

Above Ground Drainage



Technical Installation Guide

Making it work by making it happen

4,000 nationwide stockists
20,000 product lines
Significant delivery fleet

Since creating our very first plastic pipe back in 1980, there's been a passion within us to support the industry at every stage of its growth. We are invested in its future and look forward to facing the challenges together, both from an economic and sustainability point of view. This is why we invest heavily in innovation and manufacturing techniques – to enable us to establish more inventive solutions, such as our new soil, waste and traps systems and processes.

Our customer service centres also benefit from significant investment, to provide you with the best possible service. You can be sure we have got a team on hand to help; from research and development to technical and design support. The expert knowledge of our Sales and Business Development support teams can help get you on the right track from day one.

With manufacturing facilities across Doncaster, together with the stock levels we hold, we have the capability to deliver the solutions you need to complete your projects on time and in full.

Investing to stay ahead

Without investing in new technology, new ideas and fresh talent, we'd never be able to deliver the products and systems to help you move forward, and help overcome construction challenges.

By making this investment in new construction methods and technology, we can make advancements within our product ranges, helping to make installation easier, quicker and safer. Advancements that provide the end-user with peace of mind and that allow you to simply fit and forget.

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| The scale to deliver



The number and size of our manufacturing facilities, together with recent investment in our own delivery fleet allows us to deliver the confidence you need to ensure your projects are completed on time, in full and to the highest quality.

We have over 20,000 product lines, giving you a choice of materials and installation methods to complete your system, from plot drainage through to plastic plumbing. We are stocked in over 4,000 merchant branches nationwide, so you're sure to find the product you need close at hand.

Not just bigger... better

We also have teams of specialists who work together with you to help design a system that fits your scheme exactly, ensure your project runs smoothly and everything meets the necessary regulations.

As we're well networked with all the necessary trade associations and regulatory bodies, working with us means you'll have access to regular important updates on legislation and new industry developments.

To ensure you get the right service, the most relevant product and the most cost-effective system for your project, we've over 1,200 experienced individuals supporting you from start to finish, whatever the size of the job. As technology and innovation become a bigger part of our lives and indeed our working environments, our experts work together with you to design a system to ensure projects run smoothly and meet all the necessary regulations.

Our Customer Experience teams, Business Development Managers and Area Sales Managers are available at every stage of your project, support is always there for whenever you need it.

Whether for new build or refurbishment projects, Polypipe specifically recognises the demands of modern construction environments, and works across all disciplines to help you get the job done.

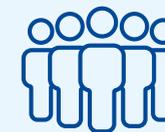
Over 20
Research & Development Technicians

Over 2,200
Manufacturing and Support Services

Over 70
Design, Heating and Ventilation Engineers

Over 120
Dedicated Technical Support Engineers

Over 200
Sales and Business Development Managers



National sales team with local knowledge



Multisite manufacturing



2,500 tonnes of products delivered each week



On average 50,000 order lines per day

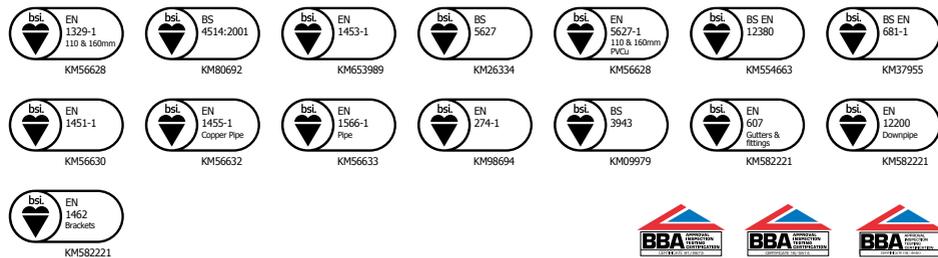


One of the UK's largest privately-owned delivery fleet



4,000 stockists nationwide

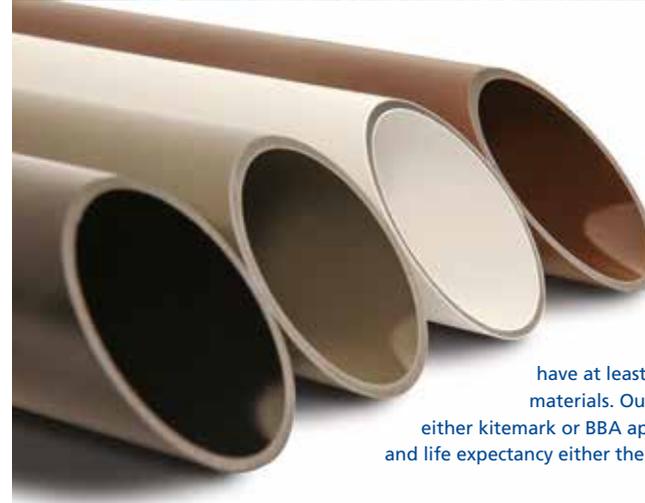
	Product	Certificate No	Kitemark Licence
Soil Systems	PVCu Soil Pipes & Fittings	KM 56628	EN 1329-1
	PVCu Soil Pipes & Fittings	KM 80692	BS 4514
	PVCu Multi-layer Soil Pipes	KM 653989	EN 1453-1
	Polypropylene WC Connectors	KM 26334	BS 5627
	Polypropylene WC Connectors	KM 56628	EN 5627-1
	Air Admittance Valves	KM 554663	BS EN 12380
	EDPM Rubber Seals	KM 37955	BS EN 681-1
	Product	BBA Certificate No	
	Polyvalve Air Admittance Valves	09/4650	
Waste Systems	Product	Certificate No	Kitemark Licence
	Polypropylene Waste Fittings	KM 56630	EN 1451-1
	ABS Waste Fittings	KM 56632	EN 1455-1
	MUPVC Waste Pipe	KM 56633	EN 1566-1
	Product	BBA Certificate No	
Push Fit Waste System, Pipe & Fittings	18/5514		
Solvent Weld ABS Waste System, Pipe & Fittings	18/5514		
Traps	Product	Certificate No	Kitemark Licence
	Polypropylene Waste Traps	KM 98694	EN 274-1
	Polypropylene Waste Traps	KM 09979	BS 3943
Rainwater Systems	Product	Certificate No	Kitemark Licence
	Gutters & Fittings	KM 582221	EN 607
	Downpipes	KM 582221	EN 12200
	Brackets	KM 582221	EN 1462
	Product	BBA Certificate No	
PVCu Rainwater Systems	91/2673		



Promoting recycling

We produce pipes and fittings using recycled materials where appropriate, and all products are 100% recyclable at the end of their useful life. Following a major investment programme and the commissioning of a polymer reprocessing plant at Horncastle, we are now one of the UK's largest processors of post-consumer waste. The plant has increased our ability to make use of reprocessed materials, recycling pre-sorted bales of household plastic polyethylene waste to produce high quality materials for our products.

In 2018, Polypipe recycled 44,700 tonnes of plastic, of which 17,500 tonnes came from recyclable plastic bottles and containers. As such, recycled plastic accounted for 75% of the raw material consumed by our Civils and Infrastructure Division in 2017, to produce pipes that were destined to be buried in the ground in applications that will manage and treat rainwater and stormwater.



Sustainable Multi-layer pipe

Polypipe Building Products was first to market in the UK with our sustainable Multi-layer waste pipe that also incorporates Biocote antimicrobial technology. Our sustainable Multi-layer waste pipe is similar in design to our sustainable Multi-layer soil pipe, both pipes have at least 50% of their weight produced from recycled materials. Our sustainable Multi-layer pipes are covered by either kitemark or BBA approvals, with dimensions, chemical resistance and life expectancy either the same or exceeding the pipe it is superseding.

Soil Systems

Developed and manufactured with quality, innovation and longevity in mind, Polypipe Building Products' soil range is the most comprehensive and technologically advanced in the UK residential market. Take, for example, our PolySoil™ systems. Manufactured using single-piece moulding technology, they offer improved performance and system durability. This, in conjunction with our Ring Lock Seal technology, removes the risk of seal distortion and dislodging during fitting, for straightforward, secure installation.

Our PolySoil™ and Solvent Weld soil systems are available in an extensive range of colours and sizes, making them suitable for most projects. When it comes to heritage projects where both

product and installation costs are a consideration, our Cast Iron Effect ring seal system combines traditional aesthetics with modern performance. In instances where cast iron might be specified for its sound-deadening qualities, we also offer our Acoustic Soil system, maximising resident comfort while remaining cost-effective.

However, none of these advancements are at the expense of the environment. Polypipe has invested heavily in technology which allows us to use more recycled materials in our products and systems, while still ensuring compliance with stringent Kitemark standards. This is evidenced by our Multi-layer soil pipe, which has at least 50% recycled material in its core.



Soil Systems



PolySoil™

PolySoil™ is the UK's most advanced ring seal soil system for the residential market. PolySoil™ incorporates our single-piece moulding technology that improves the performance and longevity of a soil system, and our Ring Lock Seal technology that stops the seal from distorting and becoming dislodged from the fitting when being installed.

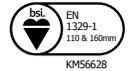
- New Ring Lock Seal
- Single-piece moulded technology
- Available in Black, Grey, White & Brown
- Kitemarked BS EN 1329



Solvent Weld

Solvent weld soil fittings are an alternative solution to ring seal fittings where a permanent homogeneous connection and system is required.

- Permanent connection when welded creating a homogeneous system
- 82mm, 110mm & 160mm
- Available in Black, Solvent Grey & Brown
- Kitemarked BS EN 1329



Cast Iron Effect

- Cost effective alternative to traditional cast iron
- All the benefits of a plastic soil system with none of the drawbacks of cast iron
- 10-year colour fastness guarantee
- New Ring Lock Seal
- Single-piece moulding technology



Acoustic

- DB12 sound insulation at 2 l/s
- Single-piece moulding technology
- Ring seal
- Connects to UK solvent weld sizes when standard solvent weld adaptors are used
- 110mm & 160mm
- LABC approved



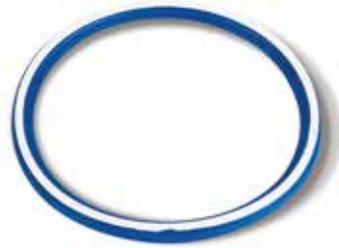
Pan Connectors

- BioCote® Antimicrobial technology
- Kitemark BS 5627
- 110mm
- Solvent weld range available



Ring Lock Seal

Our new ring lock seal won't distort once installed. As a result of our white, fixed rigid ring on our new blue EPDM seal, the shape of the seal stays uniformed through the entire circumference of the seal, regardless of how it's installed. Another great feature of our new ring lock seal is that the seal cannot become dislodged from the fitting during installation. When combined with our new single-piece moulding technology, PolySoil™ is the UK's most advanced ring seal soil system. Look for blue so you know its Polypipe.



Single-piece Moulding Technology

Our single-piece moulding technology features across our PolySoil™ range. Single-piece moulding technology means there are no moving parts, and that the entire body of the fitting is manufactured as a complete unit. This improves the longevity and integrity of a soil stack. Over time, natural expansion and contraction of a soil stack due to temperature fluctuations, caused by cold and hot water running through the stack, can put stress on the moving snap caps that hold the seals in place. Single-piece moulded fittings have no moving parts, so the integrity of the soil stack is not compromised.



Sustainable Multi-layer Soil Pipe

Polypipe's Sustainable Multi-layer soil pipe incorporates a number of industry leading improvements which includes 50% recycled content in the pipes core layer. It also carries the latest BS EN 1453 kitemark, so you can assure your customers that it meets the highest quality standards.



BioCote® Antimicrobial Technology

Scientifically proven, BioCote® antimicrobial technology reduces blockages and odour caused by the build up of biofilm. Our products which are enhanced with BioCote® provide lasting and effective protection against harmful bacteria, mould, fungi and viruses by up to 99.99%. BioCote® technology is present in our ABS Solvent Weld, Push-fit, Compression Waste, Traps & Pan Connector ranges.



Barcode & QR Codes

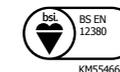
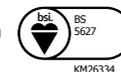
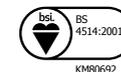
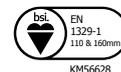
Polypipe's new PolySoil™ fittings will feature our new Barcode & QR Code label. Access the latest PolySoil™ information by scanning the QR code.

Approvals

Polypipe's soil range has a comprehensive list of approvals:

- Kitemark - BS EN 1329-1 – Soil Pipe & fittings
- Kitemark – BS EN 1453-1 – Multi-layer soil pipe
- Kitemark - BS 4514 – Soil pipe & fittings
- Kitemark – BS 5627 – WC Pan Connectors
- Kitemark – BS EN 12380 - Polyvalve air admittance valves

BBA – 09/4650 – Polyvalve Air Admittance Valves



Methods of Joining

Push fit (Ring Seal) Joining

1. Where plain ended pipe is being used, ensure that the pipe is cut square to its axis and that all burrs are removed.



2. Chamfer the end of the pipe to prevent the ring seal being damaged or misplaced when the pipe is inserted into the socket. Fittings with spigot ends are moulded with a chamfer during manufacture.



3. Lubricate the spigot or ring seal with Polypipe silicone grease or aerosol lubricant.



4. Insert the pipe or fitting into the socket and then withdraw it by approximately 10mm to allow for expansion of the pipework.



Solvent Weld Joining

1. Ensure that the pipe is cut square and that all burrs are removed.



2. Ensure that both surfaces to be jointed are dry and free from dust or other debris.



3. Use Polypipe cleaning fluid CF250 to remove any surface grease from the spigot and socket to be jointed.



4. Apply a coat of Polypipe solvent cement to both surfaces to be jointed using the brush applicator provided in the lid. The cement should be applied along the length of the spigot and not around its diameter.



