4.00 INSTALLATION

Hunter Soil and Waste Systems

Push-fit (ring seal) assembly

Solvent assembly

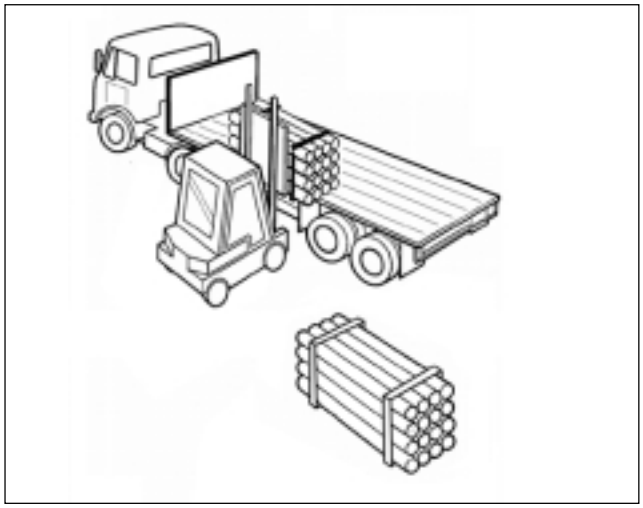
4.00 Installation

4.01 HANDLING

HANDLING

PVCu pipes are very strong, but having said that care should be taken when handling to avoid damage, such as scratching or scoring. Not only does this affect the look of pipework but can also affect the jointing of the push-fit or solvent weld fittings. In extreme cold conditions extra care should be taken, because extreme conditions reduce the impact strength of most plastics.

Pipes should be loaded by hand if possible, but if mechanical means are used then protected slings are recommended. In addition, when unloading block bundles use nylon belt type slings or fork lift trucks with smooth forks (metal hooks, slings or chains must not come into contact with the pipes).

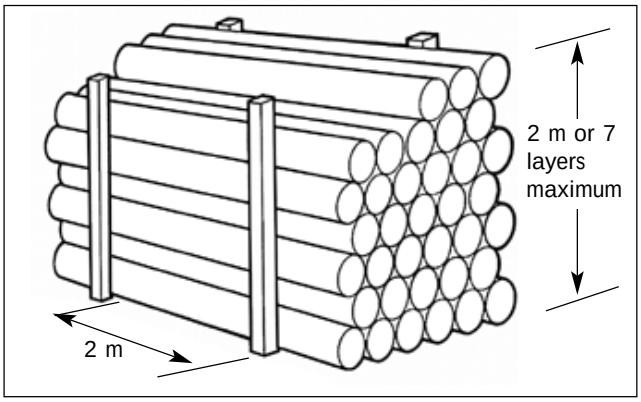


Handling block bundles

4.02 STORAGE

STORAGE

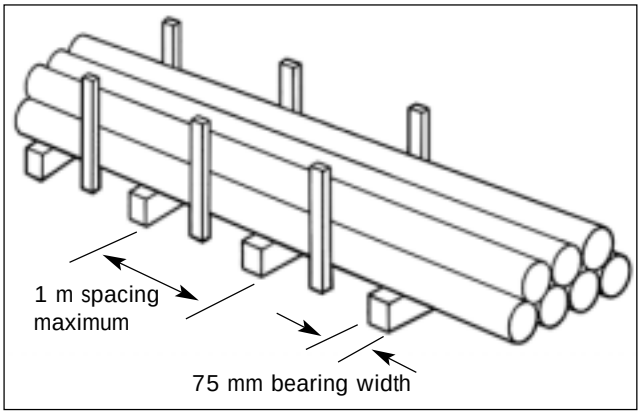
For on-site storage, lay pipes on flat ground, free from large or sharp objects - or preferably on timber battens not less than 75 mm wide spaced at a maximum of 1 m centres. In addition, side support should also be provided at intervals of not more than 1.5 m. Block bundles can be stored up to three high without extra side supports or bearers. Extra care should be taken when removing pipe from bundles as the straps are under extreme tension and may move erratically when cut.



