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OSMA

BELOW GROUND DRAINAGE SYSTEMS INSTALLATION GUIDE

wavin

Contents

Resources and Planning, Transport and Handling

RESOURCES AND PLANNING

The main contractor, or sub-contractor, needs no special equipment or power.

Contractors are responsible for checking lay-out drawings to ensure they are correct so that expensive site alterations do not have to be made after laying.

Contractors may make up OsmaDrain components such as gully assemblies off-site and in clean working conditions - particularly when components have solvent welded joints.

Pipes made from PVC-U and/or HDPE are lightweight – between one sixth and one tenth the weight of equivalent clay pipes. Nevertheless, care must be taken during transport, handling and storage.

TRANSPORT

Block Bundles

Generally, pipes are delivered pre-packed in block bundles of standard quantities. In these bundles, pipes are held by straps and timber stretchers.

Table 1. Size of Block Bundles

Nominal Pipe Size	Number of 3m/6m lengths per bundle	Dimensions in mm height	width	Weight per bundle kg 3m	6m
OsmaDrain					
110	50	725	1145	246	492
160	25	865	1035	230	460
Osma UltraRib					
150	24	655	970	158	304
225	12	730	970	173	327
300	9	966	970	227	
Wavin TwinWall					
150	33	1180	1000	-	297
225	14	1180	1000	-	235
300	8	1180	1000	-	264

Loose Pipes and Fittings

When vehicles with a flat bed are used for transporting loose pipes, make sure the bed is free of nails and other projections.

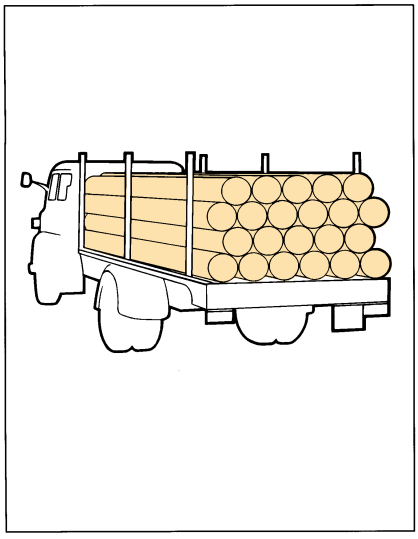
Support pipes throughout their length. Load pipes so that they do not overhang the vehicle by more than one metre.

Always load pipes with larger diameters and thicker walls before those of smaller diameters and thinner walls. Pipes should always be lifted off the vehicle, not dragged, thus avoiding damage to the ribs.

Make sure vehicles have adequate side supports at approximately 2 metre spacings, and that all uprights are flat, with no sharp edges. Secure pipes during transit.

Fittings are supplied in cardboard boxes or plastic bags.

Figure 1. Transport of loose pipes



HANDLING

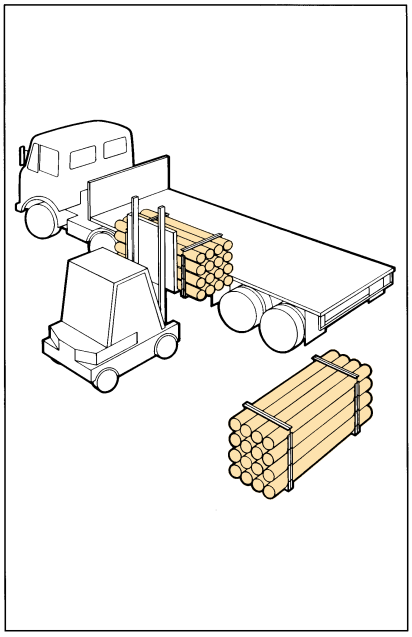
Always be careful to avoid damage when handling pipe. Cold weather reduces their impact strength, so take extra care when handling pipe in wintry conditions.

When unloading block bundles mechanically, use either nylon belt slings or fork lift trucks with smooth forks. Metal slings, hooks or chains must not come into direct contact with the pipe.

Load and unload loose pipes by hand and avoid using skids. When loose pipes have been transported one inside the other, always remove the inner pipes first.

Do not drop or drag pipes.

Figure 2. Handling of block bundles



Storage

STORAGE

Block Bundles

Store block bundles on a reasonably flat surface free from sharp projections likely to damage the pipes.

Block bundles can be stored up to three high without extra side supports or bearers. In addition, block bundles will remain free standing when cut.

Take care when removing pipes from bundles as the straps are under considerable tension and may flail when cut.

Loose Pipes

Store loose pipes on a reasonably flat surface free of sharp projections. Provide side supports at least every 2 metres. These supports should preferably consist of battens at least 75mm wide (see Figure 3.)

Ideally, loose pipes should be uniformly supported throughout their entire length. If this is not possible, place timber supports at least 75mm wide at 1 metre maximum centres beneath the pipes (see Figure 4).

Figure 3. Storage of loose pipes on the ground

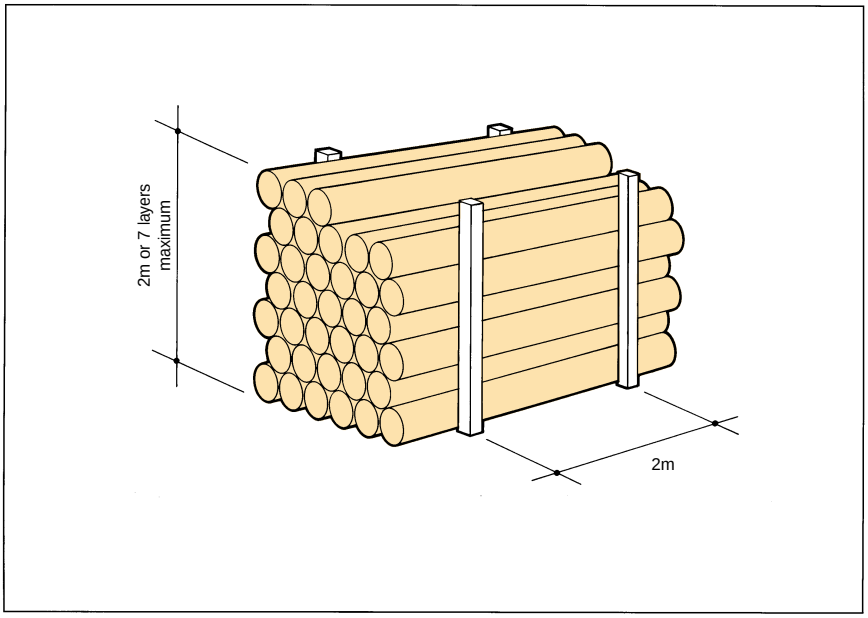
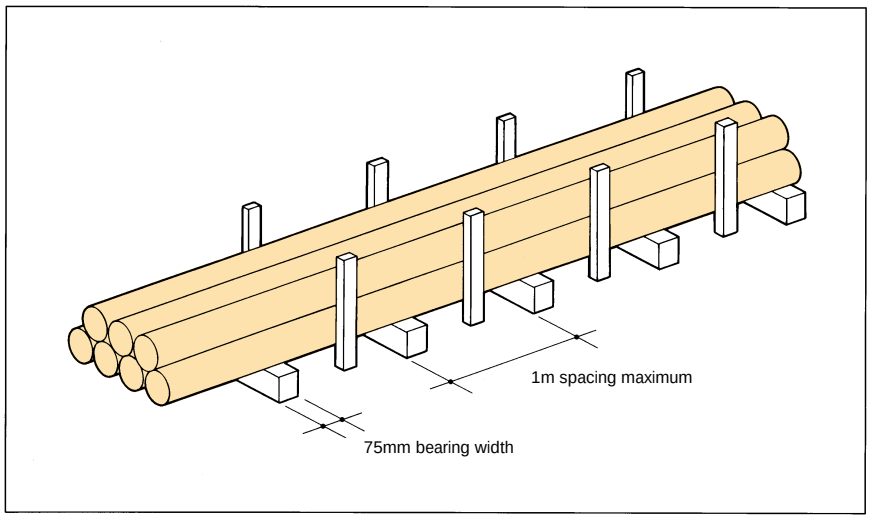


Figure 4. Storage of loose pipes on bearers



Stack pipes of different size and wall thickness separately. If this is not possible, stack pipes with larger diameters and thicker walls under those with smaller diameters and thinner walls.

Socketed pipes should be stacked with the sockets protruding and placed at alternate ends.

Do not stack pipes more than seven layers in height or above a maximum height of 2 metres.

Fittings

Store fittings supplied in plastic bags away from direct sunlight.

If fittings have to be stored outside in their plastic bags, open the bags to prevent a build-up of temperature.

The above storage requirements apply to the United Kingdom climatic conditions. In tropical climates reduce the stack height and store pipes and fittings under cover or in the shade.

Sealing Rings

a) OsmaDrain

Where applicable, OsmaDrain 110mm and 160mm sockets are supplied complete with a captive ring seal.

b) Osma UltraRib

Sealing rings are supplied either loose with pipes and fittings or pre-fixed in the case of Inspection Chamber and Manhole Bases and are included in the price.

c) Wavin TwinWall

Sealing Rings are supplied loose with pipes and fittings if required, all pipe and fitting prices are exclusive of ring seals, and must therefore be ordered separately.

Rings should be stored in their original packaging away from strong sunlight or weathering. They should never be placed on the end of the pipes which are being stored.

Installation Notes, Excavation and Bedding

INSTALLATION NOTES

The information included on this page is based on the recommendations given in BS 5955: Part 6: 1980 'Code of Practice for Plastics Pipework' (Installation of unplasticized PVC pipework for gravity drains and sewers), BS 8301: 1985 Code of Practice for Building Drainage, Water Industry Specification (WIS), No 4-08-02 (Specification for bedding and sidefill Materials for buried Pipelines) and British Board of Agrément Certificate Nos 87/1835: 89/46, 89/2268, 90/2563 and 91/58.

Bedding and backfill must be of the correct specification. Excavated 'as-dug' material may be suitable (see BS 5955: Part 6: 1980 for 'as-dug' suitability tests), otherwise a non-cohesive material is required (see Table 2).

EXCAVATION

It is important to take precautions against trench collapse. Do not open trenches too far in advance of pipe laying. Support the sides of trenches that are deeper than 1.2 metres. Keep trench widths as narrow as practicable but not less than 300mm wider than the pipe diameter, i.e. 150mm clear each side of the pipe to allow proper compaction of the sidefill.

Excavation for Manholes and Inspection Chambers

Additional excavation is necessary for:

a. Traditionally constructed manholes.
b. OsmaDrain/Osma UltraRib 750mm Manhole Bases

OsmaDrain and Osma UltraRib 250mm / 300mm / 450mm diameter Shallow / Multi-Base / Universal Inspection Chambers need no additional excavation other than that required for normal drain laying.

Table 2. Processed Granular Bedding and Sidefill Materials for Flexible Pipes.

Nominal Pipe Bore (mm)	Nominal maximum particle size (mm)	Material Specification see Note.
100	10	10mm nominal single size
Over 100 to 150	15	10 or 14mm nominal single size or 14mm to 5mm graded.
Over 150 to 300	20	10,14 or 20mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded.

Note - Aggregates conforming to BS 882, air-cooled blast furnace slag conforming to BS 1047, or lightweight aggregates conforming to BS 3797 are suitable as processed bedding and sidefill materials.

BEDDING

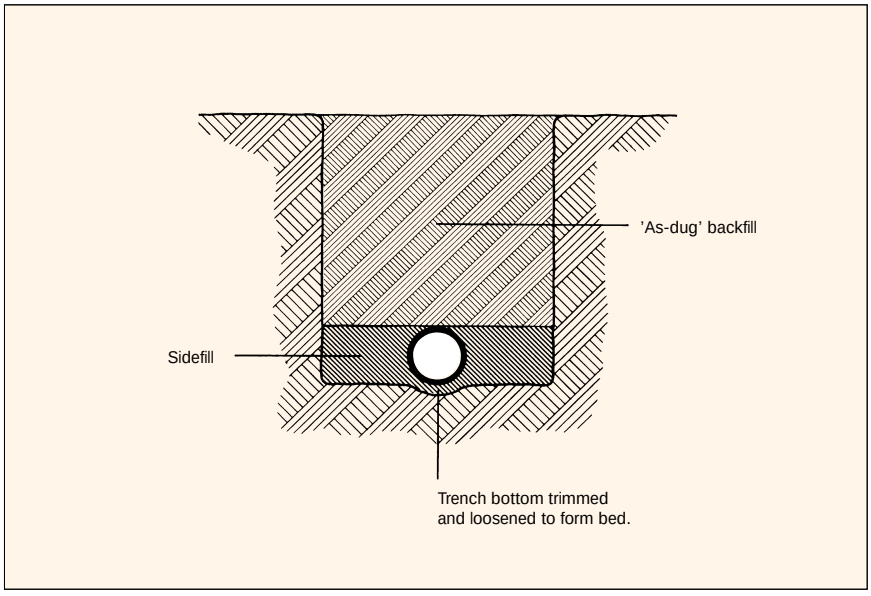
OsmaDrain and Osma UltraRib pipes laid on trench bottom

Where the 'as-dug' material is suitable,* the bottom of the trench may be trimmed to form the pipe bed (see Figure 5).

*Suitable material is defined as granular material in accordance with the recommendations of BS 5955: Part 6: 1980 Appendix A, having maximum particle sizes not exceeding those as detailed in Table 2.

Small depressions should be made to accommodate pipe or fitting socket. After the pipe has been laid these should be filled carefully ensuring that no voids remain under, or around, the sockets.

Figure 5. OsmaDrain and Osma UltraRib pipes laid on trench bottom



Bedding continued

When the formation is prepared, the pipes should be laid upon it true to line and level within the specified tolerances. Each pipe should be checked and any necessary adjustments to level made by raising or lowering the formation, ensuring that the pipes finally rest evenly on the adjusted formation throughout the length of the barrels. Adjustment should never be made by local packing. When the formation is low and does not provide continuous support, it should be brought up to the correct level by placing and compacting suitable material.

OsmaDrain and Osma UltraRib pipes laid on processed granular bedding

When the 'as-dug' material is not suitable, a layer of suitable processed granular material must be spread evenly on the trimmed trench bottom. The trench should be excavated to allow for the thickness of granular bedding under the barrels. The trench formation should be prepared, the bedding placed and the pipes laid in accordance with BS 5955: Part 6: 1980 and BS 8301: 1985.

OsmaDrain and Osma UltraRib pipes laid on a 50mm minimum processed granular bed.

In the case of 110mm/160mm OsmaDrain and 150mm Osma UltraRib pipes, where the 'as-dug' material can be hand trimmed by shovel and is not puddled when walked upon, a 50mm depth of bedding material may be used. In this case the material must be nominal 10mm single-sized aggregate (see Figure 6).

OsmaDrain and Osma UltraRib pipes laid on a 100mm minimum processed granular bed.

Where the 'as-dug' material cannot be hand trimmed by shovel and is puddled when walked upon, or, when pipes are to be laid in rock, compacted sand or gravel requiring mechanical means of trimming, or, in very soft or wet ground, the bedding should be a minimum of 100mm of processed granular material in accordance with Table 2 (see also Figure 7).

Figure 6. OsmaDrain and Osma UltraRib pipes laid on 50mm minimum of processed granular material

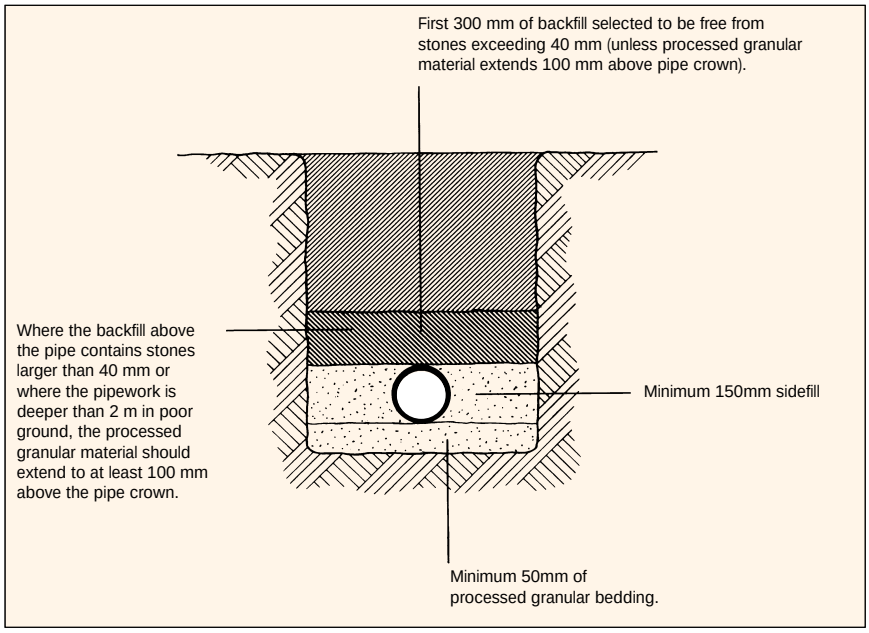
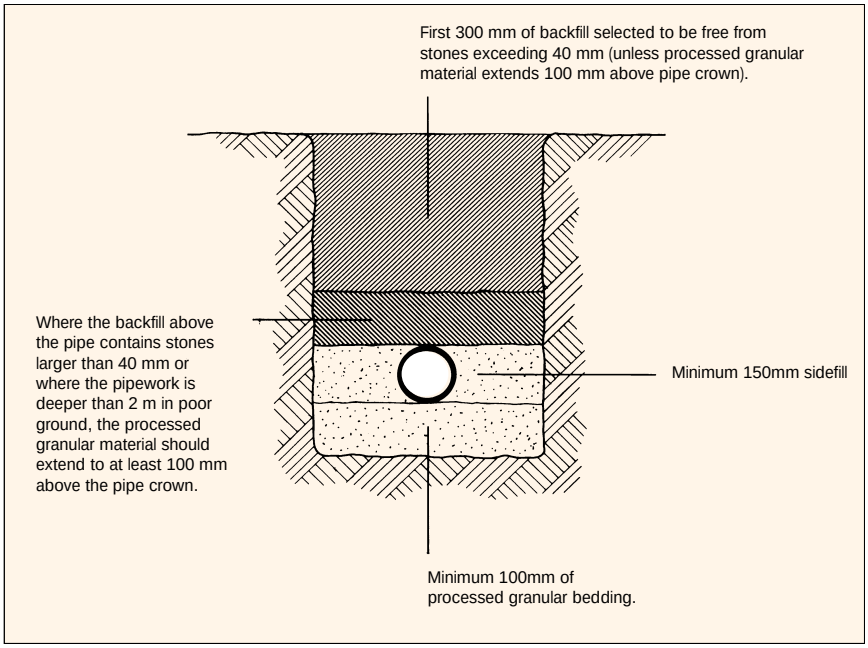


Figure 7. OsmaDrain and Osma UltraRib pipes laid on 100mm minimum of processed granular material



Backfill Sequence and Pipe Protection

BACKFILL SEQUENCE

1. Place suitable sidefill material evenly on each side of the pipe in 100mm layers. Pay particular attention to the area under the lower quadrants of the pipe. Hand tamp well at each layer up to the pipe crown. Leave the pipe crown exposed.
2. If 'as-dug' material is free from stones exceeding 40mm, imported processed granular material is not needed above the pipe crown (see Figure 6). Cover the pipe crown with a minimum of 300mm of compacted 'as-dug' material.
   If 'as-dug' material contains stones larger than 40mm, or the pipe is deeper than 2 metres in poor ground, extend the processed granular material for at least 100mm above the pipe crown.
3. In both cases, hand tamp the material fully at the sides of the pipe while tamping lightly over the crown. Continue hand tamping until a finished layer of 300mm has been placed over the pipe.
4. 'As-dug' material may be backfilled in 300mm layers and mechanically tamped. Dumpers or other vehicles must not be driven along the pipe tracks as a means of compacting. Surround vertical or steeply raking pipes with 150mm of bedding material, suitably tamped up to the invert level of the incoming pipe (Backdrops) or to ground level (Rodding Eyes). Then backfill as above.

PIPE PROTECTION

As PVC-U pipes are flexible they can accommodate a degree of ground movement and pressure without damage. However, if the pipe needs protection the following recommendations should be followed:-

Traffic Free Areas

In areas where no loading is expected (e.g. in gardens) pipes at depths less than 0.6 metre, should, where necessary, be protected against risk of damage from garden implements,For example by placing over them a layer of concrete paving slabs with at least a 75mm. layer of suitable material between pipe and slab. (see Figure 8)(Also refer to BS8301: 1985: Clause 11.1.2).

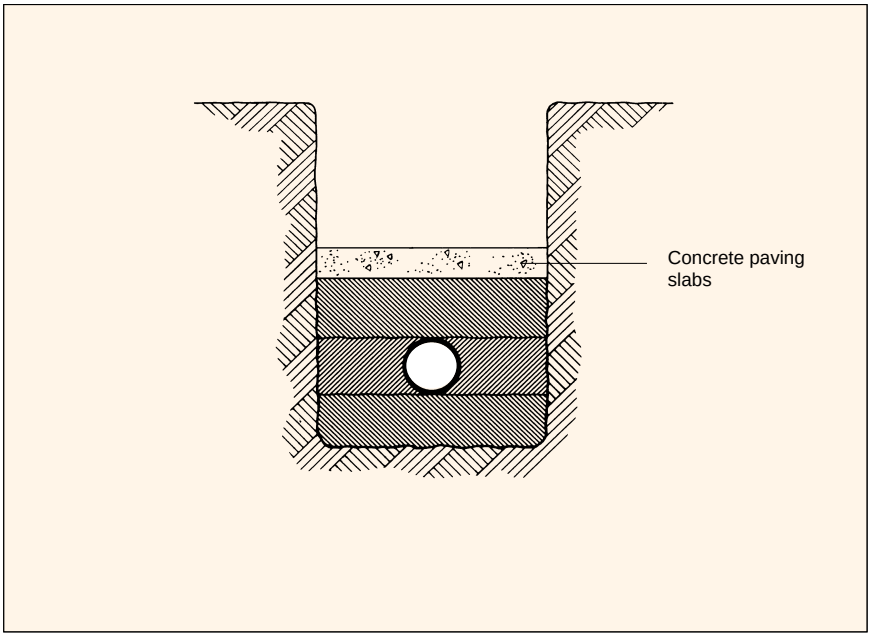
Public Highways/Adoptable Situations

In areas where loading is expected, pipes laid at depths less than 0.9 metre below the finished surface of a road, (1.2m in adoptable situations) should be protected with a concrete slab of suitable strength extending the full width of the trench (see fig. 9) or alternatively surrounded in concrete (see fig. 10).

Concrete of suitable strength or the requirement for reinforced concrete to be determined by the engineer or adopting authority.

The normal maximum depth for all installations is 10 metres.

Figure 8. Pipe Protection in Traffic Free Areas - concrete paving slabs.



Pipe Protection continued

Use of Concrete

If pipes are to be surrounded with concrete, make sure they do not float when the concrete is poured. Filling the pipes with water will generally provide enough ballast but side restraint may be needed to maintain alignment.

To maintain a certain degree of flexibility, insert 18mm compressible material, such as fibreboard or polystyrene, around the pipe joints. These boards must be at least the width of the concrete surrounds.

Pipes Under Buildings

A drain may run under a building if at least 100mm of granular or other flexible filling is provided round the pipe. On sites where excessive subsidence is possible additional flexible joints may be advisable or other solutions such as suspended drainage. Where the crown of the pipe is within 300mm of the underside of the slab, concrete encasement should be used integral with the slab (see The Building Regulations 1985, A9)

Pipes Penetrating Walls

Where a short length of pipe is to be built into a structure, a suitable wall protection sleeve, complete with couplers placed within 150mm of the wall face should be used. The length of the next 'rocker' pipe should not exceed 0.6 metre (see Figure 60). This will compensate for any settlement of the building or made up ground.

Alternatively, where it is not necessary for a pipe to be built into a structure, the provision of a lintel, relieving arch or sleeve may be used, leaving a gap of not less than 50mm around the pipe. Effective means should be adopted to prevent the entry of gravel, rodents or gases.

Figure 9. Pipe Protection - concrete slab - Ref BS 5955 Part 6.

