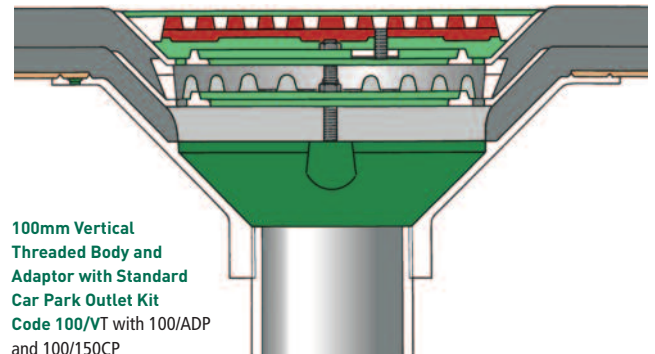
The Standard makes use of the usual circular Flat Grate and Clamping Ring, but has an additional clamp which, with the addition of a **Carflow** Raising Ring, allows for the application and sealing to a two coat asphalt waterproofing layer with paving grade topping.

The 'Heavy Duty' is still used with a standard outlet body, cast into slab but has the addition of an SG (Ductile/Malleable) Iron grating with clamping ring, all resting on a Grade 200 Cast Iron support ring. In this way the complete installation is able to easily cope with loadings up to 25 tonnes.

The examples shown on this page relate to a typical detail of a Vertical Threaded outlet with **Carflow** Threaded Adaptors, (see Page 17) the length of which can be manufactured to suit the thickness of the deck into which it is being installed.



Order Code	100/VT	150/VT
Pipe size (nom)	100	150
A	90	70
B	45	45
C	380	380
D	305	305
E	134	185

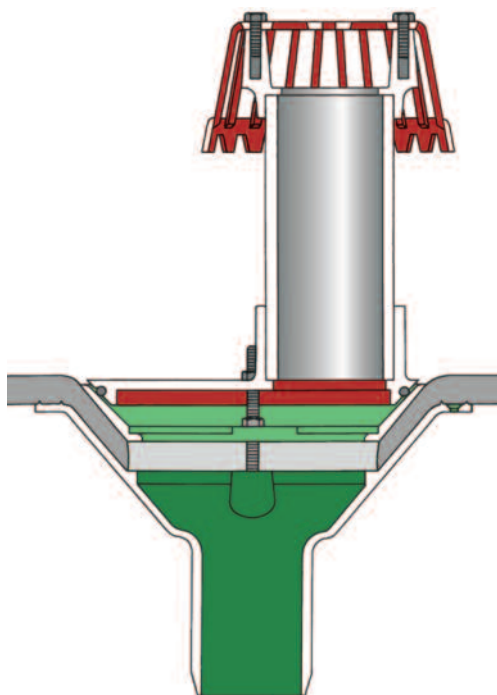


All drawings above are shown 1:5 scale



# Roof Outlets

## Overflow Outlets



75mm Vertical Spigot with Overflow Unit  
Code 75/VS with 50/75/OF

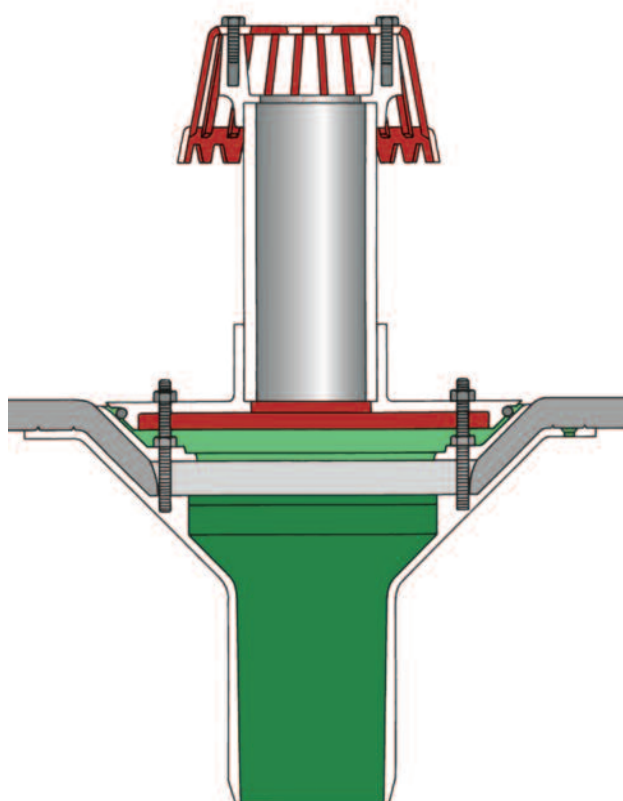


Due to the fact that some roof areas are not subject to the best of maintenance regimes, especially when they are completely hidden from view, there are occasions when blockage of the roof outlets can cause a potentially disastrous build up of water.

