

TERRAIN



Terrain Rainwater Systems

Installation Guide



Distinctive shapes. Exceptional performance.

Quality product, innovation and outstanding service – the combined promise that ensures every one of the Terrain five rainwater drainage systems will surpass your requirements, whatever the installation you're specifying.

Large or small; residential or commercial; in the public sector or as part of an industrial development, in terms of both capacity and design aesthetics the Terrain range of products is impossible to beat.

Each Terrain system comprises fully integrated gutter and downpipe assemblies as well as outlets for balconies and flat roofs, and includes all the fittings and accessories needed for easy installation.

Features and benefits

- Captive seals in all gutter systems
- Combination clipping system for quick reliable installation
- Fixing locations positioned outside the wet areas
- Expansion markings on ALL gutter fixings
- Dry jointed spigot-socket downpipe system
- EN607/EN12200/EN1462 Approved

Crescent



True half-round profile

Ideal for houses, smaller commercial buildings and offices. Can drain roof areas up to 122m² with a single downpipe. Capacity per outlet 2.54 litres/sec.*

Corniche



Square profile

A popular, modern system suiting domestic houses, bungalows and conservatories. Can drain roof areas up to 149m² with a single downpipe. Capacity per outlet 3.11 litres/sec.*

Streamline



Large square profile

A high capacity system ideal for commercial properties and larger houses. Can drain roof areas up to 294m² with a single downpipe. Capacity per outlet 6.11 litres/sec.*

Rapidflow



Deep elliptical profile

A high capacity system suiting all styles of property. Ideal for large roof areas or areas with higher than normal rainfall. Can drain roof areas up to 266m² with a single downpipe. Capacity per outlet 5.53 litres/sec.*

Omega



Ogee profile

Ideal for the more distinctive house, also suiting bungalows and conservatories. Can drain roof areas up to 242m² with a single downpipe. Capacity per outlet 5.04 litres/sec.*

Outlets



Roof and Balcony Outlets

Outlets available for all flat roof and balcony structures and drain vent systems (For large roof areas use Terrain Siphonics – see separate catalogue)

*For full capacity specifications please see System Planning on page 5.



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FIXING CENTRES AND EXPANSION JOINTS

Thermal movement

When fixing gutter, allowance must be made for thermal movement and all Terrain outlets, angles and joint brackets are engraved with the appropriate expansion gaps. It is important that the gutter is correctly fitted into these fittings taking due care to place the cut end of the gutter on the line marked. It is important that the expansion gaps are maintained when gutter is fitted and must not be spaced to exceed 4 metres/13ft centres.

In the case of dry jointing downpipe each fitting clip has a sight hole provided on the front of it. (2113.25C, 2216.23 and the 82mm and 110mm fitting clips do not have sight holes.)

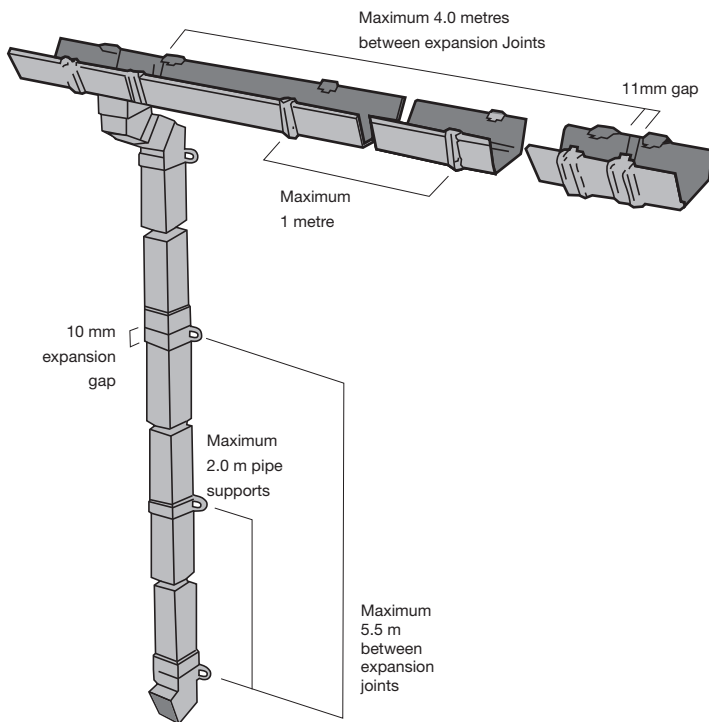


Fig.1

The purpose of the sight holes is to allow sight of the top of the pipe being fitted from below. When this pipe end obscures half of the aperture you have the correct expansion gap. The maximum distance between expansion joints should not exceed 5.5 metres/18ft.

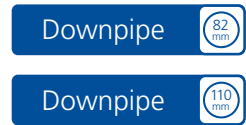
Applicable to: all Terrain gutter systems and downpipe assemblies

Maximum distance between:	
Gutter support brackets*:	1 metre*
Gutter expansion joints:	4 metres
Pipe fixing clips:	2 metres
Pipe expansion joints:	5.5 metres

*NOTE: Support centres for gutters subject to risk of heavy snow fall should be reduced to 800mm (max)

For roof outlets

APPLICATION RANGE:



Applicable to: 82mm and 110mm round pipework used with roof outlets

Maximum distance between:	
Vertical pipe fixing clips:	2 metres
Pipe expansion joints:	4 metres†

†NOTE: Anchor expansion couplings with 140 Pipe Fixing Clip to prevent thermal expansion upthrust from rupturing joint between roof outlet and finish