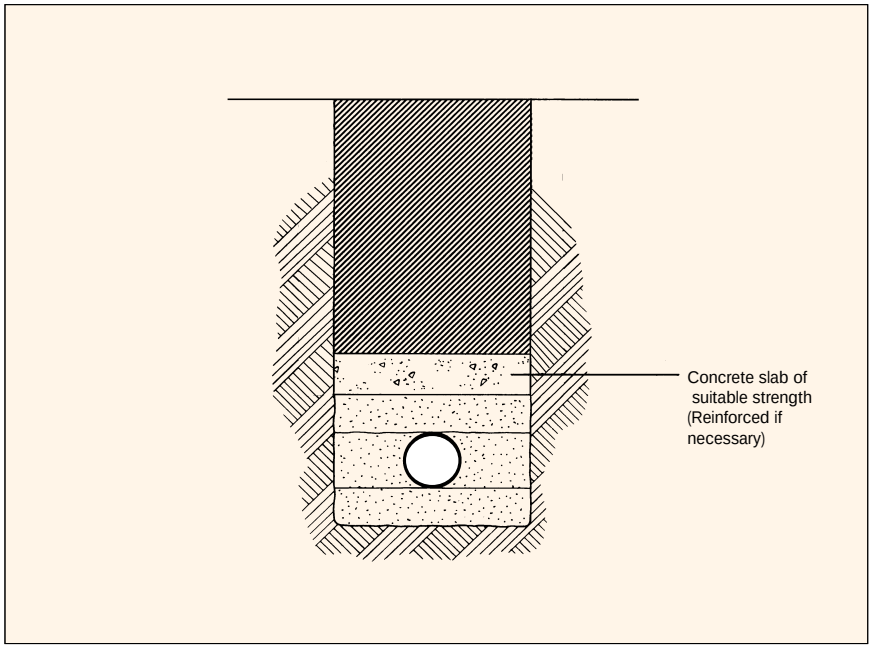
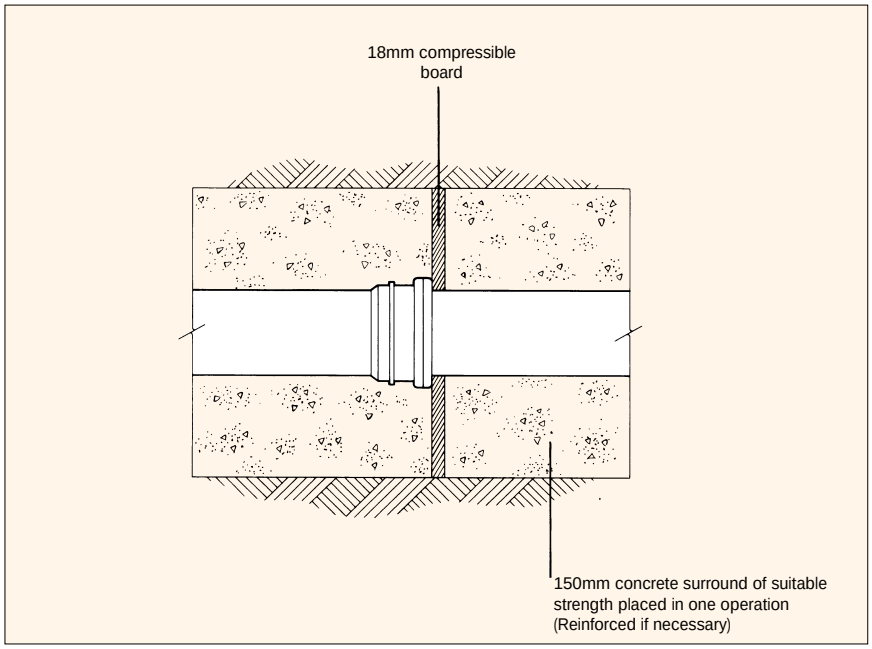


Figure 10. Pipe Protection - concrete surround



Installation of Wavin TwinWall Pipes

Please Note: That Wavin TwinWall is for use as a surface water drain in non-adoptable installations.

For private/commercial/industrial installations please refer to pages 6-9 for details on bedding and backfilling and pipe protection.

Highways Works - General

Wavin TwinWall slotted/unslotted filter and carrier pipes must be installed in accordance with the Department of the Environment, Transport and the Regions, Highways Agency Requirements (DETR,HA) and clauses 503 and 505 of the Manual of Contract Documents for Highways Works, Volume 1 (MCHW).

Highways Works - Installation

For details on the excavation, bedding, laying and surrounding of pipes reference should be made to Figures 11 a,b,c and 12 a,b and the MCHW, Volume 3, Drawing F11 (Types G, H & I) and F12 (Types S &T).

Notes

1. All dimensions are in millimetres
2. Pipes shall comply with the requirements for filter drain pipes in Table 5/1 of the Specification for Highways.
3. Pipes are to be laid with the slots or perforations facing upwards where a concrete bed is used. The orientation of the slots shall be decided by the Engineer when other types of bed are used.
4. Minimum cover to the crown of the pipe is 900mm.
5. Maximum cover to the crown of the pipe is 6000mm.

Type B Filter Material to S.H.W Clause 505

Type A or C Filter Material to S.H.W Clause 505 or Granular Material to S.H.W Clause 503.3

Concrete Grade ST2

Figure 11a. Wavin TwinWall Filter Drain, Bedding Details - Type G.

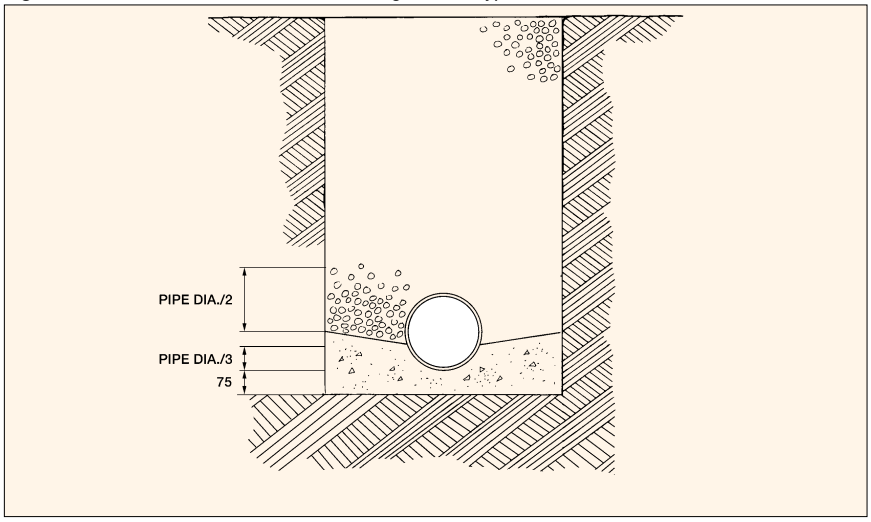


Figure 11b. Wavin TwinWall Filter Drain, Bedding Details - Type H.

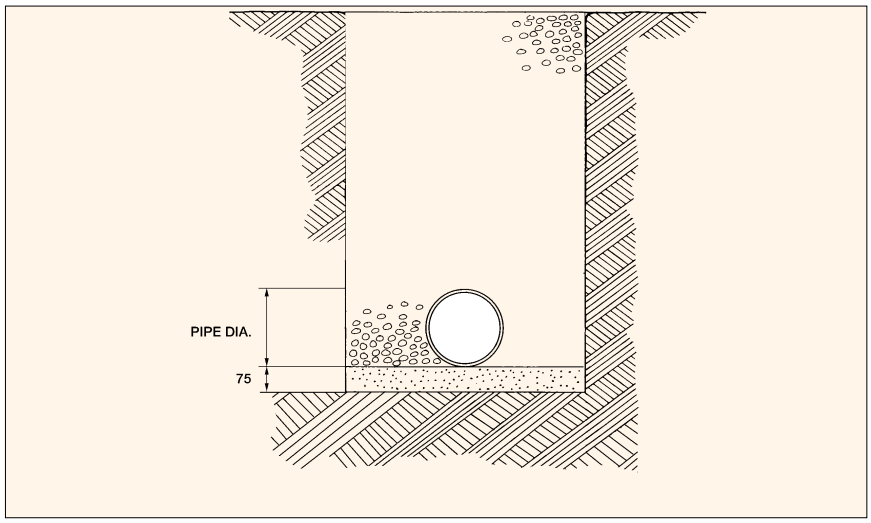
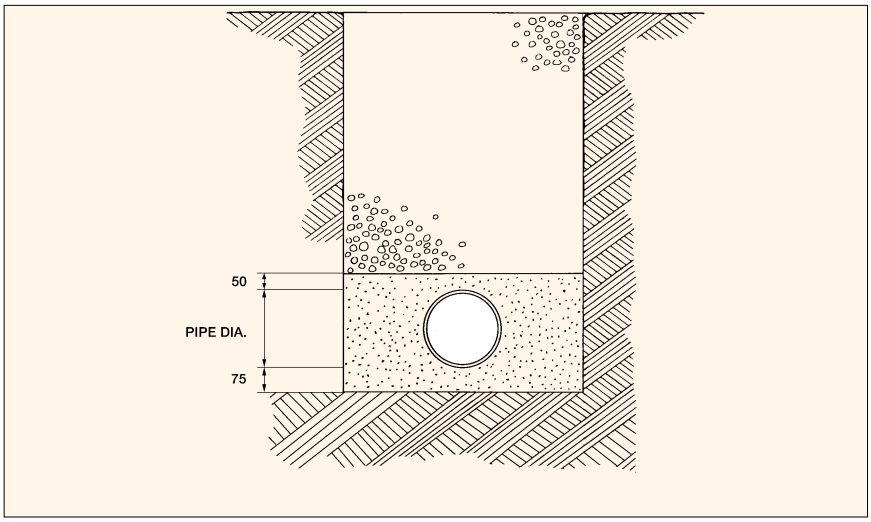
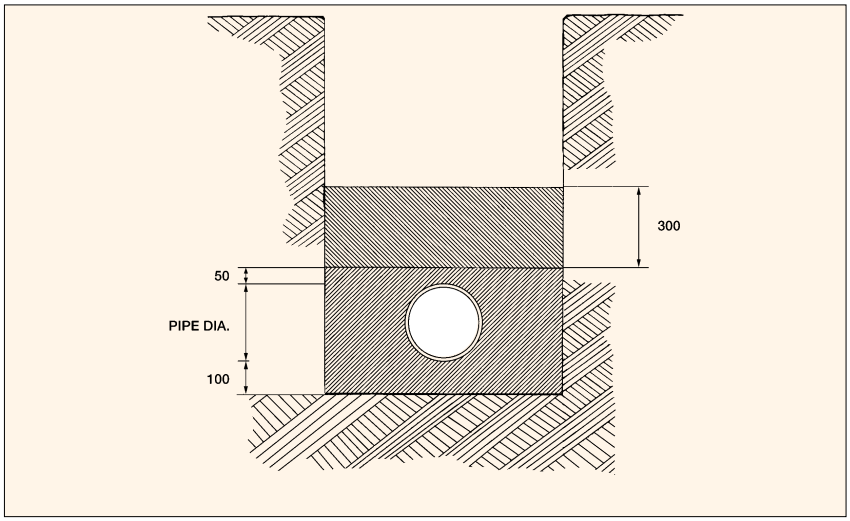


Figure 11c. Wavin TwinWall Filter Drain, Bedding Details - Type I.



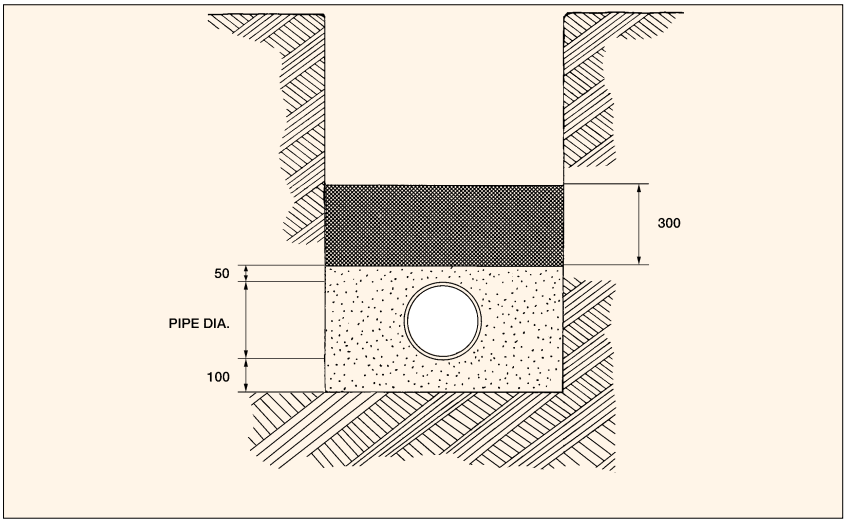
Installation of Wavin TwinWall Pipes

Figure 12a. Wavin TwinWall Carrier Drain, Bedding Details - Type T.



Minimum cover to the crown of the pipe
= 1000mm
Maximum cover to the crown of the pipe
= 3000mm for 150ø
= 5500mm for 225ø
= 5500mm for 300ø

Figure 12b. Wavin TwinWall Carrier Drain, Bedding Details - Type S.



Minimum cover to the crown of the pipe
= 900mm
Maximum cover to the crown of the pipe
= 6000mm for 150ø
= 5500mm for 225ø
= 5500mm for 300ø

Material to S.H.W Clause 503.3 (ii). Eg. Sand

Granular material to S.H.W Clause 503.3 (i)

Class 8 material to S.H.W Clause 503.3 (iv)

Table 3. Wavin TwinWall Bedding - Highway Drainage. Table 5/3 Granular Materials to BS 882

Pipe Diameter (mm)	BS 882 Coarse Aggregate (Table 4)	
	Graded Aggregate Ranges (mm)	Single Sized Aggregate Sizes (mm)
Not Exceeding 140	-	10
Exceeding 140 but not exceeding 400	20 to 5 or 14 to 5	10, 14 or 20
Exceeding 400	14 to 5, 20 to 5 or 40 to 5	10, 14, 20 or 40

Contents

Jointing

JOINTING

Preparing Pipe Ends

Pipes cut on site must be clean cut at right angles to their horizontal axis. Deburr the cut end with a scraper.

Depth of Entry Mark

Some plain ended fittings have a depth of entry mark moulded on the spigot. This depth of entry allows the pipe to expand into the fitting socket by a minimum of 12mm. Insert the spigot into the socket until the depth of entry mark is just visible.

All pipes (whether site cut or otherwise) and other plain ended fittings must be inserted to the full depth of the socket, marked at the socket face, and then withdrawn at least 12mm (see Figure 13).

Ring Seal Joints

Pipe couplers and most bends and junctions (in the 110mm and 160mm sizes) are supplied with sockets on all ends. These sockets are fitted with ring seals which act as both a sealing and expansion joint.

The correct sequence for ring seal jointing is as follows:

1. Check that the pipe is correctly prepared (see Pipe preparation, Figure 14) and that the ring seal is properly seated in its housing.
2. Make sure that both the pipe or fitting spigot and ring seal socket are dry, clean and free from grit or dust.
3. Lubricate evenly around the spigot (NOT the socket) with OsmaDrain Lubricant (4D.391/392/395) (see Table 4).
4. Make sure that the components to be joined are correctly aligned.
5. Push the spigot fully into the socket. Mark the spigot at the socket face and then withdraw the spigot by a minimum of 12mm.

If the spigot is already marked with the depth of entry, push it into the socket until the depth of entry mark is just visible.

Table 4. Lubricant Allowance

Pipe Size (mm)	No. of Joints (per 500 g)
82	160
110	100
160	45

5. Do not cut back the straight leg sections of Long Radius Bends (4D/6D.281) as only the spigot end provided is suitable for jointing.

Figure 13. Ring Seal jointing

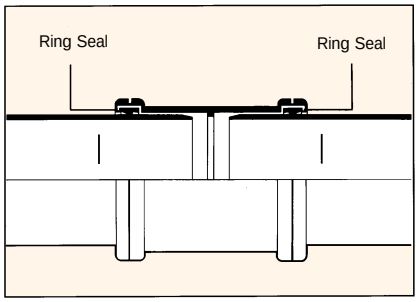
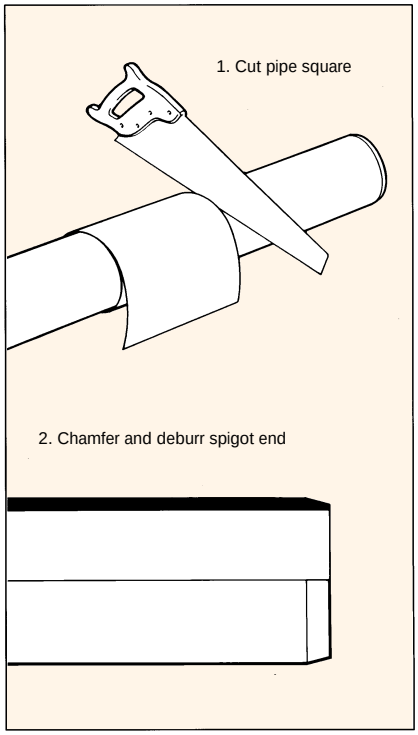


Figure 14. Pipe preparation



Jointing continued

Solvent Weld Joints

There are relatively few fittings which need to be solvent jointed. The correct sequence for solvent jointing is as follows (also see Figure 15):

1. Ensure that the pipe has been cut cleanly and at right angles to its axis.
2. Clean swarf and other dirt from the pipe end.
3. Wipe the inside of the socket and the spigot of the pipe or fitting clean from grease and dirt.
4. To remove grease and prepare the surfaces of the socket and spigot, clean both surfaces with Osma Degreasing Cleaner No 1 (4S.380) applied liberally on a clean non-synthetic rag or absorbent paper.
5. Apply one coat of Solvent Cement No 2 (4S.383/384) evenly, using a clean brush, to both the mating surfaces, stroking the cement along and not around the surfaces.
6. Immediately insert the spigot straight into the socket until the full socket depth is reached, hold for 20-30 seconds and remove any surplus cement from the mouth of the socket.
7. Each solvent joint must be completed within $1^{1}/_{2}$ minutes.
8. The joint may be handled after 10 minutes and commissioned after 24 hours.

Table 5. Solvent Cement Allowance

Pipe Size (mm)	No. of Joints (per litre)
82	64
110	44
160	24

Do not thin Solvent Cement or Solvent Cement Filler. As these cements are solvent based it is essential to observe the normal precautions for solvents (see ‘ Safety’ page 50).

Boss Socket Connections

These may be made on the sides of gullies, on sealed inspection junction covers or wherever boss sockets occur, using either a 32mm or 40mm Boss Socket Adaptor (4D.398/399).

Make the connection by drilling out the unperforated boss socket on the fitting using a standard 54mm hole cutter. Solvent weld as described in ’Solvent Weld Joints’, pushing the adaptor the full depth along the keyway of the boss socket (see Figure 16).

Figure 15. Solvent weld jointing

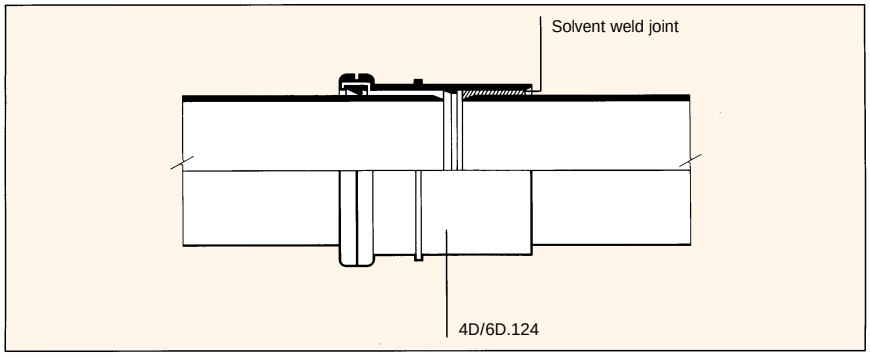
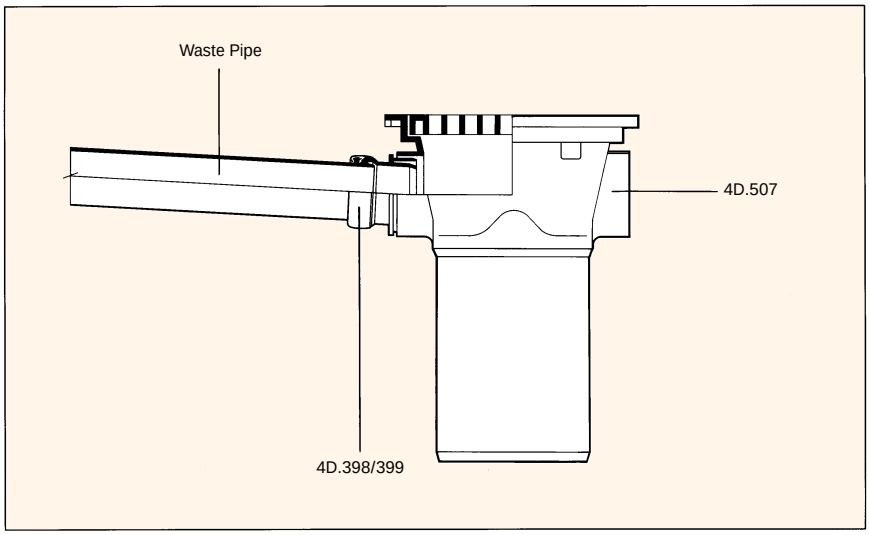


Figure 16. Boss Socket connections



Vertical Connections

Figure 17. Connection of internal waste pipe

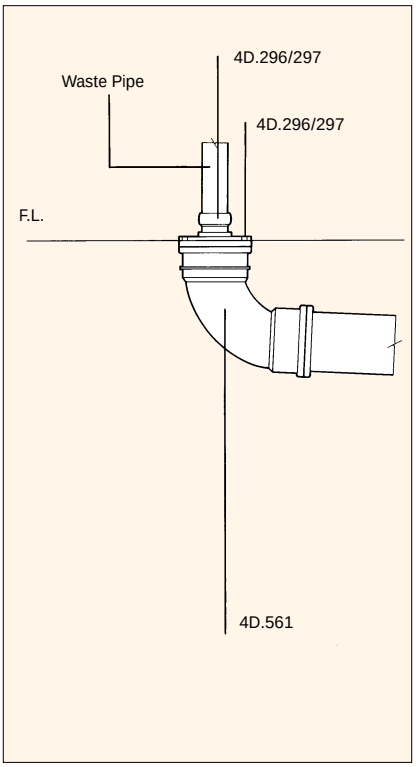


Figure 18. Connection of internal waste pipe at depth

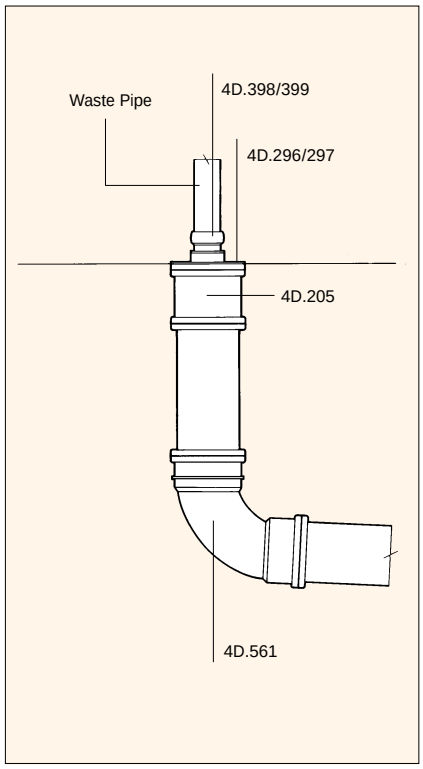


Figure 19. Internal connection of 110mm diameter soil pipe

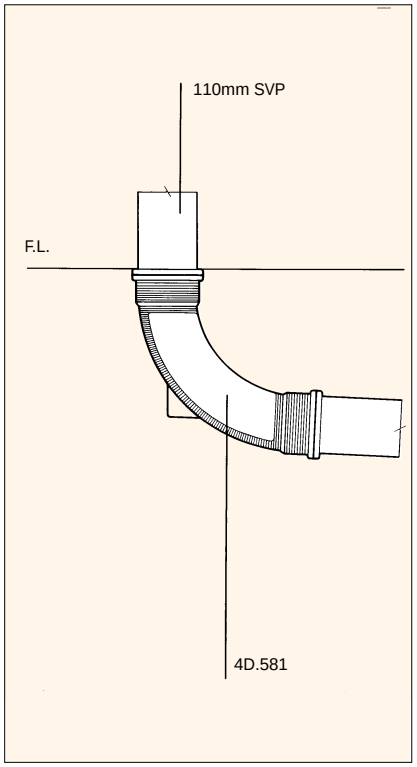
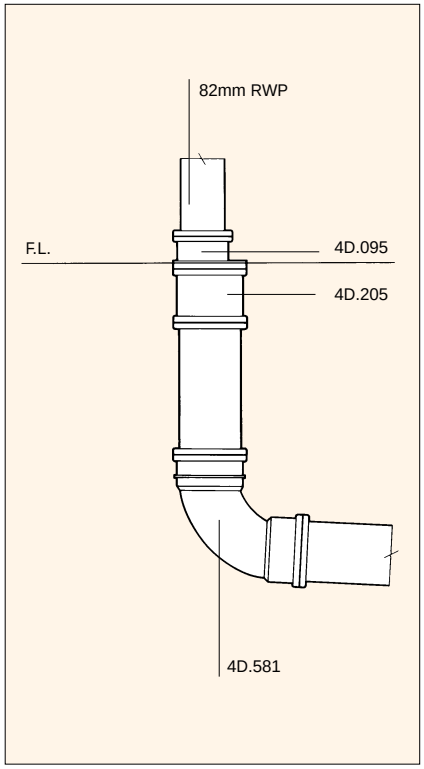


Figure 20. Internal connection of 82mm diameter rainwater or waste pipe



VERTICAL CONNECTIONS

Connection of Internal Waste Pipe

Fit a Socket Plug (4D.296) into the socket of a Short Radius Bend (4D.561). The plug has a moulded boss socket which can be drilled and fitted with the appropriate Boss Socket Adaptor (see Boss Socket Connections on page 14). A 110mm pre drilled Socket Plug (4D.297) is also available (see Figure 17).

