

HALIFAX

SOIL & DRAIN



Hargreaves
Foundry
Drainage



Cast iron mechanically jointed system

Fully compliant with BS EN 877:1999 + A1:2006

INSTALLATION GUIDE



KM 684754
BS EN 877



Hargreaves Foundry was established in 1881. We are specialist iron founders and manufacture cast iron products for a range of industries. Hargreaves Foundry Group consists of two operating arms;

Hargreaves Foundry

A traditional iron foundry manufacturing cast iron products

Hargreaves Foundry Drainage

Hargreaves Foundry Drainage is one of the country's leading manufacturers and suppliers of cast iron drainage products for above and below ground. These range from traditional rainwater and soil products through to modern, socketless, above and below ground systems that meet international standards and carry third party certification. What sets us apart from other suppliers is our ability to make bespoke items in addition to our extensive standard ranges.

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This document provides the most up-to date information with regard to our Halifax Soil and Drain product listing.

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Safe practice

The first consideration for any on site installation work should be safety. Information relating to managing health and safety in construction can be found in **Guidance on the Construction (Design and Management) Regulations 2015**.

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Key elements to securing construction health and safety

The key elements include:

- a) Managing the risks by applying the general principles of prevention
- b) Appointing the right people and organisations at the right time
- c) Making sure everyone has the information, instruction, training and supervision they need to carry out their jobs in a way that secures health and safety
- d) Duty holders cooperating and communicating with each other and coordinating their work; and
- e) Consulting workers and engaging with them to promote and develop effective measures to secure health, safety and welfare

Jointing Methods for Couplings

Ductile Iron Coupling

Part No's.: HS2012, HS3012, HS4012, HS6012, HS8012, HD4012, HD6012, HD8012

Step 1

Check the components - two-part coupling and EPDM gasket, 2 x M8 bolts and nuts (up to 100 mm diameter pipes, 4 x M8 nuts and bolts for 150mm diameter and above). Ensure the 2 grub screws for electrical continuity are present (shown below inserted into casting).



Step 2

Fit the gasket to the lower pipe/fitting first, line up the upper component and fit carefully into place. Make sure the two components are square and parallel and line up correctly with the gasket.



Step 3

Line up the two parts of the coupling ensuring they fit correctly over the gasket. At this point check that the two grub screws for electrical continuity do not protrude on the inside of the coupling.



Step 4

Bolt the two parts of the coupling together and gradually tighten, ensuring an equal distance is maintained during assembly. Do not over tighten or tighten only one side at a time. We recommend the use of a torque wrench at 15Nm.

Step 5

Adjust the grub screws until each is lightly touching the pipe then give them a final half turn. This normally will be adequate to allow metal to metal contact and provide electrical continuity - do not over tighten.



Rapid Connect Coupling

PART No's.: HS2002, HS3002, HS4002, HS6002, HS8002

Step 1

Rapid connect pipe coupling supplied complete with EPDM gasket and electrical continuity provision



Step 2

Push the coupling onto the end of the pipe or fitting up to the gasket's central register.



Step 3

Push the next pipe or fitting into the coupling making sure that the cut pipes are square.



Step 4

Tighten the set screw using;

- 6mm allen key /socket adaptor (50 - 150mm)
- 8mm allen key/socket adaptor (200mm)

Note: due to the block tightening feature the joint cannot be overtightened and this also ensures the sharp edges of coupling cut through the painted finish to provide electrical continuity



Tools for Coupling Assembly

The tools listed in the following table are required to complete the correct jointing method for couplings in the Halifax range.

Description	Product Code
½ Inch drive ratchet spanner	HSD001
6mm Allen socket adaptor	HSD003
8mm Allen socket adaptor	HSD004
14mm socket - for access door bolts	HSD002

Installation above ground

Securing Brackets to Walls

Securing bracketry to supporting structures is primarily dependent upon the condition of the proposed structure. To this end, the methods employed for securing the bracketry should be decided upon by the designers and installers for each project on an individual basis dependent upon the design and condition of the structure in the desired location.