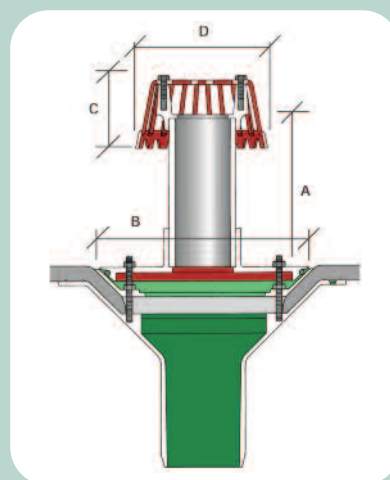
The **Caroflow** Overflow Unit is designed to alleviate this problem by sealing the outlet so that it will only come into operation when a build-up occurs.

A length of heavy duty PVC pipe is factory bonded to a sealing plate so only when the water has reached a pre-determined depth will it then begin draining and give a warning against the build-up.

The PVC tube, once installed, is then easily cut to a height lower than the surrounding membrane flashing, and is kept free and clear with a securely fixed grating assembly that cannot be removed without the necessary tools.



100mm Vertical Spigot with Overflow Unit  
Code 100/VS with 100/150/OF

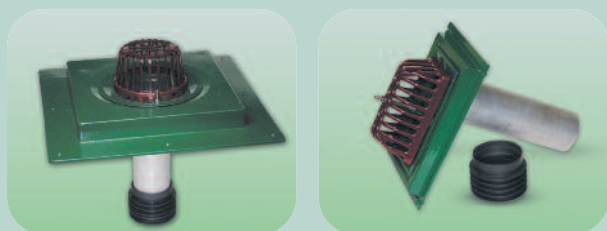


Order Code	50/75/OF	100/150/OF
A	250	250
B	220	275
C	95	95
D	170	170

All drawings above are shown 1:5 scale

# Roof Outlets

## Carolet Refurbishment Outlets



The **Carolet** body is manufactured in LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 which is primed and then electrostatically coated with a protective polyester powder coating.

A fire retardant polystyrene insert is bonded to the underside void for insulation purposes.

The 'MINI' **Carolet** employs the same patented principles of its larger cousin, but being smaller in size is able to be used in more restricted areas.

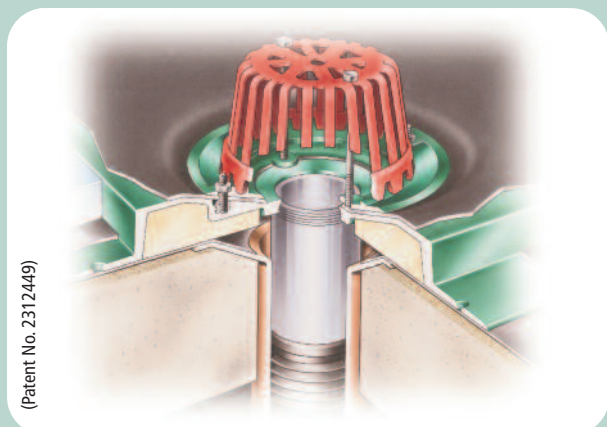
**Carolet** drainage outlets provide a revolutionary solution to the problem of ensuring a totally watertight junction between an insulated roof area and the drainage pipework.

They can be used for refurbishment projects where installation is required without disturbing existing pipework, or for new build projects connecting to a variety of pipe types.

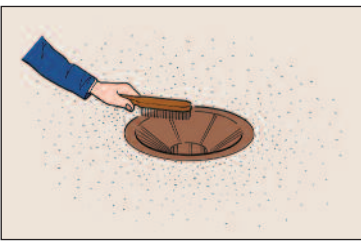
The patented concept (Patent No. 2312449) employed by **Carolet** ensures that the roof insulation is encapsulated within a waterproof protective 'bubble' and that the potential leakage points that can occur, when using other products, are eradicated.

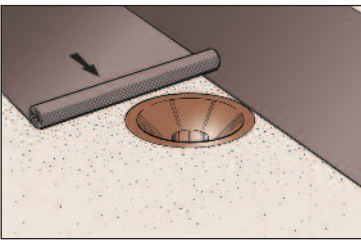
The threaded spigot or tail pipe of the **Carolet** is supplied loose for transportation and, once on site, is easily screwed and sealed into the body.

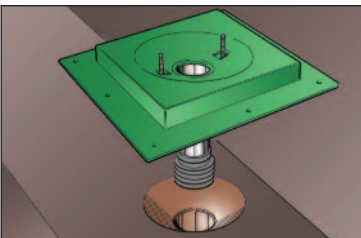
Furthermore, as each of the MINI's flanges have been designed to be easily removed (hard tap with heavy hammer) it is possible to use within narrow gullies or abutting tight against upstands, walls etc.