When installing the bend at a deeper level, fit the Socket Plug into a Coupler (4D.205) and connect the Coupler to the necessary length of pipe. Fit the pipe into the socket of the Short Radius Bend (see Figure 18).

Connection of Internal Rainwater/ Soil/Waste Pipe

To connect internal 110mm PVC-U soil pipe to a drain, push the pipe spigot into the socket of a Long Radius Bend (4D.581) (see Figure 19). Alternatively, to connect 110mm PVC-U rainwater pipe to a drain, push the pipe spigot into the socket of a Short Radius Bend (4D.561).

To connect 82mm rainwater or soil pipe to drain, fit a 110mm x 82mm Reducer (4D.095) to the socket of a Short Radius Bend (4D.561). When installing either Long or Short Radius Bends at a deeper level, fit a Coupler (4D.205) and a short length of pipe to the installation. (see Figures 18, 19 and 20.)

Vertical Connections continued

Connection of External Osma RoundLine Rainwater Pipe

Fit an Adaptor (4D.149) over the spigot of a short length of OsmaDrain pipe. Fit the other end of the pipe into a socket of a Short Radius Bend (4D.561). Fit the end of the 68mm RoundLine Rainwater Pipe into the plain socket of the Adaptor. Neither lubrication nor solvent welding is necessary (see Figure 21). Alternatively, fit an Adaptor (4D.149) over a Coupler (4D.205) and connect the Coupler to the short length of drainpipe. Complete the installation as above. For a shallow installation fit the Adaptor (4D.149) over the socket of a Short Radius Bend (4D.561) (see Figure 22).

Connection of external Osma Round and Square Profile Rainwater Pipe

The Universal Drain Adaptor (4D.159) can be used in many types of applications, ie for connecting both circular and square profiled rainwater pipes up to 70mm and waste pipes up to 50mm.

However it is recommended that the Adaptor is only used in external situations.

Installation of Universal Drain Adaptor

Connection to a 110mm OsmaDrain Spigot.

1. Check that the pipe has a straight edge and is free from swarf.
2. Fit the Adaptor over the spigot ensuring that both lips are located on the outside of the pipe spigot (see Figure 23a).

Connection to a 110mm OsmaDrain Socket.

1. Remove the snap cap and sealing ring from the socketed component.
2. Turn the Adaptor inside out (see Figure 23c).
3. Fit the Adaptor, ensuring that the outer lip is located on the outside of the socket, with the inner lip located within the socket itself (see Figure 23b).

Figure 21. Connection of RoundLine rainwater pipe to OsmaDrain 110mm spigot.

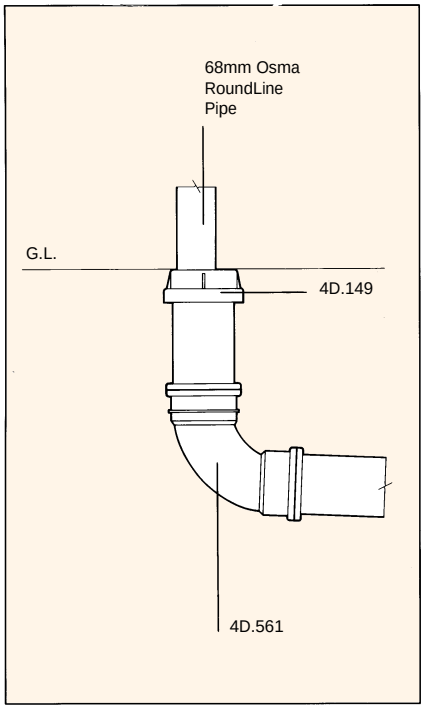


Figure 22. Connection of RoundLine rainwater pipe to OsmaDrain 110mm socket

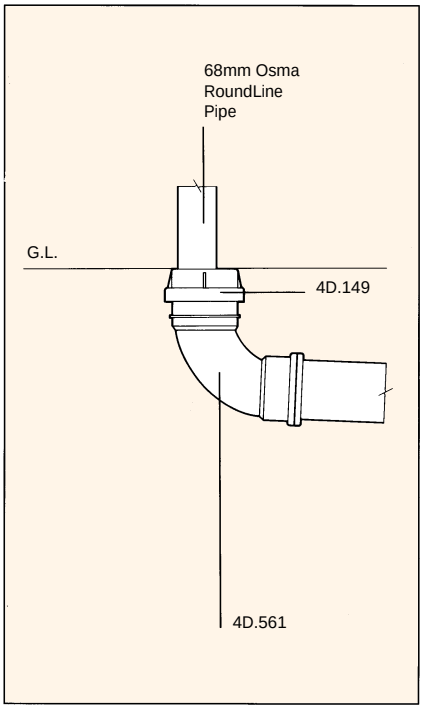


Figure 23a. Connection to a 110mm OsmaDrain spigot

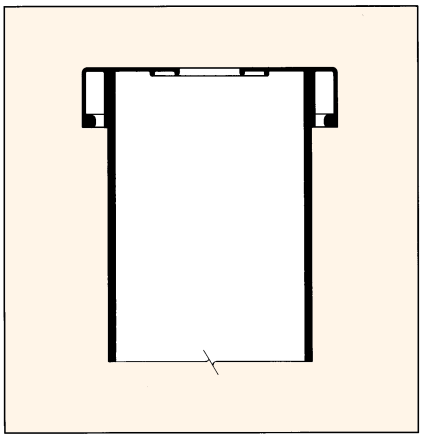


Figure 23b. Connection to a 110mm OsmaDrain socket

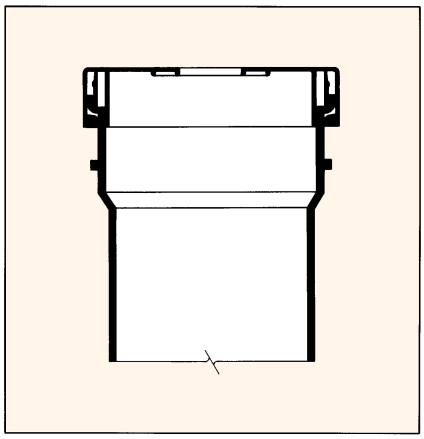
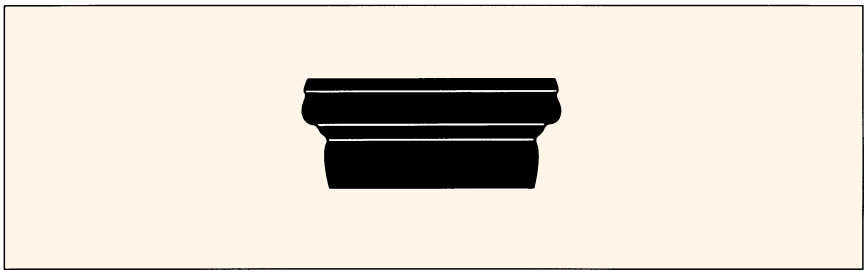


Figure 23c. Adaptor turned inside out



Vertical Connections continued

Figure 24. Connection of Osma RoundLine Rainwater Pipe

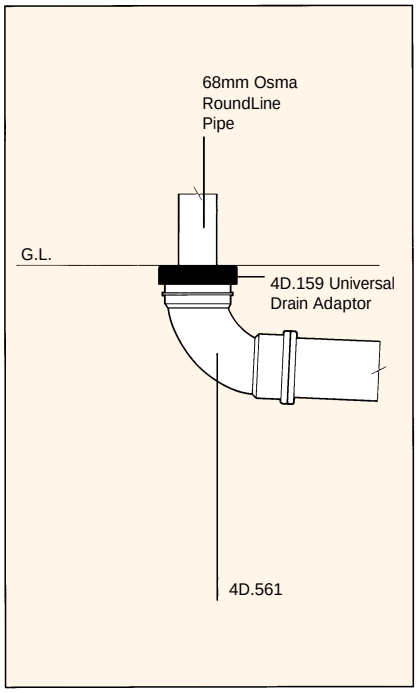
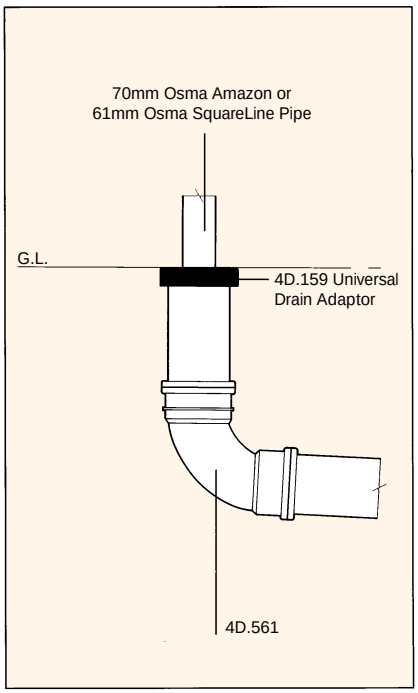


Figure 25. Connection of Osma Amazon and SquareLine Rainwater Pipes



Connection of Osma RoundLine Rainwater Pipe.

1. Ensure that the Osma RoundLine Pipe is free from swarf.
2. Place the pipe into the Adaptor, working the pipe through the opening until the pipe is located in the Adaptor to a suitable depth (see Figure 24).
3. Fix a rainwater bracket no more than 150mm from the Adaptor.

Connection to Osma Amazon and SquareLine Rainwater Pipe.

1. Firstly, using the cutting guides, (located on the underside of the Adaptor) cut the Adaptor to the required size.
2. Fit the Adaptor to either an OsmaDrain spigot or socket as detailed.
3. Ensure that the Osma Amazon or SquareLine rainwater pipe is free from swarf.
4. Place the pipe into the Adaptor, working the pipe through the opening, until the pipe is located in the Adaptor to a suitable depth (see Figure 25).
5. Fix a suitable rainwater bracket no more than 150mm from the Adaptor.

Access to Drains and Shallow Inspection Chamber

Figure 26. Shallow Inspection Chamber installation

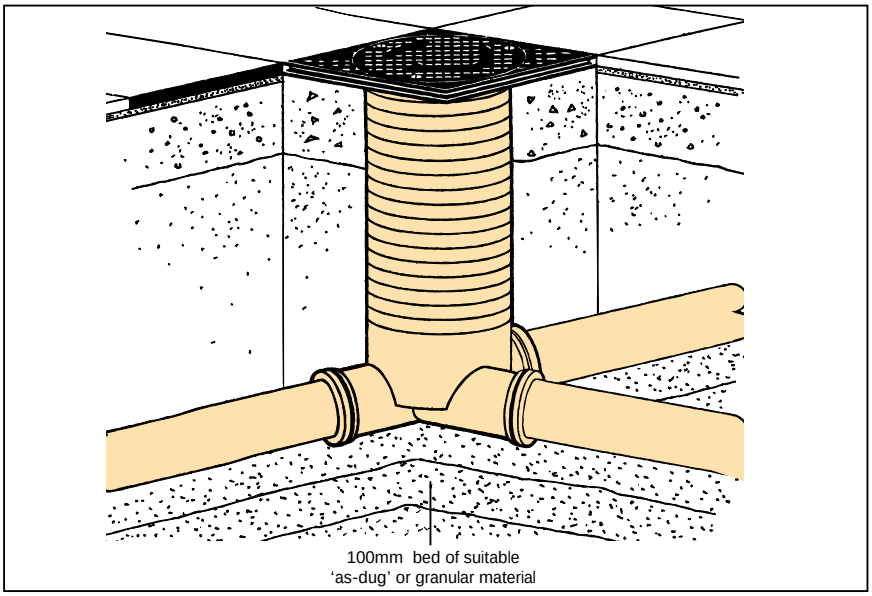


Figure 27. Shallow Inspection Chamber – non-load installation

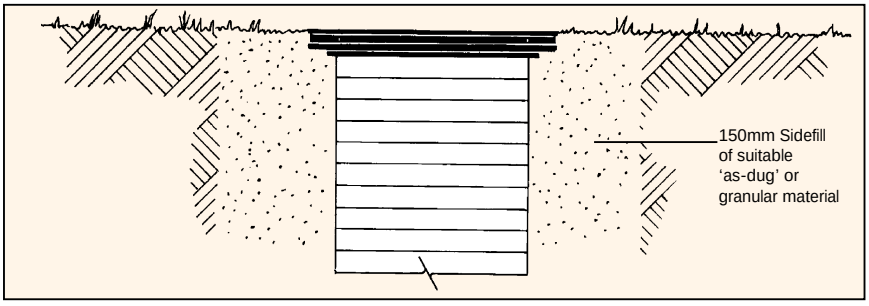


Figure 28. Shallow Inspection Chamber – external installation for wheel loads under 250kg

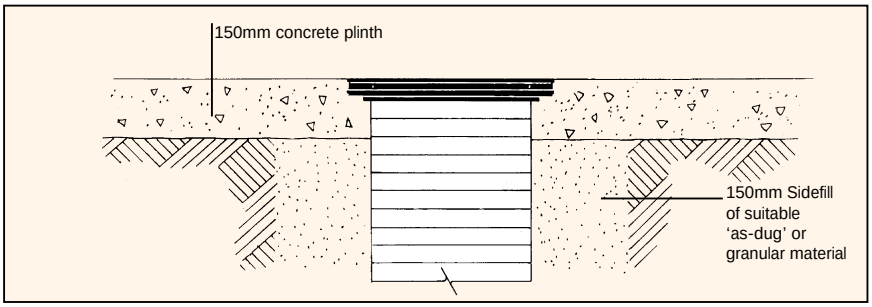
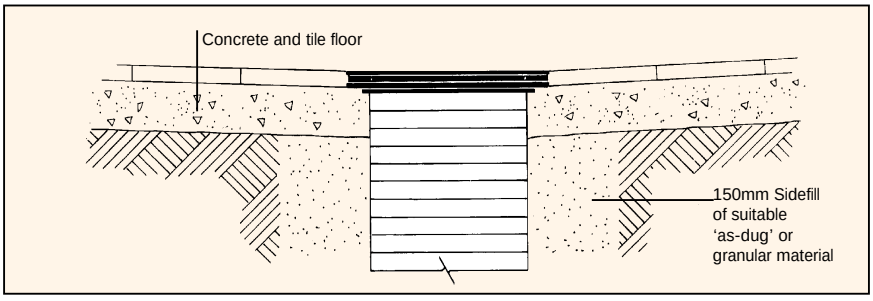


Figure 29. Shallow Inspection Chamber – internal installation



ACCESS TO DRAINS

The OsmaDrain range offers many different types of component for gaining access to drains: Shallow/Multi-Base Inspection Chambers, Universal Inspection Chambers, Sealed Rodding Access Fittings, Manhole Bases, and within traditional manholes, Channel and Sealed Access Fittings.

INSTALLATION OF SHALLOW INSPECTION CHAMBER

No additional trench excavation is needed to install the OsmaDrain Shallow Inspection Chamber.

1. Lay suitable bedding material (as used for the drain line).
2. Make pipe connections in the same way as the standard ring seal jointing of fittings (see Jointing, page 13). When using the component as a 90˚ change of direction, the main through channel should always be used. This can be achieved by inserting a 45˚ Short Radius Bend (4D.163) into the main inlet and outlet.
3. Sit the Shallow Inspection Chamber (4D.960) on a minimum 100mm bed of suitable 'as-dug' or granular material and surround it with similar material 150mm wide.
4. Cut the Shaft to size using a fine toothed saw. Chamfer the cut end to approximately 15˚ using a plain toothed rasp or scraper.
5. Lubricate top of shaft, and push-fit' the Cover and Frame (4D.961).
6. Continue to sidefill to either:

   - ground level for a non-load installation (see Figure 27), or

   - the level required for a 150mm concrete plinth if the chamber is installed externally for a wheel load of under 250kg (see Figure 28), or

   - the level required for a concrete floor if the chamber is installed internally (see Figure 29).

Multi-Base Shallow Inspection Chambers

Figure 30. Multi-Base Shallow Inspection Chamber installation

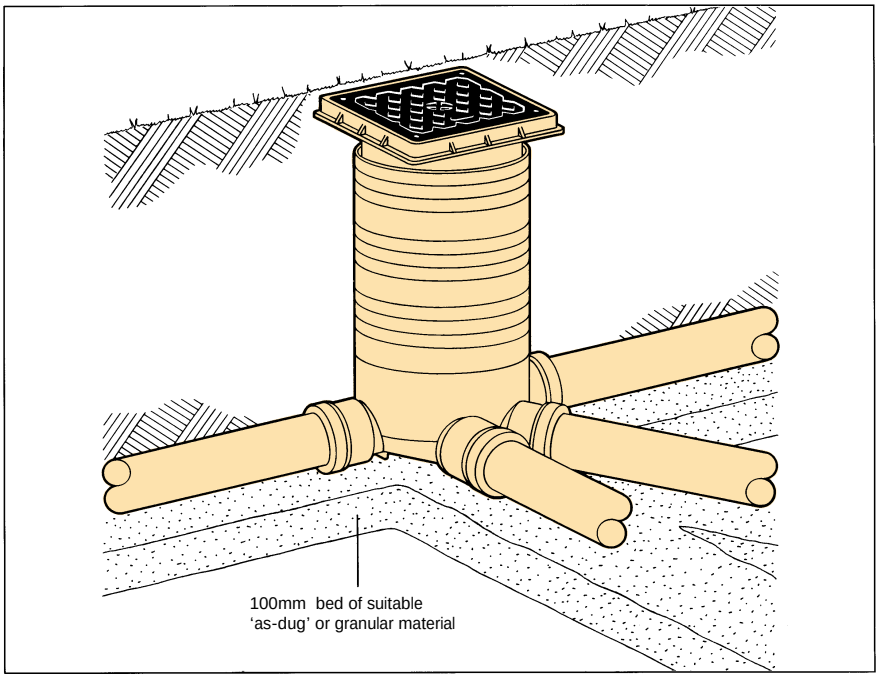


Figure 31. Multi-Base Shallow Inspection Chamber – non load installation

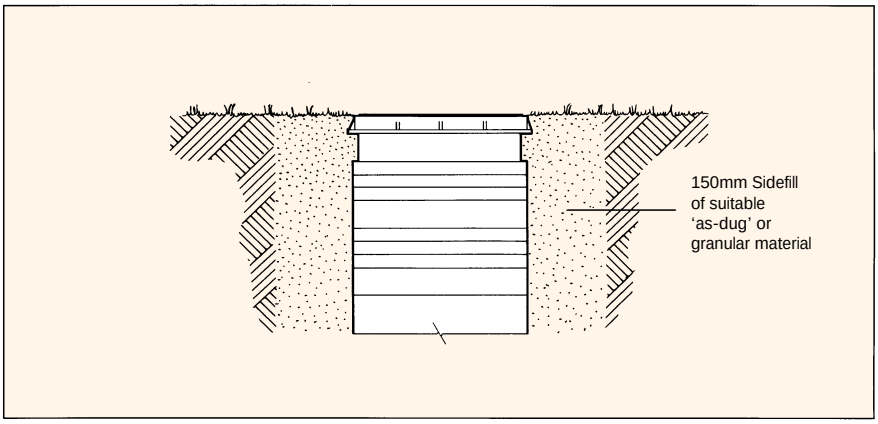
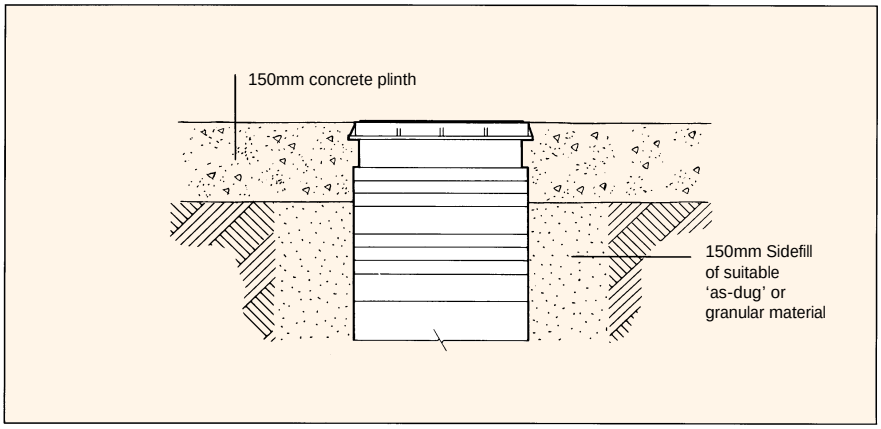


Figure 32. Multi-Base Shallow Inspection Chamber – external installation for wheel loads under 250kg



MULTI-BASE SHALLOW INSPECTION CHAMBERS

The OsmaDrain Multi-Base Shallow Inspection Chamber range consists of ten different base configurations. By simply selecting the most appropriate base for the job the cost of additional bends are avoided. The range also consists of a 300mm diameter x 150mm push-fit shaft section, together with a square section, tilt and rotate, cover and frame, which can accommodate sloping ground conditions.

Installation of Multi-Base Shallow Inspection Chamber Components

No additional trench excavation is needed to install the range of OsmaDrain Multi-Base Shallow Inspection Chamber components.

1. Lay suitable bedding material (as used for the drain line).
2. Make pipe connections in the same way as the standard ring seal jointing of fittings (see Jointing, page 13). When using the components as a 90˚ change of direction (except 4D.918), the main through channel should always be used. This can be achieved by inserting a 45˚ Short Radius Bend (4D.163) into the main inlet and outlet.
3. Sit the Multi-Base component on a minimum 100mm bed of suitable 'as-dug' or granular material and surround it with similar material 150mm wide.
4. Depending on the depth of invert required, push-fit either one or two shaft sections (4D.937) on to the base unit ensuring that the inside of the shaft section has been pre-lubricated. Intermediate depths may easily be obtained by cutting the shaft section (4D.937) to the required depth. Concentric grooves at 30mm centres act as cutting guides.
5. Push-fit the Cover and Adjustable Frame (4D.969), directly into the top of the shaft section, again ensuring that the inside of the shaft section has been pre-lubricated.

Universal Inspection Chambers

UNIVERSAL INSPECTION CHAMBERS

The OsmaDrain Universal Inspection Chamber range consists of four basic units, either a 110mm or 160mm x 450mm diameter x 270mm invert base units (4D.922/6D.928/929) and a 450mm diameter x 230mm shaft section (4D.925).

Installation of Universal Inspection Chamber Components

No additional trench excavation is needed to install either of the Universal Inspection Chamber Bases.

1. Sit the Chamber Base (4D.922/6D.928/929) on a minimum 100mm bed of 'as-dug' or granular material.
2. Make pipe connections in one of the following ways:

a) 4D.922 – Make connections in the same way as for the standard ring seal joint (see Jointing, page 13). Push Blank-off Plugs (4D.926) externally into any unused inlets, and use Inspection Chamber Channel Covers (4D.948/949) to internally blank-off unused inlets.

or

b) 6D.928/929 – make connections in the same way as for the standard jointing sequence for OsmaDrain 110mm and 160mm pipe. (see Jointing, page 13). Push Blank-Off Plugs (4D/6D.296) externally into any unused inlets.

When using the component as a 90° change of direction the main through channel should always be used. This can be achieved by inserting a 45° Short Radius Bend (4D.163) into the main inlet and outlet (see Figure 33a).

3. Assemble Chamber to required invert depth by placing one, two or three shaft sections on to the base unit, enabling the following invert depths to be achieved:

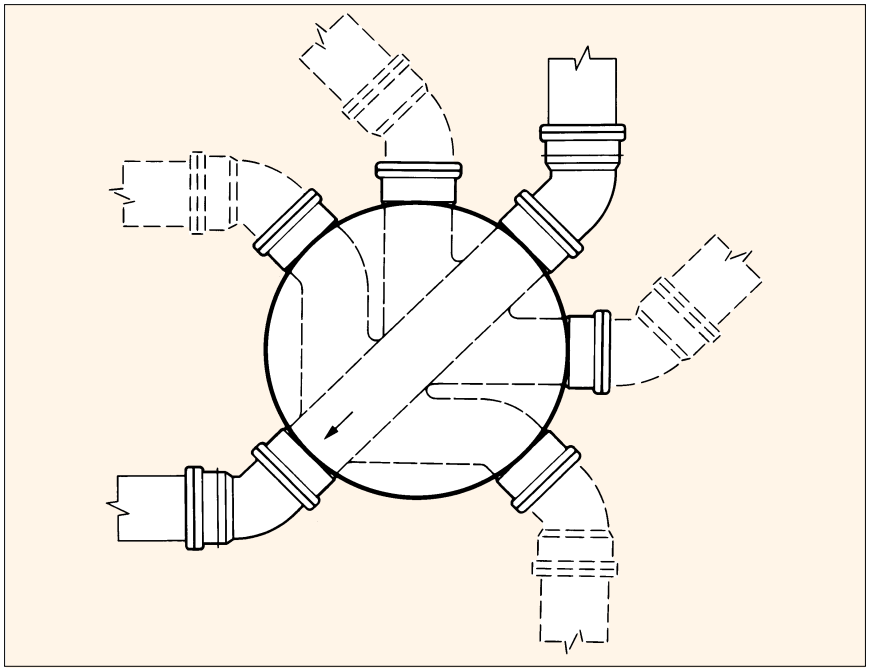
   – Base plus one shaft section = 500mm (540mm with cover)

   – Base plus two shaft sections = 730mm (770mm with cover)

   – Base plus three shaft sections = 960mm (1000mm with cover)

4. Intermediate depths are easily catered for by simply cutting a shaft section to the depth required. To make this easier, the concentric ribs located every 10mm along the shaft section act as accurate cutting guides.
5. Assembly of the chamber is very easy. A simple, sealant filled interference joint ensures a watertight installation. A tube of sealant and fixing instructions (4D.932) are provided with each and every shaft section.
6. Surround the Chamber with 150mm of similar material to that used as bedding.
7. Continue the sidefill to the level required for the 150mm concrete plinth on which the single seal Ductile Iron Cover and Frame (4D.940) will sit (see Figure 33b).
8. When the Universal Inspection Chamber is positioned in areas requiring a BS EN 124-B125 Ductile Iron Cover and Frame (4D.942), protect it from traffic loadings by shuttering its external ribs and surrounding it with concrete 150mm deep (see Figure 33c). This will ensure that all loadings are transferred to the surrounding ground.
9. The Universal Inspection Chamber is suitable for internal use provided it is fitted with the double sealed Ductile Iron Cover and Frame (4D.946).