It would be advisable to check the fixing requirements for each bracket (See HFDS 107 - Product Tables) prior to placement of order to ensure suitability for the application and availability of the required fixings.

Vertical Pipework Support

For vertical soil and rainwater stacks load bearing brackets should be provided every 3m maximum at each floor level. These brackets should be securely fixed and tightened as the installation proceeds so as to adequately support the pipework and its contents and prevent unnecessary load at the base of the stack. Where fittings are installed within the vertical stack it is recommended that additional brackets are provided to ensure alignment of the pipework.



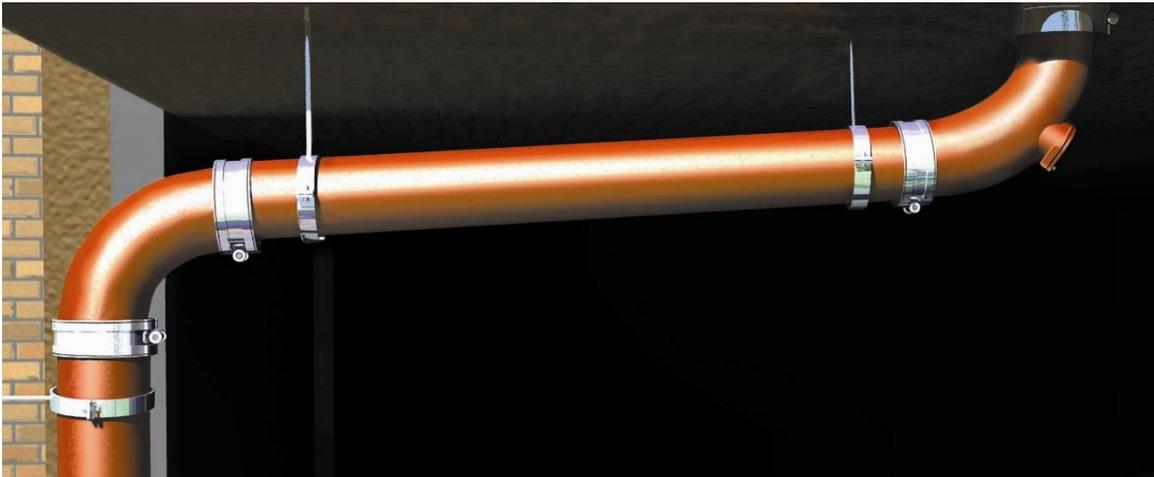
Stack Support Pipe

On multi storey buildings there may be a requirement for additional support in the form of stack support pipes, see table below. When installing stack support pipes these should be positioned at ground floor and every subsequent fifth floor where average floor to ceiling height is 2.5 metres.

We recommend either the Halifax Stack Support Console combined with a Stack Support Pipe or alternatively Cantilever Arms supporting a Stack Support Bracket and Stack Support Pipe (see illustrations for both).

Low Gradient Horizontal Pipework Support

BS EN 12056-2 Code of Practice advises the distance between pipe supports should not exceed 3 metres. We would however, recommend two brackets per 3 metre pipe length, the first being positioned within 500mm of coupling joint and the next to be maximum 2m spacing. This will aid installation and provide greater rigidity.



The normal recommendation for gradient on 100mm pipes is 1:40 minimum fall and 150mm pipes 1:60 minimum fall. The pipe should also be supported at every change of direction or branch connection and in some cases, it may be necessary to provide a lateral brace at 12m intervals. The max length of threaded rod for a single drop bracket should be 750mm; for longer drops it is recommended two drop rods are utilized with a split band clip.



Acoustic Dampener

For best results the dampener bracket (HSD6703) should be used in conjunction with the Bismat bracket as indicated by the figures in the Technical Submittal Document (HFDS 075).