5. The spigot should be inserted into the socket immediately, with a slight twisting action.



6. Any surplus solvent cement should be removed with a clean cloth.

7. The joint will be strong enough to handle after approximately 10 minutes and can be tested after 24 hours.

Ancillaries

Solvent Weld

Solvent cement available in 125ml, 250ml & 500ml.

Gap filling cement available as a 140ml tube

When working with solvent cement it is essential to observe normal safety rules:

- Do not allow solvents or cleaners to come into contact with skin or eyes
- Only use when in a well ventilated area
- Do not smoke or use naked flames near the area of work

- Once finished, close the container and store in a cool area

Cleaning Fluid

- Available as a 250ml tin

Lubricant

- Silicone available in 100g tub
- Aerosol Lubricant in 400ml can

	Pipe diameters						
	19mm	32mm	40mm	50mm	82mm	110mm	160mm
Solvent Cement 125ml Code SC125	85	45	35	20	9	5	3
Solvent Cement 250ml Code SC250	175	90	70	40	18	10	6
Solvent Cement 500ml Code SC500	350	180	140	80	35	20	12
Cleaning Fluid 250ml Code CF250	250	140	120	75	30	20	15
Silicone Grease 100g Code SG100	-	100	85	45	35	20	10

TABLE 1: NUMBER OF SOLVENT CEMENT JOINTS FOR PIPE DIAMETERS



Solvent Cement



Lubricant



Gap Filling Cement



Cleaning Fluid



Aerosol Lubricant

Scan the QR codes opposite for COSHH data sheets



	Size	Colour						
		Grey	Black	White	Brown	Solvent Grey	Black Cast Iron Effect	Light Grey
PolySoil™ PVC Ring Seal Soil	82mm	✓	✓					
	110mm	✓	✓	✓	✓			
	160mm	✓	✓					
PVC Solvent Weld Soil	82mm		✓			✓		
	110mm		✓		✓	✓		
	160mm					✓		
Cast Iron Effect Soil	110mm						✓	
Acoustic Soil	110mm							✓
	160mm							✓
Pan Connectors	110mm			✓				



Sanitary Pipework Design

Soil and ventilation systems should be designed in accordance with Document H of the current Building Regulations for England and Wales and corresponding regulations for Scotland and Northern Ireland. System design should also conform to the Code of Practice BS EN 12056:2:2000, 'Sanitary pipework, layout and calculation'.

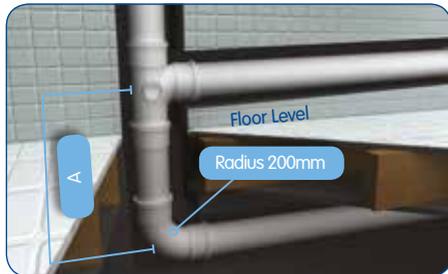
These publications cover requirements such as ventilating pipework, flow rate calculations, system configurations and capacities of drains.

Connections to Base of Stacks

The minimum vertical distances between connections to the stack and the invert of the underground drainage system are shown below:-

A = 450mm min for buildings up to 3 storeys

750mm min for buildings of 4 and 5 storeys



For buildings between 5 and 20 storeys, the ground floor appliances should connect direct to drain or to their own soil stack.

For buildings over 20 storeys, both the ground and first floor appliances should connect to their own soil stack.

Stub Stacks

For ground floor appliances, a short unventilated stack may be used, provided it discharges into a ventilated drain and distances do not exceed those shown in the diagram below. Stub stacks may also be used on upper floors where the discharge from the stack is to a ventilated soil stack.



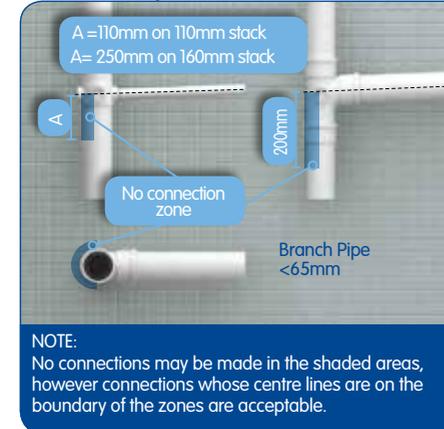
WC Connection Direct to Drain

A WC should only connect directly to the drainage system if the depth from floor level to the invert of the drain is less than 1.3m.



Prevention of Crossflow

Where a branch enters a stack, it creates a zone on the opposite wall of the stack where no connections may be made.



NOTE:
No connections may be made in the shaded areas, however connections whose centre lines are on the boundary of the zones are acceptable.

Where the branch pipe diameter is less than 65mm, the no connection zone is 110mm deep on a 110mm diameter stack and 250mm deep on a 160mm diameter stack, measured from the centre line of the incoming branch pipe. Where the branch pipe exceeds 65mm, the no connection zone is 200mm irrespective of stack diameter.

Access to Pipework

Where the discharge stack has a long drain connection to an inspection chamber, access for rodding and testing should be provided at or near the base of the stack. When ground floor appliances are connected to the soil stack, the access point should be sited above the spillover level of the appliances.



For multi-storey domestic buildings, access into the stack should be provided at 3 storey intervals and for multi-storey commercial buildings access should be provided on each floor.

Suspended Soil System Pipework

General Information

PURPOSE: To ensure that, where soil drainage pipework has to pass through an undercroft or basement area:

- it is properly supported throughout any suspended run
- its integrity is maintained and protected from the consequences of thermal expansion or contraction

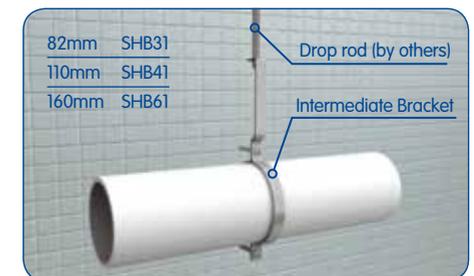
Recommended Support Centres

	Pipe diameters		
	82mm	110mm	160mm
Horizontal	0.9m	0.9m	0.9m
Vertical	1.8m	1.8m	1.8m

TABLE 2: PIPE SUPPORT CENTRES

Fixing Details

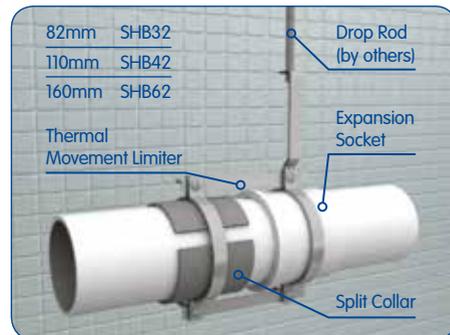
Fit intermediate support brackets for suspended pipework at recommended centres. These may be attached to 8mm drop rods (supplied by others) fixed into the ceiling or soffit above the pipework.



Install expansion joints at recommended centres along the suspended pipe run. Where the suspended run is lengthy, the expansion joints must be installed with a Thermal Movement Limiter.

Installation of Thermal Movement Limiter

1. Clean the surface of the pipe upstream of the expansion socket and the inner surface of the PVC-u split collar with cleaning fluid using a dry, clean, natural fibre cloth (NOT synthetic).
2. After setting a 10mm expansion gap, solvent weld the split collar to the pipe ensuring that, when assembled, the bolts pass through the centre of the restraining bar slots.

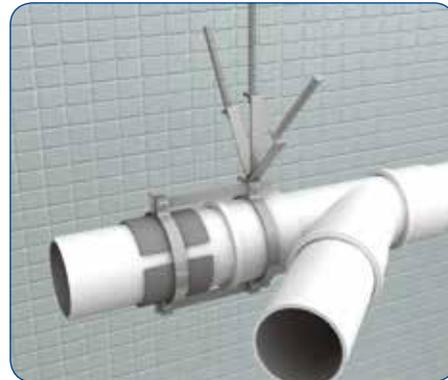


3. Assemble and locate brackets: one around the split collar and the other around the expansion socket.
4. Couple the brackets together with the two slotted retaining bars (which restrict horizontal movement to 25mm). Assemble these so that the slotted ends are above and below the expansion socket.
5. Incorporate the link eye (for attachment to drop rod or ceiling/soffit fixing) with the upper restraining bar.
6. Check that the slotted end of each restraining bar is free to move, and tighten brackets so that they achieve a firm grip on the pipework.
7. Connect assembly to drop rod and ceiling/soffit.

Cross Bracing

When branches enter a main run, cross bracing is necessary to stabilise the system.

Thermal Movement Limiter assembly with cross bracing.



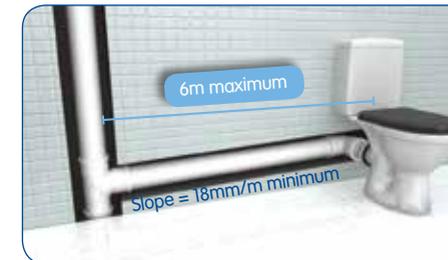
Temperature Resistance

Polypipe traps, waste and soil systems are suitable for short intermittent discharges of hot and cold water in normal domestic installations in the UK. They are not suitable for continuous discharge at elevated temperatures. The integrity of the joints and the materials of the systems are confirmed by carrying out the thermal cycling tests which are included in the relevant British and European standards which are quoted in the standards section of this document.

Branch Connections, Pipe Lengths and Gradients

The following information shows the requirements of the Building Regulations with regard to lengths of unventilated branch discharge pipes and corresponding gradients.

Requirement for single WC



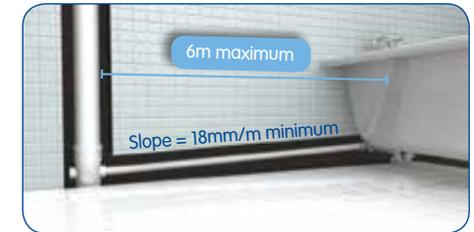
1. A maximum of 8 WCs may be connected to an unventilated soil branch. The length is limited to 15m max. in this case.
2. Pipe diameter = 110mm.
3. It is only permitted to use 82mm dia. pipework when the outlet of the WC pan itself is less than 80mm diameter.

Wash basin (also bidet)



1. Where maximum length is exceeded, an anti-siphon trap or anti-siphon unit should be used.
2. Pipe diameter = 32mm.
3. If 40mm dia. pipe is used, max length is 3m.

Bath (also shower)



1. Pipe diameter = 40mm.
2. If 50mm dia. pipe is used, max length is 4m.

Sink



1. Pipe diameter = 40mm.
2. If 50mm dia. pipe is used, max length is 4m.

Soil Manifold

The MAN 5 Soil Manifold overcomes the problem of crossflow whilst maintaining the facility to connect waste pipes to the soil stack above floor level.



Boss Connections

Polypipe offers a wide range of boss adaptors in 32mm, 40mm & 50mm sizes. A number of variants are available which include push fit, straight solvent weld, straight compression & angled compression.



Solvent Boss Adaptors

1. If your soil fitting does not have a pre-drilled boss socket you will need to drill your socket.



2. Using a drill with a 60mm hole cutter, drill your desired hole.



3. Once drilled, remove any loose plastic and de-burr all edges. Apply solvent cleaner to inside surface area of the Boss connection prior to applying solvent cement.



4. Apply solvent cement to the entire surface of the inside of the boss socket on the soil fitting.



5. Also apply solvent cement to the entire outer surface of the boss adaptor.



6. Insert the boss adaptor into the boss socket on the soil fitting. Remove any excess solvent cement.



7. Once the boss adaptor is inserted into the boss socket on the soil fitting, ¼ turn the boss adaptor. This process is important as it helps achieve a tighter bond between the boss connector and the soil fitting.



8. Once you have performed a ¼ turn, leave the fitting for 10 minutes before working on it again.



- After leaving the fitting for 10 minutes, apply solvent cleaner to the inside of the boss connector where the pipe will be inserted. Once the solvent cleaner is dry, apply solvent cement to the inside of the boss connector. It's important that the entire inside surface of the boss connector is covered with solvent cement.



- Also apply solvent cement to your waste pipe ensuring that the entire surface of the waste pipe that will be inserted into the boss adaptor is covered with solvent cement.



- Insert your waste pipe into your boss connector.



- As with the boss connector it's important to $\frac{1}{4}$ turn the pipe once it has been pushed fully into the boss adaptor.



- Leave your fitting and pipe for 10 minutes before working on them. These parts can be air tested after 24 hours.



Rubber Boss Adaptors

- Follow steps 1 to 3 in the solvent weld boss adaptors section to prepare your boss connection on your soil fitting. Polypipe rubber boss adaptors require no lubricant, no cleaning fluid and no solvent cement.



- Insert the rubber boss adaptor into your boss connection on your soil fitting.



- After inserting the rubber boss adaptor make sure the adaptor is pushed all the way into the boss connection of the soil fitting.



- Rubber boss adaptor can be used as soon as they are inserted into the soil fitting.



- Take your waste pipe and insert it squarely into the boss adaptor.



- Once your waste pipe is fully inserted into the rubber boss connector it can be air tested.



Compression Boss Adaptors

- Follow steps 1 to 8 in the solvent weld boss adaptors section to prepare your soil fitting and connect your compression boss adaptor to your soil fitting.



- Remove the compression nut, washer and rubber seal. First place the compression nut on your waste pipe, then the spacer and then finally the rubber seal. It's important that the rubber seal has its shortest side facing into the boss connector.



- Insert your waste pipe into your boss adaptor in your soil fitting.



- Tighten the compression nut by hand and then once tight make an additional 1/4 turn.



- Once the connection has been completed you can work on this fitting straight away.