Loose pipe storage on the ground

Loose pipe

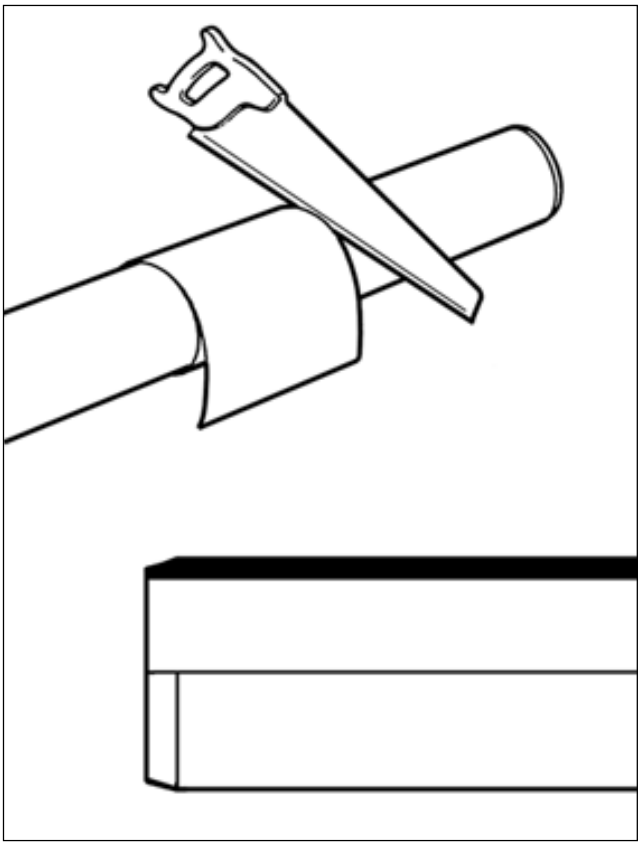
Different sized pipe should be stacked separately. If this is not possible we recommend that larger sized diameter pipe should be stacked at the bottom, not more than seven layers high or to a maximum height of 2 metres.



4.00 Installation

Spigot and socketed pipe
Spigot and socket pipes should be stacked with sockets protruding and at alternate ends to ensure even support along their length.

Fittings
Plastic pipes and fittings sealed in plastic bags or wrappers will distort if subjected to high temperatures achieved in places such as tin storage huts, or direct sunlight. Therefore, any plastic product should be stored in a cool area until needed. Solvent cement, silicone lubricants, fillers and degreasing cleaners should be stored out of direct sun light and away from any heat source.



4.03 PIPE CUTTING

PIPE CUTTING
When cutting pipe on-site Hunter recommend pipe to be;

- clean cut at right angles to its axis
- cut end then deburred with a scraper
- if cut end is inserted into a push-fit or solvent weld joint then the spigot end must be chamfered to ensure that the glue or the sealing ring is not displaced during insertion

4.04 GENERAL MAINTENANCE AND SAFETY

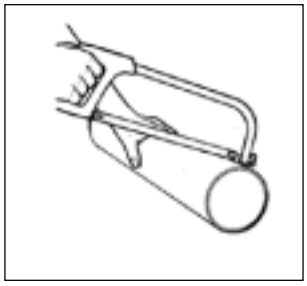
GENERAL MAINTENANCE
Assuming the system is installed correctly, no maintenance will be required. If there is a blockage, use only flexible or roller type rods. Pointed or bearing type metal fittings should not be used. Tests carried out using standard equipment from specialist drain cleaning contractors have shown their equipment to be suitable. Further guidance should be taken from BS EN 12056: 2000.

Safety
The relevant regulations are outlined in the Health and Safety At Work Act 1974 and should be followed. Hazard sheets, dealing with potential hazards of working with solvent cement and silicone lubricant are available from Hunter Plastics.

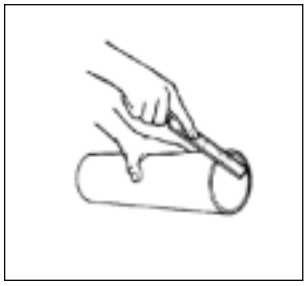
4.00 Installation

4.05 PUSH-FIT JOINTING PROCEDURES

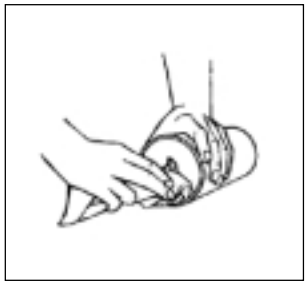
JOINTING PROCEDURES FOR PUSH-FIT SOIL & WASTE



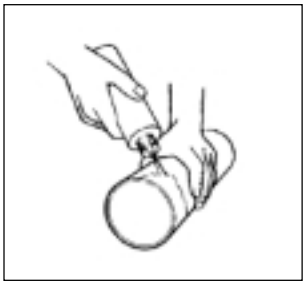
Cut pipe square, using fine tooth saw. Wrap paper around pipe as guide line