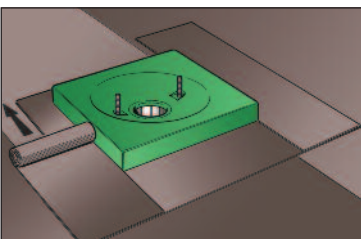


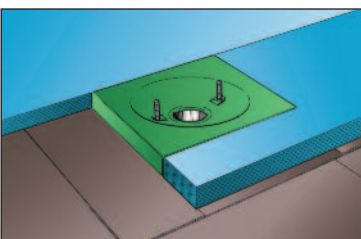
## Installation

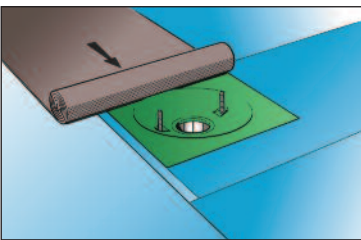
- 


Remove redundant roof coverings and clean off all surfaces ready for new installation.
- 

Lay new vapour barrier and bond into old roof outlet.
- 

Insert CAROLET, without seal, into old outlet mouth – if necessary reduce spigot length to allow full insertion – replace seal and re-insert.
- 

Bond strips of vapour barrier to CAROLET flange and existing vapour barrier, to ensure total seal.
- 

Cut and lay insulation board – if board is thicker than 50mm, chamfer / slope surrounding area so as to finish level with top of CAROLET.
- 

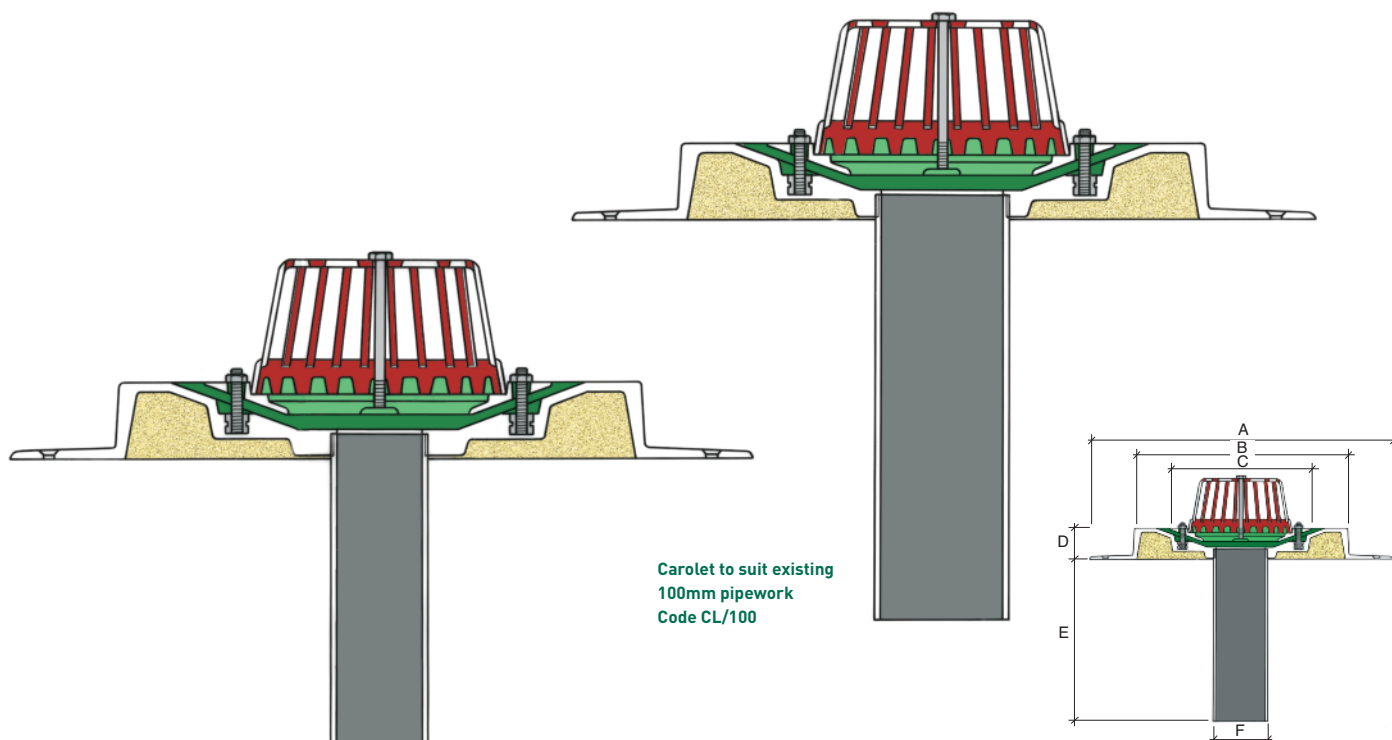
Lay main cap sheet / waterproofing over whole area – trim back and around CAROLET mouth so as to keep spigot clear.
- 

Whilst still pliable insert and tighten clamping ring to give final seal – install grating.