The dampener should be positioned with a 10mm gap between it and the supporting structure. A 16mm gap should then be left between the dampener and Bismat bracket. See image for indicative positions.



Connecting to other Materials

Equivalent Systems

The range of Pipe bores in the Halifax Soil and Drain system is designed to be compatible with any number of equivalent systems. The standard couplings within the Halifax Soil and Drain systems are suitable for connecting products of other materials into the system provided the external diameters are the same. (For example: A Plastic pipe with an O/D of 110mm could be joined to the 100mm Halifax Drain pipe (HD4001) with a 100mm Halifax Drain Ductile Iron Coupling (HD4012) because the outer diameter is the same.)

Conventional Soil/Drain Systems

Halifax Soil and Drain are modern adaptations of a traditional Cast Iron waste system. Despite containing different jointing methods than would have originally been used, it is still possible to connect the new system into existing products using a traditional, caulked joint. This versatility allows the Halifax systems to be used where an upgrade is necessary thus saving money over alternative systems which would require a full replacement.

Threaded Connections

The Halifax Soil system threaded boss is designed to suit standard 2" BSPT threaded connections from plastic or copper pipe systems and provide a secure way of transitioning between smaller bore pipes of other materials.

These bossed connections are available either as blank ends, where the other system can join the start of the Halifax system or, female threaded boss pipes which allow waste pipe connections to be made by male iron adaptors. In both cases, the bossed fittings are connected to the main system using standard Halifax Soil Couplings.



Compression-fit Boss

We have also developed a new user-friendly compression-fit boss pipe which offers labour savings. These may be used with any 50mm plastic or copper waste pipe which can simply be pushed home and then the bolts on the front plate, tightened to form a water-tight seal. These are available in single, double opposed and double 90° versions.

Please note: when connecting 50mm Halifax cast iron waste pipes into 100mm Halifax soil pipework you will need to specify a 100 x 50 Branch (HS4020)

Ensure that each boss is complete with O-ring gasket, cover door & 2 x M8x25 ZP Hex Bolts

1. Loosen the bolts (but do not remove them and make sure that the gasket is not being compressed by the door.
2. Gently insert the plastic or copper pipe until it hits the register. Please see notes below:
 - a. The pipe must be inserted perpendicular to the face of the door
 - b. If too much pressure is applied to the pipe while being inserted, it will begin to compress the gasket and prevent complete insertion. A slight twisting motion may be necessary to complete the insertion
3. Bolts should be tightened until the gasket is gripping the plastic pipe and preventing it from being removed.
 - a. Caution: Do Not Over-Tighten.

Long-tail Boss Branch

To provide additional choice and options on site we can now provide a Long Tail Boss Branch (HS4059) with a total of 4 boss connections (2 each side). These bosses are 2" BSPT female thread designed to accept male iron adaptors for plastic or copper waste pipes.