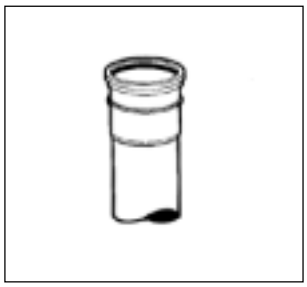
Chamfer end of pipe, using medium file or rasp. Standard lengths of pipe are already chamfered



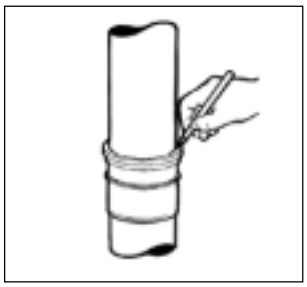
Remove swarf, dust and file dirt from end of pipe



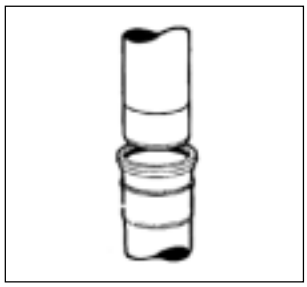
Lubricate end of pipe



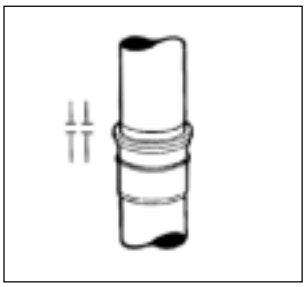
Check that ring seal is in position in housing



Push pipe fully home and mark lightly with pencil



Spigot fittings will have mark already shown

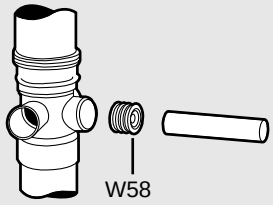
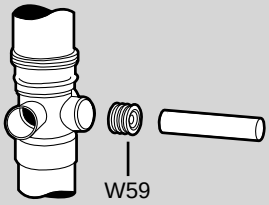
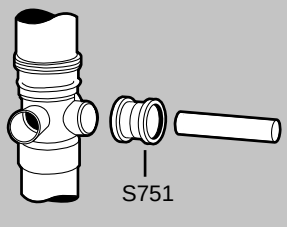


Withdraw pipe (10mm). This will allow for expansion. All fittings must be supported by a bracket

4.00 Installation

4.06 PUSH-FIT WASTE TO SOIL BOSS CONNECTIONS

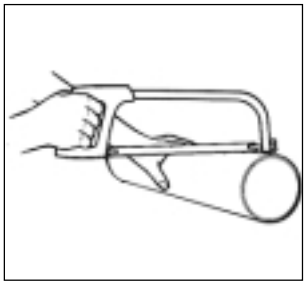
PUSH-FIT JOINTING FOR SOIL & WASTE PIPEWORK

HUNTERS 'EASY TO USE' BOSS CONNECTIONS		
32mm	40mm	50mm
CREATES PUSH-FIT CONNECTION – PUSH-FIT PIPEWORK TO BSEN1451		
		

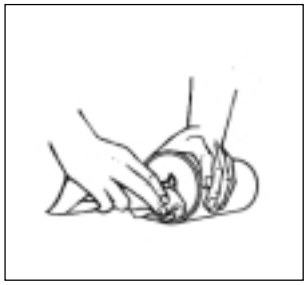
4.00 Installation

4.07 SOLVENT WELD JOINTING PROCEDURES

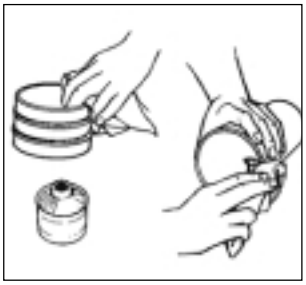
JOINTING PROCEDURES FOR SOLVENT WELD SOIL & WASTE



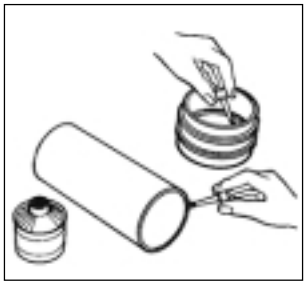
Wrap paper around pipe as guide line. Cut pipe square, using fine tooth saw. Chamfer pipe ends



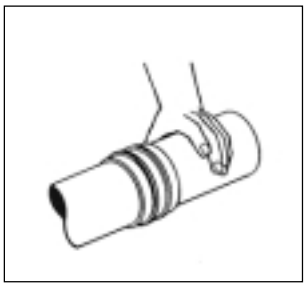
Remove all swarf dirt and dust



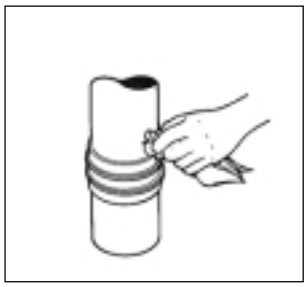
Clean surface of pipe and fittings with Hunter solvent cleaner