Figure 33a. Straight through 90° change of direction



Universal Inspection Chambers continued

Figure 33b. Universal Inspection Chamber – non-load installation

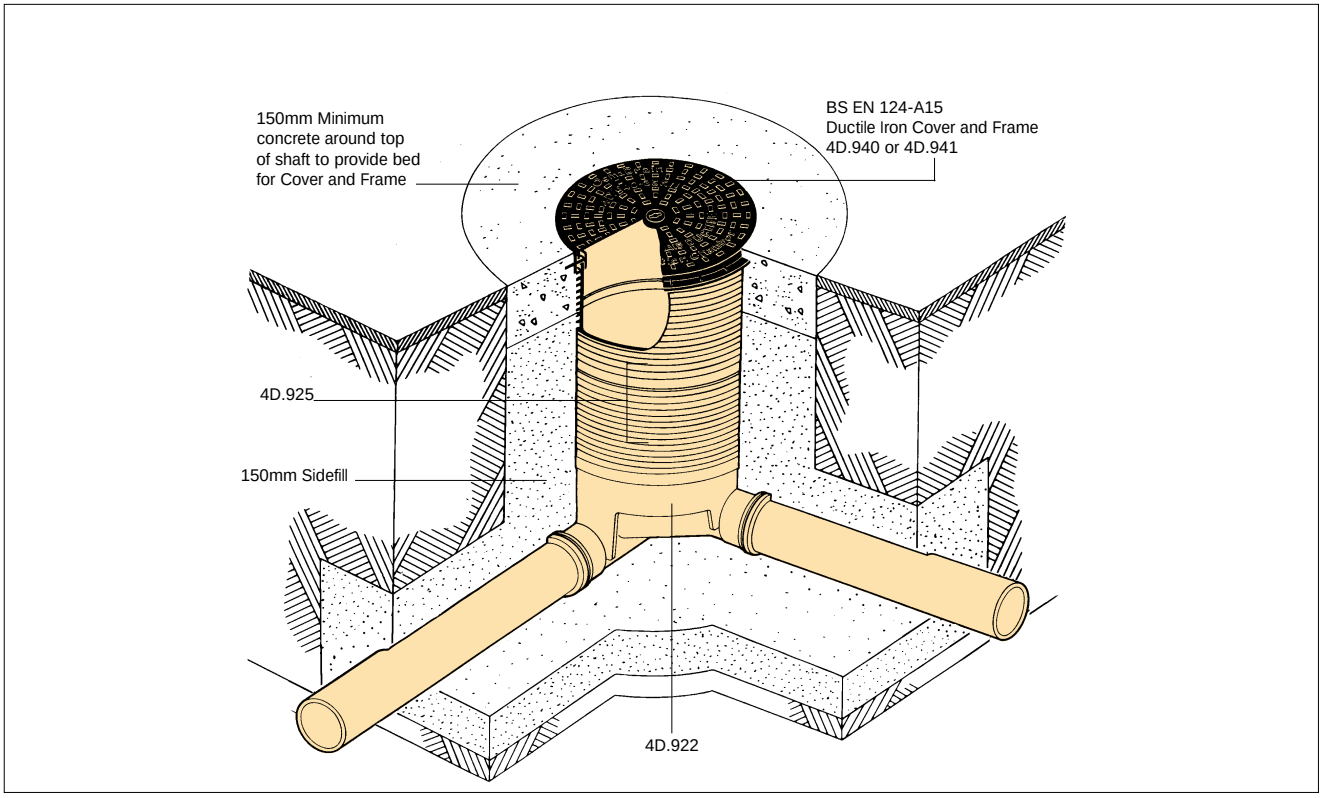
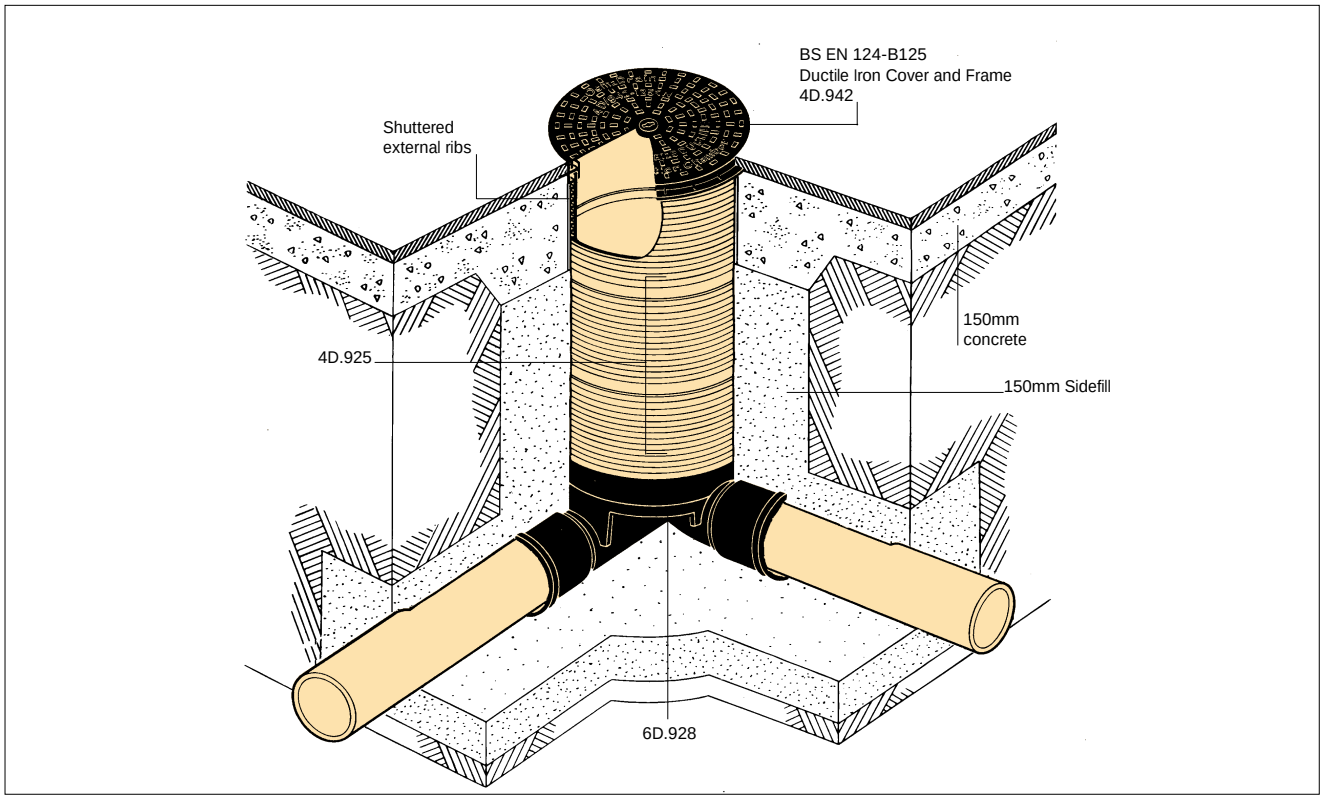


Figure 33c. Universal Inspection Chamber – in areas requiring a BS EN 124-B125 Cover and Frame



Manhole Bases

MANHOLES BASES

The OsmaDrain range of 750mm diameter Manhole Bases is designed for use at depths of up to 10 metres. The Bases have five inlets, either four at 110mm and one at 160mm (6D.875) or alternatively five at 160mm (6D.876). Both units have 160mm outlets. Two of the inlets enter the Base at 90° and two enter at 45° one of each either side of the through channel.

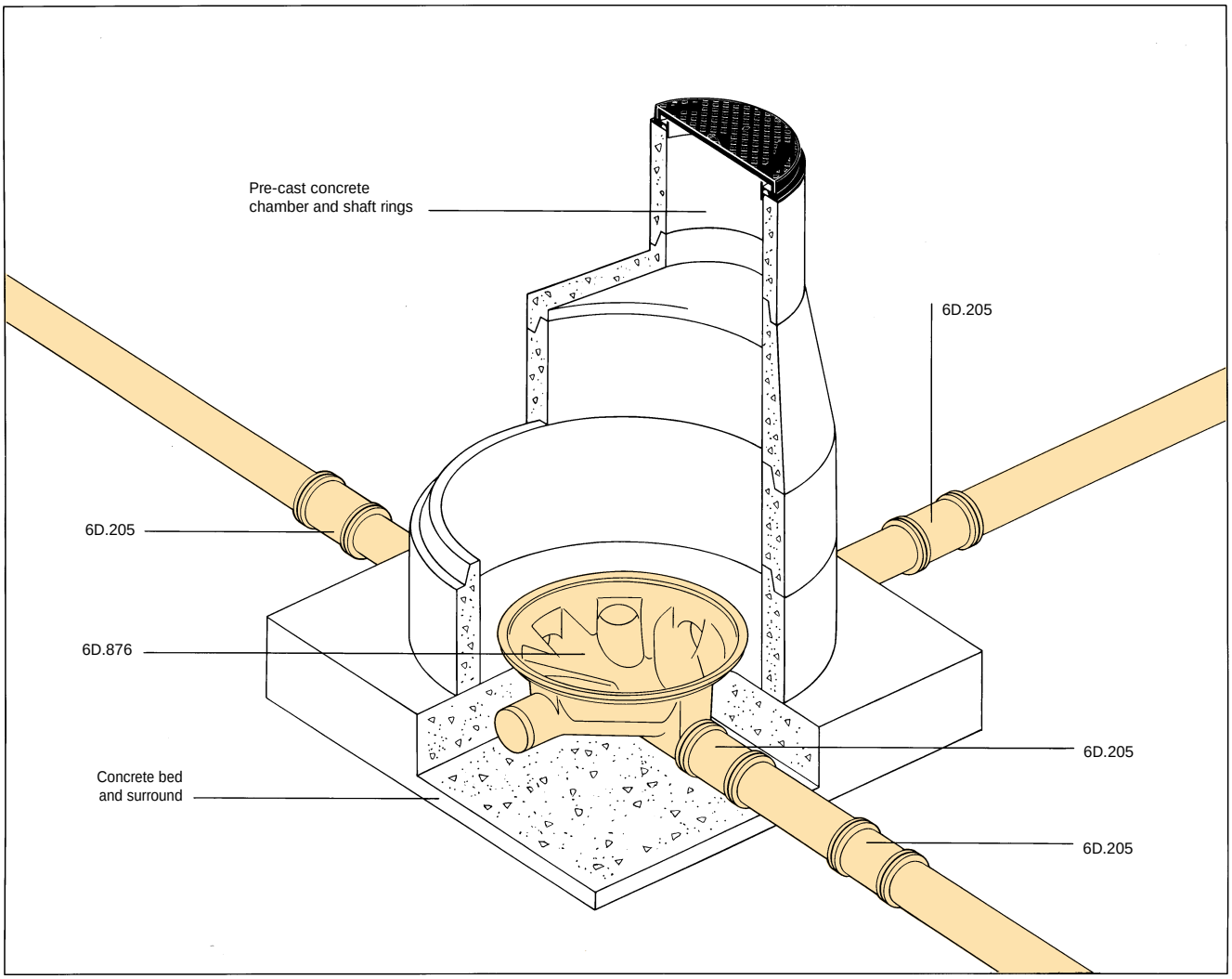
Installation of Manhole Bases

The following procedure should be adopted when installing Manhole Bases (6D.875/876).

1. Using a fine tooth saw, remove the integral spigot end of any required inlet or outlet connection. A pre-marked line shows the correct cutting position. Remove any swarf and using a rasp or file, chamfer the edge to approximately 15°.
2. Connection to the Manhole Base is made by using either a Pipe Coupler (4D/6D.205) or a double socketed Bend eg (4D/6D.563). The standard method for jointing any OsmaDrain component should be followed (see Jointing, page 13).
3. If using the Manhole Base (6D.876) and a 110mm connection is required, fit a Reducer (4D.099) into the socket of either the Coupler or Bend.
4. Bed and surround the Manhole Base in concrete, up to the top flange. Extend the concrete sufficiently from the flange to provide support all around the Base for a brick or concrete shaft (see Figure 34).

The (4D.922/6D.923/924) Universal Inspection Chamber Bases can also be used as manhole bases as above to a depth of 10 metres (see Universal Inspection Chambers, pages 20-21).

Figure 34. Manhole Base – typical installation



Sealed Access Fittings

Figure 35. Sealed Access Manhole and standpipe

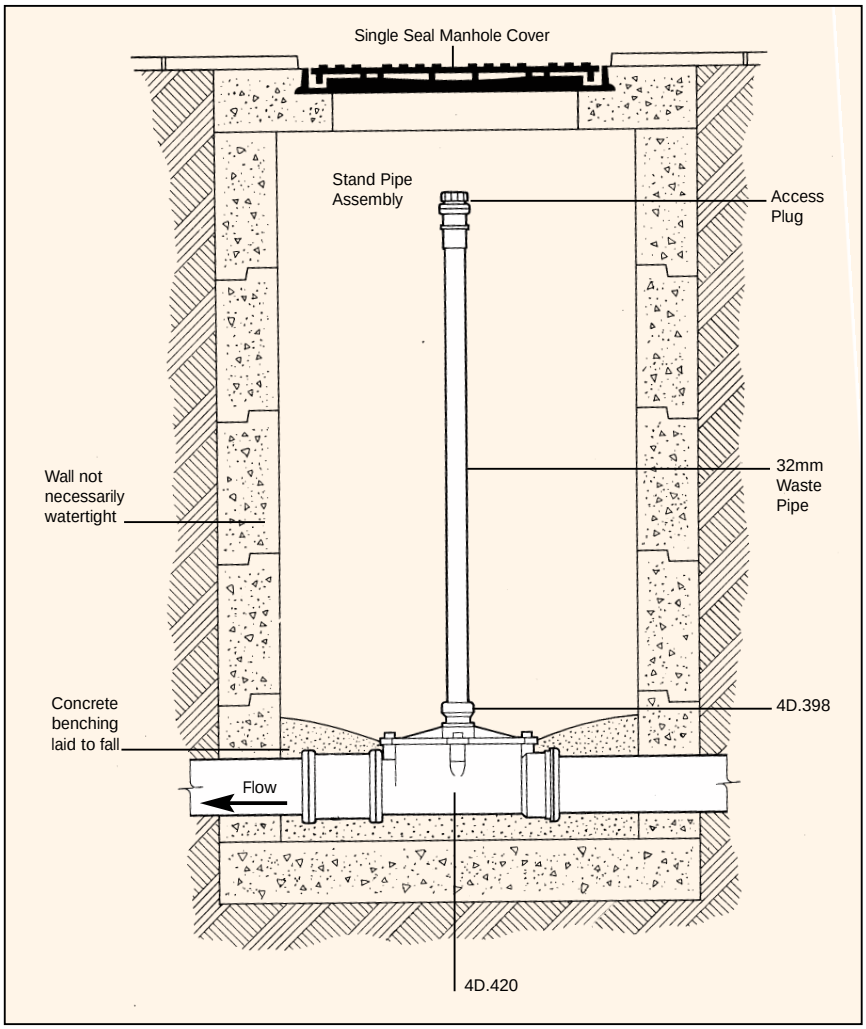
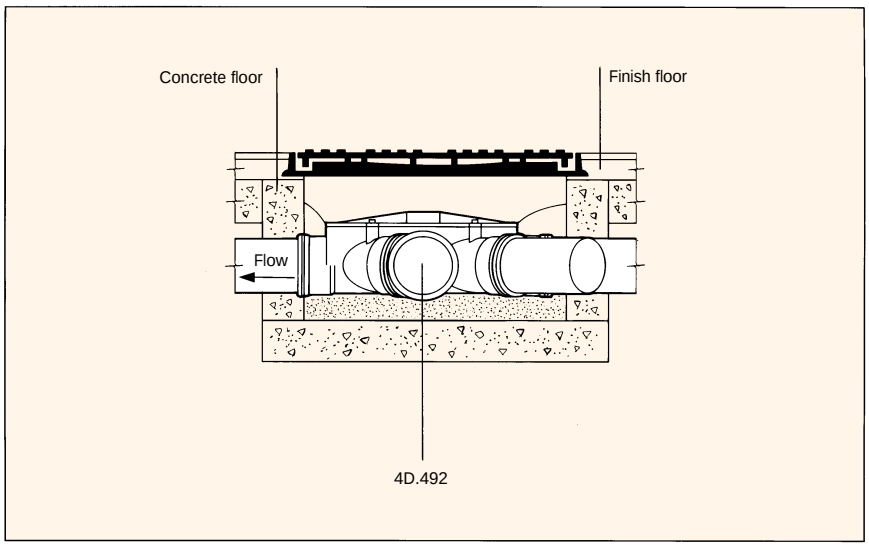


Figure 36. Sealed Access Manhole with shallow invert



INSTALLATION OF SEALED ACCESS FITTINGS

Manholes with Sealed Access Fittings are generally constructed in the same way as traditional manholes but as watertightness is not critical, unlined brick or concrete manholes may be permitted. Benching of the pipework is essential.

1. Bed all Sealed Access Fittings in cement mortar on a suitable concrete base.
2. Make pipe connections in the same way as the standard ring seal jointing of fittings (see Ring Seal Jointing, page 13).
3. Allow pipe ends to protrude beyond the edge of the manhole base so that connections can be made after the manhole walls have been built.
4. Slope benching of the pipework so that standing water will drain into the Access Fitting when the bolted cover is opened. The benching must provide adequate clearance for the access cover to be removed, for routine servicing. Bolts should be tightened in a diagonal sequence. Undue force should not be used during the tightening process.
5. Where standpipes are specified, fit these to the boss socket on the top of the bolted cover (see Boss Socket Connections, page 12 and Figure 35).
6. Use Sealed Access Fittings inside buildings in manholes with single seal manhole covers (see Figure 36).

Backdrops

BACKDROPS

A backdrop to a manhole is a method of connecting two substantially different drain line invert levels in a manhole. This can be done either internally or externally by using the following 110mm or equivalent 160mm fittings, as follows.

Installation of Backdrops

1. For an internal backdrop, use a Socket Plug (4D.296) or a Screwed Access Cover (4D.292), plus an Equal Access Junction (4D.593), vertical pipe to suit, a Short Radius Bend (4D.161) and a Channel Branch Bend (4D.782/3) or a Sealed Access Fitting to suit (see Figures 37 and 38).
2. Fix internal vertical pipe securely to the manhole wall with OsmaSoil Brackets (4S.083).
3. For an external backdrop, use a Screwed Access Cover (4D.290), plus a 45° Equal Junction (4D.213), a Short Radius Bend (4D.163), vertical pipe to suit and either a Long Radius Bend (4D.581), or a Short Radius Bend (4D.161) plus a short length of pipe connected to either a Channel Branch Bend (4D.782/3) or a Sealed Access Fitting (see Figure 38). (For bedding of vertical pipes see 'Backfill Sequence' page 8).
4. Alternatively, ramped backdrops can be used, for drops of less than one metre, by means of two Long Radius 45° Bends (4D.583) and a raking length of pipe.

Figure 37. Sealed Access Manhole with internal backdrop

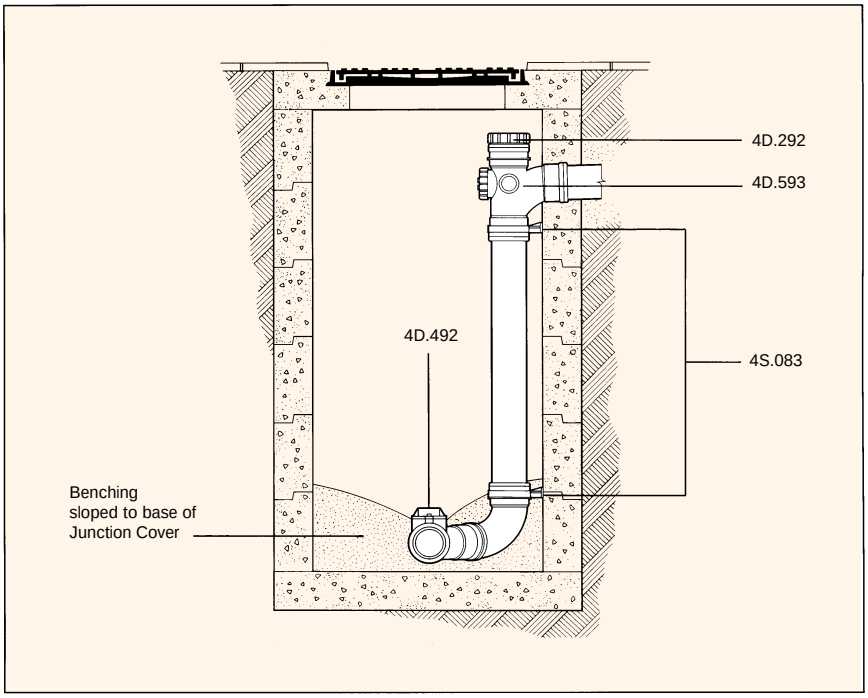
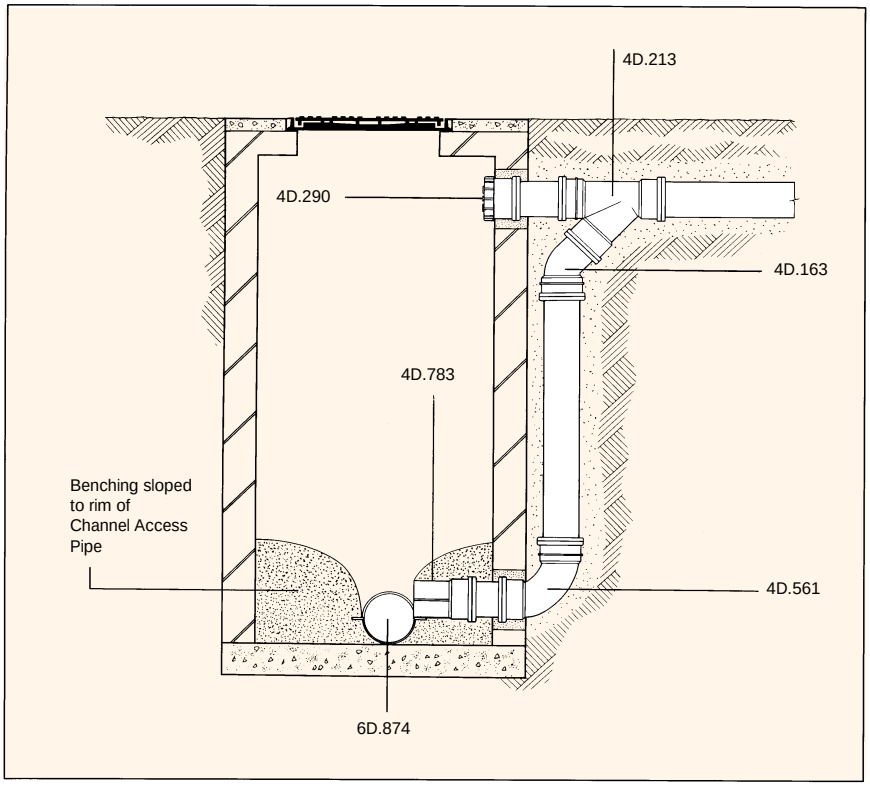