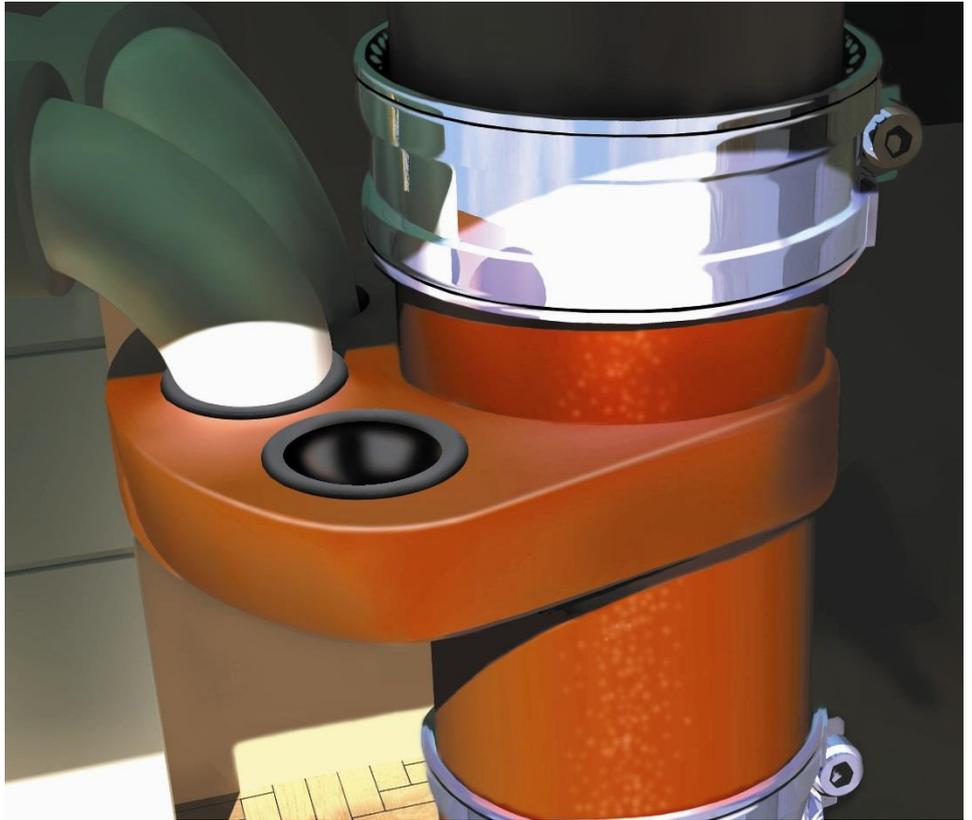
Halifax Push-fit Connector

From time to time it may be necessary to connect pipes of smaller or non-standard dimensions into the Halifax system. In this case, a Rubber Halifax fix connector can be used to cater for the difference in pipe diameters. The Halifax Fix connectors are available for our 50, 70 and 100mm pipe sizes and each is capable of connecting to a range of smaller diameter pipes. For more information on the range of diameters to which the connector is suited, please speak to a member of our sales team.



Halifax Manifold Connector

This multi-waste connector allows up to 3 waste pipes from various appliances e.g. sinks, basins and showers to be connected at a single internal point above finished floor level. The rubber grommets in the manifold connector may be cut to accept 32 & 40mm plastic or 35 and 42mm copper. The manifold body is connected to the stack by standard ductile iron couplings (HS4012) or stainless-steel couplings (HS4002).