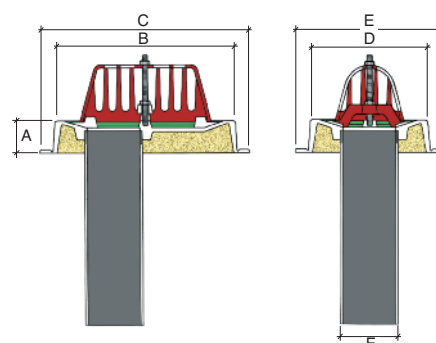
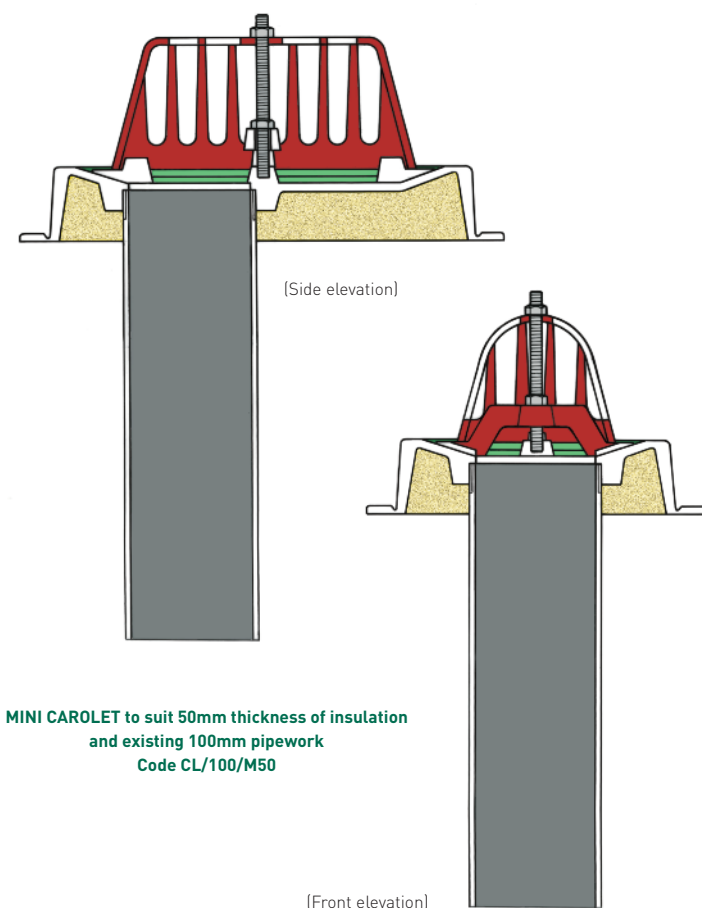


# Roof Outlets

## Carolet Refurbishment Outlets



Carolet Code No.	CL/75	CL/100
To suit existing pipe (nom)	75mm	100mm
A	494	494
B	354	354
C	236	236
D	50	50
E	285	285
F	63.5	89



Mini Carolet Code	CL/75/M35	CL/75/M50	CL/100/M35	CL/100/M50
To suit existing Pipe (nom)	75mm	75mm	100mm	100mm
A	35	50	35	50
B	276	276	276	276
C	320	320	320	320
D	182	182	182	182
E	226	226	226	226
F	63.5	63.5	89	89

All drawings above are shown 1:5 scale

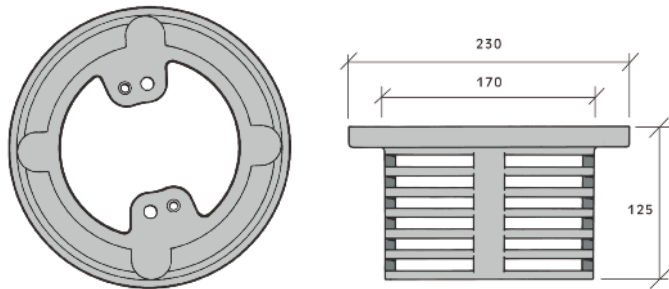
# Roof Outlets

## Accessories

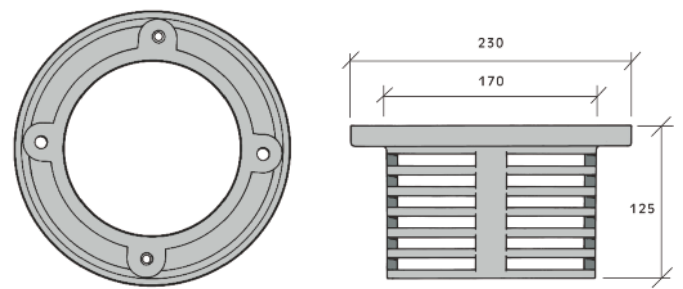
### Easy Trim Extension Rings

The **CaroFlow** "Easitrim" Extension Rings have been designed for use where a single level drainage "upside-down" warm roof system is specified. It will raise the grating by up to 110mm to allow for the height required from waterproof membrane to finished roof surface. Due to their unique designs, the EASITRIM will not only allow for drainage from any level, but if necessary, can be reduced in height by trimming with a hacksaw on site or prior to delivery.