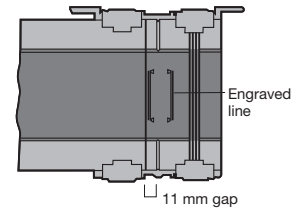


Fig.2

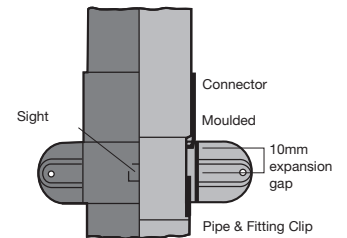


Fig.3

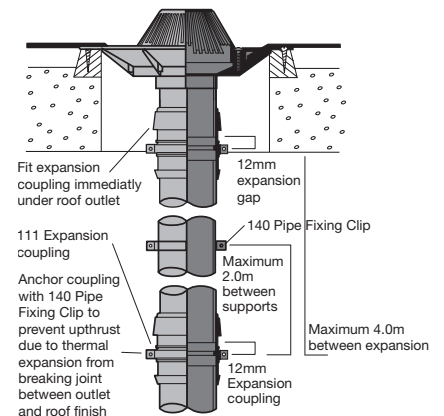


Fig.4

Design principles

Sizing of rainwater installations

There is an approved BS EN method for the calculation of roof flow load, and the following general guidelines and assumptions on sizing of rainwater installations are based on this. For detailed guidance on a particular project, please refer to 'BS EN 12056-3:2000 Gravity Drainage Systems Inside Buildings – Roof Drainage, Layout and Calculations', or contact Terrain Technical Services on 01622 795200.

Rainfall

In the UK, it is generally satisfactory for eaves gutters to be designed for a rainfall intensity of 75mm/hr. The predicted frequency of storms producing intensities of 75mm/hr is low, with just one 2 minute duration fall of such intensity anticipated each year.

A good factor of safety is therefore built into any design using these values. However, when designing for closed areas such as lightwells, flat roofs or similar the rainfall intensity value allowed for should be increased. Again, please refer to 'BS EN 12056-3:2000'.

Snow

'BS EN 12056-3:2000' sets out (Section NB4) design requirements for snow which should be taken into account. In areas where high snow loads are common, or where smooth roofing surfaces are used, gutter support brackets should be fixed at a maximum of 800mm centres.

Wind

There is no requirement to allow for the effect of wind when designing a rainwater system for flat roofs or roofs protected from the wind by adjacent buildings. However, the wind and the roof slope can have the effect of increasing the roof flow load for unprotected pitched roofs.

This is allowed for in the 'BS EN 12056-3:2000' calculation method by adding half the rise to the roof span.

Roof Flow Load: How to calculate it

There are two factors to consider when calculating flow. Firstly the area to be drained, or 'effective roof area'; and the intensity of rainfall.

For the intensity of rainfall you should assume 75mm/hr except for enclosed areas such as lightwells and flat roofs.

Effective Roof Area

Effective Roof Area can be calculated using the following formula, as illustrated in Fig.5.

$$ERA(m^2) = (W + H/2) \times L \text{ (Fig.5)}$$

KEY:

- ERA = Effective Roof Area (square metres)
- W = horizontal distance from eaves to point directly below ridge
- H = vertical rise between eaves and ridge (metres)
- L = gutter length (metres)

Calculating the actual flow

Once you have calculated the ERA, for 75mm/hr rainfall intensity

$$FLOW \text{ (litres/second)} = ERA \text{ (m}^2\text{)} \times 0.0208$$

For other rainfall intensities

$$FLOW = ERA \text{ (m}^2\text{)} \times \text{rainfall intensity (mm/hr)/3600} = \text{litres/second}$$

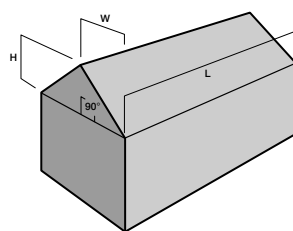


Fig.5

Flow load calculations

	Downpipe Size/Type (mm)	Level gutter		Gutter 1:350 fall	
		Area (m ²)	Flow (l/s)	Area (m ²)	Flow (l/s)
Position A 	2100 crescent				
	68 round	46	0.96	61	1.27
	2200 corniche				
	62 square	53	1.10	72	1.50
	2300 streamline				
	75 square				
	82 and 110 round	123	2.56	147	3.06
Position B 	2100 crescent				
	68 round	37	0.77	49	1.02
	2200 corniche				
	62 square	42	0.87	58	1.21
	2300 streamline				
	75 square				
	82 and 110 round	103	2.14	123	2.56
Position C 	2100 crescent				
	68 round	92	1.91	122	2.54
	2200 corniche				
	62 square	113	2.36	149	3.11
	2300 streamline				
	75 square	241	5.02	286	5.96
	82 round	242	5.04	286	5.96
110 round	242	5.04	294	6.11	
	2400 rapidflow				
	68 and 82 round	210	4.38	266	5.53
	2500 omega				
	62 square				
	68 round	192	4.00	242	5.04

Roof outlet flow load: calculation method

For a flat roof (i.e. a roof with a pitch less than 10°), the effective roof area = the plan area of the relevant part of the roof.

To calculate flow in litres/second for 75mm/hr rainfall intensity: firstly measure plan area of roof served by each outlet (square metres) and then multiply area by 0.0208 to obtain flow (litres/second)

NOTE: See Code of Practice BS EN 12056-3:2000 for full details

Roof outlets flow data

The flow rates listed have been established by independent testing carried out by the Rainwater Drainage Design Company using facilities at the Hydraulics laboratory of Salford University.