Apply a liberal coat of Hunter solvent cement to both surfaces



Immediately insert pipe into fitting with a twisting motion fully home



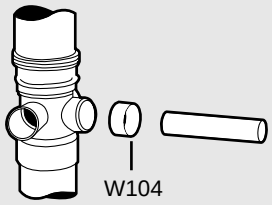
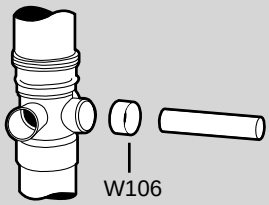
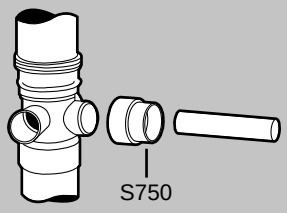
Using a clean rag, clean off surplus cement

Solvents and Lubricants for Hunter Soil and Waste

Size	Code
Lubricant	
30ml	SC960
250ml	SC966
Silicone Spray	
300ml	SC967
Solvent Cleaner	
125ml	SC950
Solvent Cement (BS6209) for PVCu and MuPVC	
125ml	SC953
250ml	SC954

4.00 Installation

4.08 SOLVENT WASTE BOSS CONNECTIONS

HUNTERS 'EASY TO USE' BOSS CONNECTIONS			
	32mm	40mm	50mm
CREATES SOLVENT WELD CONNECTION – SOLVENT WELD PIPEWORK TO BS5255			
			
ANGLED OPTIONS FOR SOLVENT WELD PIPEWORK			
2.5°			S753
90°	W104 + W111	W106 + W112	W725

4.00 Installation

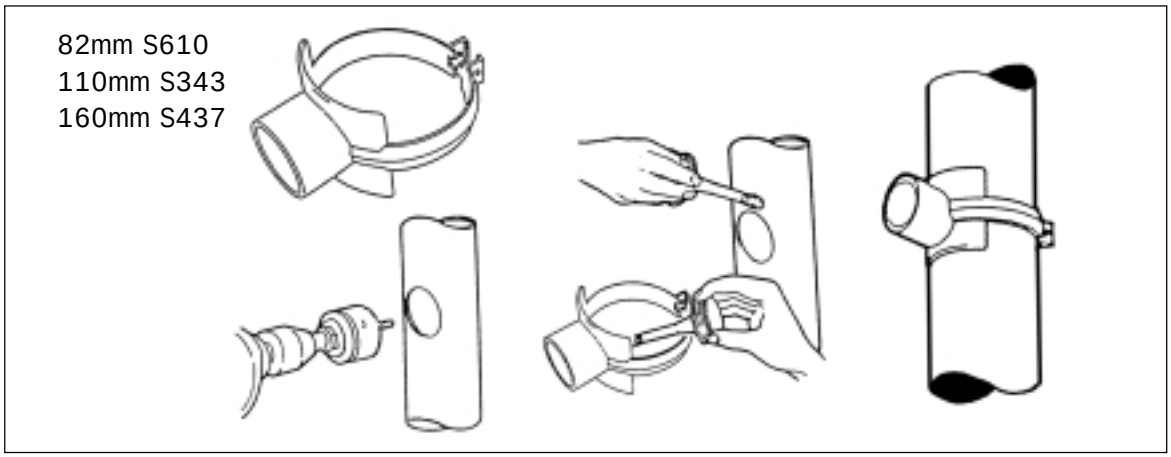
4.09 BOSS HOLE CUTTING PROCEDURE

STRAP-ON BOSS

Use a 54mm hole cutter to make a hole in the pipe. Mark areas to be cleaned and cement to be applied. Apply a coat of Hunter Solvent Cleaner to back of boss flange and pipe. Apply a coat of cement evenly to both surfaces.

The Strap Boss is uniquely designed to be fixed without the need of a nut and bolt through a simple ratchet action. Provision is made, however, if a nut and bolt fixing is required.

Place strap boss into position, ensuring that it is the correct way up (the top is marked). Tighten strap around pipe. Remove surplus cement with clean rag. If required the straps can be removed when the cement is firmly set - after approximately 24 hours. It is suggested that to ease the removal of the straps, they are partly cut through before the boss is fitted.