Termination of Soil Stacks

Ventilating pipes open to outside air should finish at least 900mm above any opening into the building within 3m and should be terminated with a perforated cover fixed to the end of the pipe, which does not restrict the flow of air into the system.

The diameter of the stack should preferably remain constant throughout its length. However, a 110mm diameter soil pipe may be reduced to 82mm above the topmost connection without unduly affecting the airflow into the stack. The diameter of a vent pipe on a branch connection can be reduced to 50mm for a 110mm branch.



Weathering Slates for Pitched Roofs

Where a soil pipe passes through a roof it must be weathered to prevent rainwater passing into the building along the pipe wall. This can be achieved by the use of a rubber/aluminium roof weathering slate which can be dressed to the profile of the roof tiles or slates.

The weathering slate can be pushed over the top of the soil pipe ensuring that there are no sharp edges which could damage the rubber sleeve. The slate is aligned with the lower tiles.



The base plate is dressed to the profile of the lower tiles with the side and upper tiles laid over the top of the base plate. On low pitched roofs, a single welt can be made to the lower edge of the base plate to provide extra strength.



The base plate may be trimmed if required, provided that at least 150mm of weathering remains.



A weathering collar is placed over the stack and solvent welded into position directly above the weathering slate.

If the roof slate is installed on a roof with interlocking tiles, boards or additional battens may be required underneath the weathering slate. The stack must pass through one only course.

To complete the installation, a vent terminal is solvent welded to the top of the stack.



STRONGER TOGETHER

The new PolySoil™ range

Polypipe

Fire Protection

Polypipe pipe collars have been specifically designed to re-instate the fire resistance of a wall or floor which has been penetrated by services such as flammable plastic pipes used in soil, waste and drainage services.

Polypipe pipe collars will seal closed flammable pipes from 50mm to 160mm diameter and can be face fixed or set-in to a wall or ceiling structure. They are suitable for use on concrete, masonry and plasterboard partitions.

Polypipe pipe collars are available with a fire rating of 4 hours and feature a tab closing device which ensures they are quick and easy to fix in place.

Polypipe pipe collars are tested to BS476 Part 20:1987 and many other International Standards.

Field of Application

Polypipe pipe collars have been specifically designed to prevent the passage of fire and hot gases through:

- Concrete, masonry and plasterboard partitions
- Concrete floor constructions
- Soil, waste and drainage “above ground” applications

Product Features

- Collars have achieved a fire rating of 4 hours
- 4 hour collar has a stainless steel outer casing
- Tab closing device means collars are easy to fix in place around pipe and rotate or slide into position
- Intumescent material is totally unaffected by water, is robust, ‘non-flaking’ and difficult to tear

Product Testing

Polypipe have carried out numerous independent fire resistance tests to confirm the suitability of the product and to demonstrate product compliance by utilising BS476: Part 20:1987 and other international standards.

The reports have been consolidated in Assessment Report No. FEA/F98105 and this is available on request from Polypipe Building Products.

Products Available

Product Code	Pipe Diameter (mm)	Fire Rating
FPS55/4	55	4 hour
FPS82/4	82	4 hour
FPS110/4	110	4 hour
FPS160/4	160	4 hour

TABLE 3: POLYPIPE FIRE PROTECTION PRODUCTS AVAILABLE

Installation Instructions

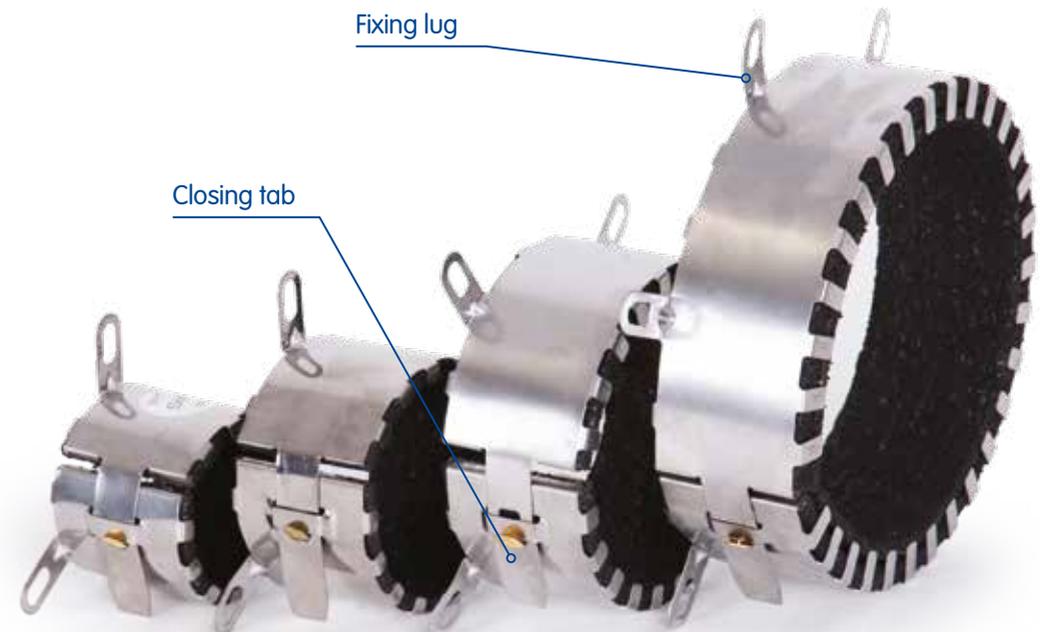
Check the likely direction of the fire. In some cases, two collars may need to be fitted to prevent the fire spread.

1. Ensure that the substrate around the penetration is flat and free from any obstructions which may prevent the correct installation of the collar. Beware of any obstructions which may interfere with the fixing tags. If the substrate is uneven it may be necessary to first render the substrate with mortar or some form of rendering material.
2. Any residual gaps which are smaller than 3mm around the service penetration will need to be filled, this can be done by using intumescent acrylic material, ensure that the gap is completely back filled. For any gaps which are greater than 3mm the penetration should be back filled using mortar or some other form of rendering material.
3. Remove the Polypipe pipe collar from its packaging, and remove the retaining pin.

4. Using both hands, open the collar by sliding the tab through the slot. This will release the collar ‘open’ to allow installation.
5. Using both hands, fit the collar around the pipe by sliding the tab through the slot. Once through, ensure that the collar is firmly fitted around the pipe and that the two sections of the collar meet.
6. The tab can now be folded back through 180° and once completed the collar can be moved towards the substrate.
Correct fitting can be achieved by rotating and pushing the collar, in some instances the collar can be slid into place.
7. Once the collar has been presented to the substrate it can be securely fitted. Using a drill, fitted with a masonry bit, place the drill in the circular-fixing hole of the fixing tag

and commence drilling to the required depth. This is usually 65mm deep into the substrate and remove any debris from the hole. Using M8 x 65mm sleeve anchors (not plastic), place the anchor in the hole and using a hammer lightly tap the anchor into position. Tighten the sleeve anchor firmly to fix into position. Repeat this procedure, until all fixings lugs have been fitted.

8. When the collar has been securely fitted into place any residual gaps between the collar and the substrate can be filled using intumescent acrylic material.
9. Ensure that any obstructions, which may have been temporarily moved, are refitted into place.



Soil System Testing

Source BS EN 12056-2:2000
National Annex NG (Informative) Inspection, testing and maintenance of completed installations

NG.1 General

This annex provides information on testing methods and maintenance of above ground gravity sanitary pipework and fittings. This document covers domestic, commercial and public buildings, with the exception of trade waste discharges and any special requirements of building such as hospitals or research laboratories.

Inspections and tests should be made during the installation of the discharge system as the work progresses to ensure that the pipework is properly secured and clear of obstruction, debris and superfluous matter and that all work which is to be concealed is free from defects before it is finally enclosed.

Prefabricated units should be tested at the works or place of fabrication and inspected upon delivery to site.



NG.2 Final Inspection

On completion, the discharge system should be meticulously inspected to ensure that the recommendations of this British Standard have been observed and that no cement droppings, rubble or other objects are left in or on the pipes and that no jointing material projects into the pipe bore. When this has been done, tests for the soundness of the pipework and for the performance should be made.

NG.3 TESTING

NG.3.1 Air Test

NOTE Normally this test is carried out to confirm that all pipes and fittings are airtight. It should be completed in one operation but for large multi-storey systems testing in sections may be necessary.

NG.3.1.1 Preparation

The water seals of sanitary appliances should be fully charged and test plugs or bags inserted into the open ends of the pipework to be tested. To ensure that there is a satisfactory air seal at the base of the stack, or at the lowest plug or bag in the stack if only a section of the pipework is to be tested, a small quantity of water sufficient to cover the plug or bag can be allowed to enter the system.

One of the remaining test plugs should be fitted with a tee piece, with an air inlet cock on each branch, and one branch being connected by means of a flexible tube to a manometer. Alternatively, a flexible tube from a tee piece fitted with air inlet cocks on its other two branches can be passed through the water seal of a sanitary appliance. Any water trapped in this tube should be removed and then a manometer can be connected to one of the branches.

NG.3.1.2 Application

Air is pumped into the system through the other branch of the tee piece until a pressure equal to 38mm water gauge is obtained. The air inlet cock is then closed and pressure in the system should remain constant for a period of not less than 3 mins.

NG.3.1.3 Leak location

NOTE Defects revealed by an air test may be located by the methods given in NG.3.1.3.1, NG.3.1.3.2 and NG.3.1.3.3.

NG.3.1.3.1 Smoke

A smoke producing machine may be used which will introduce smoke under any pressure into the defective pipework. Leakage may be observed as the smoke escapes. Smoke cartridges containing special chemicals should be used with caution, taking care that the ignited cartridge is not in direct contact with the pipework and that the products of combustion do not have a harmful effect upon the materials used for the discharge pipe system.

Smoke testing of plastics pipework should be avoided due to naphtha having a detrimental effect, particularly on ABS, PVC-U and MUPVC. Rubber jointing components can also be adversely affected.

NG.3.1.3.2 Soap solution

With the pipework subject to an internal pressure using the smoke machine method as described in NG.3.1.3.1, a soap solution can be applied to the pipes and joints. Leakage can be detected by the formation of bubbles.

NG.3.1.3.3 Water test

There is no justification for a water test to be applied to the whole of the plumbing system. The part of the system mainly at risk is that below the lowest sanitary appliance, and this may be tested by inserting a test plug in the lower end of the pipe and filling the pipe with water up to the flood level of the lowest sanitary appliance, provided that the static head does not exceed 6m.

NG.3.2 Performance Tests

NG.3.2.1 General

All appliances, whether discharged singly or in groups, should drain speedily, quietly and completely.

To ensure that adequate water seals are retained during peak working conditions, the tests described in NG.3.2.2 should be carried out. After each test, a minimum of 25mm of water seal should be retained in every trap. Each test should be repeated at least three times, the trap or traps being recharged before each test. The maximum loss of seal in any one test, measured by a dip stick or small diameter transparent tube, should be taken as the significant result.

NG.3.2.2 Tests for self-siphonage and induced siphonage in branch discharge pipes

To test for the effect of self siphonage, the appliance should be filled to overflowing level and discharged by removing the plug; WC pans should be flushed. The seal remaining in the trap should be measured when the discharge has finished. Ranges of appliances, connected to a common discharge pipe, should also be tested for induced siphonage in a similar way.





Polypipe Building Products Acoustic Soil System combines the familiarity and advantages of standard ring seal soil systems, with proven enhanced acoustic performance. Our range of socketed pipe and ring seal fittings in combination with vibration damping brackets ensures that the system not only meets but surpasses current building regulations requirements for sound insulation.

Our Acoustic Soil pipe is manufactured with a hydraulically smooth inner surface, which allows for a continuous smooth flow of water, reducing sound emissions. The system comes complete with a range of acoustically engineered fittings to ensure fast and easy drainage installations for soil and rainwater applications.

The Benefits

- Excellent sound insulation 12 dB(A) at flow rate 2l/s*
- Elevated impact resistance
- Resistance to a wide range of chemical agents at high temperatures
- Easy to install
- LABC Approved

*Test EN 14366 / DIN 4109

System Description

Polypipe Building Products Acoustic Soil is suitable for all gravity waste water pipes in accordance with DIN EN 12056 and DIN 1986-100. Pipes and fittings consist of mineral-reinforced polypropylene, which as well as offering impressive acoustic properties also offers improved temperature properties versus standard PVC soil systems. The consistently thick-walled pipes and fittings meet the raised requirements of Sound Insulation Class III of DIN 4109 / VDI 4100. Just as with all synthetic materials, Polypipe Building Products Acoustic Soil is corrosion-proof, long lasting and resistant to chemically aggressive waste water in the range of pH 2 to pH 12. The smooth inner surfaces and high degree of resistance to abrasion make sure that no deposits develop and this, in turn, ensures that the pipes can be reliably operated for a very long time.

Sound Insulation

Tests conducted by the Fraunhofer Institute in accordance with DIN EN 14366 confirmed the excellent sound insulation properties and the maximum Sound Insulation Class III requirements. It has been proven for many years now that thick-walled pipe systems with very high molecular weight minerals have excellent sound insulation properties. The high density of 1.6 g/cm³ (+/- 0,05) contributes to the absorption of sound which is transmitted by air and conducted by solids.

Sources of noise in building equipment

The sources of noise in building service installations are:

- Filling noises
- Intake noises
- Noises from fittings
- Draining noises
- Impact noises



How does sound develop in a building?