Roof outlet part no.	Size	Flow capacity litres/sec Head of water at outlet		
		30mm	50mm	100mm
2180.2	50	0.88	1.18	1.78
2180.3	82	2.12	2.52	3.21
2181.2	50	2.00	2.27	2.69
2181.3	82	2.10	4.89	7.22
2170.3	82	9.18	11.08	13.67
2170.4	110	9.29	14.11	18.22
2171.3	82	4.94	9.24	16.64
2171.4	110	5.17	9.95	24.18

Note: Figures based on 75mm/hr rainfall intensity

HANDLING

- Take all reasonable care when handling PVC-u, particularly in very cold conditions
- Load and unload loose pipes by hand
- In case of mechanical handling, avoid the use of chains and hooks

On site storage

- Stack pipe lengths:
 - either on a flat base
 - or on level ground
 - or on 75mm x 75mm timber at 1m maximum centres.
- Provide side support with 75mm wide battens at 1m centres (see Fig.6)
- Maximum stack: seven layers high
- Ideally, stacks should contain one diameter pipe size only. Where this is not possible, stack largest diameter pipes at base of stack. Small pipes may be nested inside larger pipes
- If stored in the open for long periods or exposed to strong sunlight, cover the stack with opaque sheeting
- Store fittings under cover. Do not remove from cartons or packaging until required
- Gutters should be kept under similar storage conditions, but additional care should be taken to protect the profile
- Store solvent cement and cleaning fluid in a cool place out of direct sunlight and away from any heat source

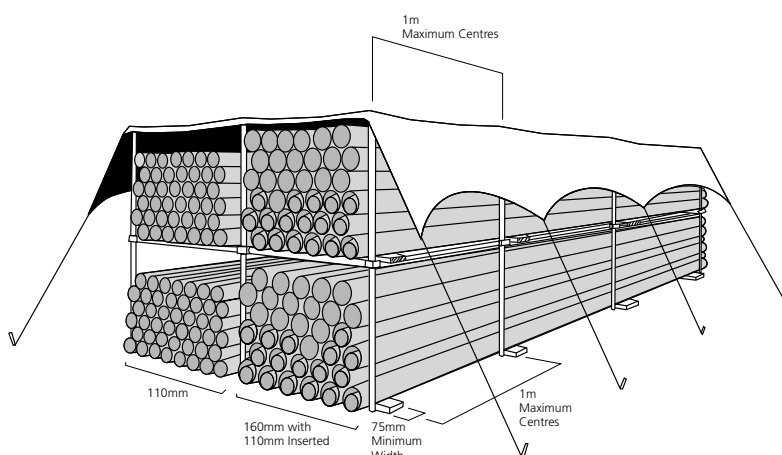


Fig.6

GUTTER INSTALLATION

General principle

Applicable to: all Terrain gutter systems

- Lock back clips of fittings in position and screw fitting to fascia where applicable
- Locate back of gutter under rear clip ensuring that the expansion gap is correct (see page 2)
- Pull front of gutter down and push front clip into position. To release gutter for adjustment, pull on tab at front of fitting

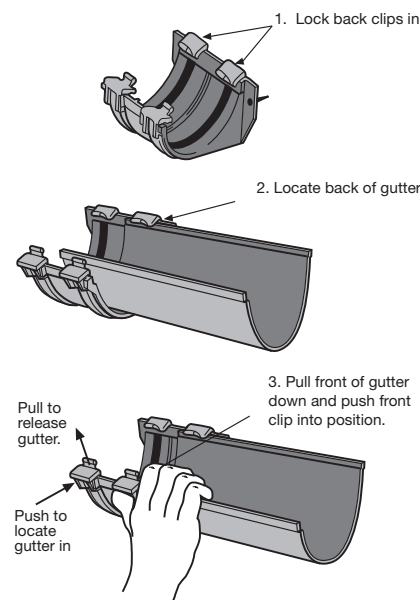
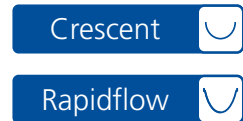


Fig.7

Connecting to other gutter systems

APPLICATION RANGE:



Applicable to: 2100 CRESCENT and 2400 RAPIDFLOW

- Gutter Adaptor Clips (2167.4 for 2100 CRESCENT, 2467.5 for 2400 RAPIDFLOW) permit connection between Terrain systems and PVC-u guttering of a similar design from other manufacturers
- Remove front locking clip from the side of Terrain fitting which is to take the connection, BUT DO NOT DISCARD
- Lay the other manufacturer's gutter into the fitting, ensuring that it sits correctly within the fitting and that the expansion gap is correct (see page 2)
- Insert one end of the Adaptor Clip under the back locking clip
- Holding the adaptor clip in position, re-insert the front locking clip
- Check that the gutter is fully seated within the fixing clip
- Push the front of the Adaptor Clip down onto the locking clip seat

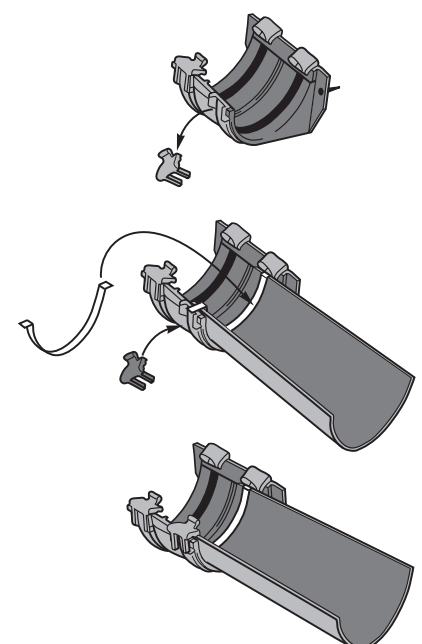


Fig.8 2400 RAPIDFLOW system

FIXING PRINCIPLES

Secure fixing: screw specification

Applicable to: all Terrain gutter systems

- All Terrain gutter systems are designed to withstand maximum anticipated loading (e.g. heavy snow) without breaking
- Any method of fixing the gutter system to the building fabric MUST be equally capable of bearing such loading
- Assuming fixing to nominal 25mm thick softwood, fascia screws should be:
 - Size: No.10 roundhead* zinc-plated
 - Length: penetrating wood by minimum 19mm