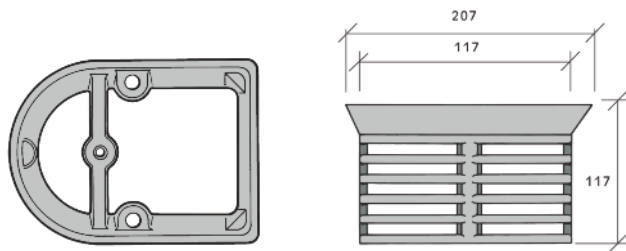
Each EASITRIM Extension Ring is supplied complete with extra long threaded stainless steel fixing studs.



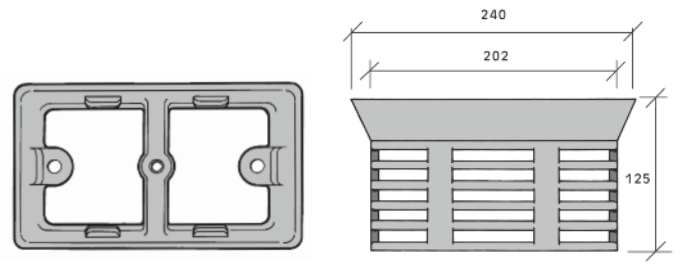
**Extension Ring Code 50/75ER**  
(To suit all 50mm and 75mm Circular Outlets)



**Extension Ring Code 100/150ER**  
(To suit all 100mm and 150mm Circular Outlets)



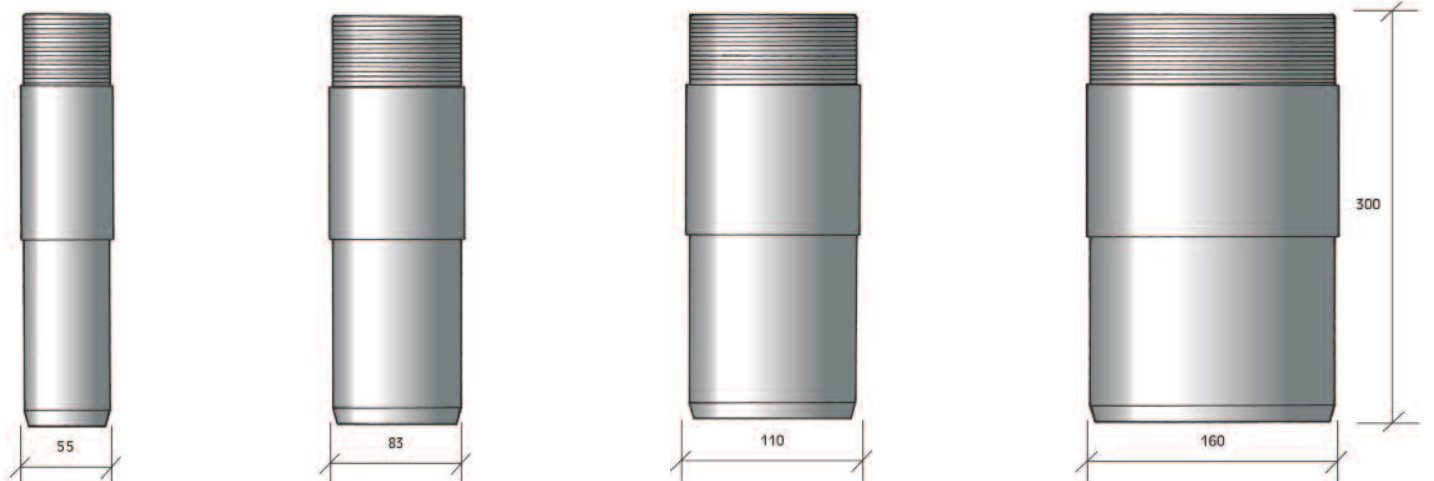
**Balcony Outlet Extension Ring Code B0/ER**  
(To suit all Balcony Outlets)



**Gulley Outlet Extension Ring Code G0/ER**

### Threaded Adaptors

**CaroFlow** threaded adaptors are manufactured in ABS Plastic and are male taper threaded at one end to BS21 for connection into any **CaroFlow** threaded connection outlet. The other end is then turned and chamfered to BSEN 1566:2004 spigot dimensions to suit nominal bores of 50mm, 75mm, 100mm and 150mm. They are recommended for use where extra length is required, i.e. when the joint between outlet and pipework is likely to be cast within the concrete slab, or where a Two Way outlet is to be connected directly to "O" Ring socketed PVC pipework. The standard length of a **CaroFlow** adaptor is 300mm, but longer lengths can be produced to order.