BOSS HOLE CUTTING – CLOSED BOSSES

To prevent the internal bore of the closed bosses being damaged, a 48mm hole cutter must be used when drilling out the closed bosses. Remove the swarf before fitting the boss adaptor. (Also see section 3.10).

Connectors 1 and 2.
The boss adaptor rubbers (W58 and W59) can be used for both polypropylene pipe (BS EN1451:2000), (MUPVC) modified unplasticized polyvinyl chloride pipe (BS EN1566:2000) and copper waste where an expansion connection is acceptable. The boss rubbers will push inside the bosses. The W59 will reduce the opening to connect 40mm pipe and the W58 is used to connect the 32mm pipe.

Connectors 3 and 4.
If a solvent weld connection is required for BS EN1566 pipe, the W106 and W104 reducers will be used. The W106 will connect (BS EN1566:2000) 40mm pipe and the W104 will reduce the opening to connect the (BS EN1566:2000) 32mm pipe.

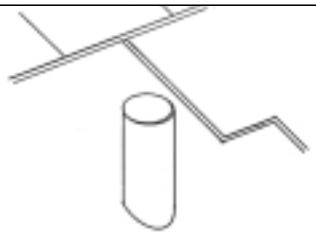
Connectors 5 and 6.
A straight solvent adaptor (S750) will glue over the outside of the boss to connect BS EN1566 50mm pipe, and the push fit adaptor (S751) will push over the bosses for 50mm pipe to BS EN1451:2000.

Connectors 7 and 8.
The angled solvent weld adaptors will glue over the outside of the boss to connect (BS EN1566) 50mm pipe. These are the S753 50mm angled (2½˚) solvent weld adaptor and the W725 50mm angled (90˚) solvent weld adaptor.

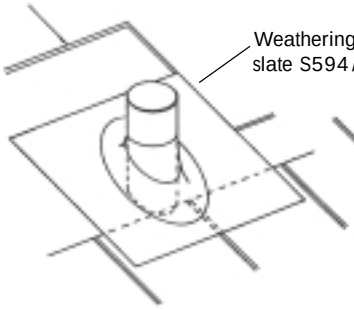
4.00 Installation

4.10 VENTING THROUGH ROOF STRUCTURES

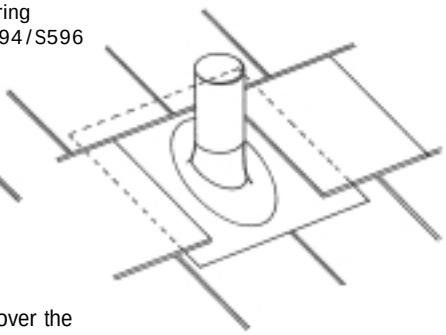
WEATHERING SLATES FOR PITCHED ROOFS



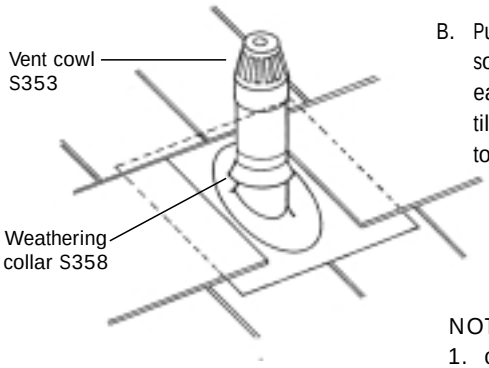
A. Spigot end of soil pipe through roof section.



B. Push the weathering slate over the soil pipe using silicone lubricant to ease installation and lower onto tiles. Then dress the aluminium plate to fit the lower tiles.



C. Fit the side and upper tiles over the weathering slate.



D. Glue the weathering collar directly over the slate and fit the vent cowl to the top of the stack.

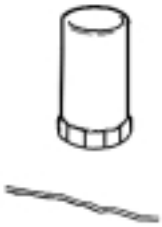
NOTE:

1. on low pitched roofs a single welt may be made to the lower edge of the base plate in order to provide optimum weathering.
2. in all areas of high winds or difficult tiling situations tingles must be used to prevent the lower edge from lifting away from the tiles
3. With interlocking tiles the stack must pass through only one course. The stack should be offset beneath the roof if necessary

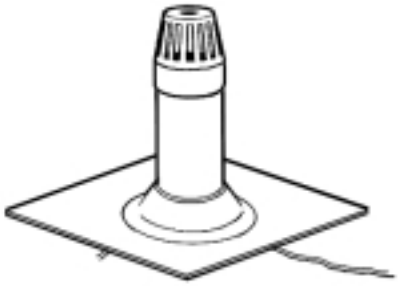
   board or additional battens may be required under weathering slates used with interlocking tiles.