*Some fittings are manufactured with countersunk holes (Omega). In such cases countersunk screws may be used

Fixing methods

Applicable to: all Terrain gutter systems

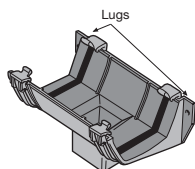


Fig.9a 2200 CORNICHE system

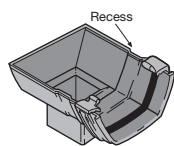


Fig.9b

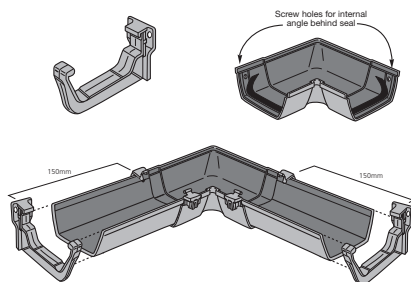


Fig.10

- Generally, Terrain gutter fittings (brackets, outlets, angles) are designed with:
 - EITHER integral fixing lugs (Fig.9a)
 - OR recess(es) (Fig.9b) which accept a standard support bracket

IMPORTANT NOTE: Whichever method is used, ALL fittings must be anchored

- In some cases, Terrain gutter fittings are designed with screw fixing holes behind the seal, eg gutter angle 2354.6.90. If it is not possible to secure gutter angles through the screw fixing holes, then support brackets must be fitted to the gutter within 150mm of the angle on both sides

Spacer blocks

APPLICATION RANGE:



Applicable to: 2100 CRESCENT and 2200 CORNICHE systems

Designed to enable 2100 and 2200 systems to accommodate large tile overhangs, placing the gutter centrally beneath the tile edge. Avoids the need to use a larger gutter system. **2166 Spacer** (rectangular): Steps out gutters by 16mm **2166.22 Spacer** (triangular): Allows gutters to be fixed to 22½° sloping fascias

- Screw fix spacer to fascia through fixing holes provided
- Fix bracket THROUGH spacer, solidly into fascia

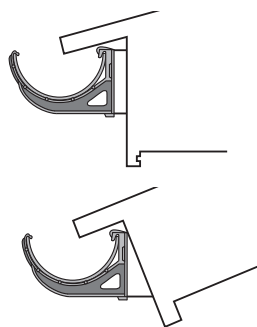


Fig.11

FIXING BRACKETS

Fixing adjustable rafter bracket

Applicable to: all Terrain gutter systems

- For fixing gutter systems to open-ended rafters where no fascia exists
 - NOTE: Only suitable for rafters in sound condition*
- Choice of brackets (all adjustable): Side (2160 and 2360) Top (2161 and 2361)
- Fixing to rafter using (minimum) 2 x No.10 roundhead zinc-plated screws
- Support bracket secured by single bolt
- Pegs on rafter bracket locate in screw holes of support bracket

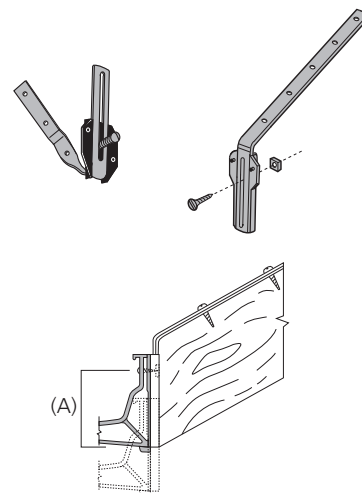


Fig.12

System	Adjustment Range (A)
2100, 2200	65mm
2300, 2400, 2500	75mm

SUPPORT STRAP

Gutter fitting support strap

Applicable to: all Terrain gutter systems

- For use with joint brackets and running outlets when used with any rafter bracket
- Discard PVC-u back plate from rafter bracket: retain nut and bolt to fix support strap to brackets
- Studs prevent support strap from twisting

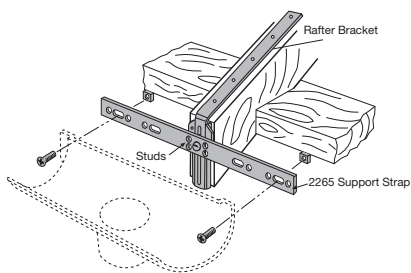


Fig.13

DRIVE-IN BRACKETS

Fixing drive-in brackets

Applicable to: all Terrain gutter systems

- For fixing gutters where no fascia board or rafters exist
- Standard version: 2162 (for 2100 CRESCENT and 2200 CORNICHE systems)
- Heavy duty version: 2362 (for 2300 STREAMLINE, 2400 RAPIDFLOW and 2500 OMEGA systems)
- Drive spike into mortar at appropriate height to allow fitting of gutter support bracket (or drill suitable hole and mortar spike in)
- Support bracket held in position by nut and bolt
- Adjust height by slackening locking nuts on threaded stud

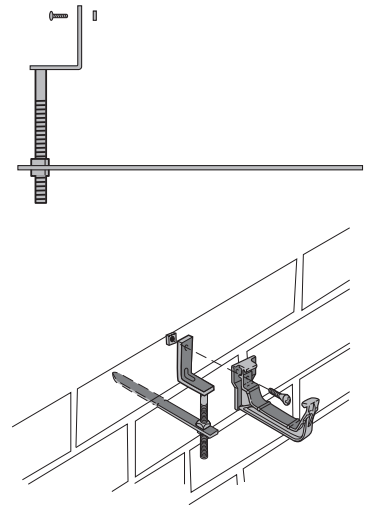


Fig.14

NOTE: If used on corbelled brickwork, ensure sufficient penetration of spike into mortar to support potential gutter loading