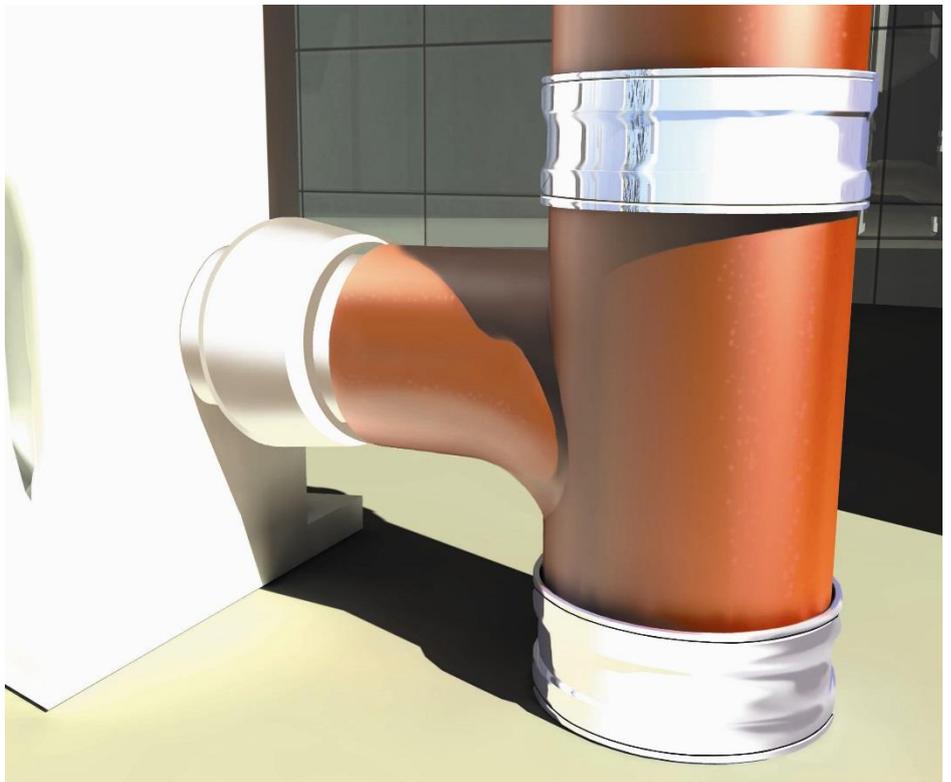


Fitting Instructions

- 1) Remove grommets and pierce appropriate size hole to suit waste pipe.
1. If any of the connections are not to be used save a grommet for blanking off.
- 2) Apply a small amount of silicone grease (not supplied) to the outside of grommets and re-fit into manifold. Ensure the grommet retaining groove is correctly located in the manifold casing.
- 3) Lubricate pipe ends before insertion into grommet with a rotational movement.
2. We recommend pipe ends are chamfered to ease assembly.
- 4) Any blank grommet must be fitted as point 2 above.

WC Connection

The Halifax system accepts Multikwik and similar push fit WC connectors - see illustration



PVC Above Ground Soil Systems

100mm Halifax to PVC use standard Ductile Iron Coupling (HS4012) or Stainless-Steel Coupling (HS4002).

150mm Halifax to PVC use standard Ductile Iron Coupling (HS6012) or Stainless-Steel Coupling (HS6002)

Conventional Cast Iron Soil/Drain

To connect Halifax into a conventional soil or drain socket use a traditional caulked joint.

Below Ground Clayware

Halifax can be connected to a clay or earthenware socket using a traditional cement joint.

When connecting to Supersleve/Hepsleve use the appropriate adaptor coupling by Hepworth.

Roof Outlets / Floor Drains

In most cases our standard couplings will connect directly onto the majority of products available on the market, but if in doubt, contact us to check on compatibility.

Installation Below Ground

Buried Pipelines

While both pipe systems use the same 2-pack Epoxy coating, the coating used on the Halifax Drain system is thicker than that used on the Halifax Soil system and as such, has a higher resistance to chemical attack. This makes the Halifax Drain system more suited to being buried in the ground. It should be noted however that where the products are to be placed in particularly aggressive soils (e.g. peat) where the PH value is less than 6, it is recommended that the pipe system be encased in polyethylene sleeves for additional protection.

Trench Preparation

Halifax drainage may be laid directly into an accurately trimmed trench allowing 50mm clearance beneath each coupling joint. The bottom of the trench should be flat to provide continuous support. Where accurate trimming cannot be achieved due to the subsoil condition, it will be necessary to excavate an additional 100mm to allow a granular bed to be laid whilst still maintaining the 50mm clearance beneath each joint.

Concrete Encasement

In a situation where the pipes need to be encased in concrete, provided the applied coating is dense, undamaged and free from bare patches and lack of adhesion, they will form a barrier between the cast iron and the concrete therefore making either system suitable for use. However, due to the thicker coating mentioned above, if we were to recommend a product system to be completely encased in concrete (as opposed to a short length passing through a concrete wall/foundation), the Halifax Drain system would be the most appropriate. In the event that the concrete encasement becomes damaged or is not fully coherent, the painted surface of the casting may be required to form a barrier between the otherwise exposed cast iron and any encroaching aggressive substances.

Bedding in Concrete

When a concrete bed is required prepare the trench as above to provide 100mm of concrete under the pipe but support the pipe on a compressible material (expanded polystyrene) either side of each joint. If the pipework is being surrounded in concrete provision should be made for a flexible joint, within the concrete, at 5m intervals and placed next to a pipe joint. This should be made of suitable compressible material and cover the full cross-sectional area of the concrete. It is recommended that inspection and testing of the pipework is completed in sections prior to haunching and surround with concrete.