4.10 VENTING THROUGH ROOF STRUCTURES CONTINUED

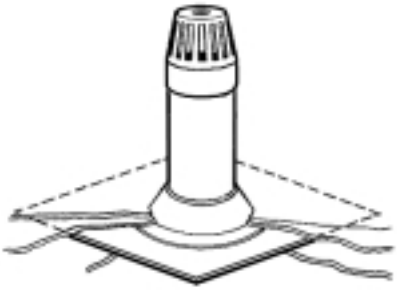
WEATHERING SLATES FOR FLAT ROOFS (3 LAYER FELT)



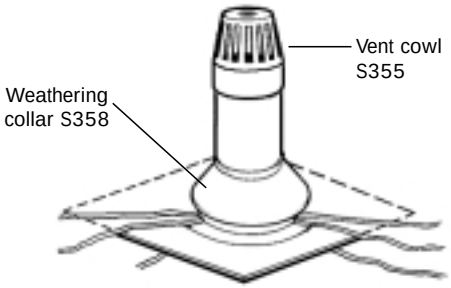
1. dress the first layer of felt up to the pipe



2. place the vent cowl over the end of the pipe (don't use solvent weld cement) and then push the cone over and down the pipe onto this layer of felt



3. coat the aluminium base plate with the bitumen and then place the second layer of felt over the base plate up to the rubber cone, and trim to fit. Repeat for the third layer of felt



4. solvent weld the weathering collar to the pipe above the weathering slate S590 to prevent ingress of water. Finally, replace the vent cowl S355

4.00 Installation

4.11 PIPE SUPPORTS

Vertical Pipes

Hunter Plastics Ltd's range of PVCu and galvanised mild steel support brackets must be selected to fit either around the pipe socket or the circumference of the pipe. We recommend that metal brackets be used on vertical pipes in multi-storey dwellings because of their greater fire resistance. Hunter recommend that socket brackets are used to prevent the pipes from slipping out of position causing leaking at the joints and excessive weight on fittings at the base of the stack. By securely fixing socket brackets it also ensures that necessary thermal movement is taken up. Pipe brackets such as the S217 do not restrict thermal movement and are for intermediate support only.

Horizontal Suspended Pipes

The same brackets as discussed above are used but the brackets will need to be suspended from a bracket backplate and threaded rod that can be made and assembled on site by the installer. Due to the lightness of our pipework, the threaded rod only needs to be M8, but the installer should provide these items.

As plastic is subject to thermal movement, we recommend that the pipe sockets are held firmly by braces to prevent them from moving. This ensures that any thermal movement is taken up in the expansion coupling, preventing buckling of the pipe between the supports. Please note that intermediate pipe brackets are for support only and must not restrict movement.

The British Standard BS EN 12056-2: 2000 recommends that pipe should be supported at the following intervals.

Material	Pipe Diameter (mm)	Horizontal (m)	Vertical (m)
Polypropylene	32	0.5	1.2
	40	0.5	1.2
	50	0.6	1.2
Modified unplasticized	32	0.5	1.2
polyvinyl chloride	40	0.5	1.2
(MuPVC)	50	0.6	1.2
Unplasticized polyvinyl	82	1.0	2.0
chloride (PVCu)	110	1.0	2.0
	160	1.2	2.0

4.12 HEALTH AND SAFETY

Testing

On the completion of any installation work, the system should be inspected and tested in accordance with BS EN 12056-2: 2000 and the Building Regulations. Air testing is the preferred form of leak detection. The use of smoke testing of plastics pipework should be avoided as there are certain smoke generating devices which are harmful to plastics materials and rubber seal rings. It is essential that where smoke testing is required assurance is obtained from the manufacturer of the device that it is safe for use with PVCU systems.

Water Testing

On occasions above ground pipework below the lowest sanitary appliance is water tested. Consequently, it must be remembered that all flexibly jointed soil pipe fittings are designed to resist a pressure of approximately 0.5 bar. This is equivalent to a pipe filling with water to about 5 metres above a ring seal joint. As all plastics move with the change in temperature, some type of expansion joint would always be needed within a PVCu pipe system. Therefore, to take the weight of the water filled pipe and to prevent fittings being forced off of the pipe during water testing, we insist that the pipe and fitting sockets be held firmly by socket brackets to prevent them from moving. This will also ensures that any thermal movement is taken up in the expansion sockets, preventing buckling of the pipe between the supports. Please note that intermediate pipe brackets are also required for support, but must not restrict thermal movement.