OFFSETS

- Form an offset (or 'swan neck') using 2 x 112.5° standard bends and a cut length of plain ended pipe

Small offsets

APPLICATION RANGE:



Applicable to: 62mm and 75mm square downpipe systems

- For 62mm square downpipe, 2214.23 Wall Offset provides 25mm offset
- For 75mm square downpipe, 2314.33 Wall Offset provides 57mm offset

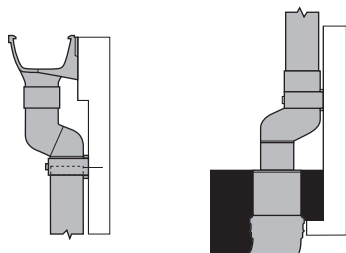


Fig. 15

ADJUSTABLE PIPE CLIPS

Adjustable pipe fitting clip (2112.25.T)

APPLICATION RANGE:



Applicable to: 2100 CRESCENT, 2400 RAPIDFLOW and 2500 OMEGA, 68mm round downpipe

- Screw back plate to wall using No.10 roundhead screws
- Snap clip body around pipe or fitting. If around fitting, ensure it is located in the moulded groove
- Locate assembly over back plate and secure with nut and screw provided at required distance from wall

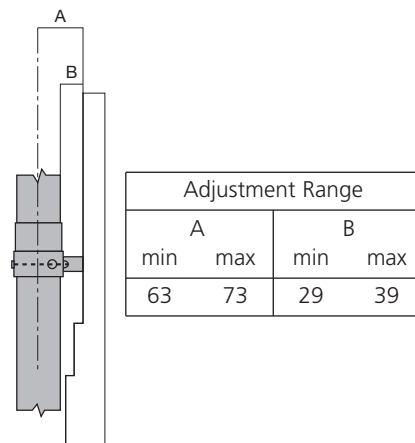
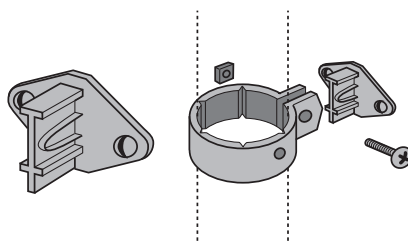


Fig. 16

Adjustable pipe fitting clip (2212.23.T)

APPLICATION RANGE:



Applicable to: 2200 CORNICHE and 2500 OMEGA, 62mm square downpipe

- Screw back plate to wall using No.10 roundhead screws
- Locate body over back plate. Ensure fixing nuts and screws are loosely fitted onto clip body (the screw thread should not fully penetrate the nut)
- Grip the screw heads firmly and locate onto the back plate
- Tighten fixing screws at required distance from wall

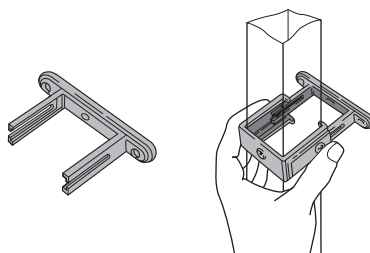


Fig. 17

OUTLET GUARD

Gutter outlet guard (9915.25)

APPLICATION RANGE:



Applicable to: 68mm round and 62mm square downpipe

- Flexible polyethylene fitting designed to prevent leaves etc. entering the downpipe
- Push-fit into Stop End or Running Outlet



Fig. 18

RAINWATER SHOES

Fixing and locking rainwater shoes

APPLICATION RANGE:



Applicable to: 68mm round downpipe systems

- Locate the moulded nib on retaining grooves of shoes in one of the five retaining notches on 2112 or 2113 Fixing Clip
- Five different positions are possible. Each ensures both shoe and pipe above it are fully supported

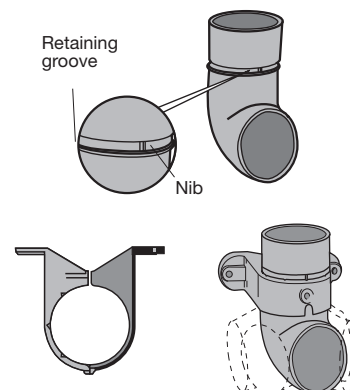


Fig. 19

RAINWATER HEADS

Applicable to: all Terrain Downpipes

- Direct push-fit connection at correct distance from wall (*Fig.20a*)
 - 2111.25 to suit 68mm round
 - 2211.23 to suit 62mm square
 - 2111.3 to suit 82mm round
 - 2111.4 to suit 110mm round
- Requires 25mm Offset Bend F2314.33.25 for connection to 75mm square downpipe at correct distance from wall (*Fig.20b*)
 - 2311.33 to suit 75mm square

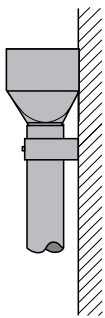


Fig.20a

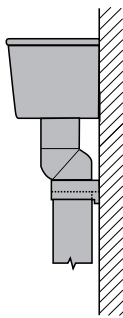
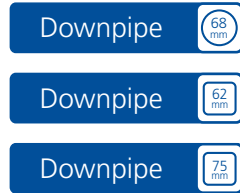


Fig.20b

CONNECTION TO BURIED PIPES

APPLICATION RANGE:



Applicable to: 68mm round and 62mm or 75mm square downpipe systems

- Use EPDM rubber drain adaptors to connect downpipes to 82mm and 110mm buried drains