The biggest problem in building equipment is where structure-borne noise is transmitted at the point of pipe fixing and where pipes are installed in walls and ceilings. The following are the most important steps in actively furthering sound insulation:

- No sound bridges to adjacent rooms with pre wall installation. The pre wall installation is to be acoustically disconnected
- No exposed installation of waste water pipes on the walls of rooms to be sound insulated
- Use of low-noise fittings of Group I as per DIN 52218
- Use of walls, which are suitable for installations, e.g. 220 kg/m² (large mass)
- In waste water system pipe planning, no waste water pipes are to be installed in partition walls between flats/ houses
- Acoustically favourable floor plans should be drawn up so that rooms in need of sound insulation are not arranged directly next to rooms with sanitary installation equipped walls or under bathrooms/toilets

Installation

Polypipe Building Products Acoustic Soil pipes are to be installed in such a manner that they are free of tension and that changes in lengths are not hindered.

Arranging the brackets:

- The distance between the brackets in the case of horizontal piping is approximately 10 times exterior pipe diameter
- In the case of vertical installation the distance between brackets should be 1 bracket in every 3 metres of pipe, however, 2 metres should not be exceeded
- If possible, do not install the brackets directly at the zones of impact
- A fixed bracket and a loose bracket per pipe length (storey height of more than 2.50 mtr) are recommended for drop pipelines
- Fixed brackets are fixed points in the piping system. In the case of pipes without sockets, the fixed bracket is to be placed directly above the shaped part at the bottom end of the pipe. Fittings or groups of fittings are always to be located as fixed points
- In multi-storey buildings, drop pipes are to be secured against subsidence. The use of an adjustment length with a fixed bracket under the socket is recommended



Installation in concrete and brickwork

Polypipe Building Products Acoustic Soil pipes and fittings can be directly set in concrete or plaster provided that adequate care is taken. In order to prevent the concrete mixture from seeping into the socket gap, it should be sealed with adhesive tape. Open piping components are to be closed. The piping is to be installed in such a manner that it is prevented from moving during the cementing process. Should the piping be plastered under a gap in the wall, a layer of plaster of at least 1.5cm should be applied onto a plaster support (e.g. metal mesh). No acoustic bridge for structure-borne sound should be allowed to develop between the piping and the plaster support. In order to prevent this, the piping should be fully covered with sound insulation material (e.g. mineral wool, insulating sheaths).

Ceiling pipes

Pipes installed through ceilings must be sound insulated with structure-borne sound insulation material and be damp-proof. Should melted asphalt be put onto the floors, the fittings in the region where the pipe runs through the ceiling must be protected by means of protective pipes or by means of being wrapped in heat insulating materials. Subsequent installation of piping parts

connections can be produced by means of the installation of a branch or by using couplers. In order to install, a sufficiently long piece of pipe (L = length of the shaped part + 2.5 d) is removed and the branch is inserted. Cutting edges are to be cleaned and smoothened. A coupler is pushed onto both the remaining pipe without a socket and onto a piece of pipe equivalent to the gap. The piece of pipe is then inserted into the piping and the couplers are pushed over the cutting edges. The couplers are to be secured by means of clamps.

Material Properties

Material – Mineral-reinforced polypropylene (PP)

Nominal Diameters – 110mm / 160mm

Colour – Light Grey RAL7035

Seal – Patented triple lip

Chemical Resistance – Discharge of aggressive media in the range of pH2 – pH12

Test Specimen	Flow Rate (l/s)			
Plastic waste water installation system with pipe clamps "BISMAT 1000" (manufacturer Walraven). In each storey (EG and UG) two pipe clamps were mounted. At the upper wall area of the installation wall one "Bismat 1000" loose clamp was installed (supporting clamp SL, DN 100). At the lower wall area of the installation wall one "Bismat 1000" double clamp consisting of supporting clamp (SL, DN 100) and fixing clamp (SX, DN 100) was installed. To prevent contact to the pipe, the loose clamps and the supporting clamps were equipped with two spacers (2 x 7.5 mm, black) on each side.	0.5	1.0	2.0	4.0
Installation sound level LAFeq,n [dB(A)] following DIN 4109 in the basement test-room. UG rear.	<10	<10	12	17

TABLE 4: POLYPIPE ACOUSTIC SOIL SOUND PROPERTY

WC Connectors

A comprehensive range of WC connectors is available for all applications, manufactured from both Polypropylene and uPVC.

The inlet sockets on all types are designed for use with horizontal outlet WC pans to BS5503.

For full details of types available, refer to product range information as shown in the current price list.

Kwickfit WC Pan Connectors

Kwickfit pan connectors are manufactured from polypropylene and are fitted with a flexible TPE seal for connection directly into plain ended soil pipe. This range is available in straight, 90°, 104°, swivel, offset and flexible versions.



Pan connectors are manufactured from polypropylene and all versions have a 110mm spigot outlet for connection to a ring seal soil system socket. This type of connector is not suitable for solvent welding.



Straight Pan Connectors

1. Straight pan connectors are generally used for pipes situated level with the toilet.



2. Place the finned section of the pan connector into the soil pipe. Depending on the installation it may be more suitable to install the pan connector on the toilet first.



3. Once the pan connector is inserted into the pipe the toilet can be positioned and installed to the pan connector.



4. When the toilet is in position it can be fixed in place.



90° Pan Connectors

1. 90° pan connectors are generally used for pipes that are situated below the floor.



2. Place the finned section of the pan connector into the soil pipe or soil fitting that should be situated below the floor level. Depending on the installation it may be more suitable to install the pan connector on the toilet first.



3. Once the pan connector is inserted into the pipe the toilet can be positioned and installed to the pan connector. When the toilet is in position it can be fixed in place.



Air Admittance Valves

An alternative to conventionally venting and terminating a soil stack is the use of an air admittance valve. These valves are designed to reduce the number of vent pipes in a building, which would normally be vented through the roof to atmosphere.

When installed, the valves are in the closed position and will prevent foul air escaping from the pipework system in normal atmospheric conditions or when positive pressure is created in the soil stack or waste pipes, created by the discharge from appliances or fluctuations in

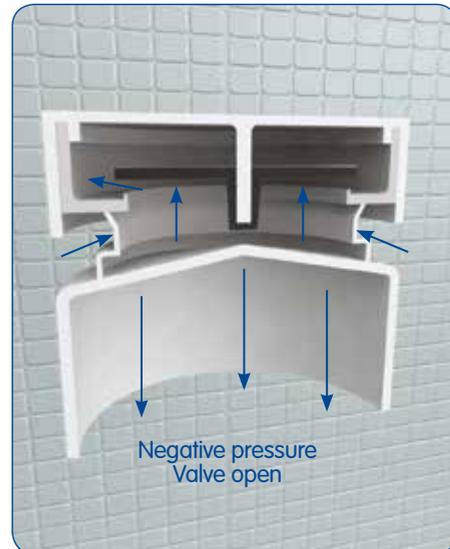
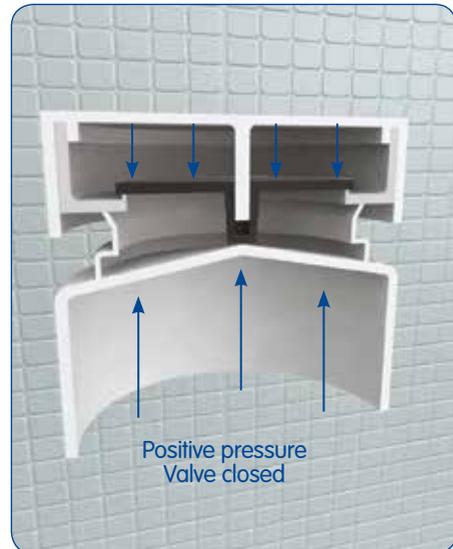
Valve sizes and Polypipe Codes

Size	PVC-u Solvent Socket		ABS Solvent Spigot to BS EN 1455-1			ABS Push fit Spigot to BS EN 1451-1		
	82mm	110mm	32mm	40mm	50mm	32mm	40mm	50mm
Code	SPV82	SPV110	PVS32	PVS40	PVS50	VWP32	VWP40	VWP50
Air flow rate (ls ⁻¹)	40.1	43.2	6.6	8.1	9.5	6.6	8.1	9.5

TABLE 5: AIR ADMITTANCE VALVE SIZE AND CODE

pressure within the drainage system. When negative pressure is encountered, the valve will automatically open and allow air to enter the stack, equalising pressures and therefore preventing loss of water seals in the traps on appliances.

110mm and 82mm valves are for use on soil stacks in buildings up to five storeys in height and the 32mm, 40mm and 50mm valves are for use on branch discharge pipes.



Siting of Air Admittance Valves



1. Valves should be fitted in a vertical position above the pipe being ventilated.
2. The valves should be installed within the building, preferably in a freely ventilated, non-habitable space such as a duct or roof space or externally to the building where they are protected from dust, insects and are easily accessible but not likely to be subject to interference, e.g. from vandals.

Where the valve is installed in a duct, holes should be provided to allow an air supply to the valve.

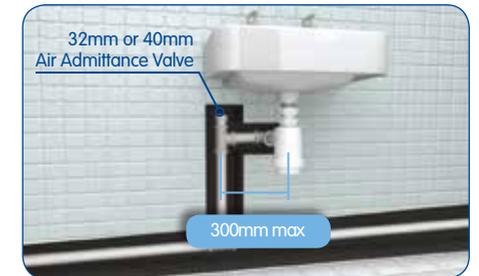
3. An Air Admittance Valve should not be used on a stack that provides the only means of ventilation to a septic tank or cess pool.
4. 82mm and 110mm Air Admittance Valves are supplied with an expanded polystyrene insulative shroud. The shroud should be left in position on the valve where there is a possibility of condensation forming and freezing within the valve body.
5. To prevent induced siphonage in a row of wash basins, a 40mm or 50mm air admittance valve should be fitted between the two wash basins furthest from the stack.

6. In all installations, stacks should not be fitted with Air Admittance Valves where the connecting drain(s) are subject to periodic surcharging or are fitted with intercepting traps.

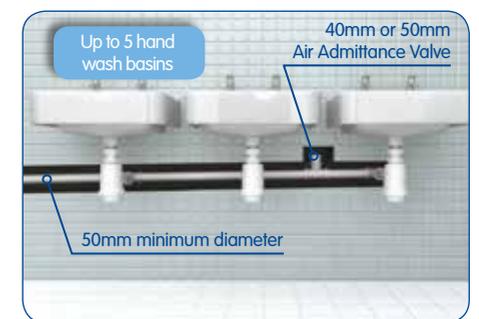
In this case a conventionally vented stack should be used.

7. It is recommended that all Air Admittance Valves are tested for airtightness before installation, i.e. the valves should float when supported in an upright position in a bowl of water.

Installation to prevent self-siphonage



Installation to prevent induced siphonage



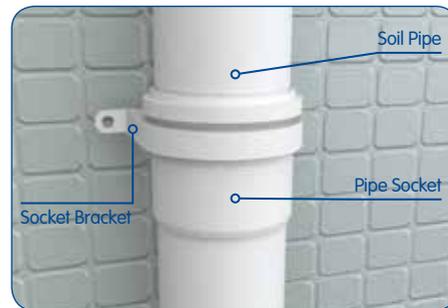
Drainage Ventilation Provision

1. For up to and including four dwellings, one, two or three storeys in height, additional drain venting is not required.
2. For five to 10 dwellings, a conventional vent stack should be provided at the head of the drain run.
3. For eleven to 20 dwellings, a conventional vent stack should be provided at the mid-point and head of the drain run.
4. For multi-storey domestic dwellings (other than those referred to above) and non domestic buildings, conventional drain venting should be provided if more than one such building, each equipped with the valves, is connected to either a common drain, itself not vented by means of a ventilation stack, or to a discharge stack not fitted with a valve.

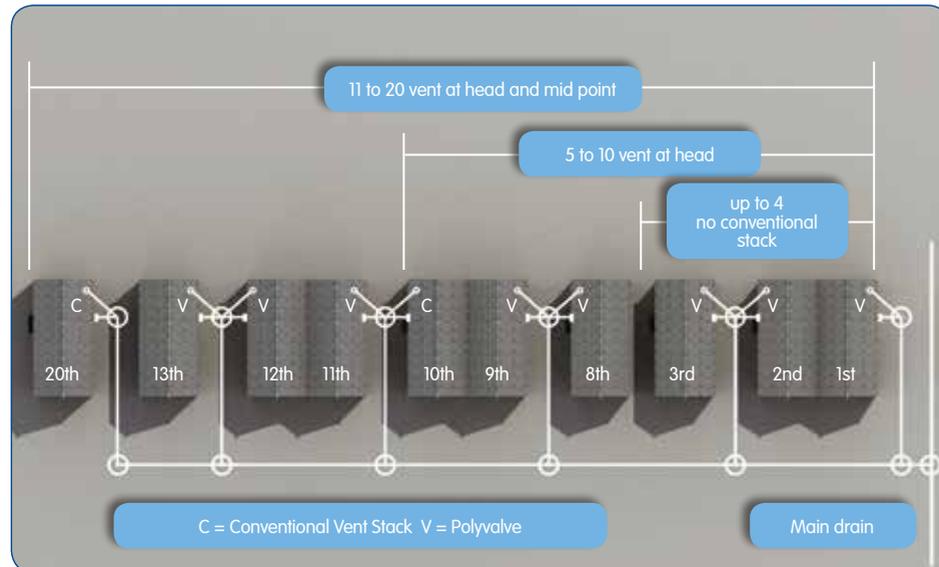
Thermal Movement and Expansion Joints

Pipe sockets should be securely anchored to the structure to prevent excessive thermal movement.

Expansion and contraction can take place between pipe sockets by providing an expansion allowance every 4m within the pipework run. Intermediate pipe brackets should not hold the pipe so securely so as to unduly restrict expansion and contraction.