Figure 38. Open Channel Manhole with stepped invert and external backdrop



Sealed Rodding Access Fittings

Figure 39. Rodding Eye - head of drain access

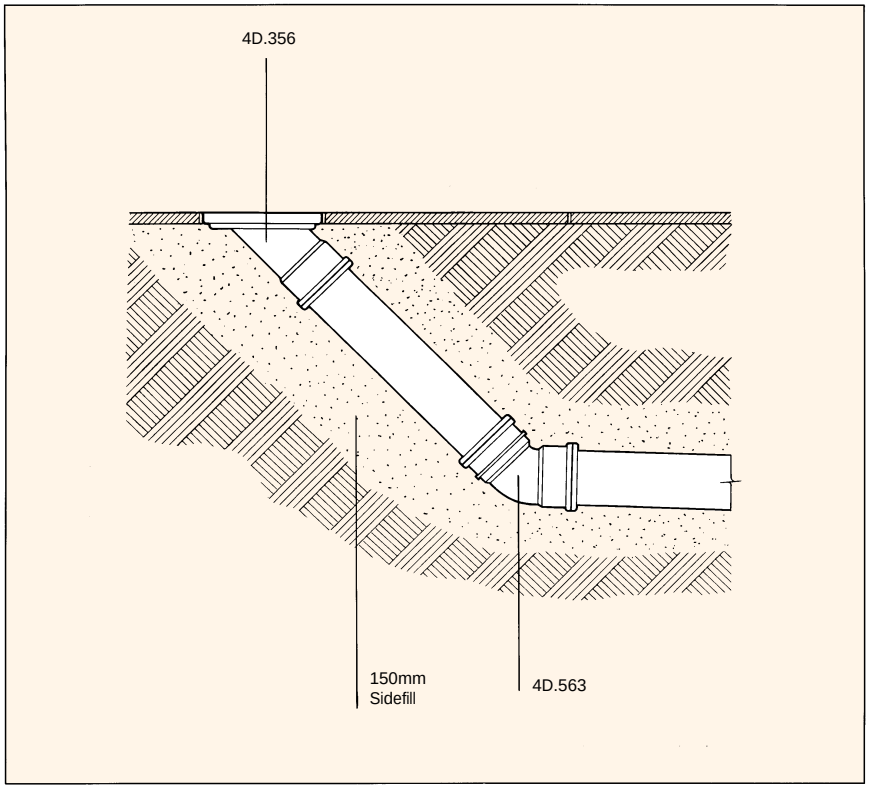
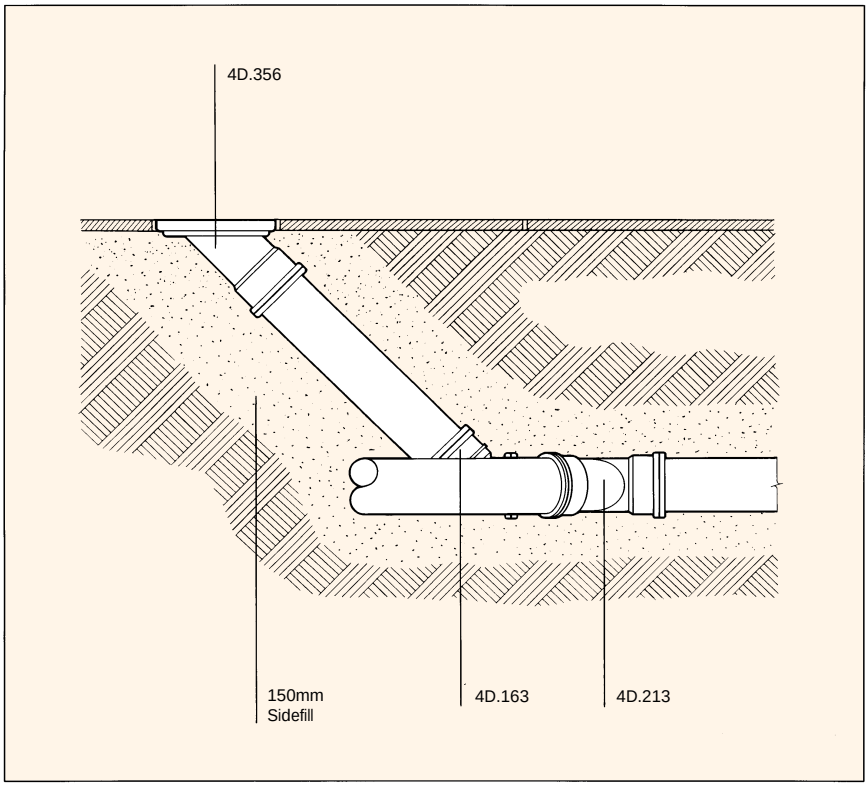


Figure 40. Rodding Eye - intermediate access



RODDING ACCESS FITTINGS

Rodding Eye installations comprise a 45˚ Sealed Rodding Eye, (4D.316/356) a raking length of pipe and a 45˚ Short Radius Bend to drain (see Figure 39).

Installation of Sealed Rodding Access Fittings

Obtain intermediate rodding access by placing the Sealed Rodding Access Eye (4D.316/356) at ground level and connecting it via a raking length of pipe and a 45˚ Bend (4D.163) to a 45˚ Junction (4D.213) on the main drain (see Figure 40).

Wherever rodding access points are installed, access must also be provided both inside the house and at the gully. Internally, fit an Access Pipe (4D.274) at or near the base of the soil stack. In addition, if the ground floor WC connects direct to drain, fit a WC Connector with access (4S.761/762) as required.

Outside the house, provide direct access to the drain through either, the OsmaDrain Bottle Gully (4D.900/901) or through an Access Bend (4D.169/569) fitted to the outlet of the Universal Gully (4D.500) (see also pages 28 and 29).

110mm Rodding Eyes can be used for access to larger diameter drains by fitting the appropriate Reducer at the terminal connection. Rodding Eyes should be set in or next to paved areas to make rodding easier.

Manhole Construction and Channel Fittings

MANHOLE CONSTRUCTION

OsmaDrain Shallow, Multi-Base and Universal Inspection Chambers offer an alternative to traditional manholes and may be used at depths up to 1 metre.

For access at depths greater than 1 metre, construct a traditional manhole and use either, a) the range of OsmaDrain Manhole Bases (6D.875/876) or the Inspection Chamber Bases (4D.922/6D.928/929) (see page 20) or b) the range of OsmaDrain Channel or Sealed Access Fittings.

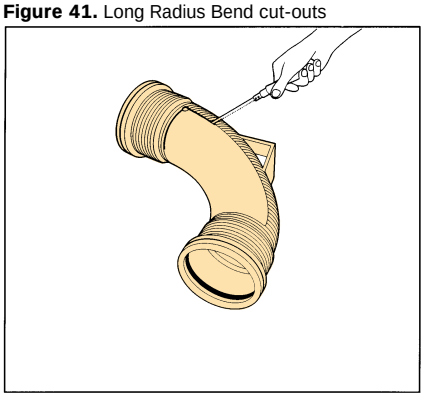
Construct all manholes to meet the requirements of the Building Regulations, BS Codes of Practice and also BS 5955; Part 6: 1980.

CHANNEL FITTINGS

When used as Long Radius Channel Bends the 87½° Double Socketed Long Radius Bend (4D.581) and the 45° Double Socketed Long Radius Bend (4D.583) are to be drilled and cut on site using a hand drill, pad saw and plain toothed rasp. The cut-out section is marked on each fitting (see Figure 41).

Level invert fittings are also available. Use these where falls are critical or where three or more entries are needed on each side of the through channel. Install as other open channel fittings but joint channels by solvent welding using Solvent Cement Filler (4S.383/384) (see Solvent Weld Joints, page 14).

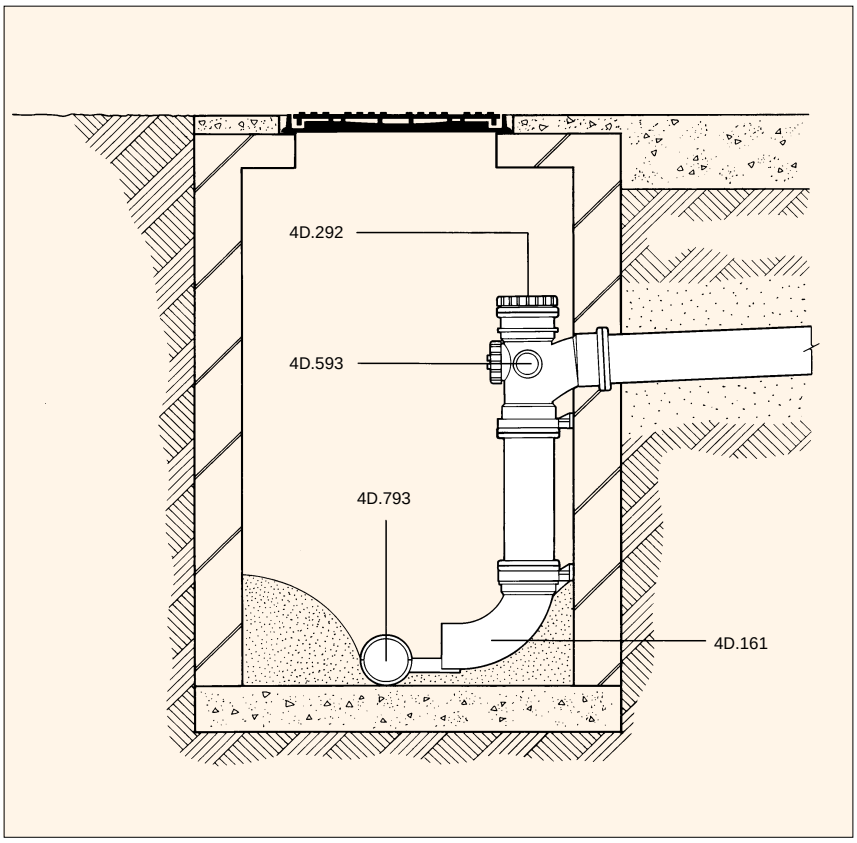
Figure 41. Long Radius Bend cut-outs



Installation of Channel Fittings

1. Bed all half-round channel pipes and standard channel fittings in cement mortar on a suitable concrete base.
2. Side entries into the main channel should have an angle of entry not greater than 90° at the internal face of the Inspection Chamber or Manhole. For entries greater than 90° a double socketed bend (eg 4D.563) should be placed adjacent to the manhole, which should provide a deviation of not more than 45° (see Figure 43).
   The OsmaDrain range offers a number of 3/4 Sectional Bends in sizes up to 160mm, which can be cut on site to suit angles of entry into any Inspection Chamber or Manhole of between 30° and 90°.
3. Bed the Bends in cement mortar and connect them to the main channel so that the discharge from the Branch is in the direction of flow of the main channel.
4. Allow pipe or fitting ends to protrude beyond the edge of the manhole base so that connections can be made after the manhole walls have been built.
5. Provide concrete benching to rise vertically from the top edge of the channel pipe to at least the height of the outlet soffit.
6. Shape the benchings round the channel branches of the branch drains to guide the flow of sewage in the desired direction.
7. Where practicable, ensure the soffits of the main pipes entering and leaving a manhole maintain a similar gradient.

Figure 42. Open Channel Manhole with level invert and internal backdrop



Channel Fittings continued

Figure 43. Open Channel Manhole with stepped invert branch entries

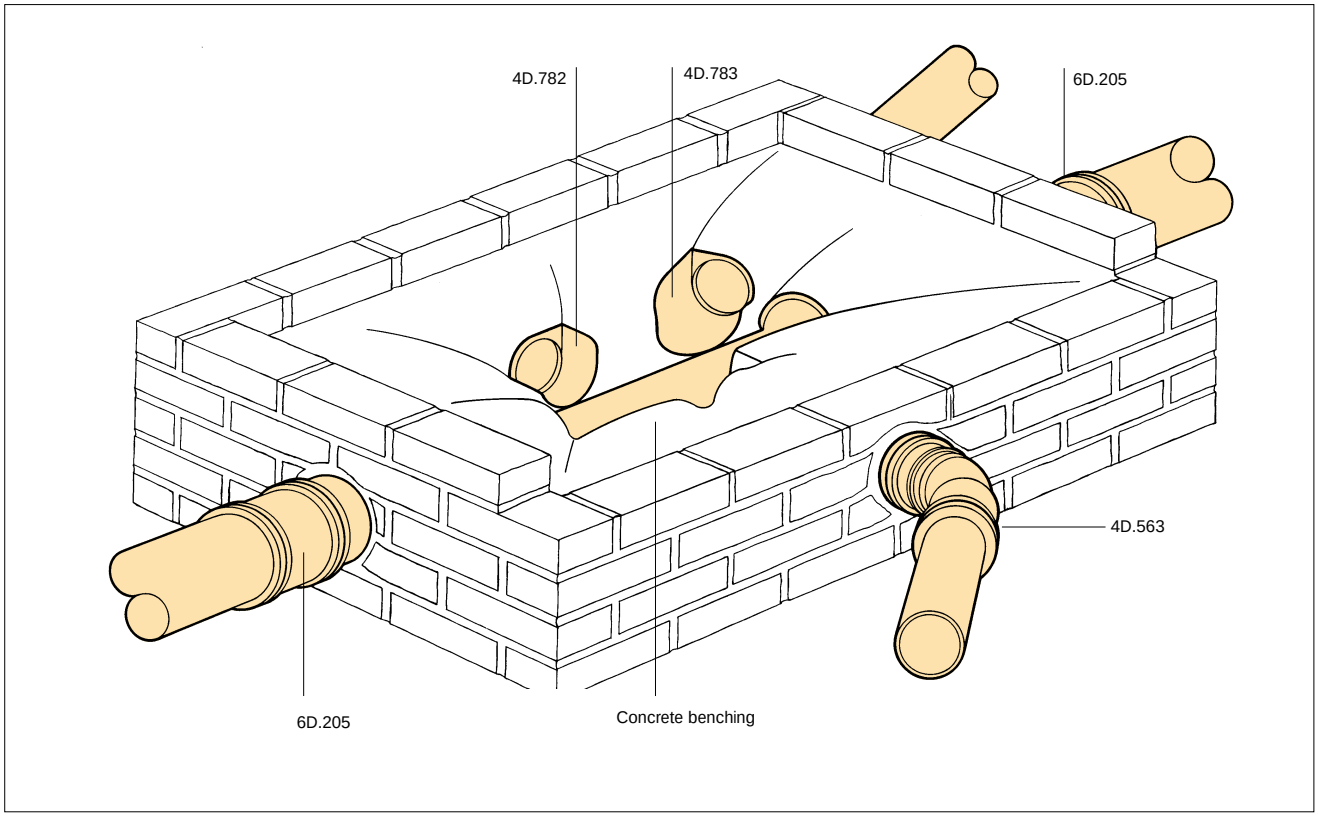
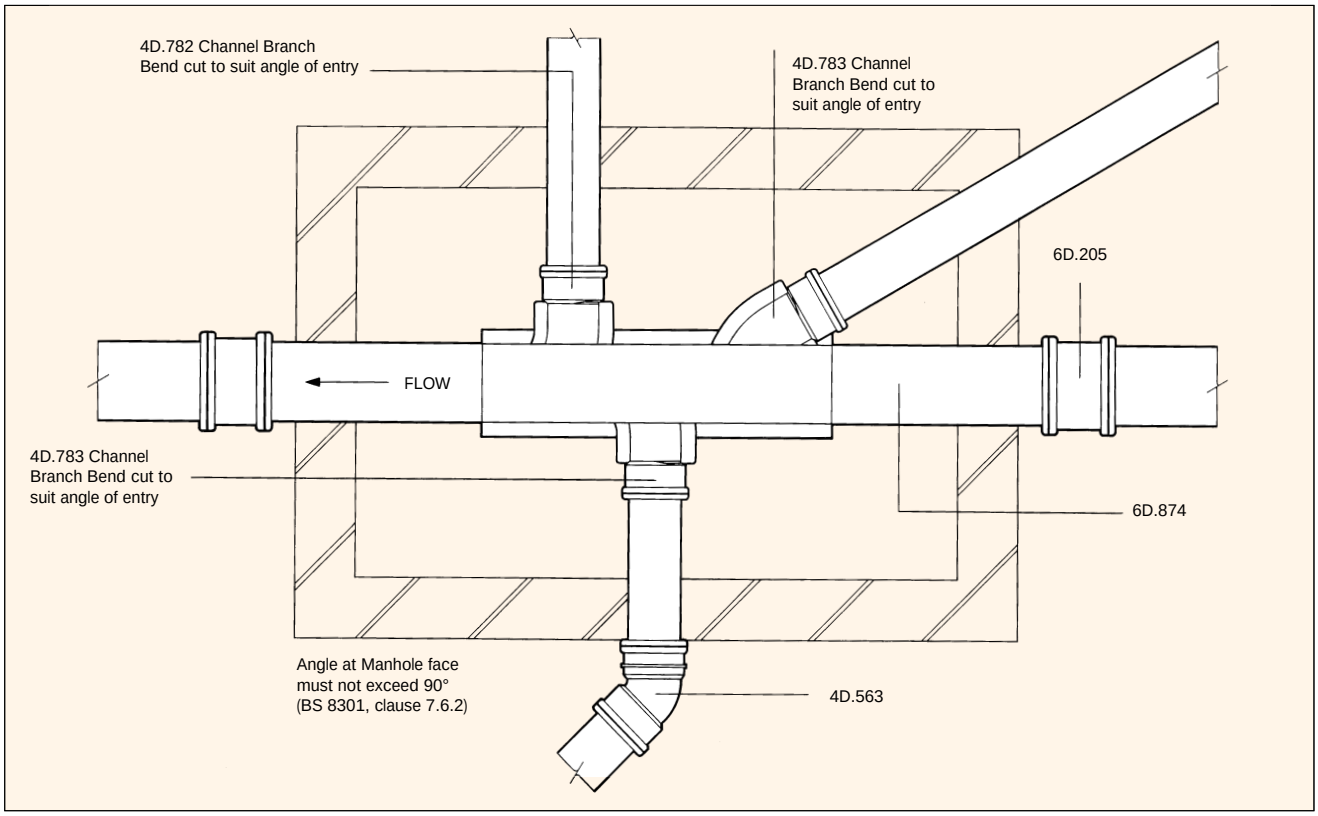


Figure 44. Plan of Open Channel Manhole with stepped invert branch entries

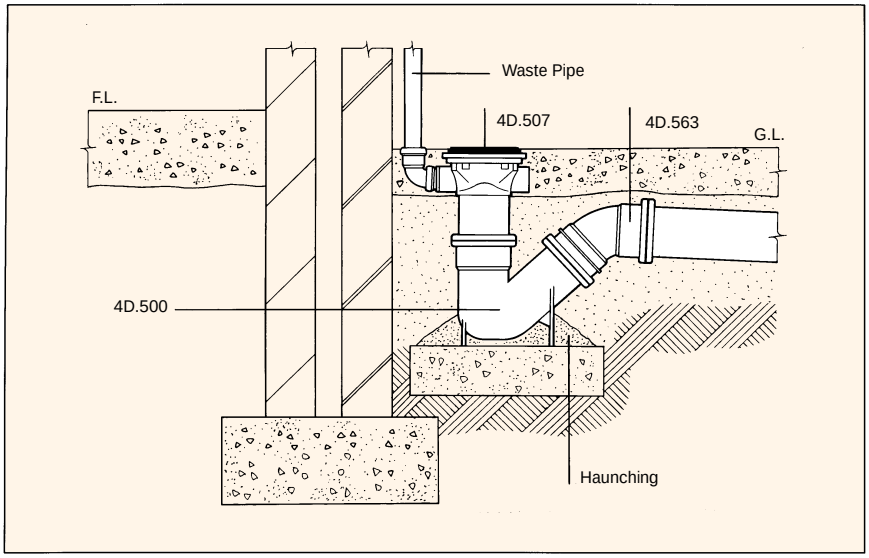


Universal Gully

INSTALLATION OF UNIVERSAL GULLY

1. Assemble the Universal Gully out of the ground.
2. Set it on a substantial base such as a precast concrete slab, bricks or in-situ concrete and haunch it with concrete up to the level where the supporting feet meet the body. Make sure the concrete does not enter any ring seal joints.
3. Make connections to drain with a 45° Bend (4D.563) or, if access is required, an 87½° Access Bend (4D.569) (see Figure 46).
4. Make horizontal connections to the 2 x 50mm boss sockets on the Hoppers using a 32mm, 40mm or 50mm Boss Socket Adaptor from either the OsmaDrain or OsmaSoil ranges (see Boss Socket Connections, page 14 and Figure 45).
5. Make horizontal connections – up to 50mm – by fitting a Bossed Pipe (4D.589) between the Hopper and the Gully Trap.
6. Make vertical inlet connections in accordance with BS Code of Practice 8301 'Building Drainage' and H1 Section 1.11 of the Building Regulations 1989 which states that a branch pipe should only discharge to a gully between the grating and the top level of the water seal.

Figure 45. Universal Gully with horizontal inlet



Using a knife, cut a hole of a suitable size in the vertical inlet cover to allow pipe up to 75mm in diameter to be inserted (see Figure 46).

7. Backfill with suitable material.
8. Where a Cast Iron Cover Access Point is specified, (4D.324), set it in concrete over the access point (see Figure 46).
9. The sealed Access Hopper (4D.527) can be used in areas where foot traffic only is expected.
10. When not protected by paving or concrete at ground level, the crown of the outlet bend must be below the level to which garden implements penetrate, when this is not possible, bed a concrete slab above the bend (see Figure 47).

Figure 46. Universal Gully with vertical inlet and access

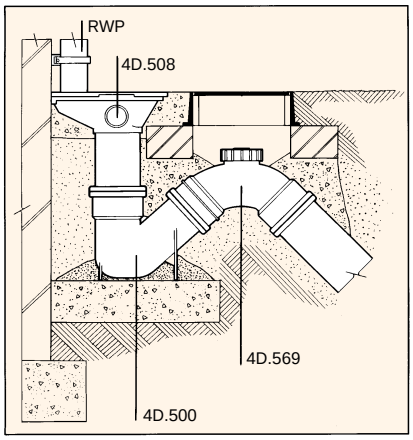
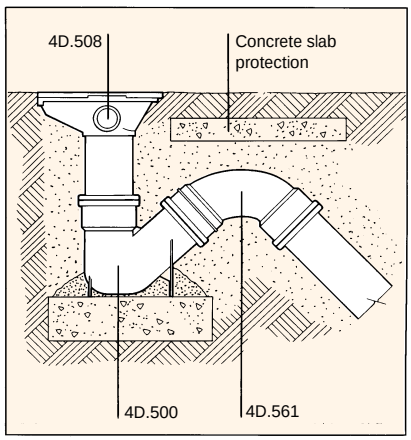


Figure 47. Universal Gully – protection of outlet bend



Bottle Gully

Figure 48. Bottle Gully installation with horizontal inlet

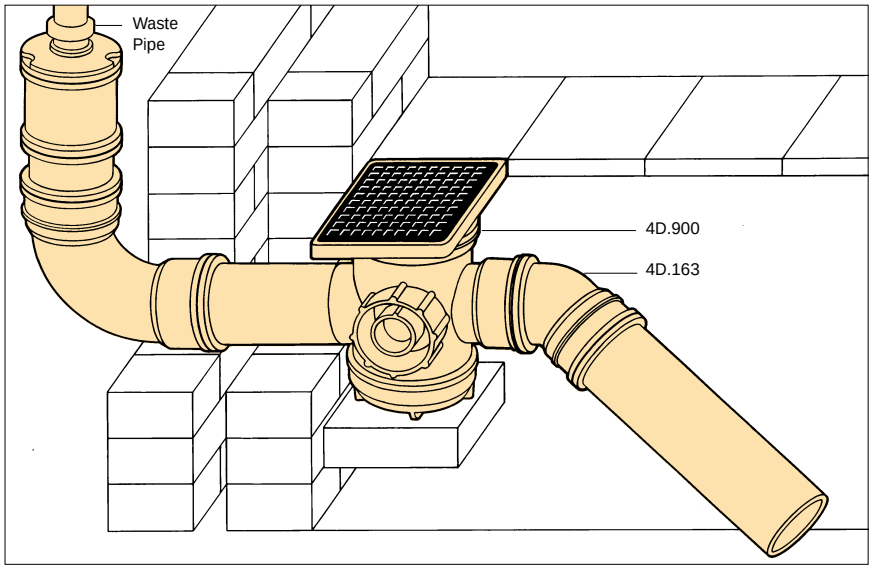


Figure 49. Bottle Gully installation with vertical inlet

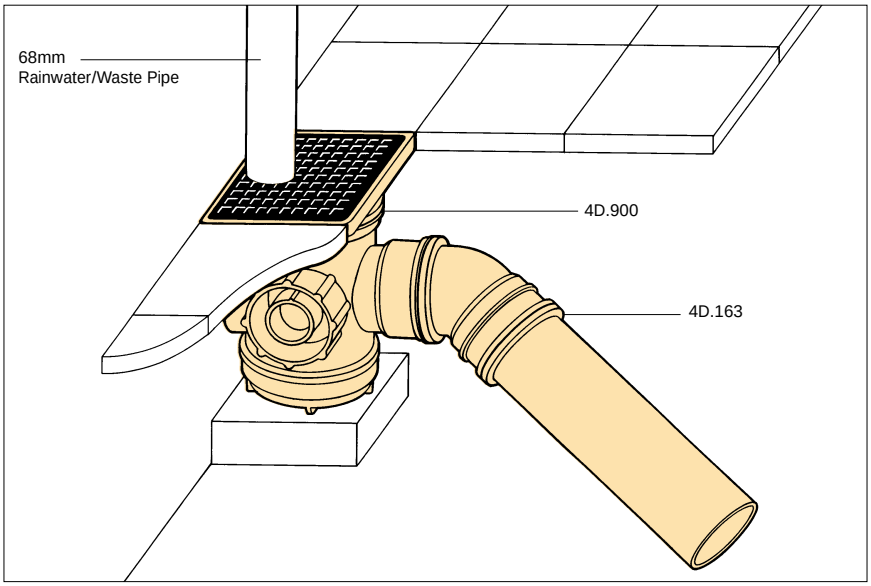
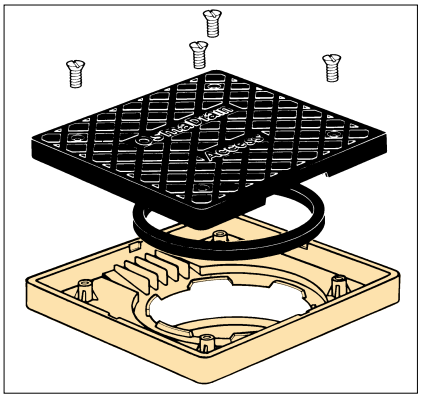
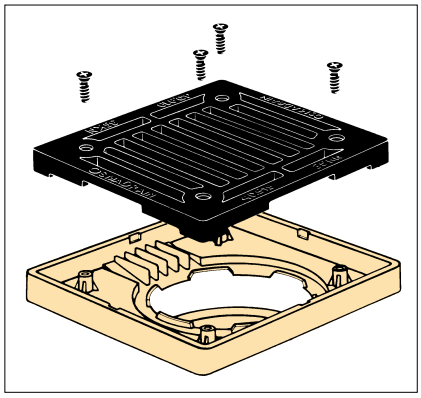


Figure 50. Alternative Bottle Gully Cover installations

a) Sealed Access Cover



b) Ductile Iron Grating



INSTALLATION OF BOTTLE GULLY

1. Position and level the Gully on a suitable base, such as a pre-cast concrete slab, bricks or in-situ concrete.
2. Haunch it with concrete 25-30mm from the base, This will ensure that the base is firmly located.
3. Make any horizontal connections from 32mm to 110mm to either the left, right or back sockets (see Figure 48).
4. Make vertical connections for waste or rainwater pipes by cutting the grating to the necessary diameter and insert the pipe (see Figure 49).
5. To accommodate unpredictable site conditions the Gully offers a height adjustment facility. Simply remove the cover and frame from the Gully body.
   Cut the required length of OsmaDrain 160mm pipe and insert into Gully. Solvent weld cover and frame into pipe end.
6. Backfill with suitable material. It is not necessary to surround the Gully with concrete.
7. If the Gully is to be used internally, a Sealed Access Cover (4D.915) is available as an extra. Simply remove the existing grating and by means of four self-tapping screws fix the Access Cover. Full detailed fixing instructions are available with each Sealed Access Cover. (see Figure 50a).
8. If the gully is to be used in areas where light vehicles have access, a Ductile Iron Grating (4D.919) is available as an extra. The gully should be surrounded with concrete 150mm deep. (see Figure 50b). The Grating is secured by simply removing the existing grating and by means of four self tapping screws, fix the new grating. Full detailed fixing instructions are available with each Ductile Iron Grating.