Maintenance

Correctly designed and installed systems should require very little or no maintenance whatsoever. However, should a form of blockage occur, only flexible or roller type rods should be used. Pointed or boring type metal fitting s are not to be used. Mechanised rodding equipment should only be used by properly trained operators. Should any pipework need cleaning, ensure that you use the correct cleaning materials.

Special Notes

Hunters Air admittance valves should be periodically checked to ensure the internal diaphragm is clear of any obstructions. Component parts can be replaced as necessary or cleaned with Hunters' silicone spray.

Hunters Fire Stop seals do not require maintenance once installed properly. They should however be inspected regularly and damaged seals must be removed and replaced immediately.

Safety

Relevant regulations should always be adhered to when on site (see the Health and Safety at Work Act 1974).

When using solvent for jointing etc, normal solvent safety rules must be observed at all times, ie;

- always work in a well ventilated area to avoid fume inhalation
- never smoke or expose solvent to naked flames
- close solvent container once used and store in cool dry place
- do not allow solvent to have contact with skin COSHH (Control of Substances Hazardous to Health) must be referred to where appropriate

4.00 Installation

4.13 PVC COMBUSTION PROPERTIES

SUMMARY OF PVC COMBUSTION PROPERTIES FOR PVCU, PVC-c AND MUPVC PIPES AND FITTINGS

PVC is very difficult to ignite using common ignition sources.

Burning materials release heat and the rate of release affects the severity of the fire; this, in association with ignitability, largely determines the rate of flame spread. Both the rate of heat release and the total heat of combustion PVC are significantly lower than those of other Common thermoplastics

PVC has limited spread of flame characteristics and achieves high classifications in national building fire tests.

PVC tends to form a protective carbonaceous layer (or char). This insulates the materials below and excludes the oxygen necessary for combustion. The hydrogen chloride emitted acts as a combustion inhibitor.

Smoke densities are similar to wood under smouldering conditions but greater under flaming conditions

Metallic materials may suffer from some corrosion by hydrogen chloride but restoration is normally possible. Fears of the effects on structural elements of buildings have been shown to be unfounded.

Although hydrogen chloride is a main gaseous product of the combustion of PVC the toxic potency of the combustion gases of PVC is similar to and certainly not significantly worse than those from many natural and synthetic materials

The build up of toxic fumes will be slow when compared with rapidly burning materials of a similar toxic potency.

Resistance to ignition and how well flame is supported and spread are the most significant properties which contribute to fire safety. PVC is particularly good in the respect and this is recognised in the UK Building Regulations.

The toxic potency of PVC decomposition products is similar to that of most other materials.

Overall therefore PVC is a widely acceptable material which does not represent a greater fife hazard than other synthetic or natural organic materials.

4.00 Installation

4.13 PVC COMBUSTION PROPERTIES CONT-

Fire fighting

All commonly available fire extinguishers are effective in fighting fires involving PVC, although due note should be taken of the particular situation (eg when live electrical equipment is nearby) which may restrict the use of some media Advice should be sought from the local Fire Authority as to the most suitable types of extinguisher to be installed.

In the event of a small localised fire, immediate action may be taken by personnel in the vicinity, using available extinguishers. Care should be taken to avoid inhalation of decomposition fumes. When the fire has been extinguished, ventilation should be increased to clear the fumes as quickly as possible.

If a major outbreak of fire is discovered, the Fire Brigade should be called immediately and personnel should be evacuated from the area. It is important to advise the fire-fighting personnel to wear acid-resistant protective clothing and full face masks. Suitable breathing equipment should be worn by the fire fighters exposed to the products of combustion.

Qualified medical aid should be sought if anything more than very temporary irritation to skin, eyes, throat, etc is experienced by personnel who come into contact with PVC decomposition products.

Decomposition Products

PVC burns to give dense, acrid fumes. The major gaseous products of combustion are carbon monoxide, carbon dioxide and hydrogen chloride. Carbon monoxide and hydrogen chloride is highly irritant. The Threshold Limit Valves are 50 ppm (TLV -TWA) for carbon monoxide and 5ppm (TLV-C) for hydrogen chloride.

Corrosive Fumes

Hydrogen chloride which is given off during combustion of PVC has a highly corrosive effect on many materials. Equipment surfaces directly affected should be cleaned down to remove corrosive depositions as soon as possible after the fire is extinguished.