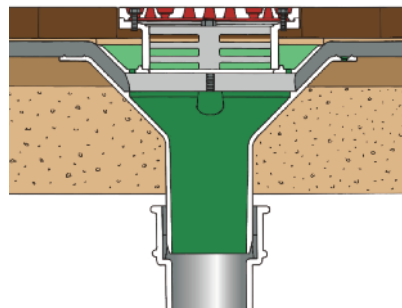
**Code 50/ADP**

**Code 75/ADP**

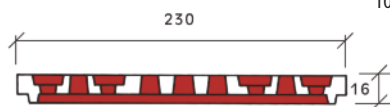
**Code 100/ADP**

**Code 150/ADP**

All drawings above are not to scale



100mm Vertical Spigot with Extension Ring to suit 100/150mm Standard Outlets and Kombi Terrace Grate

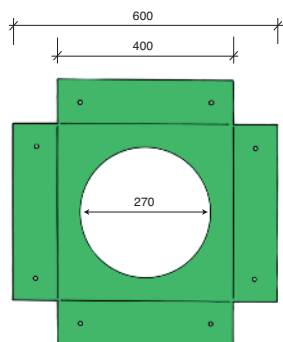


### Kombi Terrace Grate

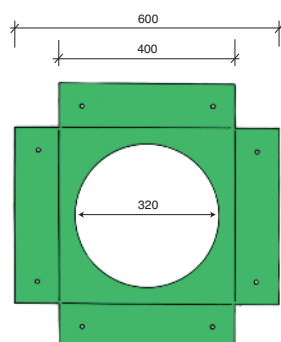
The **Caroflow** "Kombi" Terrace Grate is for use with both sizes of circular EASITRIM Extension Rings, where brick pavements, paving slabs, etc are detailed. The grate design allows for rotation through 90 degrees to allow positioning to surrounding pavements/slabs.

All grates and rings are available in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 or leaded gunmetal to BS EN 1982:2008.

The detail to the left is an example of the use of the CAROFLow "Kombi" Terrace Grate and the extension ring (after trimming to correct height). Please note that, if a sand bedding is used, a proprietary brand of filter paper will be required to ensure that no sand enters the outlet through the extension ring.



**Support Plate**  
To suit 50/75mm Standard Outlet **Code 50/75SP**



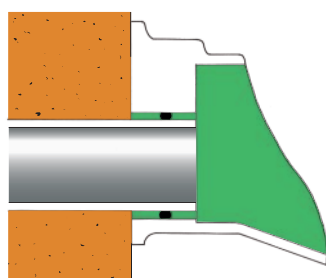
**Support Plate**  
To suit 100/150mm Standard Outlet **Code 100/150SP**

### Support Plate

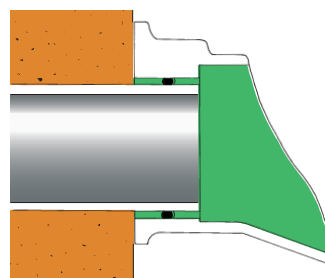
If **Caroflow** outlets are to be used on a metal deck construction then the use of the **Caroflow** Support Plate is recommended.

It is designed to provide a solid and secure area upon which the outlet can be installed.

Manufactured from 1.5mm steel sheet the support plate can either be powder coated or painted in red oxide.



**Code: 50/Spout**  
with 50/ADP Threaded Adaptor



**Code: 75/Spout**  
with 75/ADP Threaded Adaptor

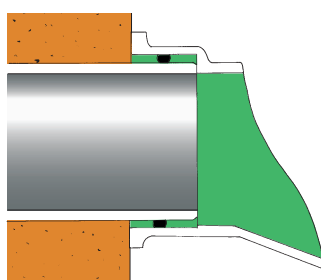
### Discharge Spouts

**Caroflow** Discharge Spouts are manufactured in either LM6 Aluminium Silicon casting alloy to BS EN 1706:2010 or leaded gunmetal to BS EN 1982:2008 and are sized for direct connection to either 75mm or 100mm **Caroflow** Threaded Adaptors or uPVC Soil Pipe to BSEN 1566:2004.

The discharge pipe from the outlet is installed so that it projects from the vertical wall/parapet by 40mm.

The spout is offered onto the pipe so that the fixing ears can be marked and plugs drilled then the sealing O Ring that is supplied with the spout is 'rolled' onto the projecting pipe.

The spout can now be re-offered and, as the spout is forced down the pipe, the ring rolls and forms a watertight seal.



**Code: 100/Spout**  
with 100/ADP Threaded Adaptor



# Roof Outlets

## Connections and Drainage Areas

**Connections** – The Caroflow range of roof outlets is extensive and has been designed to allow connection to most proprietary brands of pipework. Each outlet page details the connections that are applicable to it and should be cross referenced with the information below.

**PVC** – All Caroflow Vertical Spigot, Gulley Spigot and Balcony Spigot outlets (excluding 50mm size) will connect directly to BS 4514:2001 "O" ring socketed PVC pipework. Where connections have to be made to some 45 degree or 90 degree Spigot outlets, use should be made of a proprietary Heat Shrink adaptors or specialist adaptor couplings.

A simpler and more secure alternative is to use a Caroflow Threaded adaptor with any Caroflow Threaded outlet.