Yard Gully

YARD GULLY

The OsmaDrain Yard Gully (4D.800) comes complete with its own trap facility which allows ease of rodding via a removable rubber plug.

Also available as optional extras are a Perforated Galvanised, Mild Steel Catchment Bucket (4D.815) and a Ductile Iron Grating and Frame, suitable for use in installations requiring a BS EN 124-B125 Medium Duty Loading.

Gully Connection – 110mm OsmaDrain

1. Make sure that both the Gully spigot and ring seal socket are dry and clean from grit and dust.
2. Lubricate evenly around the gully spigot (NOT SOCKET) with OsmaDrain Lubricant (4D.395).
3. Make sure the components to be jointed are correctly aligned.
4. Push the socket fully on to the spigot.

Installation of Yard Gully

1. When excavating the Gully pit allow an additional 100mm under the unit and 150mm around the unit.
2. Sit the Gully (4D.800) on a minimum 100mm bed of suitable “as-dug” or granular material and surround it with similar material 150mm wide, up to the underside of its 110mm spigoted outlet, (see Figures 51 and 52).
3. Connect the Gully to the branch drain in the appropriate way.
4. Pour 150mm x 250mm invert of concrete around the Gully up to its lip (see Figures 51 and 52).
5. Where required insert the Galvanised, Mild Steel, Catchment Bucket (4D.815) (see Figure 51).
6. Bed the Cast-Iron Grating and Frame in a suitable concrete mix (see Figures 51 and 52).

Figure 51. Yard Gully installation

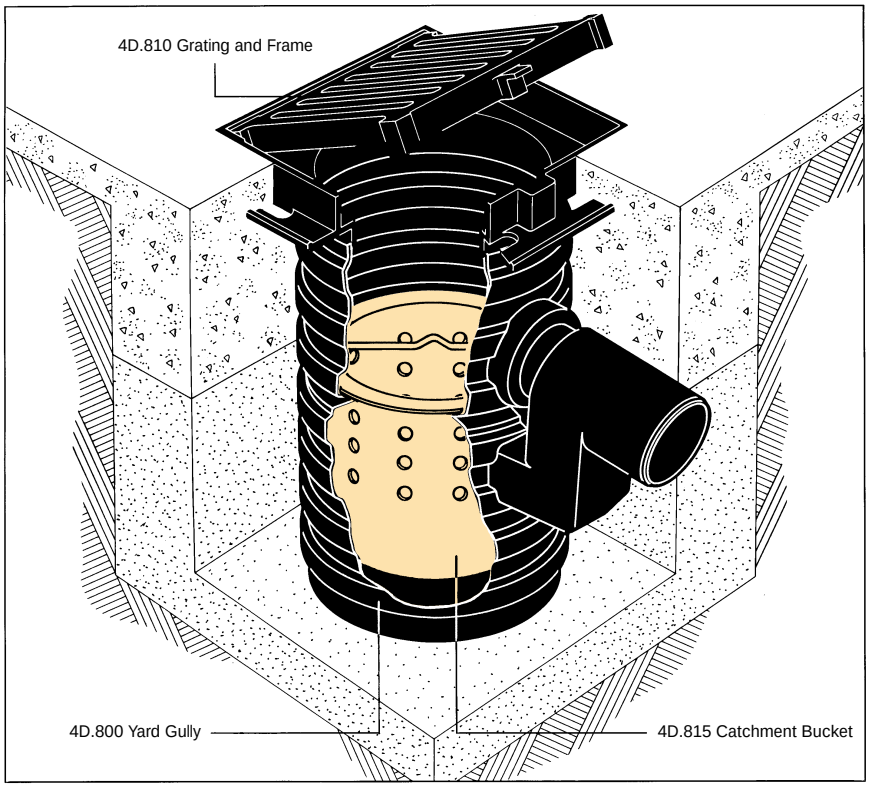
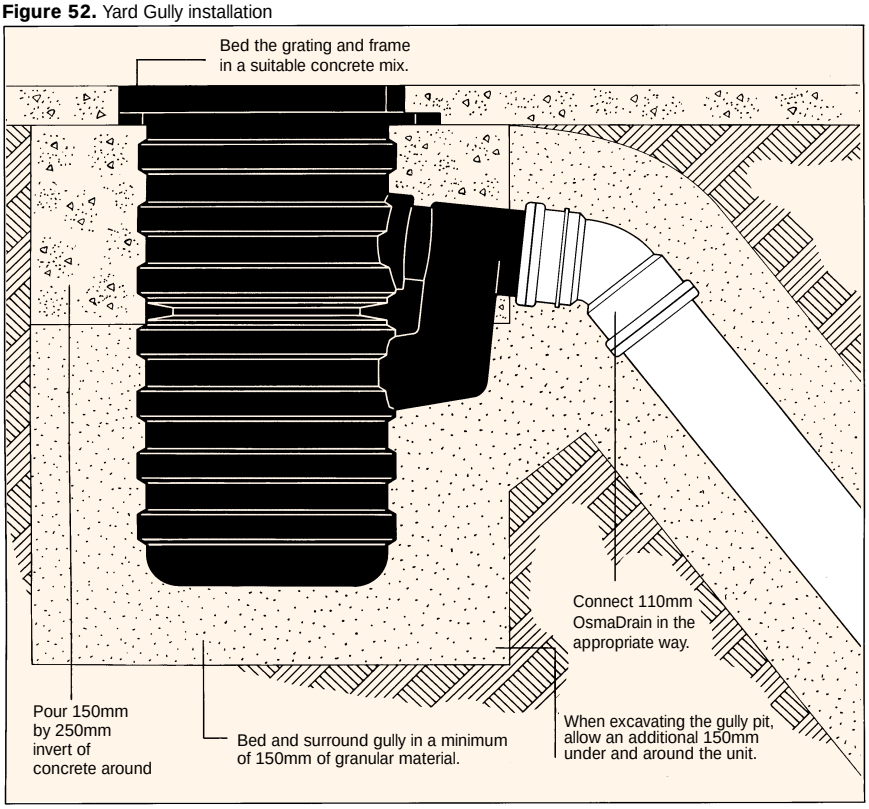


Figure 52. Yard Gully installation



Connections to other materials

Figure 53. Connection to clay socket

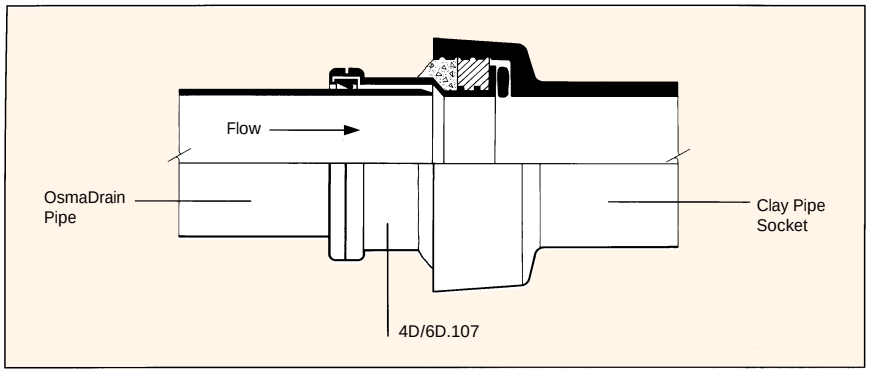


Figure 54. Connection to cast iron socket

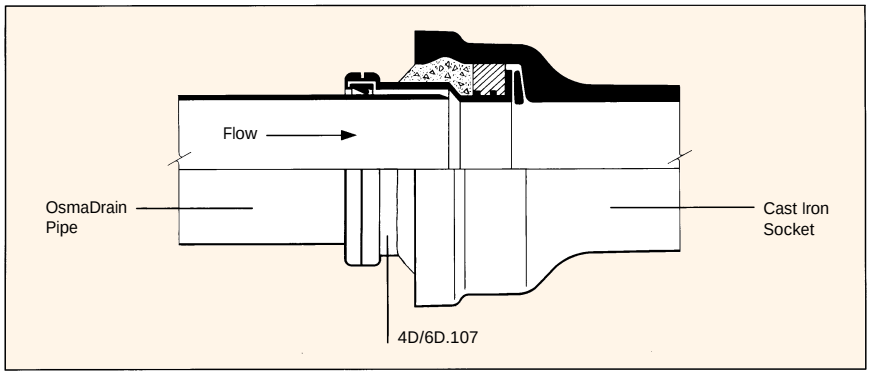


Figure 55. Connection to clay or cast iron spigot

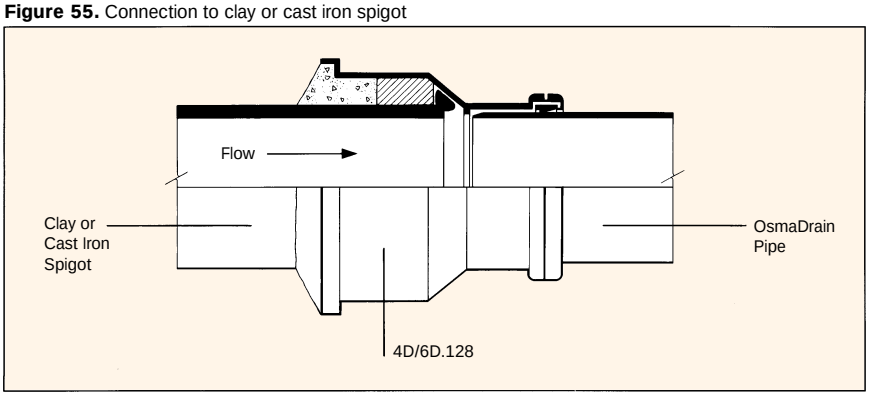
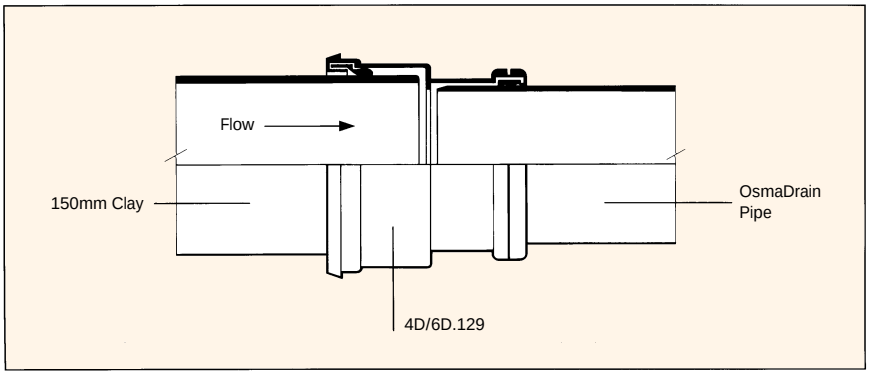


Figure 56. Connection to thin-wall clay spigot



CONNECTIONS TO OTHER MATERIALS

PVC-U Connection to Clay Socket

Apply a bead of mastic to the face of a PVC-U Adaptor (4D/6D.107). Position the Adaptor in the socket and caulk with gaskin followed by cement mortar. Then insert the PVC-U pipe spigot in the standard way (see Figure 53).

PVC-U Connection to Cast Iron Socket

Apply a bead of mastic to the face of a PVC-U Adaptor. Position the Adaptor in the cast iron socket and caulk with gaskin followed by well caulked lead wool. Do not use hot lead.

Alternatively use gaskin and cement mortar in a similar way to that used for jointing PVC-U to a clay socket (see Figure 54).

PVC-U Connection to Clay or Cast Iron Spigot

Apply mastic to the spigot face to the clay or cast iron pipe and insert it into the socket of the PVC-U Adaptor (4D/6D.128). Caulk firmly with a layer of gaskin and complete with a sand and cement joint (see Figure 55).

PVC-U Connection to Thin-wall Clay Spigot

Lubricate spigot of clay pipe and fit a PVC-U Adaptor (4D/6D.129). Insert the PVC-U pipe spigot in the standard way (see Figure 56).

Slotted Rigid Pipe

INSTALLATION OF SLOTTED RIGID PIPES

French Drain

1. Install Slotted Pipes as other OsmaDrain pipes (see Installation page 6) but use a selected permeable fill as bedding, sidefill and backfill material (also see Figure 57).
2. Do not compact the backfill.

Septic Tank Leach Pipe

OsmaDrain Slotted Pipes may be used to dispose of septic tank effluent by sub-surface irrigation (see Figure 58). However, you should always consult the septic tank manufacturer for advice on the correct specification of pipe to use.

1. Lay pipes in trenches with a uniform gradient not steeper than 1:200 from the septic tank outlet.
2. Install unperforated OsmaDrain pipe with a fall of 1:30 for the first 3 metres. Installing an Inspection Chamber at this point will make it easier to monitor land damage.
3. Lay the pipes on, and surround them with, a 150mm layer of clinker, clean gravel or broken stone 20mm – 50mm grade.
4. Place a layer of polythene sheet over the slotted pipe before backfilling.
5. Do not use pipes manufactured in accordance with BS 4962 (OsmaDrain Subsoil Drainage) for disposing of septic tank effluent.

Figure 57. French Drain

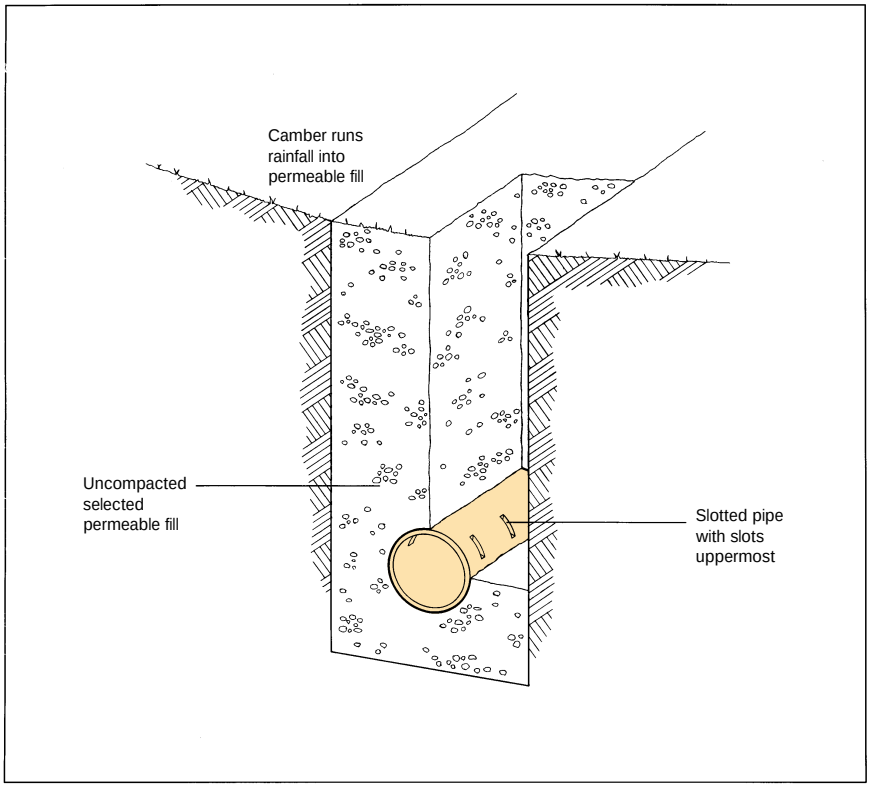
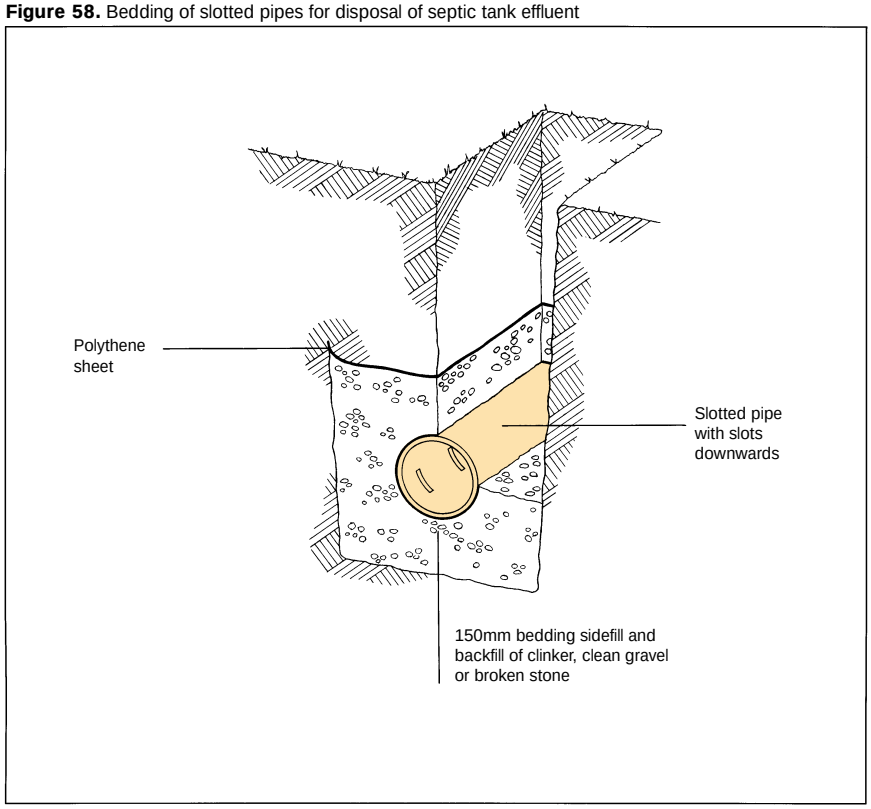


Figure 58. Bedding of slotted pipes for disposal of septic tank effluent



Subsoil Drainage Pipe and Wall Protection Sleeve

Figure 59. Subsoil drainage pipe installation behind a retaining wall

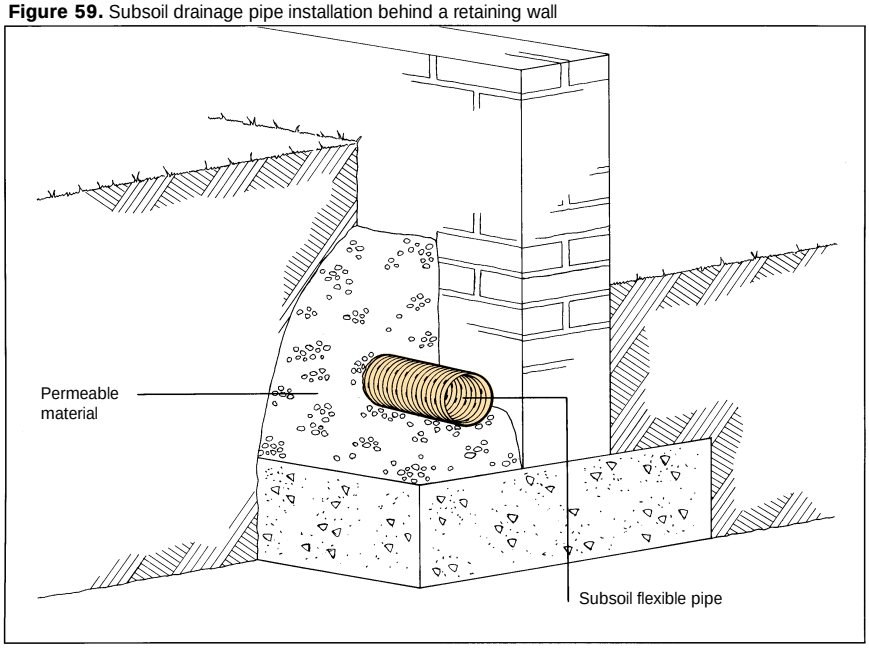
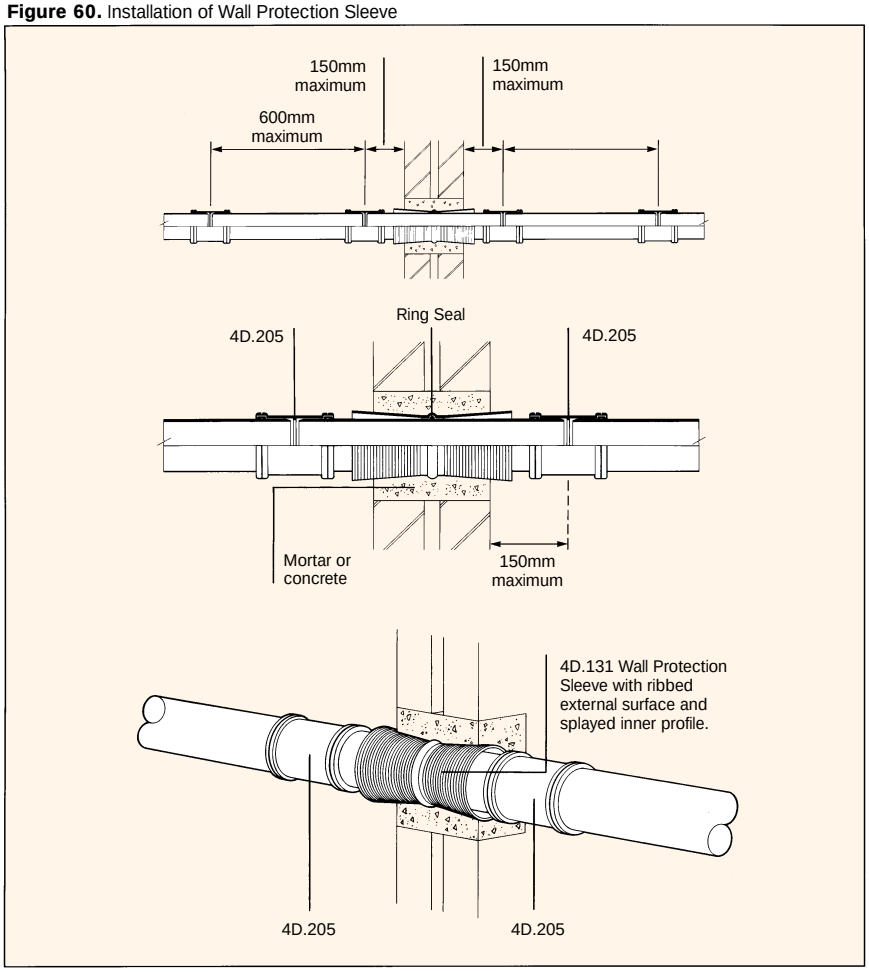


Figure 60. Installation of Wall Protection Sleeve



INSTALLATION OF SUBSOIL DRAINAGE PIPE

1. Excavate and backfill as for other OsmaDrain Pipes (see Installation, page 6) but fill trenches to a level slightly above ground to allow for settlement.
2. If soils are impermeable, lay 100mm of permeable material over the pipe before backfilling. However, because of natural soil porosity, trenches in schemes designed to control a water table will seldom need a permeable fill.
3. A cut-off or curtain drain can be created by bringing the permeable fill to, or near to, the surface. A greater depth of permeable fill will also enhance the performance of the drain.
4. To drain ground behind a retaining wall bed the pipe on shingle. Backfill with graded material (see Figure, 59).