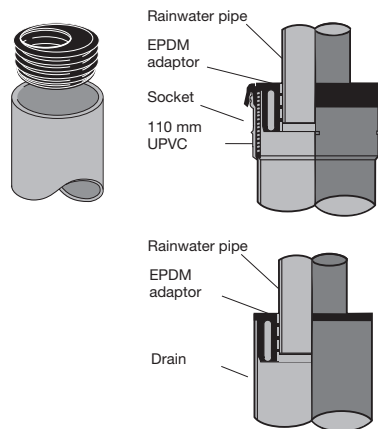
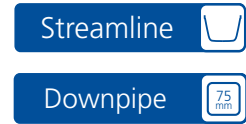


Fig.21

OUTLET ADAPTOR

Screwed outlet adaptor (2368)

APPLICATION RANGE:



Applicable to: 2300 STREAMLINE with 75mm square downpipe

- Enables downpipe to be positioned anywhere along a gutter length
- Using Terrain **Hole Cutter 2105.3** drill 76mm diameter hole in centre of base of gutter
- Unscrew the two parts of the adaptor and push top part with screw thread through hole in gutter outlet guard
- Screw the two parts of the adaptor together so that the gutter is clamped tightly

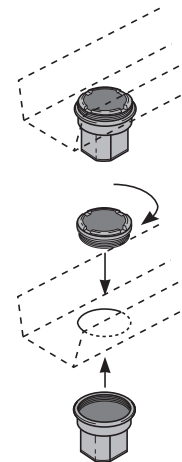
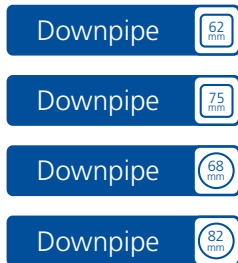


Fig.22

JOINTING

Dry jointing

APPLICATION RANGE:



Applicable to: Terrain 62mm/75mm square downpipe assemblies and 68mm/82mm round downpipe assemblies

- Fully support all downpipe and joint fittings with fixing clips positioned at correct intervals

- Install fittings with the socket facing upstream

NOTE: All downpipe fittings – except shoes – are socket/spigot

- Ensure pipe ends are cut square and deburred before connection to fitting
- Position pipe and fitting clip in moulded groove on fitting
- Check clip is correctly positioned, by ensuring that the expansion gap is marked
- Use the sight hole in the front of the clip to achieve the correct expansion gap

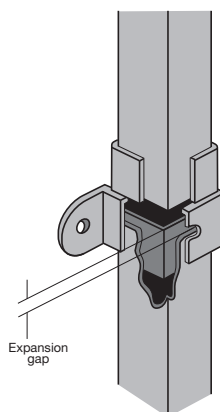


Fig.23 2200 CORNICHE system

Solvent cement jointing

APPLICATION RANGE:



Applicable to: Terrain 110mm round downpipe assemblies

NOTE: The 2100.3 is a dry joint system for external use. If used internally, it must be solvent welded to make an air-tight system. Alternatively, the 100.3 soil system can be used.

- Cut pipe square, deburr and clean mating surfaces with 9101 Cleaning Fluid
- Coat mating surfaces with 9100 Liquid Weld, using a clean brush
- Assemble joint immediately, removing any excess cement with a clean rag

Initial set: 3-4 minutes
Final set: 12 hours

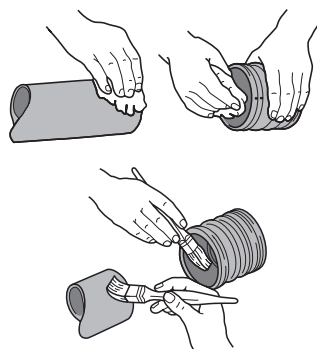


Fig.24

CAUTION: Closely follow directions for use of solvent cement as printed on the container label

Seal ring jointing

APPLICATION RANGE:



Applicable to: Terrain 110mm round downpipe assemblies

REQUIREMENT: To create a 12mm expansion gap at a pipe joint to allow pipes to expand without distorting the pipework

- File square cut pipe to provide 45° chamfer. (Do not chamfer to a knife edge.) Lubricate rubber seal with 9136 Lubricant
- Push pipe fully into socket. Mark pipe as shown (Fig.25)

- Withdraw pipe until mark is 12mm from socket to provide required expansion gap
- Anchor the expansion joint with a pipe fixing clip OR (if not practical) anchor a fitting within 1 metre of the joint

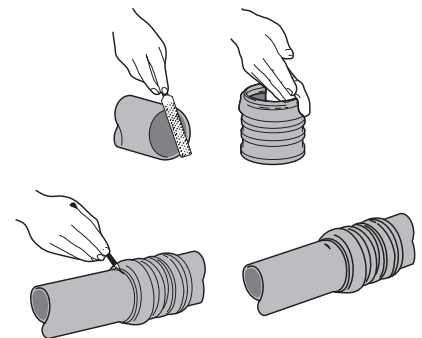


Fig.25

Conversion of solvent weld socket to ring seal joint

APPLICATION RANGE:



Applicable to: 82mm and 110mm round solvent cemented downpipe assemblies, using 109.3/109.4 Seal Ring Adaptor

Under normal use fit 109 Adaptor to upstream socket only

- Clean mating surfaces with 9101 Cleaning Fluid
- Fit ring seal into 109 Collar
- Carefully apply solvent cement to mating surfaces
- Assemble immediately, applying firm even pressure until collar is correctly positioned