**Cast Iron** – All Caroflow Spigot Outlets are sized for direct connection to leading socketless and socketed cast iron systems to BS416:1990 or BS EN 877:1999. Spigot and socket systems must be jointed according to manufacturers recommendations.

**Screw Threaded Steel** – All Caroflow threaded connection outlets are manufactured with BS21 female parallel screwed sockets, for direct connection to tube to BS EN 10226:2005.

These tubes are pre-screwed with male taper threads to BS21 and provide total gas tight security.

**Aluminium** – All Caroflow Spigot outlets will connect directly to aluminium pipes and fittings from leading aluminium pipe manufacturers, using their standard fittings/couplings.

**Copper** – Only Caroflow Gunmetal outlets should be used for connection to copper pipework. Spigot outlets should be brazed directly to the copper tube. Threaded outlets should make use of a proprietary adaptor, i.e. Yorkshire Imperial Male Iron to Copper adaptor No. 3.

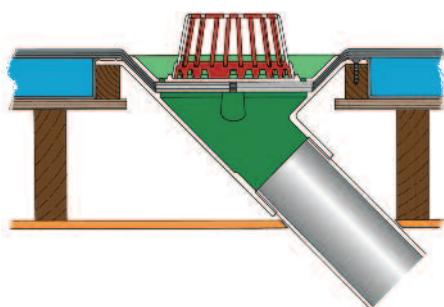
**Caroflow Roof Drainage Flow Rates** – BS EN 12056-3:2000 (Gravity drainage systems inside buildings – Part 3: Roof drainage, layout and calculation) now specifically limits the drainage capacity that can be used to calculate areas to be drained, so as to prevent siphonic action that may damage internal pipework. Physical testing of all our outlets has shown that the below rates and areas are lower than results that have been seen from this testing.

Description		Dome Grate		Flat Grate	
Type	code	M2	ltrs/sec	M2	ltrs/sec
Vertical Spigots	50/VS	82	1.70	82	1.70
	75/VS	240	5.00	240	5.00
	100/VS	514	10.70	514	10.70
	150/VS	725	15.10	787	16.40
Vertical Threaded	50/VT	82	1.70	82	1.70
	75/VT	240	5.00	240	5.00
	100/VT	514	10.70	514	10.70
	150/VT	730	15.20	736	15.90
45° Spigots	50/45S	82	1.70	82	2.68
	75/45S	240	5.00	240	6.97
	100/45S	422	8.77	497	10.34
45° Threaded	50/45T	82	1.70	82	1.70
	75/45T	240	5.00	240	5.00
	100/45T	417	8.68	484	10.06
90° Spigots	50/90S	82	2.20	82	1.70
	75/90S	184	3.82	192	4.00
	100/90S	348	7.24	398	8.28
90° Threaded	50/90T	82	2.20	82	1.70
	75/90T	181	3.77	196	4.07
	100/90T	343	7.14	391	8.13
	150/90T	507	10.60	624	13.00
Two-Way Outlets (Horizontal)	50/TW	–	–	58	1.20
	75/TW	–	–	96	2.00
	100/TW	–	–	114	2.38
	150/TW	–	–	141	2.95
Two-Way Outlets (Vertical)	50/TW	–	–	82	1.70
	75/TW	–	–	198	4.12
	100/TW	–	–	376	7.83
	150/TW	–	–	395	7.95
Balcony Outlets	50/BO	–	–	82	1.70
	75/BO	–	–	240	5.00
	100/BO	–	–	363	7.55
Kompact Balcony Outlets	50/KBO	–	–	82	1.70
	75/KBO	–	–	240	5.00
Gulley Outlet Spigots	75/GOS	240	5.00	–	–
	100/GOS	514	10.70	–	–

All rates are assuming that the outlet grate is free and clear of any debris/blockages.  
Results are based on a rainfall intensity of 75mm per hour and a 35mm head of water adjacent to the outlet (45mm head for 160mm outlets as per EN 1253-2:2015).

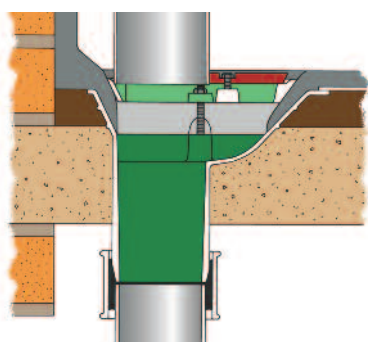
The above flow rates should be used as a guide only. Each drainage area will have individual features that may influence overall flow characteristics.  
Please contact the Technical Services Department on [01763] 244446 for further advice.

**Caroflow** Roof Outlets provide a watertight connection between the roofing membrane and drainage pipework, thereby removing the problem of water penetrating the roof at this critical point. They give a ready made, engineered sump that is mechanically sealed to the roof waterproofing membrane and then connect that sump to the pipework, without a break. All Caroflow outlets follow the same principle and are ideally suited to all membranes from traditional 3-layer felt, asphalt and copper (or lead clad) to today's high performance single ply membranes. Some examples of their use are detailed below.