Installation to 20 Dwellings



1. Ensure that the pipe spigot is cut square, chamfered and free from burrs.
2. Push the pipework into the socket until the central stop within the fitting is reached.
3. Mark a pencil line on the pipework at the socket face.
4. Withdraw the pipework from the socket by 10mm.

Ring seal adaptors (e.g SWE 99) are available in the System 2000 range which enable most solvent soil sockets to be converted to a ring seal expansion joint. Expansion couplers are available in the ABS and MuPVC ranges to provide expansion provision.

Acoustic Expansion Couplers

Polypipe's Acoustic Expansion Coupler has been designed to allow an installed pipe to move up to 15mm within the fitting. This movement occurs through thermal movement. As a result Polypipe's Acoustic Expansion coupler also addresses the issue of unwanted noise in soil stacks, which is caused by thermal movement and unplanned contact between the stack and structure of the building.

Polypipe's Acoustic Expansion Coupler limits the transfer of noise by allowing thermal movement to happen with the rubber gasket in the fitting. Normal working practice for standard soil couplers is to withdraw the fitting when installed with the pipe by 10mm. With Polypipe's Acoustic Expansion Coupler, this action is no longer required. This provides certainty that expansion has been allowed for during installation.

Acoustic Expansion Coupler key features:

- Limits noise transfer between separating walls and floors when installed on all floors
- Allows the pipe to move within the body of the fitting by up to 15mm
- Reduces stress on pipework systems from thermal movement
- Promotes best practice by managing the expansion
- Can be installed in horizontal and vertical installations



Waste Systems

Polypipe Building Products' comprehensive waste range includes three solvent weld waste systems, ABS, MuPVC & Overflow, accompanied by Push-fit, compression and Push-fit overflow products. Our updated waste range now features two new unique technologies, both of which are offered by Polypipe for the first time in drainage and waste products in the UK. Present in our ABS, Push-fit & compression waste fittings and our ABS & Push-fit Multi-layer waste pipe, BioCote® Antimicrobial technology kills 99.99% of all bacteria that comes into contact with either the outer or inner surface of pipes and fittings.

The bacteria-killing technology also reduces unpleasant odours and blockages in waste systems, ordinarily caused by the build-up of biofilm. With our second unique feature, you can help to minimise your project's carbon footprint, through the specification of our sustainable new Multi-layer waste pipe construction, which uses recycled material in its core.



Waste Systems



Solvent Weld - ABS

ABS solvent weld waste is our most popular choice for residential waste installations. Available with BioCote® technology, Polypipe's ABS waste range is the most comprehensive in the UK.

- BioCote® antimicrobial technology
- 32mm, 40mm & 50mm
- Black, Grey, White & Brown



KMS56630



Solvent Weld - MuPVC

MuPVC is the preferred choice of waste system where higher temperatures and higher use of chemicals are involved. We would recommend using MuPVC in place of ABS in schools and dentists for example.

- 32mm, 40mm & 50mm
- Black, Solvent Grey & White



KMS56628 KMS56633



Push-fit

Polypipe Push-fit waste which now incorporates BioCote® antimicrobial technology is a quick and easy alternative to solvent weld waste systems.

- BioCote® antimicrobial technology
- 32mm, 40mm & 50mm
- Black, Grey, White & Brown



KMS56630



Compression

Polypipe compression waste now incorporates BioCote® antimicrobial technology and our new Fit-Rite™ technology. Our Fit-Rite™ technology has been developed and created to make installation, particularly in tight spaces far easier with less risk of the fitting leaking in the future.

- Fit-Rite™ technology
- BioCote® antimicrobial technology
- Works with solvent weld and push fit waste sizes
- 32mm & 40mm in white only



Overflow

Polypipe's overflow range is available in 21.5mm size and in white solvent weld and grey push fit options.

- White Solvent weld
- Grey push fit
- Full range of tank connectors, adaptors & ancillaries available

Fit-Rite™ Technology

Fit-Rite™ technology has been created and developed to enable simple fitting and removability. Our products enhanced with this innovative design incorporate an improved finned seal for ease of installation, reducing the need for pipe tampering and allows for easy guidance in tricky to reach spaces such as beneath baths and behind sinks. Fittings are also designed to accommodate solvent weld pipes and have BioCote® technology.

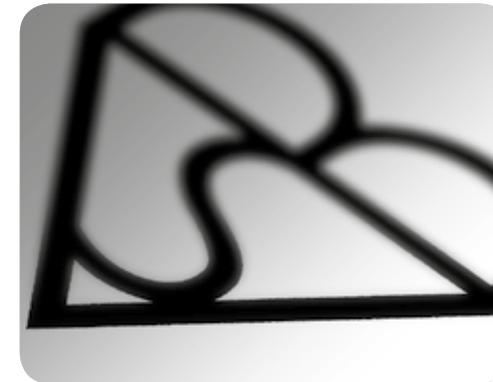


Sustainable Multi-layer Waste Pipe

Polypipe Building Products new sustainable Multi-layer recycled core waste pipe demonstrates an investment in product development and carbon efficient solutions. The use of a recycled core allows installers to effectively reduce their carbon footprint whilst continuing to use products from a brand they trust.

BioCote® Antimicrobial Technology

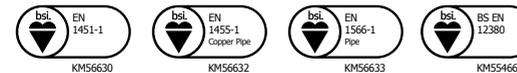
Scientifically proven, BioCote® antimicrobial technology reduces blockages and odour caused by the build up of biofilm. Our products which are enhanced with BioCote® provide lasting and effective protection against harmful bacteria, mould, fungi and viruses by up to 99.99%. BioCote® technology is present in our ABS Solvent Weld, Push-fit, Compression Waste, Traps & Pan Connector ranges.



Approvals

Polypipe's waste range has a comprehensive list of approvals

- Kitemark - BS EN 1451-1 – Push-fit waste fittings
- Kitemark – BS EN 1455-1 – ABS Solvent weld fittings
- Kitemark - BS EN 1566-1 – MUPVC Solvent weld waste pipe
- Kitemark – BS EN 12380 - Polyvalve Air Admittance Valves
- BBA - 18/5514 – Push-fit waste system, Pipe & Fittings
- BBA – 18/5514 – Solvent Weld ABS waste system, pipe & fittings
- BBA – 09/4650 – Polyvalve Air Admittance Valves



Methods of Joining

Push-fit (Ring Seal) Joining

1. Ensure that the pipe is cut square to its axis and that all burrs are removed.



2. Chamfer the end of the pipe to prevent the ring seal being damaged or misplaced when the pipe is inserted into the socket. Fittings with spigot ends are moulded with a chamfer during manufacture.



3. Lubricate the spigot or ring seal with Polypipe silicone grease or aerosol lubricant.



4. Insert the pipe or fitting into the socket and then withdraw it by approximately 10mm to allow for expansion of the pipework.



Solvent Weld Joining

1. Ensure that the pipe is cut square and that all burrs are removed.
2. Ensure the both surfaces to be jointed are dry and free from dust or other debris.
3. Use Polypipe cleaning fluid CF250 to remove any surface grease from the spigot and socket to be jointed.



4. Apply a coat of Polypipe solvent cement to both surfaces to be jointed using the brush applicator provided in the lid. The cement should be applied along the length of the spigot and not around its diameter.



5. The spigot should be inserted into the socket immediately, with a slight twisting action.



6. Any surplus solvent cement should be removed with a clean synthetic cloth.
7. The joint will be strong enough to handle after approximately 10 minutes and can be tested after 24 hours.

Compression joining

1. Ensure that the pipe is cut square and that all burrs are removed.



2. Remove threaded nut, washer and seal from the fitting.



3. Place the threaded nut first onto the pipe, then the blue washer. Finally push the seal onto the pipe with the seal facing into the fitting.



4. Polypipe's blue Fit-Rite™ insertion aid can be left in the body of the fitting if you are connecting to solvent weld and Push-fit pipe. If you are connecting to metal pipe or distorted plastic pipe you can remove the pipe insertion aid.



5. Insert the pipe into the fitting.



6. Screw the threaded nut onto the body of the fitting. Once tight apply an additional 1/4 turn.



	Size	Colour					
		Grey	Black	White	Brown	Solvent Grey	
Waste Systems	ABS Solvent Weld Waste	32mm	✓	✓	✓	✓	
		40mm	✓	✓	✓	✓	
		50mm	✓	✓	✓	✓	
	MUPVC Solvent Weld Waste	32mm		✓	✓		✓
		40mm		✓	✓		✓
		50mm		✓	✓		✓
	Push-fit Waste	32mm	✓	✓	✓	✓	
		40mm	✓	✓	✓	✓	
		50mm	✓	✓			
Compression Waste	32mm			✓			
	40mm			✓			
Overflow	Solvent Weld Overflow			✓			
	Push-fit Overflow	✓					
Traps	Traps	32mm			✓		
		40mm			✓		

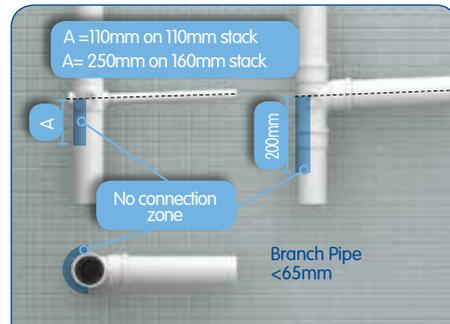


Prevention of Crossflow

Where a branch enters a stack, it creates a zone on the opposite wall of the stack where no connections may be made.

Where the branch pipe diameter is less than 65mm, the no connection zone is 110mm deep on a 110mm diameter stack and 250mm deep on a 160mm diameter stack, measured from the centre line of the incoming branch pipe.

Where the branch pipe exceeds 65mm, the no connection zone is 200mm irrespective of stack diameter.



NOTE:
No connections may be made in the shaded areas, however connections whose centre lines are on the boundary of the zones are acceptable.

Access to Pipework

Where the discharge stack has a long drain connection to an inspection chamber, access for rodding and testing should be provided at or near the base of the stack. When ground floor



appliances are connected to the soil stack, the access point should be sited above the spillover level of the appliances.

For multi-storey domestic buildings, access into the stack should be provided at 3 storey intervals and for multi-storey commercial buildings access should be provided on each floor.

Boss Connections



All boss shoulders provided on bossed pipes, branches, strap bosses etc. are a common waste and will accept 32mm, 40mm and 50mm waste pipes using a comprehensive range of boss adaptors.

Where a boss shoulder is moulded solid, it should be drilled through with a 60mm diameter hole saw.

Note: Boss Adaptors with universal Push-fit or compression joints will accept polypropylene, ABS, MUPVC or copper waste pipes.

Rubber boss adaptors

Please refer to page 23.

Solvent boss adaptors

Please refer to page 20.

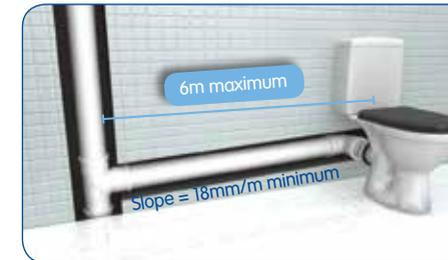
Compression boss adaptors

Please refer to page 24.

Branch Connections, Pipe Lengths and Gradients

The following information shows the requirements of the Building Regulations with regard to lengths of unventilated branch discharge pipes and corresponding gradients.

Requirement for single WC



1. A maximum of 8 WCs may be connected to an unventilated soil branch. The length is limited to 15m max. in this case.
2. Pipe diameter = 110mm.
3. It is only permitted to use 82mm dia. pipework when the outlet of the WC pan itself is less than 80mm diameter.

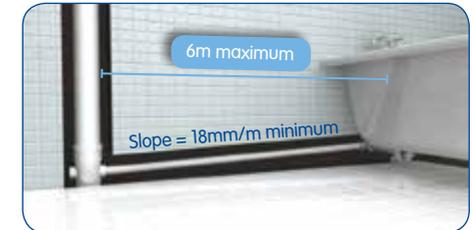
Wash basin (also bidet)



1. Where maximum length is exceeded, an anti-siphon trap or anti-siphon unit should be used.
2. Pipe diameter = 32mm.
3. If 40mm dia. pipe is used, max length is 3m.

Bath (also shower)

1. Pipe diameter = 40mm.
2. If 50mm dia. pipe is used, max length is 4m.



Sink

1. Pipe diameter = 40mm.
2. If 50mm dia. pipe is used, max length is 4m.



Soil Manifold

The MAN 5 Soil Manifold overcomes the problem of crossflow whilst maintaining the facility to connect waste pipes to the soil stack above floor level.





Raising the Standard for Above Ground Drainage Systems

Through a highly valued partnership with BioCote®, Polypipe has now extended its product offering far beyond what is currently available on the market by launching the world's first antimicrobial drainage solution. Which includes our ABS Solvent Weld, Push-fit & Compression Waste pipe and fittings. Our Traps & Pan Connectors also include BioCote®.

Benefits of integrating BioCote® Antimicrobial Technology

From a microbiological point of view, what's happening beyond the sink drain has proven to be of considerable importance. Polypipe products containing BioCote® have been independently proven to reduce over 99% of microbes. Benefits of this include:

- Extends the lifetime of products**
 By preventing microbes such as mould that can cause material degradation from negatively impacting product performance
- Reduces smells and blockages**
 BioCote® protects against bacteria and mould that can cause foul odours and blockages within a waste system
- More hygienic**
 BioCote® technology consistently acts to prevent the accumulation of bacteria in the waste system
- Provides permanent protection**
 Integrated during the manufacturing stage, BioCote® doesn't wash away or wear off

Now available across a wide range of Polypipe Products:

ABS Waste



Push-fit Waste



Compression Waste



Traps



Pan Connectors



Technology supported by real life data

BioCote® protected Polypipe products are supported by regular and robust quality control testing data, however they don't just perform in the laboratory, they also perform in real life.