Settlement

Pipework leaving buildings and manholes which may be subject to settlement should incorporate a minimum of two joints close to the point of exit at a maximum of 600mm apart. This will provide a short length of pipe to act as a “rocker pipe” and in areas where large settlement is expected more than one may be required.

Under the provisions of BS EN 877, the couplings within the system are designed to function with up to 3° of deflection. It is this allowance along with the short pipe length which permits the movement due to settlement without impeding the function of the pipe system.



Depth of Pipework

Halifax drainage may be installed under most buildings without additional protection, but when laid under roads with less than 1.2m cover and in areas which are subject to special loadings it is recommended that extra protection be considered.

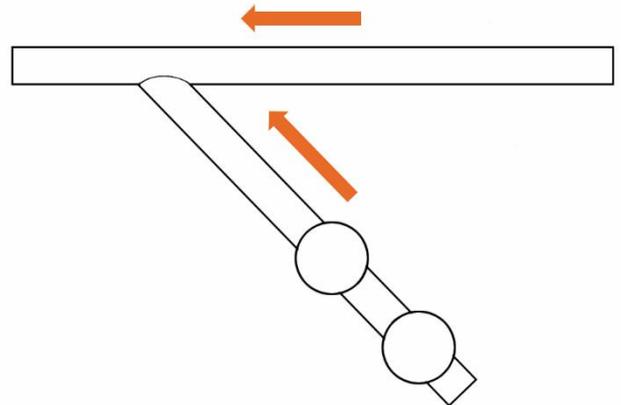
Pipe Falls

The pipework gradient should provide a self-cleaning action under normal discharge conditions. For flows of less than 1 litre/sec. gradients of 1 in 40 for 100mm pipe and 1 in 60 for 150mm pipe are usually satisfactory; but in any case, the gradients should not be less than 1 in 80 for 100mm pipe and 1 in 150 for 150mm pipe.

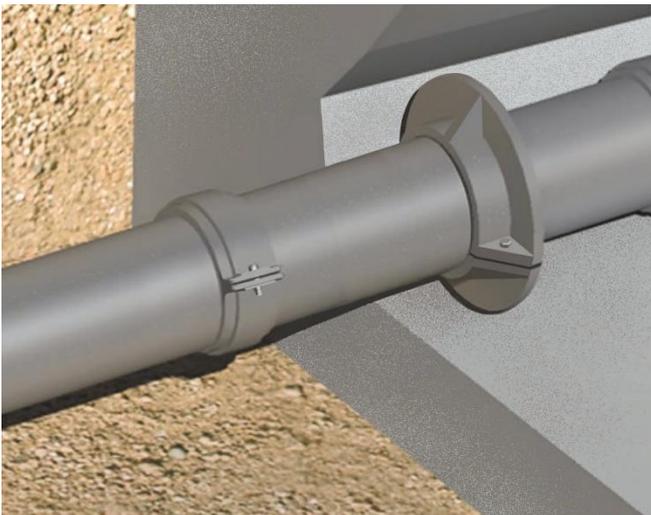
Provision for Access

Access is required on drainage pipelines to enable the rodding and clearing of any debris and may be provided by manholes, chambers, access fittings or rodding eyes/roddable gullies - the latter allowing downstream access only.

As a general guide, no part of a drain should be further from a manhole than 45 metres and the distance between manholes should not exceed 90 metres. Where one drain connects with another drain without provision of access in the form of a manhole or inspection chamber, access should be provided on the branch drain within 12 metres of the junction. Where the drainage pipeline changes direction either vertically or horizontally; it is recommended an access fitting be incorporated in the design.



Puddle Flanges



In basement areas where pipes pass through external walls it may be necessary to install a puddle flange. For locations which are below the water table or in areas liable to flooding, puddle flanges will reduce the risk of water entering the building.