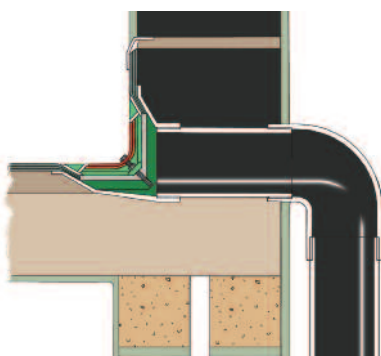
### 45 degree Threaded with CAROFLOW adaptor – Warm Roof

- Position outlet body (with CAROFLOW Threaded adaptor already connected) into pre-formed hole within roof deck and secure to timber spacers through outlet flange.
- Lay vapour barrier up and over into outlet mouth and place rigid insulation board into position.
- Dress three layer felt into outlet mouth, insert clamping ring and tighten down.
- Secure grating into clamping ring.



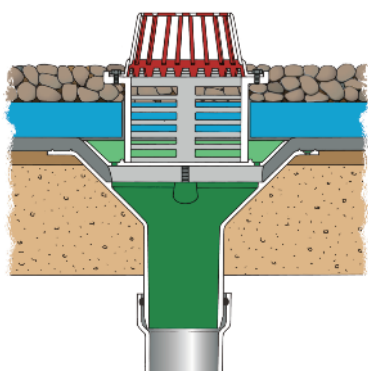
### Balcony Outlet with Grate Cut-out – Cold Roof

- Grout outlet body into pre-formed hole, within slab, ensuring that flange is set at minimum screed level.
- Lay screed to correct falls to finish level with outlet flange.
- Treat outlet flange and mouth with suitable bitumen-based primer and add isolating membrane prior to dressing in of two layer mastic asphalt.
- Whilst second layer is still pliable insert clamping ring into position and tighten down. Trim off excess length of stud before securing grating.
- (If grating is required to accept downpipe from upper level, the relevant section should be cut away to allow downpipe into outlet mouth).
- Secure lower pipework to outlet spigot.



### Two Way horizontal take-off – Cold Roof

- Connect required length of threaded steel tube (or CAROFLOW adaptor for PVC pipework) to Two Way outlet and place assembly into junction between horizontal and vertical surfaces.
- Ensure that horizontal flange is positioned level with finished screed and vertical flange to be level with wall surface. Ensure minimal drainage fall away from outlet into pipework.
- Lay screed to correct falls to finish level with outlet flange.
- Dress 3 layer felt into outlet mouth, insert clamping ring and tighten down whilst still pliable.
- Trim off excess stud lengths and secure grating into position.



### Vertical Spigot with Extension Ring – Inverted Roof

- Grout outlet body into pre-formed hole within slab, ensuring that flange is set at minimum screed level
- Lay screed to correct falls to finish level with outlet flange
- Treat outlet flange and mouth with suitable bitumen-based primer and add isolating membrane prior to dressing in of two layer mastic asphalt.
- Whilst second layer is still pliable insert clamping ring into position and tighten down.
- Lay insulation board leaving circular hole sized to accept Extension Ring.
- Secure Extension Ring and grating and lay 20mm minimum diameter washed ballast.
- Connect pipework to outlet spigot.

Notes





## Caro Support and Caro Pedestal

Having been available for over 28 years, the proven Caro Support product has been added to with the addition of the new Caro Pedestal for Paved and Decked areas.

- Immediate drainage between and under slabs and decking
- Protection of waterproofing membranes – simple installation reducing time and labour
- All drainage outlets, manholes, conduits, etc, concealed beneath slabs and decking



## Caro Flood Defence Systems

Manufacturer of flood protection products since 2001 and has built up a reputation for quality and performance.

- WaterWall and WaterDoor
- Aluminium and steel in manufacture
- Quick and easy assembly and dismantling
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- UK manufactured and designed
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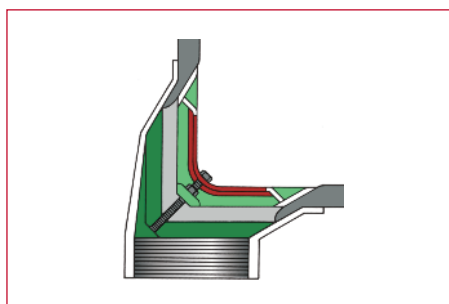
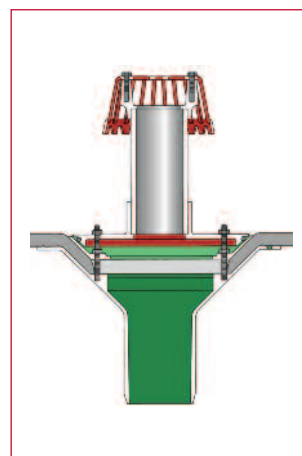


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