Two near-identical waste traps were selected for testing in a study designed to simulate real life conditions. The traps were made from the same material apart from a key difference: one trap was a product made by Polypipe, protected by BioCote®, and the other was unprotected. The selected sample images below show the results from swabbing the traps after subjecting them to contamination whilst in situ.

The BioCote® protected traps demonstrated remarkable antimicrobial efficacy that is clearly visible in the images below:

BioCote® Protected Trap



Unprotected Trap



How we did it: putting Polypipe protected traps to the test

BioCote® protected Polypipe traps are put through rigorous testing to ensure consumers' confidence in the efficacy of antimicrobial treated products.

To guarantee that data generated from the testing is relevant to the product application, a real life scenario was simulated in a controlled environment in an independent testing facility.

Using two waste water traps near identical in size and shape, the laboratory tested Polypipe antimicrobial traps against unprotected competitor products to showcase the difference in performance.

Laboratory Method

After labelling and marking the sample traps with a swab site on the interior of the traps. The traps were then filled with tap water so that the swab site was sitting just above the waterline for accuracy of results. The sample traps were flushed in the morning using tap water and refilled to mimic real life usage.

Swabbing Method

Swabs were taken from the 5cm x 5cm swab site on both the protected and unprotected traps. Swabs were then spread directly onto agar and incubated for 48 hours at 35 degrees Celsius. To ensure accuracy and reliability of results, this process was repeated.

About BioCote®

Located in the heart of England, BioCote® has been a market leading antimicrobial additives provider for over 25 years. With an open, consultative approach to antimicrobial product integration, BioCote® is trusted by leading brands, manufacturers and product innovators worldwide.

BioCote® are passionate about creating distinctive, high-value products shown to reduce the negative effects of bacteria, mould, fungi and viruses on materials, delivering value-added, intrinsic product differentiation to partner products.

BioCote® believe in best practice. This is why BioCote® are ISO 9001 and 14001 accredited, HACCP International certified and they offer independent antimicrobial testing to ensure that protected materials are performing to the non-negotiable standards of products carrying the BioCote® trademark.

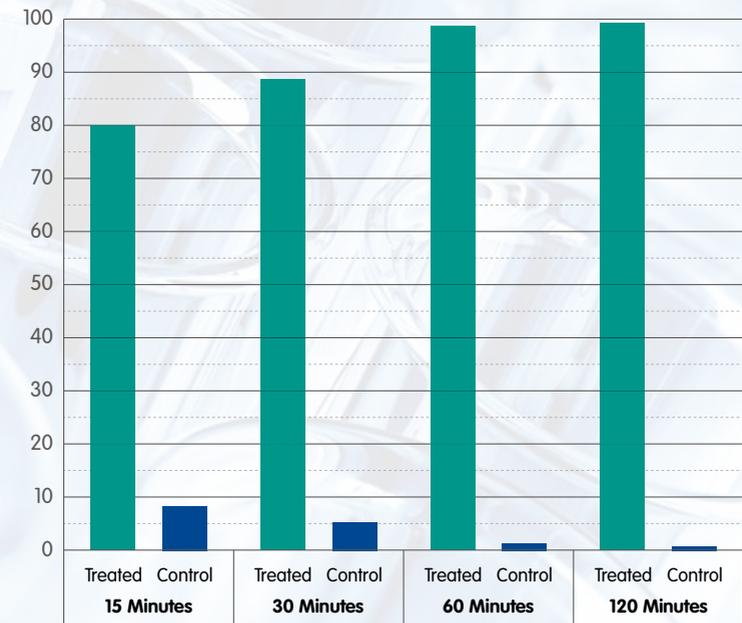
Premium performance from Polypipe antimicrobial traps.

BioCote® protected Polypipe traps are put through rigorous testing to ensure consumers' confidence in the efficacy of antimicrobial treated products.

Polypipe protected products containing BioCote® technology can reduce microbes on the surface by over 80% in as little as 15 minutes.

BioCote® works constantly against contaminating microbes, providing Polypipe products with lasting protection that has been proven to perform for up to 25 years.

Percentage bacteria reduction



| Traps

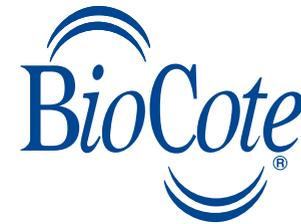
Polypipe Building Products' traps range provides superior flexibility and ease of installation. With our enhanced investment, we can also offer a range that includes Fit-Rite™ technology for extra peace of mind and BioCote® technology; reducing mould, fungus and odours. An improved compression range and the introduction of a 50mm bath trap makes installation in confined spaces more accessible. Also for added confidence, we are the only manufacturer with a Traps range which is Kitemark™ Accredited.



Traps: Features

Fit-Rite™ Technology

Fit-Rite™ technology has been created and developed to enable simple fitting and removability. Our products enhanced with this innovative design incorporate an improved finned seal for ease of installation, reducing the need for pipe tampering and allows for easy guidance in tricky to reach spaces such as beneath baths and behind sinks. Fittings are also designed to accommodate solvent weld pipes and have BioCote® technology.



BioCote® Antimicrobial Technology

Scientifically proven, BioCote® antimicrobial technology reduces blockages and odour caused by the build up of biofilm. Our products which are enhanced with BioCote® provide lasting and effective protection against harmful bacteria, mould, fungi and viruses by up to 99.99%. BioCote® technology is present in our ABS Solvent Weld, Push-fit, Compression Waste, Traps & Pan Connector ranges.

The only Kitemarked Trap available in the UK

Polypipe are very proud to be the only manufacturer in the UK to have a kitemark accreditation on our available traps range. For more information and to understand what testing we have to put our traps through to achieve a kitemark accreditation. Please scan the QR code to find out more:



Help for Heroes

79p from the sale of each WP46 Trap will be contributed to Help for Heroes Trading Limited, which Gift Aids all of its taxable profits to Help for Heroes (Registered Charity Number 1120920).

An extensive range of traps for every application

Tubular Trap

There are two forms of Tubular Trap, a "P" Trap for horizontal outlets and an "S" Trap for vertical outlets. Tubular traps usually have a nut which can be loosened, allowing the outlet to be rotated around to the required direction and then re-tightened.



Bottle Trap

Bottle Traps have a central vane, or dip tube to form the trap. There is a removable bowl to clear any blockages. This form of trap should only be used on wash basins.

Pedestal Trap

Pedestal Traps are also known as Straight Through Traps or Bag Traps and are generally used in instances where there is insufficient space to install a standard Bottle or Tubular Trap.



Washing Machine Trap

Traps designed for washing machines are typically similar to tubular traps and must cater for the connection of the flexible hose running from the appliance.

Undersink Kits

This type of trap arrangement is used in situations where there may be a double bowl or bowl and a half unit and where a washing machine needs to be connected. Polypipe supply with every undersink trap, an adaptor to connect to non-UK sized outlets.



Bath Traps

Bath traps work the same as any other trap but are designed to fit under a bath and accommodate if required an overflow to be connected into the trap. Most of Polypipe's bath traps offer a swivel function to allow a 360 deg option for connecting waste pipe.

Resealing and Anti-Siphon Traps

Resealing and Anti-Siphon traps are used generally for the same purpose, that is to prevent the loss of the water seal in the trap due to either self or induced siphonage.



Bath Traps Installation

Polypipe offer a wide range of bath traps to meet various installation and building regulation requirements. Before selecting which trap you require it's important to understand the distance between the floor and the bath outlet. It's also important to understand if the overflow will be part of the outlet or the trap, along with where the waste pipe is situated. When selecting a trap for new build, the trap must have a minimum of a 50mm seal to meet building regulations part H.

1. In this installation we demonstrate our 50mm bath trap that is connected to an outlet with a built in overflow, with the pipe running 90 deg to the flow of the trap.



2. Remove the threaded nut, blue finned rubber seal, and blue spacer from the outlet of the bath trap.



3. Place the threaded nut over your waste pipe, with the exposed threads facing towards the end of the pipe the trap is connecting to. Then place the spacer on to the waste pipe followed by the finned blue seal. It's important the smaller end of the seal is facing towards the end of the pipe that is connecting to the trap. If you are connecting your Polypipe trap to a piece of metal waste pipe or a non-kitemarked solvent weld or push fit waste pipe, you can remove our unique patented blue Fit-Rite™ insertion aid. When installing non-Polypipe traps that have an insertion aid you will need to cut the insertion aid out of the fitting for it work.



4. When connecting your bath trap to your waste pipe it's important that the waste can be fully inserted into the outlet of the trap. Once this has been done you can then move the blue finned seal along the waste pipe into the trap.



5. Once the seal is in place, the threaded nut can be threaded onto the trap, which will create a compression seal between your waste pipe and trap. After the threaded nut has been hand tightened a final ¼ turn is required.



6. A final inspection of the connection is required to make sure the connection has been made by pulling on the pipe and fitting. This may not be suitable in certain applications.



7. When presenting the inlet of your bath trap to the outlet of the bath, the seal must be completely flat to create a 100% seal.



8. To complete the installation, thread the nut onto the outlet. There should be no play in the connection between the outlet and the trap.



9. Once the installation is complete run water through the trap and waste system to confirm the trap has been installed correctly.



General Traps Installation

Polypipe offer a wide range of traps to meet various installation and building regulation requirements. For more information on what type of trap you may need for your installation, please see pages 58 & 59.

In this installation, we demonstrate a bottle trap.



1. Remove the threaded nut, blue finned rubber seal, and blue spacer from the outlet of your trap.



2. Place the threaded nut over your waste pipe, with the exposed threads facing towards the end of the pipe the trap is connecting to. Then place the spacer on to the waste pipe followed by the finned blue seal. It's important the smaller end of the seal is facing towards the end of the pipe that is connecting to the trap. If you are connecting your Polypipe trap to a piece of metal waste pipe or a non-kitemarked solvent weld or push fit waste pipe, you can remove our unique patented blue Fit-Rite™ insertion aid. When installing non-Polypipe traps that have an insertion aid you will need to cut the insertion aid out of the fitting for it work.



3. When connecting your trap to your waste pipe It's important that the waste can be fully inserted into the outlet of the trap. Once this has been done you can then move the blue finned seal along the waste pipe into the trap.



4. Once the seal is in place, the threaded nut can be threaded onto the trap, which will create a compression seal between your waste pipe and trap. After the threaded nut has been hand tightened a final ¼ turn is required. A final inspection of the connection is required to make sure the connection has been made by pulling on the pipe and fitting. This may not be suitable in certain applications.



Pedestal Traps Installation

Deciding on what trap you need for a pedestal sink can vary greatly. Before deciding what trap you need you will need to understand where the waste pipe is situated. If the waste pipe is positioned along the wall then a bottle or "P" trap would be required. If the waste pipe is positioned in the floor then a pedestal trap (sometimes referred to as a straight through trap) will be required. In some installations you may also require a trap that has an adjustable feature. If the total distance of the waste pipe run is longer than 1.7 meters to the soil stack then an anti-syphon trap will be required.

1. When presenting the inlet of your trap to the outlet, the seal must be completely flat to create a 100% seal.



2. To complete the installation, thread the nut onto the outlet. There should be no play in the connection between the outlet and the trap.



3. If you have installed an adjustable trap as we have in this installation then the trap can be positioned in line with the waste pipe. To do this, loosen the threaded nut below the threaded nut that is connected to the outlet. Then move your trap either up or down as required, once this is complete re-tighten the threaded nut to re-seal the trap.



4. To connect your trap to your waste pipe remove the threaded nut on the outlet of the trap, along with the blue finned rubber seal, and blue spacer. Place the threaded nut over your waste pipe, with the exposed threads facing towards the end of the pipe the trap is connecting to. Then place the spacer on to the waste pipe followed by the finned blue seal. It's important the smaller end of the seal is facing towards the end of the pipe that is connecting to the trap. If you are connecting your Polypipe trap to a piece of metal waste pipe or a non-kitemarked solvent weld or push fit waste pipe, you can remove our unique patented blue Fit-Rite™ insertion aid. When installing non-Polypipe traps that have an insertion aid you will need to cut the insertion aid out of the fitting for it work.



5. When connecting your trap to your waste pipe it's important that the waste can be fully inserted into the outlet of the trap. Once this has been done you can then move the blue finned seal along the waste pipe into the trap.



6. Once the seal is in place, the threaded nut can be threaded onto the trap, which will create a compression seal between your waste pipe and trap. After the threaded nut has been hand tightened a final ¼ turn is required. A final inspection of the connection is required to make sure the connection has been made by pulling on the pipe and fitting. This may not be suitable in certain applications. Once the installation is complete run water through the trap and waste system to confirm the trap has been installed correctly.



Undersink Traps Installation

Undersink traps perform a number of functions which range from connecting one sink and one appliance, to multiple sinks and multiple appliances from one trap. Undersink traps generally offer greater adjustability compared to other traps.

1. Prior to installing your undersink trap it's important to understand the type and number of sink outlets you will be connecting to and how many appliances will need to be connected to your trap (i.e. dishwasher waste hose, washing machine hose etc.). This information will determine what type of undersink trap you will require. In our installation we require a 1½ undersink trap with one hose connection.



2. Before installing your undersink trap we recommend lining your trap up to all sink connections to make sure you have enough adjustability within the trap and to make sure the outlet of your trap can be connected to your waste pipe. It's at this stage where if required you should shorten any of the adjustable lengths.