Denso tape or similar should be wrapped around the pipe before bolting on the two-piece puddle flange; this will ensure a watertight seal is achieved.

When pipes are installed through pipe sleeves which have been cast into the concrete wall section, it will be necessary to seal the gap between the sleeve and pipe passing through it with a mastic/ sealant.

Cutting Pipes

Halifax Soil & Drain pipes are easy to cut when shorter lengths are required. We recommend the use of a powered chop saw or disc cutter with the appropriate metal cutting disc fitted (a manual hacksaw is not practical!) Any burrs or sharp edges should be removed prior to installation to avoid damage to the gaskets. Please see note below regarding paint touch-up.

Caution: - Ensure that eye, respiratory and hand protection are worn at all times when cutting pipes. If power tools are to be used, ensure the area is free from flammable materials/chemicals which may ignite from sparks.

Touching-Up

Any areas of exposed metal (including cut ends of pipes) should be touched up prior to installation. First any dust, debris or loose paint should be removed then the area should be lightly sanded to ensure good adhesion of paint. The area should then be touched up using a high-quality paint suitable for outdoor use on metallic surfaces.

Modifications & Testing of Installations

Modifications to Existing Installations

1. Measure the height of the fitting to be inserted into the existing stack. Add 15mm to this height to allow space for the jointing system.
2. Ensure sufficient support is present in the stack both above and below the location to be cut. If there is any doubt as to the support in place, do not begin modification works.
3. Mark locations on pipe stack to be cut.
4. Cut section out of pipe using a cutting disk or rotary grinder.
5. Remove any burrs, cutting dust and other debris paying particular attention to the sealing zones (approximately 50mm either side of the joint locations)
6. Cut ends should be coated as per the touch-up procedure. Ensure coating is fully cured before proceeding with modifications
7. Insert exposed ends of pipes into coupling gaskets making sure that the central register in the gasket is firmly seated against the pipe ends.
8. Insert fitting into gap. Make sure that the gasket is correctly seated against the fitting both top and bottom and that the central register of the coupling is firmly seated against the pipe ends.
9. Loosely assemble the coupling halves around the gasket and check alignment of the pipe stack.
10. Tighten bolts in couplings to the recommended torque settings (15Nm for Ductile Iron Couplings). Ensure that each side of the coupling is tightened evenly.
11. Conduct testing of the new joints & fitting to ensure modification has been successful.

Testing of Sanitary Pipework

In accordance with The Building Regulations 2010 - Approved Document H: Drainage and Waste Disposal, clause 1.38:

“Air Tightness.

The pipes, fittings and joints should be capable of withstanding an air test of positive pressure of at least 38mm water gauge for at least 3 minutes. Every trap should maintain a water seal of at least 25mm. Smoke testing may be used to identify defects where a water test has failed. Smoke testing is not recommended for PVC-U pipes.”

Testing of Foul Drainage Pipework

In accordance with The Building Regulations 2010 - Approved Document H: Drainage and Waste Disposal, clause 2.61:

“Water Test.

For pipes up to 300mm diameter the system should be filled with water up to a depth of 5m above the lowest invert in the test section and a minimum depth of 1m measured at the highest invert in the test section. This may then be left for a period (one hour is generally sufficient) to condition the pipe. The test pressure should be maintained for a period of 30 minutes, by topping up the water level as necessary so that it is within 100mm of the required level throughout the test. The losses per square metre of surface area should not exceed 0.15 litres for test lengths with only pipelines or 0.20 litres for test lengths including pipelines and manholes, or 0.40 litres for tests with only manholes and inspection chambers alone (i.e. no pipelines).”

In accordance with The Building Regulations 2010 - Approved Document H: Drainage and Waste Disposal, clause 2.62:

“Connectivity.

Where separate drainage systems are provided (see Approved Document H5), connections should be proven to ensure that they are connected to the correct system.”



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