INSTALLATION OF WALL PROTECTION SLEEVE

1. Pack the space between the Sleeve and the wall with mortar or concrete.
2. Lubricate the pipe well before positioning it through the sleeve.
3. Place Couplers (4D/6D.205) within 150mm of each side of the wall face. The length of the next 'rocker' pipe should not exceed 0.6 metre (see Figure 60). This will compensate for any settlement which may occur.
4. If abnormal settlement is expected incorporate several 'rocker' pipes. Complete with flexible joints (see BS 8301:1985 Building Drainage, Clause 6.7).

Maintenance and Access for Cleaning

Figure 61. Rodding through Inspection Chamber

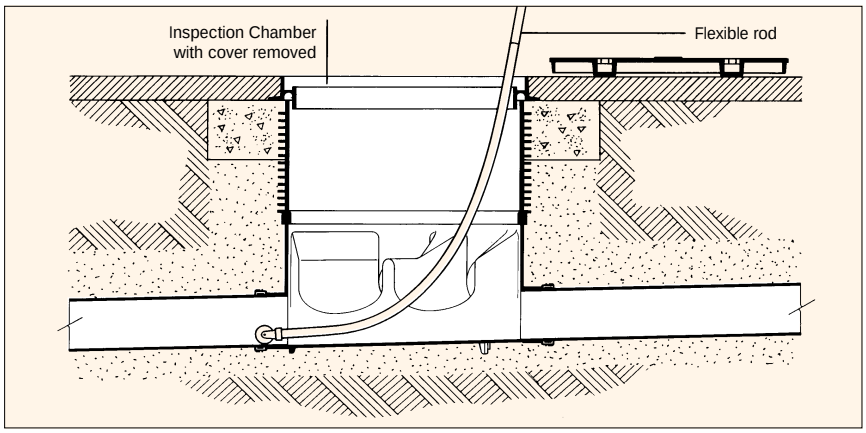


Figure 62. Rodding through Bottle Gully

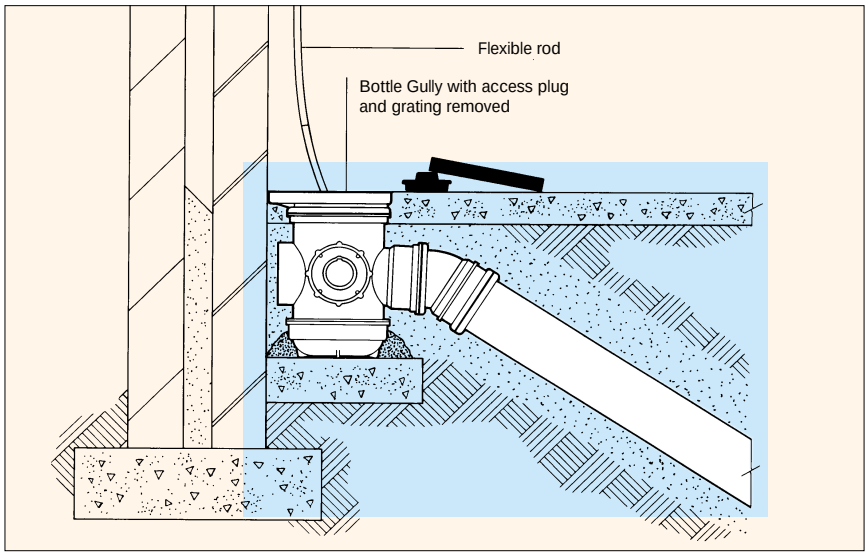
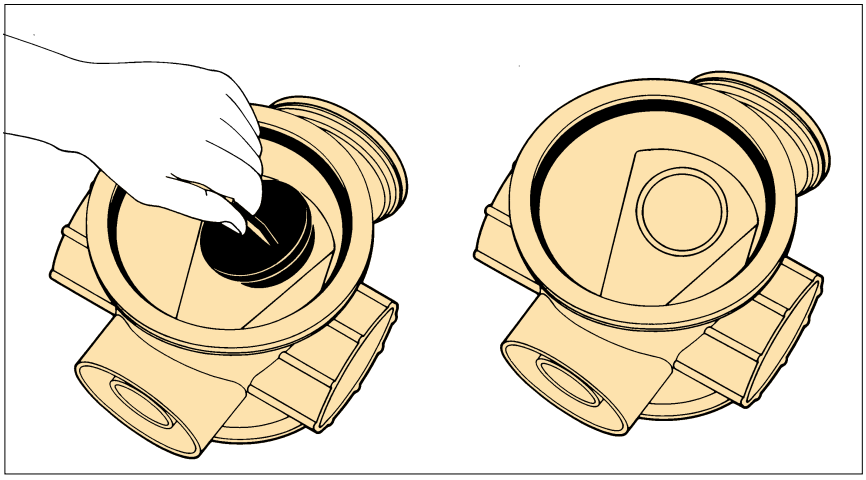


Figure 63. Access to Bottle Gully for Rodding



MAINTENANCE

Building Regulations and Local Authority Bylaws state that manholes, inspection chambers and rodding eyes must be provided to give ready access to underground drains for maintenance and cleaning.

Remove inspection chamber covers periodically and clean the benching.

Check the complete drainage system periodically and clean, making good any defects if necessary.

ACCESS FOR CLEANING

The smooth bore of PVC-U pipes combined with their longer lengths reduce the risk of blockages. However, if a blockage does occur, use only flexible or roller type rods. Pointed or boring type metal fittings are NOT recommended. Tests have been carried out on PVC-U pipes and fittings using equipment from specialist drain cleaning contractors and their normal equipment is suitable. Do not use specialist cutting attachments (see Figure 61).

Inspection Chambers

As with open channel manholes, the Shallow, Multi-Base and Universal Inspection Chambers are easily rodded in all directions.

Bottle Gully

The OsmaDrain Bottle Gully allows easy rodding of the drain through the Gully itself. Using the Bottle Gully saves the expense of providing a bend with access plus a purpose made cover and frame (see Figure 62).

To obtain access to the drain, lift the grating by inserting a screwdriver under its edge, and simply lever out the removable access plug (see Figure 63).

Before replacing the plug, clean all mating surfaces.

Contents

Jointing

JOINTING

Unlike traditional methods for jointing PVC-U systems, the Osma UltraRib method is unique and innovative, since the ring seal is positioned over the pipe spigot rather than being retained within a pipe or fitting socket (see Figure 65).

The major advantages of the Osma UltraRib jointing method are:

a) There is no need to chamfer pipe ends

b) The ring seal cannot be displaced during jointing

c) The design of the joint ensures a flush fit between the internal bore of the pipe and the fitting thus increasing its hydraulic performance.

Figure 64. Correct cutting position

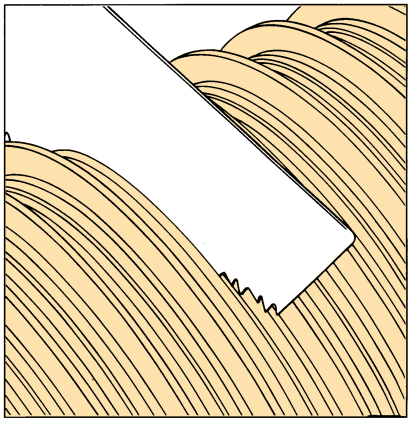


Figure 65. Osma UltraRib Sealing Ring

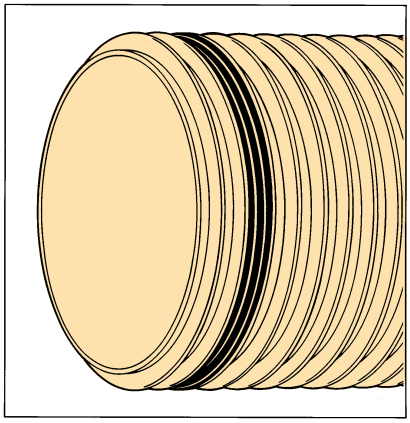


Figure 66. Applying the lubricant

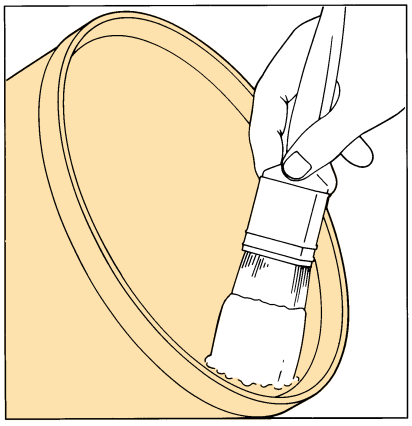


Figure 67. Protecting the pipe end

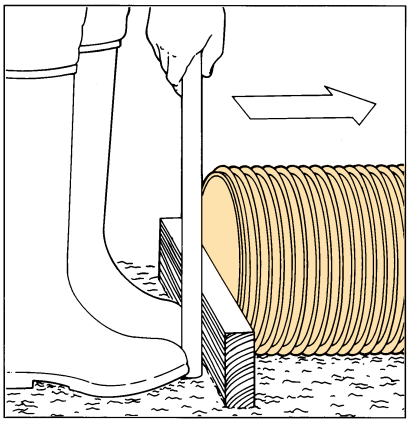


Figure 68. Aligning spigot into socket

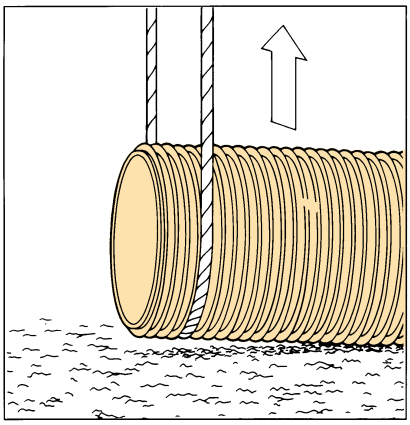
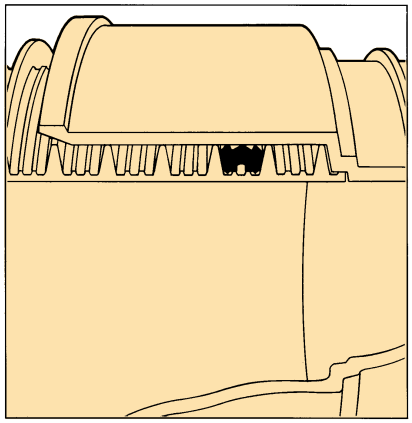


Figure 69. Section through pipe joint



Preparation

Ensure that the two ribs that retain the sealing ring are sound.

Cutting

Pipes must be cut midway between the ribs. The design of the ribs allows the pipe to be cut square using a coarse toothed saw (see Figure 64).

Jointing Sequence

1. Clean pipe spigots and sockets. All dust, dirt and grit which could prevent an effective seal must be removed from pipe ends and sockets.
2. The correct position for the sealing ring is indicated in Figure 65 i.e. between the second and third ribs from the pipe end. Ensure the Ring Seal is correctly seated and not twisted.
3. Lubricant should be applied to the whole of the inside of the socket (see Figure 66).
4. To make the joint, offer up the pipe to the socket, align pipe and push home. Alignment is important to facilitate jointing.

The force required to push the pipe home will vary according to pipe size and ambient temperature. Whatever method is used to apply the necessary force, care must be taken to ensure that there is no risk of damaging the pipe ends. The most convenient method is to use a lever ensuring the pipe end is protected (see Figure 67).

A good technique is to lift the pipe up by passing a rope underneath. This makes it easier to align the spigot into the socket. Mechanical pulling or pushing methods are unnecessary (see Figure 68).

Inspection Chamber

INSPECTION CHAMBER

The Osma UltraRib range of Inspection Chambers consist of three basic units, either a 150mm x 150mm x 450mm or a 150mm x 110mm x 450mm base section (6UR.928/929) together with a 450mm diameter shaft section (4D.925).

The 6UR.929 base unit comes complete with four 110mm integral socketed side inlets, two at 90° and two at 45°, one of each, either side of the 150mm through channel.

The 6UR.928 base unit is supplied with a single Blank-off plug, for use to blank off any unusual inlets. Both units are supplied in opaque bags, which are sealed to protect the ring seals.

Installation of Inspection Chamber Components

No additional trench excavation is needed to install the Inspection Chamber.

1. Sit the Inspection Chamber Base (6UR.928/929) on a minimum of 100mm bed of 'as-dug' or granular material.
2. Make pipe connections in one of the following ways:

   a) 6UR.928 - Make connections in the same way as for the standard jointing sequence for Osma UltraRib pipe (see Jointing, page 36).

   b) 6UR.929 - Make connections in the same way as for the standard jointing sequence for OsmaDrain pipe (see Jointing, page 13) and for Osma UltraRib pipe (see Jointing, page 36).

   When using the components as a 90˚ change of direction, the main through channel should always be used. This can be achieved by offering up the socket of the 45˚ Short Radius Bend (6UR.163) to the main inlet and outlet spigots of the through channel.
4. Assemble Chamber to the required invert depth by placing one, two or three shaft sections onto the base unit, enabling the following invert depths to be achieved.
   - Base plus one shaft section = 500mm (540mm with cover)
   - Base plus two shaft sections = 730mm (770mm with cover)
   - Base plus three shaft sections = 960mm (1000mm with cover)
5. Intermediate depths are easily catered for, simply cut a shaft section to the depth required. To make this easier, the concentric ribs located every 10mm along the shaft section act as accurate cutting guides.
6. Assembly of the chamber is very easy. A simple, sealant filled interference joint ensures a watertight installation. A tube of sealant and instructions are provided with each and every shaft section.
7. Surround the chamber with 150mm of similar material to that used as bedding.
8. Continue the sidefill to the level required for the 150mm concrete plinth on which the single seal Ductile Iron Cover and Frame (4D.940) will sit (see Figure 70).
9. When the Inspection Chamber is positioned in areas requiring a Class BS EN 124-B125 Medium Duty, Ductile Iron Cover and Frame (4D.942), protect it from. traffic loadings by shuttering its external ribs and surrounding it with concrete 150mm deep (see Figure 71). This will ensure that all loadings are transferred to the surrounding ground.

Figure 70. Universal Inspection Chamber – non-load installation

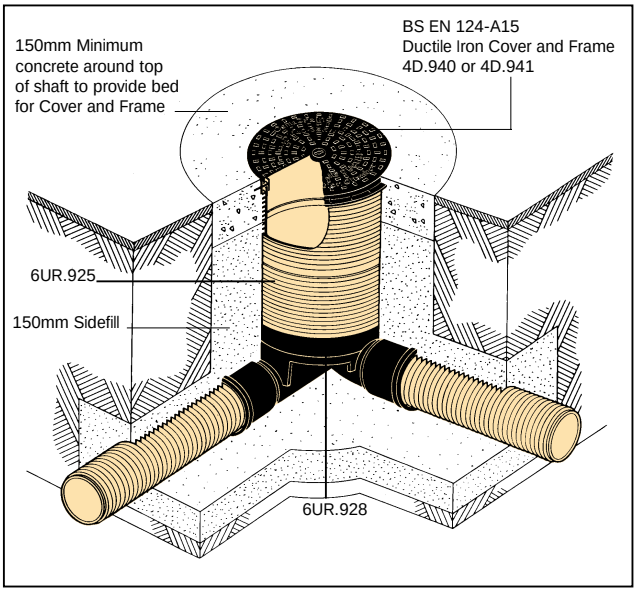
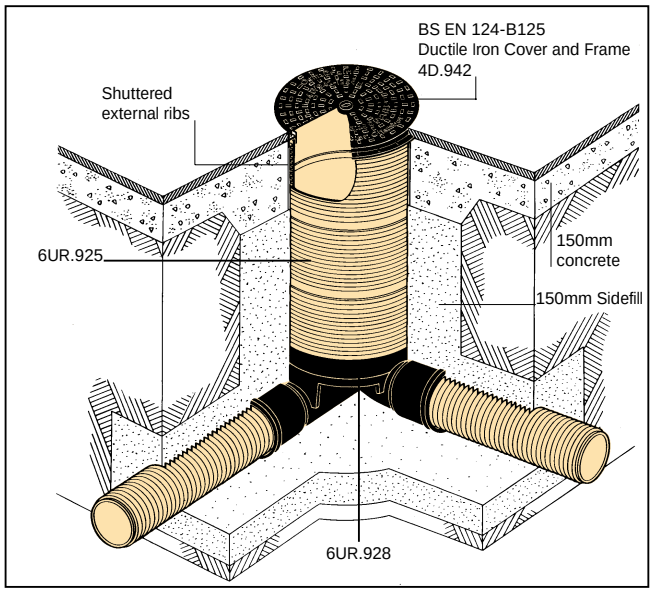


Figure 71. Universal Inspection Chamber – in areas requiring a BS EN 124-B125 Cover and Frame



Manhole Bases

MANHOLE BASES

The Osma UltraRib range of 750mm diameter Manhole Bases are designed for use at depths of up to 10 metres. The range consists of the following configurations:-

6UR.875 150mm diameter through channel with four 110mm BS 4660 inlets.

6UR.876 150mm diameter through channel with four 150mm diameter inlets.

9UR.877 225mm diameter through channel with two 225mm diameter inlets.

9UR.878 225mm diameter through channel with four 150mm diameter inlets.

In three of the above cases (6UR.875/876 and 9UR.878) two of the 110mm or 150mm inlets enter the Bases at 90˚ and two enter at 45˚ one each, either side of the 150mm or 225mm through channel.

In the case of the 9UR.877 base, the inlets enter the base at 90˚ one either side of its 225mm through channel.

All base units come complete with ring seals pre-fitted, one on each of the 150mm or 225mm inlets or outlets. The units are supplied in opaque bags which are sealed to protect the ring seals.

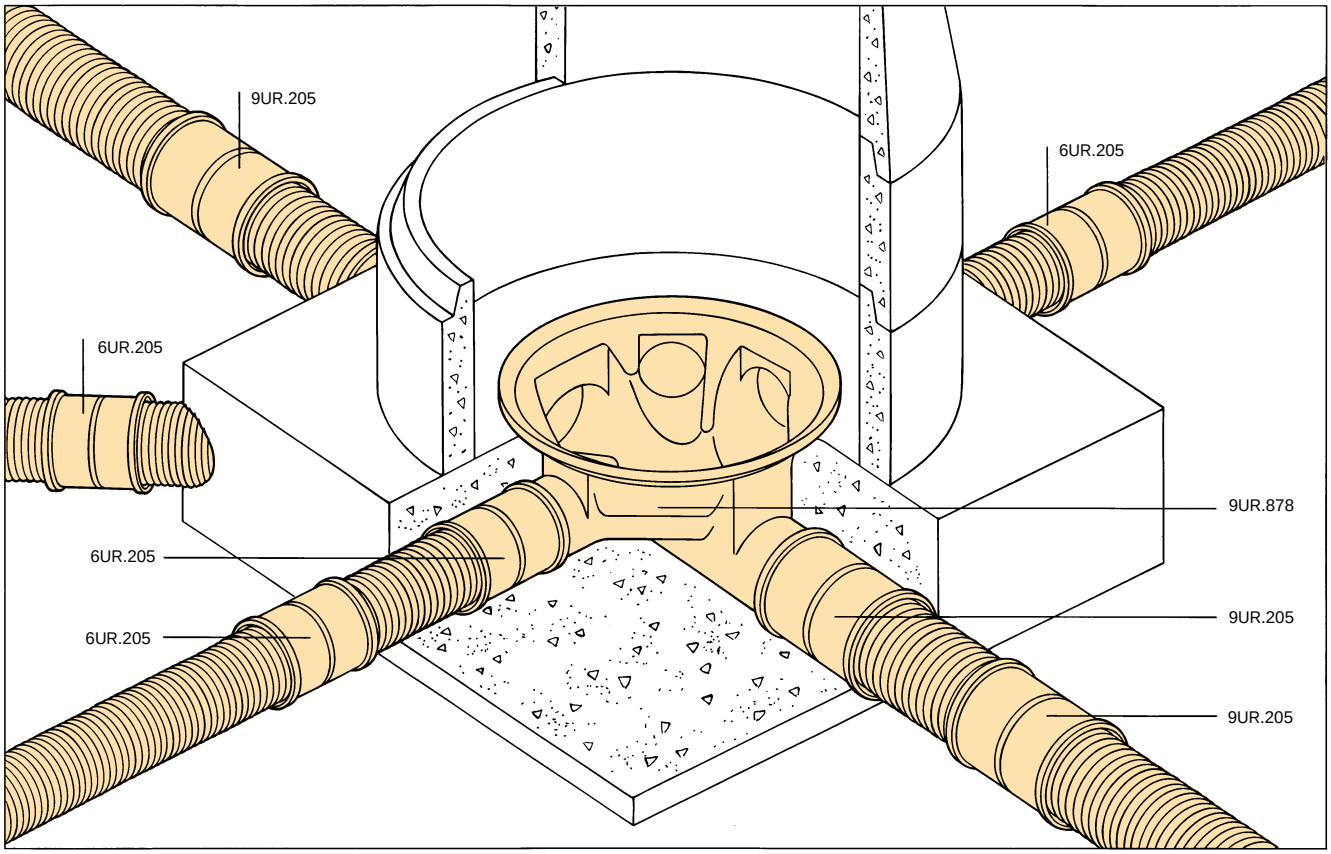
Installation of Manhole Bases

The following procedure should be adopted when installing all four Manhole Bases.

1. Make connections to the Base by removing the integral spigot end of any required inlet or outlet using a fine tooth saw. A pre-marked line shows the correct cutting position. Remove any swarf and using a rasp or file chamfer the edge to approximately 15˚.
2. Connection to the Base is then made by using either a standard Pipe Coupler or Bend. Ensure that the pre-fitted ring seals are correctly seated. Lubricant should then be applied to the whole of the inside of the socket of the Pipe Coupler or Bend. To make the joint offer up the socket of the fitting to the spigot of the base. Connection of Osma UltraRib pipe to the fitting should then be made in the normal way (see Jointing, page 36).
3. If using Manhole Base (6UR.875) and a 110mm BS 4660 connection is required the standard method for jointing any OsmaDrain component should be followed.
4. Bed and surround the Manhole Base in concrete, up to the top flange. Extend the concrete sufficiently from the flange to provide support all around the Base for a brick or concrete shaft (see Figure 72).

The (6UR.928/929) Inspection Chamber Bases can also be used as manhole bases as above to a depth of 10 metres.

Figure 72. Manhole Base – typical installation



Channel Access Fittings

CHANNEL ACCESS FITTINGS

The Osma UltraRib Inspection Chamber offers an alternative to traditional manholes for use at depths up to 1 metre. For access at depths greater than 1 metre use either of the range of Osma UltraRib Manhole Bases.

Alternatively when constructing traditional manholes, either level or stepped invert, choose from the extensive range of Osma UltraRib Channel Access Fittings.

The Osma UltraRib range of Long and Short Radius Channel Access Bends (6UR/9UR.853/861/863/866/867) together with the range of Channel Branch Bends (6UR.780/781/784/785) when used in association with the range of Equal and Unequal Channel Access Junctions (6UR/9UR.794/795/796/797) offers the installer total flexibility in terms of manhole channel construction.

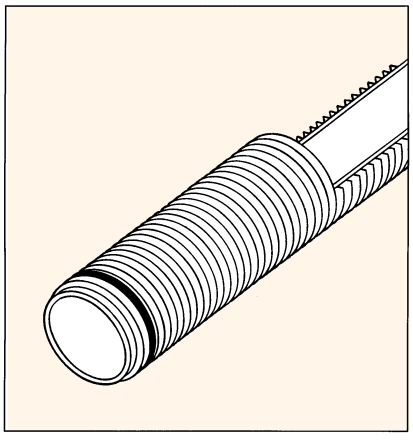
Construct all manholes to meet the requirements of the Building Regulations, BS Codes of Practice and also BS 5955: Part 6: 1980.

Installation of Channel Access Fittings

Stepped Invert Fittings

1. Bed all half round Channel Access Pipes/Bends (6UR/9UR/12UR.874) plus (6UR/9UR.853/861/863/866/867) in cement mortar on a suitable concrete base.