3. When connecting your trap to your sink outlets the seals need to be 100% flush with the outlet. If this is not the case then you may need to use the adaptor provided with your undersink trap along with the seal for this adaptor.



4. Fully tighten your threaded nuts. There should be no lateral movement between these parts once they are installed correctly.



5. Repeat steps 3 & 4 for all sink outlets.



Polypipe supply with every undersink trap (WTC6), an adaptor to connect to non-UK sized outlets.

6. To connect your trap to your waste pipe remove the threaded nut, blue finned rubber seal, and blue spacer from the outlet of your trap. Place the threaded nut over your waste pipe, with the exposed threads facing towards the end of the pipe the trap is connecting to. Then place the spacer on to the waste pipe followed by the finned blue seal. It's important the smaller end of the seal is facing towards the end of the pipe that is connecting to the trap. If you are connecting your Polypipe trap to a piece of metal waste pipe or a non-kitemarked solvent weld or push fit waste pipe, you can remove our unique patented blue Fit-Rite™ insertion aid. When installing non-Polypipe traps that have an insertion aid you will need to cut the insertion aid out of the fitting for it work.



nut has been hand tightened a final ¼ turn is required. A final inspection of the connection is required to make sure the connection has been made by pulling on the pipe and fitting. This may not be suitable in certain applications.

8. Connecting appliance waste hoses to your undersink traps is done by either removing the cap from the hose or if no cap is present, by cutting the end of the hose off. This process differs depending if the hose is straight or angled.



9. Once the cap is removed or the hose end has been cut away, you can connect your hose to the hose connection. Place the appliance hose as far over the hose connection as is possible making sure there are no kinks in the hose once it has rested.



7. When connecting your trap to your waste pipe it's important that the pipe can be fully inserted into the outlet of the trap. Once this has been done you can then move the blue finned seal along the waste pipe into the trap. Once the seal is in place, the threaded nut can be threaded onto the trap, which will create a compression seal between your waste pipe and trap. After the threaded



Traps General Information

Traps are an integral part of any waste system and are generally situated on the outlet of an appliance (to which the waste is attached).

The purpose of a waste trap is to provide a water seal between the waste water pipework and the internal environment of the property, thus stopping any foul air entering the building which would be both hazardous and unpleasant.

All points of discharge into a soil and ventilation system should be fitted with a trap to prevent foul air from the underground drainage system entering the building. Under working and test conditions, traps should retain a minimum water seal of 25mm.

If a trap forms part of an appliance, the appliance should be removable. All other traps should be fitted directly after the appliance and should be removable or be fitted with a cleaning eye.

The depth of water seal is the vertical distance between the water level in the trap after discharge and the point at which the water would be at such a level as to allow foul air through the trap.

Minimum diameters and depth of seals for waste traps are specified in the Building Regulations and are shown in the table 6 opposite :-

Minimum dimensions of traps and water falls

Appliance	Diameter of trap (mm)	Dept of water seal (mm)
Wash basin	32	75
Bidet	32	75
Bath	40	50
Shower	40	50
Sink	40	75
Washing Machine	40	75
Dishwasher	40	75
Waste disposal unit	40	75
Urinal bowl	40	75

TABLE 6: DEPTH OF WATER SEAL BY APPLIANCE

Diameter of traps indicated refers to the nominal inside diameter of the waste pipework to which they are fitted.

Where baths, showers, washing machines and dishwashers discharge directly to a gully, the depth of seal may be reduced to 38mm.

Joining to waste pipes

Most traps available in the UK have universal compression outlets and will connect onto Push-fit and solvent weld plastics waste systems together with imperial and metric copper systems.

Rainwater Systems

Polypipe has the most comprehensive rainwater offer in the UK, in both profiles and colours. Our ranges are also supported by our vast range of adaptors which allow our systems to be connected to nearly all types of existing installations, including cast iron. Polypipe Building Products in recent years has also innovated with its unique Notched Ogee gutter system, which stops gutter becoming dislodged through heat expansion and contraction. Our Elegance Cast Iron Effect range is a perfect cost effective solution to traditional cast iron systems where local planning requires this type of system to be installed. Our most recent addition to our rainwater range is our Elegance Colour offering.

Our Elegance Colour range has 25 different colours and finishes, ranging from Sea Mist Blue to Red Wine, from Chartwell Green to pearl white, and various colours in between. We also offer within our Elegance Colour range a cast iron effect finish and also a matt finish which resembles the look of aluminium. No other manufacturer in the UK can offer the depth and breadth or range that we can at Polypipe Building Products.

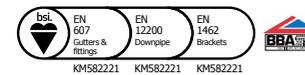


Rainwater: Introduction



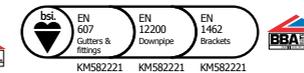
Half Round

- Available in 75mm, 112mm & 150mm
- Available in Black, White, Grey & Brown
- Comprehensive range of adaptors to connect to traditional materials



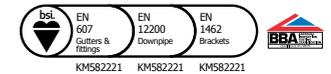
Square

- Available in 112mm
- Available in Black, White & Brown
- Comprehensive range of adaptors to connect to traditional materials



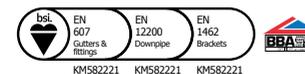
Polyflow

- 117mm x 75mm
- High Capacity design able to drain a roof area up to 240m²
- Available in Black, White, Grey, Brown & Anthracite



Ogee & Sovereign

- Ogee – 130mm x 70mm - imitates the original cast iron ogee profile
- Sovereign 117mm x 75mm – is a modern take on the tradition ogee profile
- High Capacity systems
- Available in Black, White, Brown & Oak Brown



Downpipes

- 4 Systems
- Round available in 50mm, 68mm & 110mm
- Square available in 65mm
- Available in Black, White, Brown, Grey, Anthracite & Oak Brown



Elegance

- Cast iron effect finish
- 4 systems
- Notched Ogee, Half round 112mm, Polyflow deep capacity & round 68mm downpipe
- 10 Year Colour Fastness Guarantee



As part of our continued product development initiatives we are constantly introducing new products and updating our existing ranges, hence our rainwater range now incorporates nine different systems to cover all installations from domestic and commercial to industrial.

These nine systems provide a variety of profiles and capacities ensuring that every installation is catered for whether it is a modern streamline dwelling (Sovereign) or an industrial property (150mm half round).

All rainwater products are manufactured from PVCu in accordance with a Quality Management System to BS EN ISO 9001 (certificate no FM00318).

Profiles available:

75mm & 112mm Half Round	112mm Square	117mm x 75mm Polyflow
		
19 / 39.1cm ²	57.2cm ²	57.1cm ²
130mm x 70mm Ogee	150mm Industrial Half Round	117mm x 75mm Sovereign
		
57.8cm ²	84.6cm ²	70cm ²

Gutter size	75mm Half Round	112mm Half Round	112mm Square	117x75mm Polyflow	130x70mm Ogee	117x75mm Sovereign	150mm Half Round
Downpipe size	50mm Round	68mm Round	65mm Square	65mm Square	68mm Round 65mm Square	68mm Round 65mm Square	110mm
Hepworth		✓	✓				✓
Osma		✓					✓
Hunter		✓	✓				
Marley	✓	✓ (Clipmaster)					✓
Brett Martin		✓	✓				
Floplast		✓	✓				
Marshall Tufflex		✓	✓				✓
Freefoam		✓					

TABLE 7: PRODUCT COMPATABILITY

Polypipe Gutter	75mm Half Round	112mm Half Round	112mm Square	117x75mm Polyflow	130x70mm Ogee	117x75mm Sovereign	150mm Half Round
Black	✓	✓	✓	✓	✓	✓	✓
Brown		✓	✓	✓	✓	✓	✓
Grey	✓	✓		✓			✓
White	✓	✓	✓	✓	✓	✓	
Oak Brown						✓	
Cast Iron Effect		✓			✓		
Anthracite				✓			

TABLE 8: COLOUR AVAILABILITY

Handling and Storage

Although rainwater gutter, downpipe and the associated fittings are strong and lightweight, care must be taken when handling.

Extra precaution should be taken in cold conditions due to the reduction in impact strength of plastic products.

All gutter and downpipes should be stored away from direct sunlight and preferably under cover. When stored in any form of racking all downpipes should be supported at no more than two metre intervals (as shown opposite).

Fittings should be kept under cover in their respective packaging until such time as required for installation.

Solvent cement should also be kept out of direct sunlight or away from any other heat source.

Calculating Roof Areas

The aim of designing a rainwater system is normally to achieve a balance between the cost of the system and the frequency and consequence of possible flooding. The capacity of the gutter should be sufficient to provide adequate disposal of the heavy rainfall usually associated with summer thunderstorms.

A simple methodology for roof drainage design is shown opposite but for further information regarding roof drainage refer to BS EN 12056-3: 2000 Roof Drainage, Layout and Calculation (see diagram opposite).

Gutter Selection

Due to the infrequency of extremely heavy rainfall in the United Kingdom, it is almost impossible to design a cost efficient rainwater system to give complete immunity from flooding and overflow.

Because of this it is generally regarded as normal practice to design rainwater systems using a

rainwater intensity level of 75mm per hour. To calculate the gutter requirement, multiply the E.R.A. (m²) by a factor of 0.0208 (75mm/hour divided by 3600 seconds/hour) to give the flow rate in litres/second (l/s).

Once a flow rate has been determined use tables 9 & 10 on page 74 to select the required gutter profile.

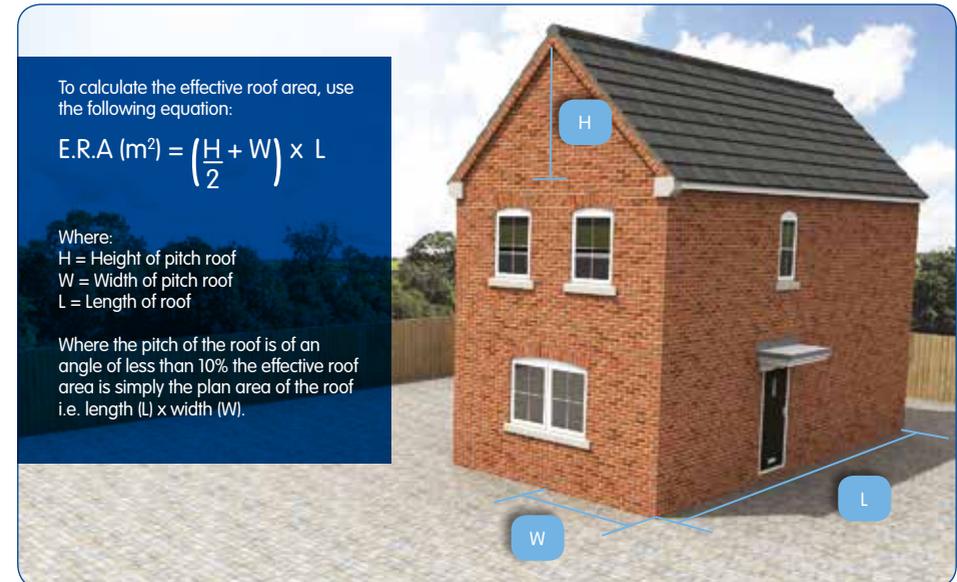
Note: If a gutter angle is introduced into the rainwater gutter run, the effective gutter capacity will be affected and an adjustment must be made to the maximum roof area which each rainwater system is capable of draining (see Code of Practice BS EN 12056-3:2000 for further details).

To calculate the revised maximum roof area which can be drained when the gutter run contains an angle the following factors must be applied to the figures in tables 9 and 10 on page 74.

Level gutter run with angle within 2 metres of outlet	10% Reduction
Level gutter run with angle further away than 2 metres of outlet	5% Reduction
Gutter run at 1:600 fall with angle within 2 metres of outlet	20% Reduction
Gutter run at 1:600 fall with angle further away than 2 metres of outlet	10% Reduction



Ideal downpipe storage



Roof area calculations

Outlet fixed at	Flow Capacity (l/s)	Flow Capacity (l/s)	Maximum Roof Area (m ²)	Maximum Roof Area (m ²)
	End	Centre	End	Centre
75mm - Half Round	0.390	0.680	16	32
112mm - Half Round	0.912	1.833	44	88
112mm Square	1.083	2.167	52	104
Polyflow - Deep Capacity	1.800	3.600	86	172
Ogee	1.833	3.667	88	176
Sovereign	2.100	4.200	101	202
150mm - Half Round	2.300	4.600	110	220

TABLE 9: GUTTER FLOW CAPACITY BASED ON LEVEL FALL

Outlet fixed at	Flow Capacity (l/s)	Flow Capacity (l/s)	Maximum Roof Area (m ²)	Maximum Roof Area (m ²)
	End	Centre	End	Centre
75mm - Half Round	0.520	0.900	24	48
112mm - Half Round	1.300	2.600	62	124
112mm Square	1.517	3.033	72	144
Polyflow - Deep Capacity	2.500	5.000	120	240
Ogee	2.567	5.133	123	246
Sovereign	2.950	5.900	142	284
150mm - Half Round	3.233	6.467	154	308

TABLE 10: GUTTER FLOW CAPACITY BASED ON 1:600 FALL

Profile	Max support centres
75mm - Half Round	0.5 mtr
112mm - Half Round	1 mtr
112mm Square	1 mtr
Polyflow - Deep Capacity	1 mtr
Ogee	1 mtr
Sovereign	1 mtr
150mm - Half Round	1 mtr

Note: In areas susceptible to high snow fall or high winds reduced gutter support centres of 0.5 metres are recommended.