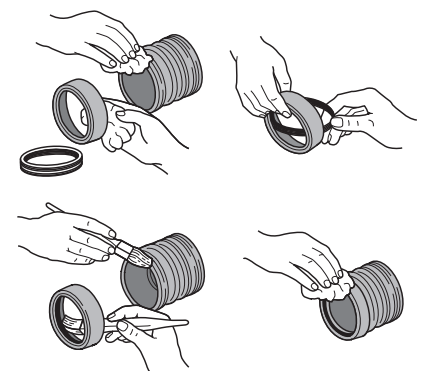


Fig.26

Installing screed finish balcony outlet

Applicable to: 2172 Balcony Outlet

- Remove grid
- Position spacer on locating pegs
- Replace screws temporarily to prevent ingress of concrete
- Lay screed to the level of the top edge of the spacer
- Remove screws and replace grid
- Dress flashing over the rear upstand
- Tuck flashing into brickwork, joint and point

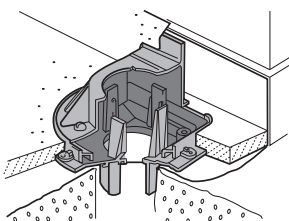


Fig.27

Installing asphalt finish balcony outlet

Applicable to: 2174 Balcony Outlet

- Remove grid
- Temporarily replace screws to prevent ingress of asphalt
- Apply a suitable primer or bonding agent up to engraved line on outlet body
- Apply asphalt layer: dress over outer rim and down to engraved line on outlet body
- Remove screws
- Offer up grid and check correct angle of dressing
- Fit washer and grid, and secure with screws

NOTE: The polypropylene washer allows the grid to be easily removed for maintenance/clearing

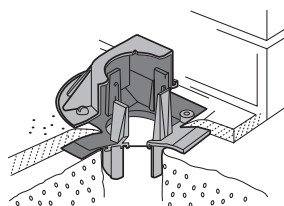


Fig.28

Connection to downpipes

Applicable to: 2172 and 2174 Balcony Outlets

- For 68mm round downpipe (2100): use 2173.3.25 Socket Adaptor
- For 62mm square downpipe (2200): use 2273.3.23 Socket Adaptor
- For 82mm round downpipe (2100.3): connect direct to balcony outlet socket
- Solvent-weld all joints (see page 9)

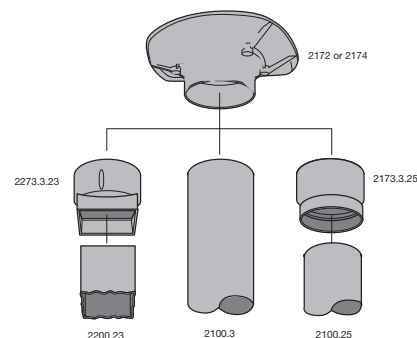


Fig.29

Small roof outlets

Fixing small roof outlet to proprietary plastic finish

Applicable to: all 2180 and 2181 Roof Outlets

- Apply recommended adhesive to flange of outlet body
- Dress plastic material over flange to the edge of opening
- Secure the flat or domed grid with brass screw supplied, lightly clamping the roof finish material in position

Fixing small roof outlet to mineral felt finish

Applicable to: all 2180 and 2181 Roof Outlets

- Apply suitable bitumastic primer to flange of outlet body
- Apply liquid bitumen or activator to roof and prepared area of flange
- Lay first layer of felt to edge of flange

- Dress second and third layers over the flange to the edge of the opening
- Secure the flat or domed grid with the brass screw supplied, lightly clamping the edge of the second and third layers of felt

NOTE: 2180 and 2181 outlets are not suitable for use with hot asphalt

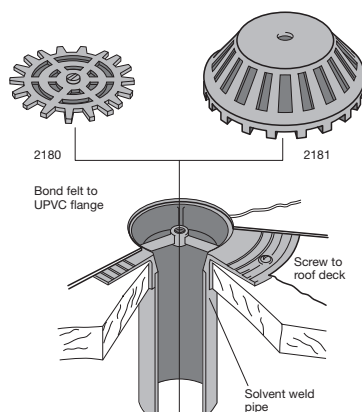


Fig.30

Connecting spigot/socket bends (small roof outlets)

Applicable to: all small diameter roof outlets

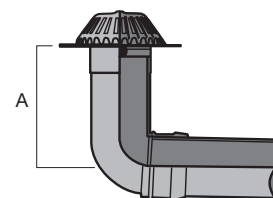


Fig.31 2181.2 Domed Outlet (small diameter)

Fittings	outlet size (mm)	dimension A (mm)	
		min	max
2180.2 + 207.2.92	55	73	118
2181.2 + 207.2.92	55	73	118
2180.3 + 107.3.92	82	89	168
2181.3 + 107.3.92	82	89	168