RECOMMENDED FIRST AID TREATMENT

Inhalation Of Noxious Fumes

The patient should be removed as rapidly as possible into fresh air. Artificial respiration should be applied if necessary. Expert medical attention should be obtained immediately.

Waste Disposal

Scrap PVC for disposal is not classified as ‘Special Waste’ under the Control of Pollution (Special Waste) Regulations 1980 and may be disposed of at approved landfill tips, or by incineration under approved conditions in compliance with the requirements of the Control of Pollution Act 1974. Advice on the preferred method should be obtained from the Local Authority waste Disposal Officer.

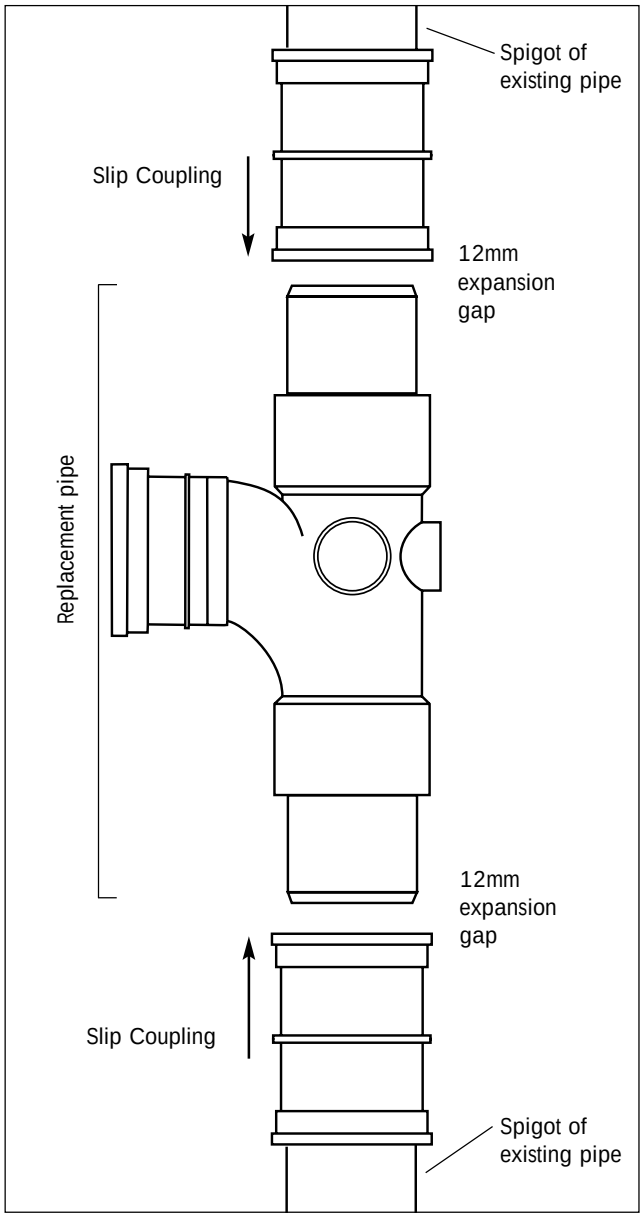
4.00 Installation

4.14 PIPE REPAIRS

REPAIR AND REPLACEMENT PIPE

Should a section of pipe require replacement for repair purposes, or to incorporate a fitting, prior to construction - Hunters' Slip Coupling (S211) would be the ideal choice to carry out this work. Procedure as follows:

- assemble the relevant fittings to be incorporated into the existing pipework or prepare the required length of pipe, allowing a minimum spigot length at each end of 65mm for 82mm, or 75mm for 110mm diameter pipework and 100mm for 160mm diameter pipework.
- then, cut the appropriate length of the existing pipe allowing for an expansion gap of 12mm at each end
- chamfer and lubricate the spigots of the existing pipe, then fit a slip coupling over either end
- position the new pipe section or assemble using socket brackets where necessary and lubricate the spigots
- slide the slip coupling over the new spigots and position each one centrally over the joint/expansion gap
- Using socket brackets fix the slip coupling over the new spigots position each one centrally over the expansion gap



4.00 Installation

4.15 EXPANSION ADAPTOR

It is essential in any solvent weld soil system to allow for the expansion and contraction that occurs within the installation.

The S201 Ring Seal Adaptor should be fitted where a change in direction occurs and/or at a fixed point i.e. a fitting such as a branch, that is held in position with a support bracket.

N.B. see also 1.08 Thermal expansion.

TYPICAL INSTALLATION - S201 Ring Seal Expansion Adaptor