TABLE 11: RAINWATER SUPPORT CENTRES

Cutting, Preparing & Connecting Gutter

1. All rainwater gutters and pipes must be squarely cut and all burrs must be removed. It is recommended that a fine toothed handsaw is used. Care must be taken when cutting gutters and pipes in cold or damp conditions due to the slippery nature of the pipe surface.



2. After your gutter has been cut we recommend removing any burrs that may be present with a piece of sandpaper. This will stop any loose bits of plastic cutting into the seal.



3. Polypipe rainwater systems are fitted with a flexible clip and seal jointing mechanism, making it easy to connect gutter to fittings. Because the clip is flexible and not part of the body of the fitting this allows for much easier installation.



4. When connecting a piece of gutter to a gutter fitting, it's best to start by placing the gutter under the flexible clip which is facing away from you. Once the gutter is positioned under the flexible clip you can then move the front edge of the gutter under the flexible clip closest to you.



5. It is also important that the gutter is not connected beyond the expansion line which is clearly marked on each fitting.



Installation on Fascia Boards

1. For more information on brackets, supports and how to position fascia brackets see page 74.



2. Polypipe union brackets and running outlets can be used in place of fascia brackets when the installation allows.



3. When installing your gutter into a run of fascia brackets you should start by connecting the back edge of the gutter under each bracket as demonstrated in this installation.



4. Once the back edge of the gutter is in place, the front edge can be clicked into place. It's best to have your gutter in the correct position prior to connecting the front edge as it can be difficult to move the gutter along the run of fascia brackets once it's in place.



5. Connecting to fittings is the same process as in point 4. Prior to connecting your gutter you will need to make sure it does not go beyond the expansion line, which is detailed on each fitting.



Installation on Rafters

1. For more information on brackets, supports and how to position brackets see pages 74.



2. Depending on the age and type of roof, the distance between rafters can vary, but on most properties the distance should be around 600mm. We recommend installing a fascia bracket on every rafter.



3. When installing your gutter into a run of fascia brackets you should start by connecting the back edge of the gutter under each bracket as demonstrated in this installation.



4. Once the back edge of the gutter is in place, the front edge can be clicked into place. It's best to have your gutter in the correct position prior to connecting the front edge as it can be difficult to move the gutter along the run of fascia brackets once it's in place.



5. Connecting to fittings is the same process as in point 4. Prior to connecting your gutter you will need to make sure it does not go beyond the expansion line, which is detailed on each fitting.



Jointing Brackets and Supports

1. Preparing gutters & pipes

All rainwater gutters and pipes must be squarely cut and all burrs must be removed. It is recommended that a fine toothed handsaw is used. Care must be taken when cutting gutters and pipes in cold or damp conditions due to the slippery nature of the pipe surface.



2. Gutter position

All gutters should be installed as high as possible and be positioned so that the edge of the roof is central to the cross section of the profile.

Although the performance of Polypipe gutter profiles enables them to be installed level, it is recommended that a fall of 1:600 is achieved. Supporting at the recommended spacings (see table 11 opposite) will reduce any sort of ponding, sagging or silting.

Profile	Max support centres
75mm - Half Round	0.5 mtr
112mm - Half Round	1 mtr
112mm Square	1 mtr
Polyflow - Deep Capacity	1 mtr
Ogee	1 mtr
Sovereign	1 mtr
150mm - Half Round	1 mtr

Note: In areas susceptible to high snow fall or high winds reduced gutter support centres of 0.5 metres are recommended.

TABLE 11: RAINWATER SUPPORT CENTRES

3. Brackets and supports - general

Due to the varied nature of rainwater installations Polypipe offers a wide range of support options for its gutter profiles.

All systems feature a standard PVCu fascia bracket as well as top and side rafter brackets and rise and fall brackets in galvanised metal. Also included in the range are top and side universal rafter arms for use with all Polypipe gutter fascia brackets (except 150mm half round) gutter unions and running outlets.

As part of the Sovereign and Ogee ranges, a top hang fascia bracket which provides further enhancement of the gutter profile whilst giving support which is virtually invisible from ground level.



All supports should be fixed at centres not exceeding those detailed in table 11 opposite as well as adjacent to both ends of any gutter angles.

It is recommended that the bracket furthest away from the downpipe outlet is installed first. This means that if a fall is applied to the gutter this will be the highest bracket installed, therefore the correct gutter height will be determined immediately as installation commences.

Fascia brackets

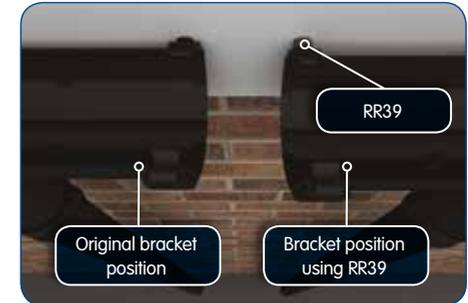
All Polypipe gutter fascia brackets incorporate three screw holes, under normal circumstances it is only necessary to use the centre fixing hole but it is recommended that all three are utilised in order to counter the effects of heavy snow fall or high winds. It is also recommended that support centres are reduced in situations where such heavy snow fall or high winds are common.

For more information visit the website www.polypipe.com, click on Literature & Technical Info and search for "Rainwater Systems".

All components should be secured to the fascia using corrosion resistant No.10 roundhead screws.

Normally traditional techniques are used when installing fascia brackets i.e. using a plumb line along the length of the fascia board and fixing brackets at intervals as shown in table 11 opposite.

If there is excessive overhang from the roof tiles then it is possible to use a spacer plate (RR39) to bring the gutter forward by 15mm. This may prevent the need for a wider profile gutter. In this instance spacer plates should be used behind all fascia brackets, unions and outlets.



Necessary space must be left between support brackets for any unions or outlets. Unions and outlets must be secured to the fascia utilising the screw holes provided on each fitting.

Once all brackets, unions and outlets are in place the gutter can then be clipped into place.

All Polypipe rainwater systems use a flexible clipping band to secure the gutter profile providing a sound watertight joint.

There is no need to remove the clipping band to complete the installation. The gutter is simply offered into the bracket, union or outlet with the side nearest the fascia being introduced first. Then by applying a little downward pressure to the gutter the clipping band is pushed over the top edge of the gutter.

On all gutter joints an expansion gap must be allowed to ensure that any thermal movement is accommodated between two fixed gutter fittings.

Insertion depths are marked on all jointing fittings, such that, if the gutter ends are fitted to the "insert to here" lines there will be ample provision for expansion and contraction under normal UK conditions.



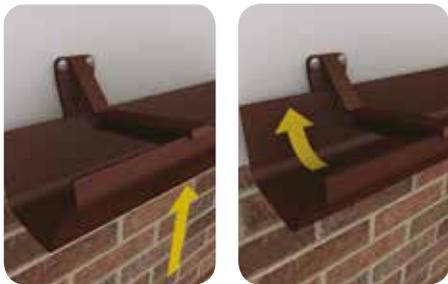


It is recommended that external stop ends should only be used where the gutter length from the running outlet does not exceed 300mm.

Where gutter lengths exceed 300mm, a fixed union bracket and an internal stop end should be used to ensure that expansion and contraction is controlled.

Top hanging brackets

In addition to the standard fascia bracket the Sovereign and Ogee ranges also incorporate top hang brackets. An angled top hang bracket is available for use with conservatories in the Sovereign Range. The method of fixing the brackets to the fascia is exactly the same as the standard fascia bracket.



The front edge of the gutter should be clipped into the bracket and then the back edge of the gutter should be snap fitted into place by applying upward pressure, the profile will clip into place providing a robust support with aesthetic advantages.

The conservatory style bracket is fixed in exactly the same manner as the top hang bracket but incorporates a "V" section so the roof of the conservatory does not interfere with the bracket when fixed in position.

Rafter and rise & fall brackets

In addition to the range of fascia brackets Polypipe offer a range of rafter brackets to suit each gutter profile.

Rafter brackets can be used where there is no fascia board in place to fix a bracket to. They are screwed to the rafters either before the roof is fixed in place (top rafter bracket) or after the roof is completed (side rafter bracket). Side rafter brackets are ideal for maintenance work as they can be installed with the roof in place.



Standard rafter brackets only fit around gutter, not fittings. It is necessary to use the universal rafter brackets to connect unions and running outlets.

Universal rafter arms are suitable for all Polypipe fascia brackets other than the 150mm half round system.

All rafter brackets are galvanised metal therefore corrosion resistant.

When using rafter brackets all gutter joints must be made using gutter union brackets / universal rafter brackets or, alternatively, supports should also be fixed either side of each fitting in any gutter run.

Should a gradient be required in the gutter run then rise and fall brackets can be used as an alternative to the rafter brackets where there is no fascia board in place.

If the installer wishes he can also use the universal rafter arm in combination with a standard fascia bracket to include a fall.

These are available in top and side variations and allow for up to 65mm height adjustment.

Installation of Downpipes

It is recommended that all downpipes are solvent welded to the running outlets to prevent any dropping of downpipes due to the thermal expansion of the plastic pipe system. 10mm expansion gaps must be left between the end of the downpipe and the bottom of the sockets of all other fittings in the downpipe run.

As with gutter runs all downpipe runs must be securely supported. Support centres are shown in the table opposite.

Additional to the supports required by table 12 opposite, all offsets, connectors, shoes and access pipes should be securely supported.



Pipe size	Max support centres Horizontal runs	Max support centres Vertical runs
50mm Round	1.0 metre	1.0 metre
68mm Round	1.0 metre	2.0 metres
65mm Square	1.0 metre	2.0 metres
110mm Round	1.0 metre	1.8 metres

TABLE 12: DOWNPIPE SUPPORT CENTRES

Outlets and offsets

All Polypipe downpipes will connect directly on to the spigot of a running outlet.

Due to building design it is usually not possible to connect a downpipe to the outlet and continue this to the drain connection without any joints.

An offset is often required at the gutter outlet.

All offsets at roof line level are achieved by using the offset bends detailed in the current trade price list.

65mm square and 68mm circular are available in both 87.5° and 112.5° angles, 50mm is available in 112.5° angle only. To give the offset joints a clean look the RR136 joint cover is available for the 68mm round downpipe system.

All offsets should be supported directly beneath the lower offset bend by a pipe bracket or clip. In the case of 65mm square downpipes the RS233 / RS234 connector.

Should there be a case where the downpipe needs to stand off the wall slightly, i.e. offset decorative brickwork or tudor style beams, then a downpipe spacer (PA20) can be used to give an extra 30mm clearance between the downpipe and the wall.

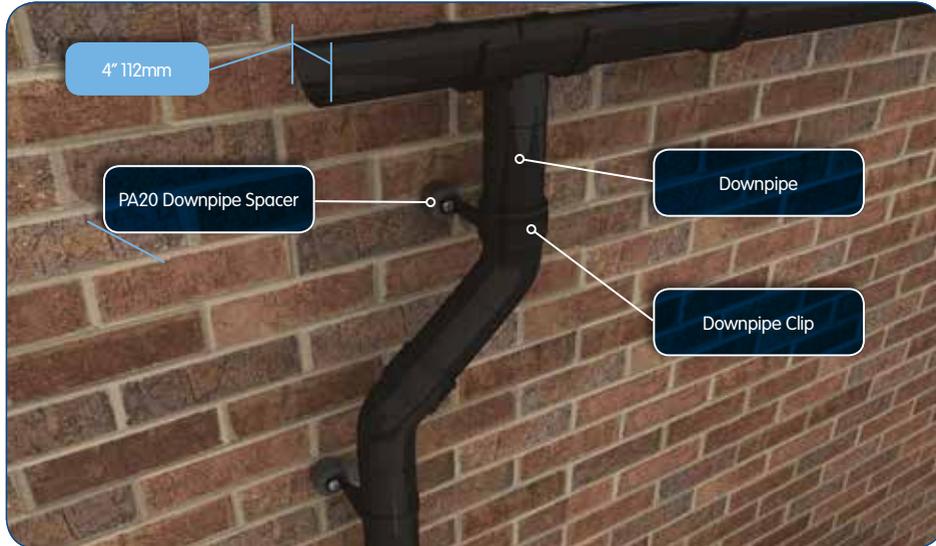
For connections to drains including rainwater shoes and adaptors see Connections to Drainage Systems section on page 83.

Connection to other materials

As part of the half round, square and ogee ranges Polypipe supply a range of gutter adaptors to connect to existing metal profiles. These include connections to half round, square and both left and right hand ogee profiles.

Connection to the metal gutter is made by installing a bolt through both the adaptor and the metal gutter section and sealing the joint with an appropriate waterproof mastic.

All adaptors must be supported at either side of the connection.



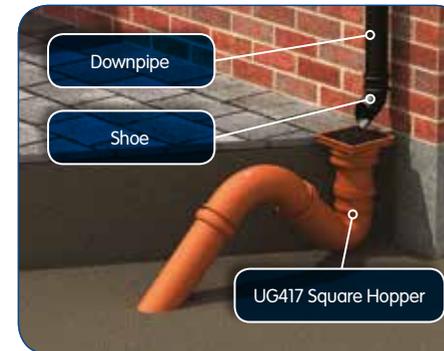
Connection to Drainage Systems

There are various different ways of connecting the rainwater downpipe to the drainage system.

This can be achieved with two basic methods.

Terminating the downpipe with a rainwater shoe for disposal into a hopper or gully or connection directly to the underground drainage system using a rainwater pipe adaptor.

Rainwater Shoe discharging over Square Hopper



Rainwater discharging into Bottle Gully



Rainwater discharging into Rainwater to U/G Pipe Adaptor



Square Downpipe discharging into drain via Square to Round Adaptor



Downpipe discharging into Universal Drain Adaptor



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