GRID OPTIONS

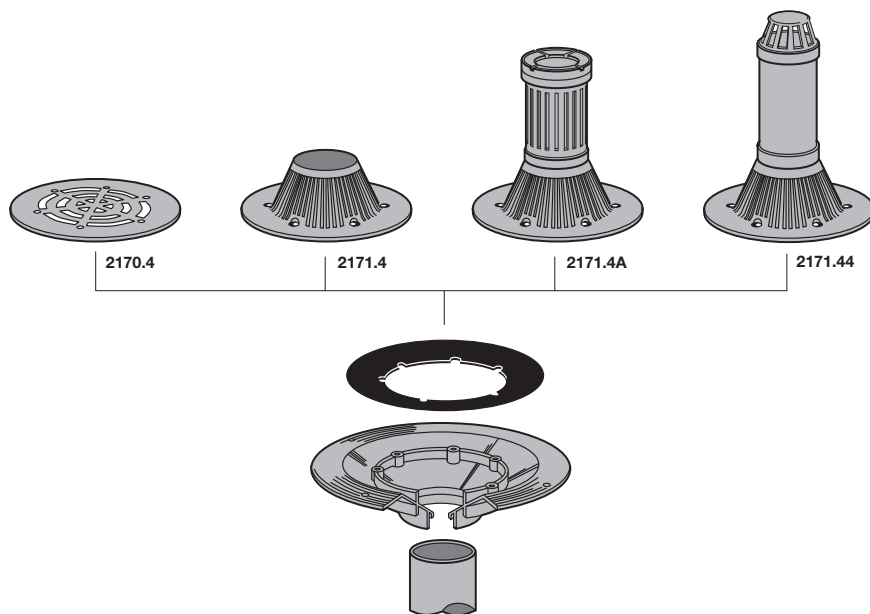


Fig.32

NOTE: 2170 flat roof outlet is not suitable for vehicular traffic

Fixing to asphalt finish

Applicable to: all 2170 and 2171 Roof Outlets

- Apply suitable bitumastic primer or bonding agent to bowl and flange of outlet body
- Dress a 19mm layer of asphalt over flange and bowl to level of upstand
- Offer up selected grid (see Fig.32 for alternative grids) check correct angle of dressing and engagement of screws
- Secure grid and washer in position with screws supplied

NOTE: The polypropylene washer allows the grid to be easily removed for maintenance/clearing

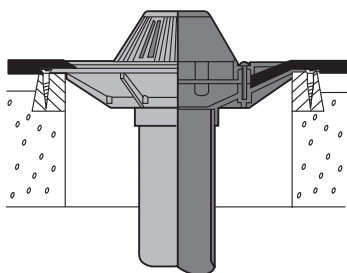


Fig.33 2171.4 Domed Outlet

Fixing to mineral felt finish

Applicable to: all 2170 and 2171 Roof Outlets

- Apply suitable bitumastic primer or bonding agent to bowl and flange of outlet body
- Apply liquid bitumen or activator to roof and prepared areas of outlet body
- Lay first layer of felt to edge of flange
- Lay second and third layers over roof outlet
- Dress down into bowl to the upstand
- Secure grid and washer in position with screws supplied

NOTE: The polypropylene washer allows the grid to be easily removed for maintenance/clearing

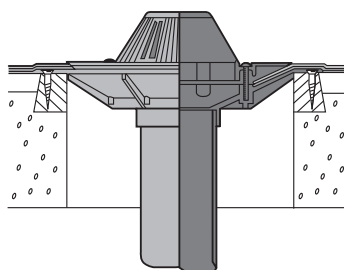


Fig.34 2171.4 Domed Outlet

Fixing to proprietary plastic finish

Applicable to: all 2170 and 2171 Roof Outlets

- Apply recommended adhesive to bowl and flange of outlet body
- Lay plastic material over roof outlet
- Dress over flange and bowl to the level of the upstand
- Secure grid and washer with screws supplied (see Fig.32 for alternative grids)

NOTE: The polypropylene washer allows the grid to be easily removed for maintenance/clearing

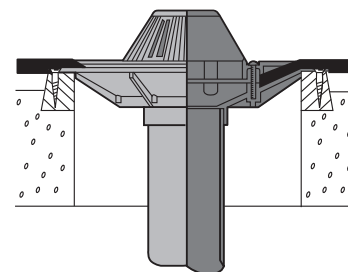
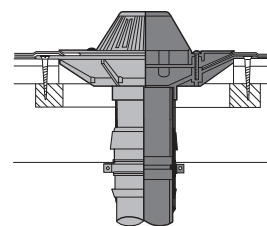


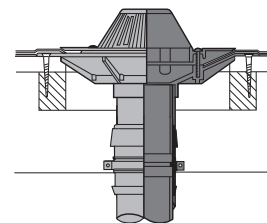
Fig.35 2171.4 Domed Outlet

Anchoring on thin or uneven roof structures

Applicable to: all 2170 and 2171 Roof Outlets



Three-layer felt on insulation material over profiled metal decking



Three-layer felt on thin timber decking

Fig.36 2171.4 Domed Outlet

Connecting spigot/socket bends (large roof outlets)

Applicable to: all large roof outlets

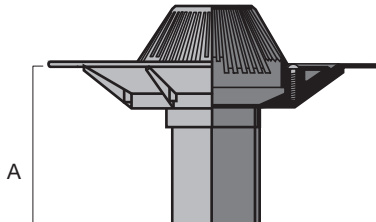


Fig.37 2171.4 Domed Outlet

Fittings	outlet size (mm)	dimension A (mm)	
		min	max
2170.3 + 107.3.92	82	140	219
2171.3 + 107.3.92	82	140	219
2170.4 + 107.4.92	110	146	257
2171.4 + 107.4.92	110	146	257

General fixing details

Applicable to: balcony and roof outlets

- Solvent weld pipe-end, or spigot of bend, to roof outlet (*for jointing techniques, see page 9*)
- Locate outlet body in roof structure and check that a suitable rigid fixing can be made
- Screw down outlet firmly to roof structure
- Remove grid
- Apply selected roof finish

HELPING YOU SOLVE PROBLEMS

Terrain products are backed by a comprehensive Technical Advisory Service, which is here to provide you with advice and design guidance on all aspects of above and below ground drainage. Telephone 01622 795200 Fax 01622 792564.

The Terrain Fabrication Service helps specifiers and contractors overcome problems both at the design stage, and on site. The Service can provide solutions to even the most demanding problems by fabricating special components to order.

Planning and development stage

The technical services available to help you at this stage include:

- Drainage system design, including detailed drawings
- Specification, product scheduling and estimating
- Design and production of bespoke fittings to meet specific application requirements
- NBS Specification clauses available

Quality and assurance

Terrain is accredited to BS EN ISO 9001:2000 Management Systems. All systems are manufactured to the relevant European Standard and where applicable certified to British Standard.

- EN 607 Eaves Gutters and Fittings made from PVC-u
- EN 1462 Brackets for Eaves Gutters
- EN 12200 Plastic rainwater piping for above ground external use PVC-u

Commercial Piping and Sanitary Systems



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