Figure 73. Position of ring seal



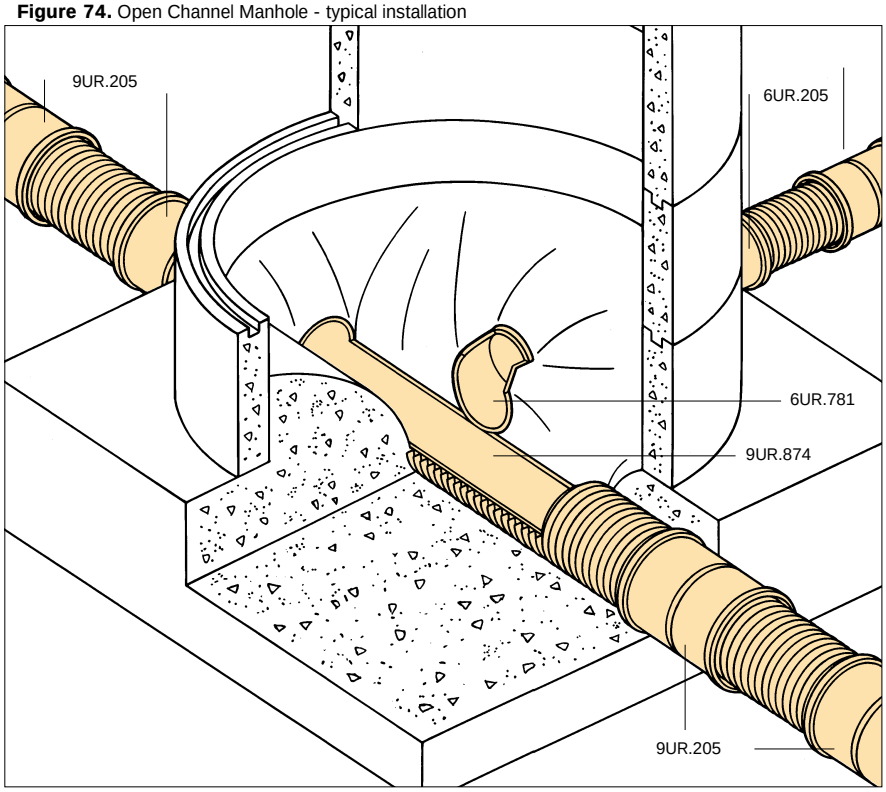
2. Connection to Channel Access Pipe (6UR/9UR/12UR.874) is made by using a standard Pipe Coupler or Bend. Connection to Channel Access Bends (6UR/9UR.853/861/863/866/867) is made by simply butt-jointing the bends to a straight Channel Access Pipe (6UR/9UR.868).
3. The Osma UltraRib range offers a number of $^{3}/_{4}$ section Channel Access Bends (6UR.780/781/784/785).
4. Bed the Channel Branch Bends in cement mortar and position them so that the discharge from the Branch Bend is in the direction of the flow of the main channel.
5. Provide concrete benching to rise vertically from the top edge of the channel pipe to at least the height of the outlet socket.
6. Shape the benching round the channel Branch Bend to guide the flow of sewerage in the desired direction.
7. Continue the manhole construction from the base in suitable brickwork or pre-cast concrete ring sections and fit with an appropriate cover and frame.

Level Invert Fittings

The Osma UltraRib range contains a number of Level Invert Fittings. These fittings should be used where falls are critical or where three or more entries are needed on each side of the through channel.

Install as per stepped invert channel fittings. The Channel Access Junctions are butt-jointed to either Channel Access Bends (6UR.788/799) or a straight Channel Access Pipe (6UR/9UR.868).

Figure 74. Open Channel Manhole - typical installation



Channel Access Fittings continued

Figure 75. Open Channel Manhole with stepped invert branch entry

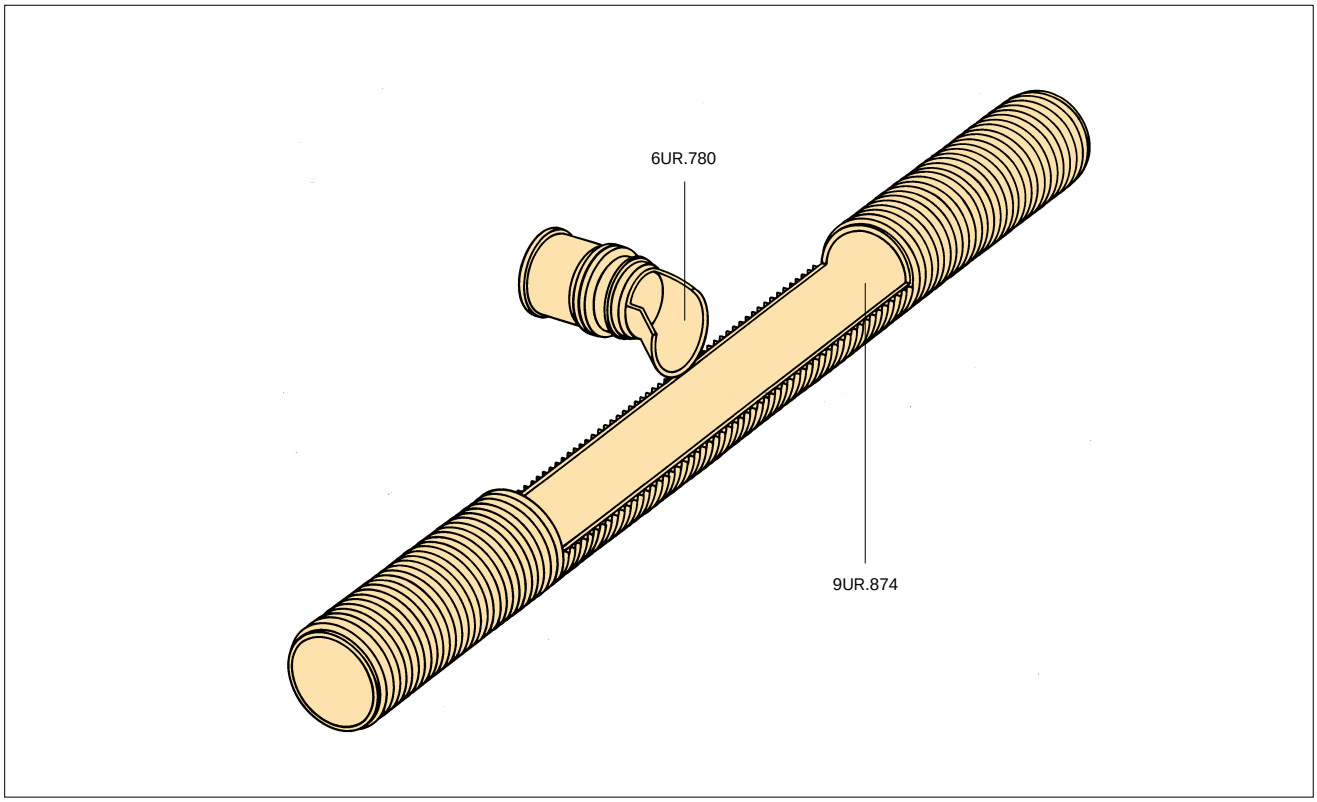
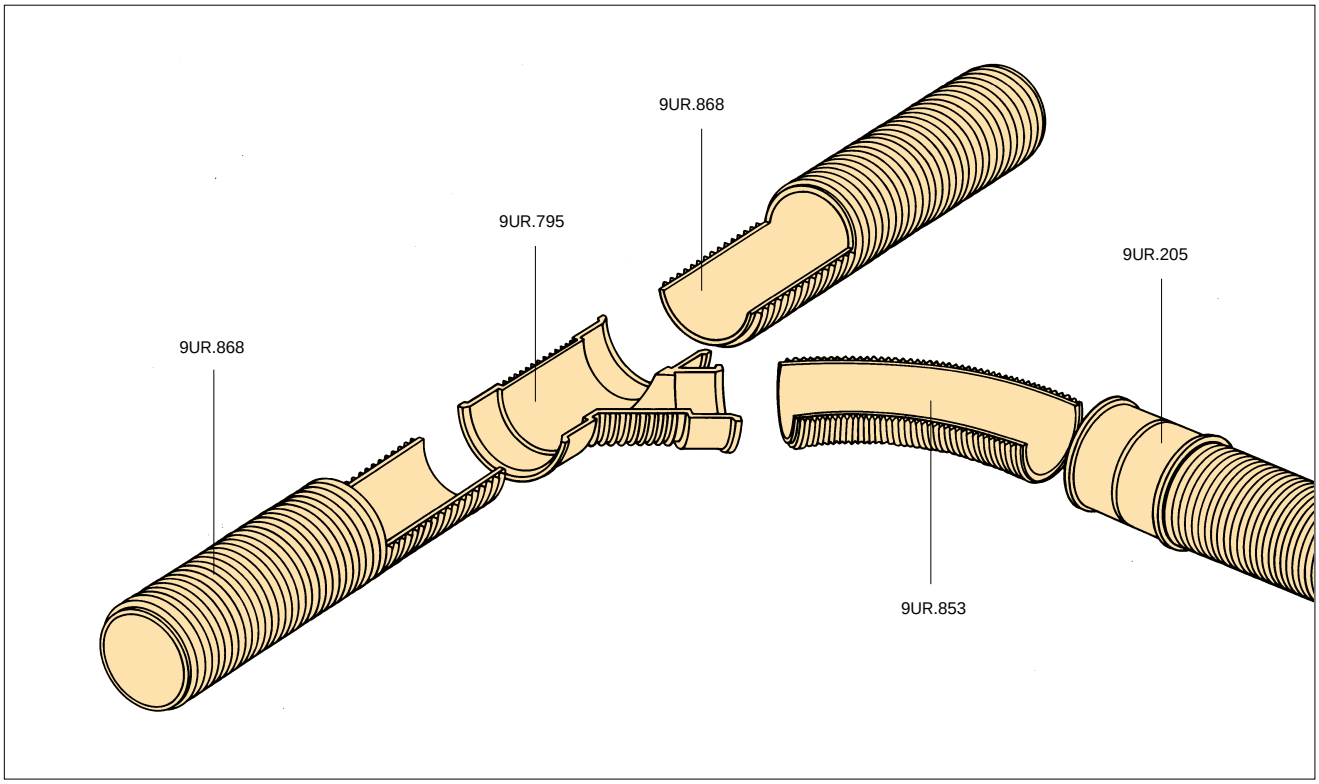


Figure 76. Open Channel Manhole with level invert branch entry



Road Gully

ROAD GULLY

The Osma UltraRib Road Gully offers high impact resistance with light weight. A series of external reinforcing ribs give the unit its strength and also act as anti-flotation collars during installation.

Gully Connection - 150mm Osma UltraRib

1. Clean gully socket and pipe spigot. All dust, dirt and grit which could prevent an effective seal must be removed.
2. Correctly position the Osma UltraRib ring seal between the second and third ribs from the pipe end or on the spigot end of the Osma UltraRib S/S Bend - 45° (6UR.163), ensuring that the ring seal is correctly seated and not twisted.
3. Lubricate the whole of the inside of the gully socket.
4. Offer up the pipe or bend to the socket, align and push home.

Gully Connection - 150mm Wavin TwinWall

1. Clean gully socket. All dirt and grit which could prevent an effective seal must be removed.
2. Lubricate the whole of the inside of the gully socket.
3. Ensure that the spigot end of the Osma UltraRib to TwinWall Adaptor Bend (6TW.147) is clean and that the Osma UltraRib ring seal is correctly seated. Align and push home.

Gully Connection - 160mm OsmaDrain

1. Clean gully socket. All dirt and grit which could prevent an effective seal must be removed.
2. Lubricate the whole of the inside of the gully socket.
3. Ensure that the spigot end of the Osma UltraRib to OsmaDrain Adaptor (6UR.143) is clean and that the Osma UltraRib ring seal is correctly seated. Align and push home.

Figure 77. Osma UltraRib Road Gully - typical installation

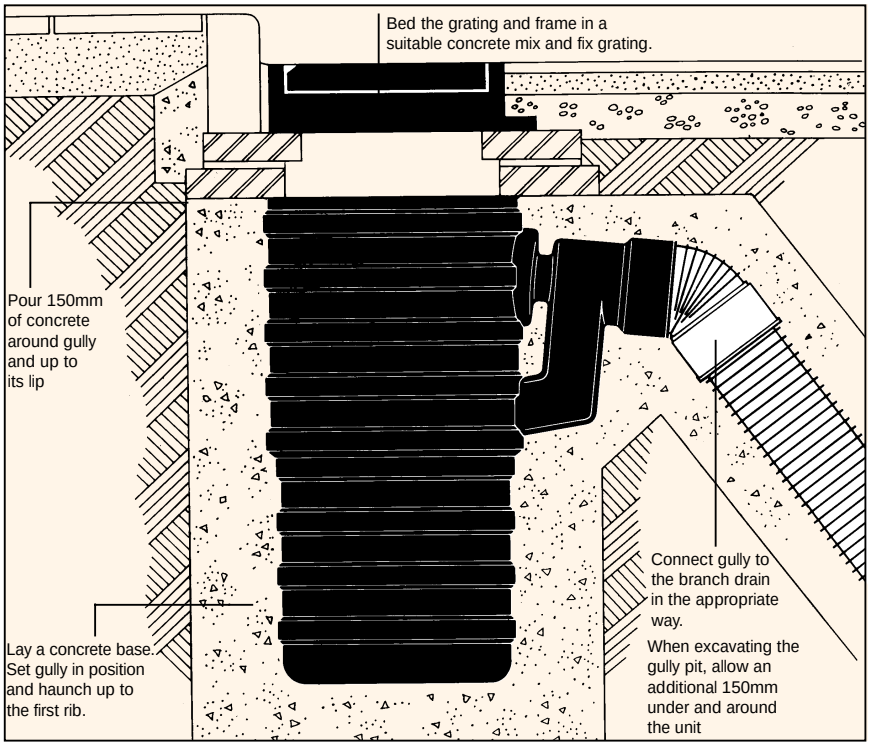


Figure 78. Connection to 160mm flexible, corrugated pipe

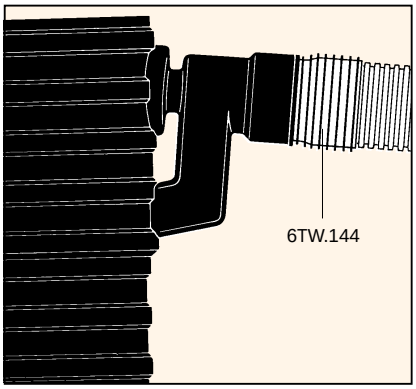
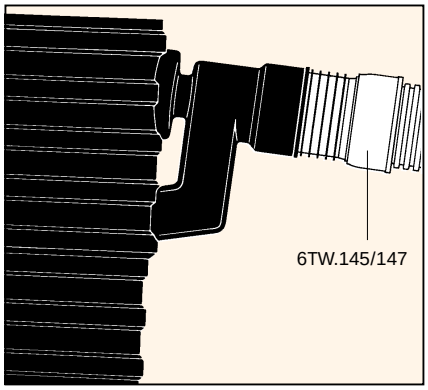


Figure 79. Connection to 150mm Wavin TwinWall



Installation of Road Gully

1. When excavating the Gully pit allow an additional 150mm under and around the unit.
2. Lay concrete base 750mm x 750mm x 150mm overall Set Gully in position and haunch in up to its second rib.
3. Connect the Gully to the branch drain in the appropriate way.
4. Pour 150mm of concrete around the Gully up to its lip. When surrounded by concrete as shown in Drawing No F13 of the DTP's *Highway Construction Details*, the joints are fully watertight in accordance with the DTP's *Specification for Highway Works*: Part 2: Clause 509.3.
5. Where required, build a brick or concrete kerb on top of the Gully to suit grating and frame.
6. Bed the grating and frame in a suitable concrete mix (see Figure 77).

Connections to other Materials

Figure 80. Connection to BS 4660 socket

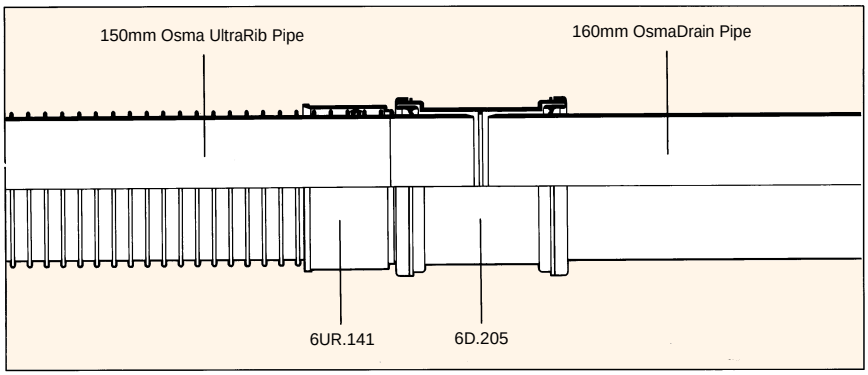


Figure 81. Connection to BS 4660 spigot

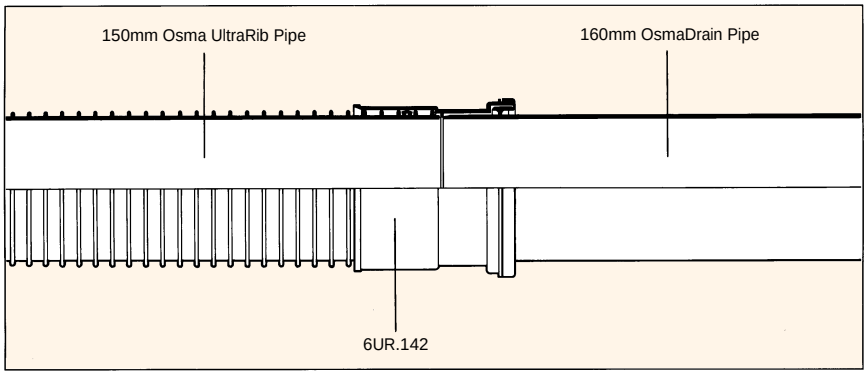


Figure 82. Connection to BS 4660 spigot

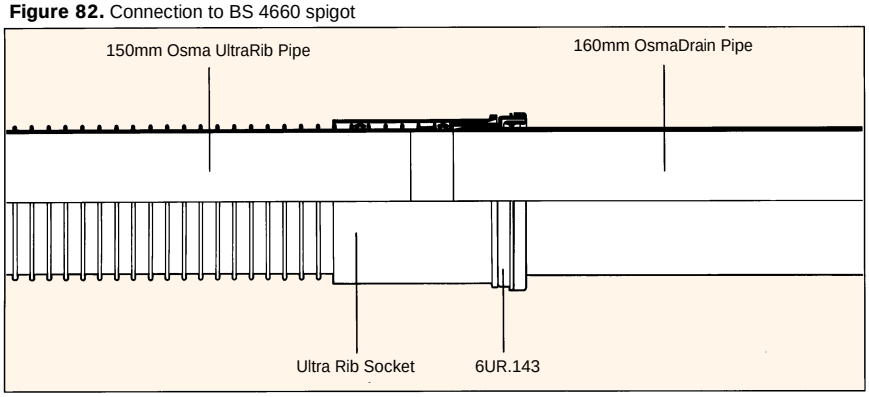
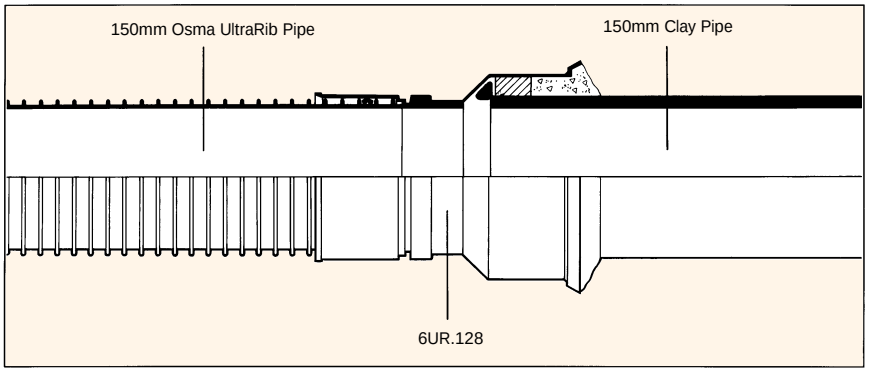


Figure 83. Connection to clay or concrete spigot



CONNECTIONS TO OTHER MATERIALS

The Osma UltraRib range offers a number of Adaptors which enables the system to be connected to both traditional and plastic systems.

Osma UltraRib Spigot to BS 4660 Socket

Lubricate spigot end of Adaptor (6UR.141) and insert into 160mm BS 4660 Socket. Make Osma UltraRib connection in the normal way (see Figure 80 and Jointing, page 36).

Osma UltraRib Spigot to BS 4660 Spigot

Ensure spigot end of the BS 4660 pipe is clean cut, lubricate and push the ring seal end of the Adaptor (6UR.142) fully on to the pipe withdrawing it by a minimum of 12mm. Make Osma UltraRib connection in the normal way (see Figure 81 and Jointing, page 36).

Osma UltraRib Socket to BS 4660 Spigot

Ensure spigot end of the BS 4660 pipe is cut clean, lubricate and push the ring seal end of the Adaptor (6UR.143) fully on to the pipe withdrawing it by a minimum of 12mm. Make Osma UltraRib connection in the normal way (see Figure 82 and Jointing, page 36).

Osma UltraRib Spigot to Clay/ Concrete Spigot

Apply mastic to the spigot surface of either Clay/Concrete pipe and insert into the socket of the Adaptor (6UR.128). Caulk firmly with a layer of gaskin and complete with a sand and cement joint (see Figure 83). Make Osma UltraRib connection in the normal way (see Jointing, page 36).

Connections to other Materials continued

Osma UltraRib Spigot to Thin-wall Clay Spigot

Lubricate spigot end of clay pipe and push the ring seal end of Adaptor (6UR.129) fully on to the pipe. Make Osma UltraRib connection in the normal way (see Figure 84 and Jointing, page 36).

Osma UltraRib Spigot to Clay/ Concrete Spigot

To join 150mm Osma UltraRib to either a 150mm Clay/Concrete pipe use Adaptor (6UR.106) if push-fit adaptors are unsuitable. Loosen stainless steel clamps, slide Adaptor on to end of the Clay/Concrete pipe, tighten clamp. Insert Osma UltraRib pipe into opposite end, tighten clamp (see Figure 85).

Osma UltraRib Spigot to Clay Spigot

To join 225mm Osma UltraRib to a 225mm clay pipe use adaptor (9UR.109). Loosen stainless steel clamps, slide Adaptor on to end of the Clay pipe, tighten clamp. Insert Osma UltraRib pipe into opposite end, tighten clamp (see Figure 86).

Osma UltraRib Spigot to Concrete Spigot

To join 300mm Osma UltraRib to a 300mm Concrete pipe use Adaptor (12UR.112). Loosen stainless steel clamps, slide Adaptor on to end of the Concrete pipe, tighten clamp. Insert Osma UltraRib pipe into opposite end, tighten clamp (see Figure 87).

Figure 84. Connection to thin-wall clay spigot

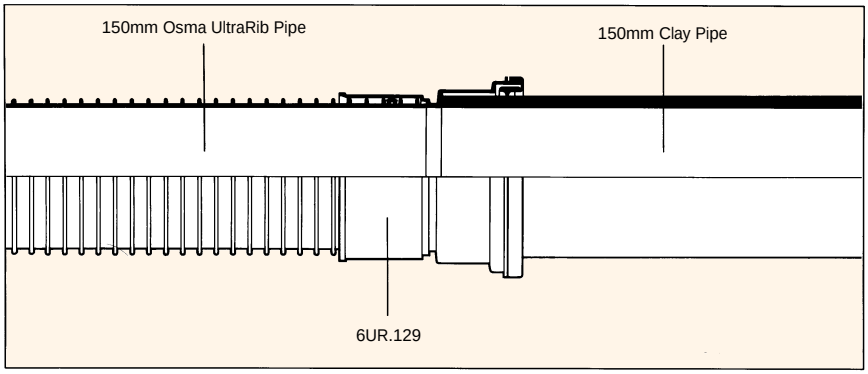


Figure 85. Connection to clay or concrete spigot

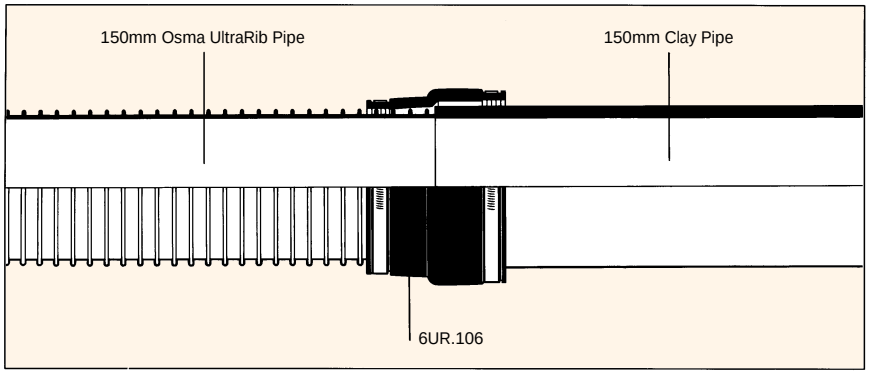


Figure 86. Connection to clay spigot

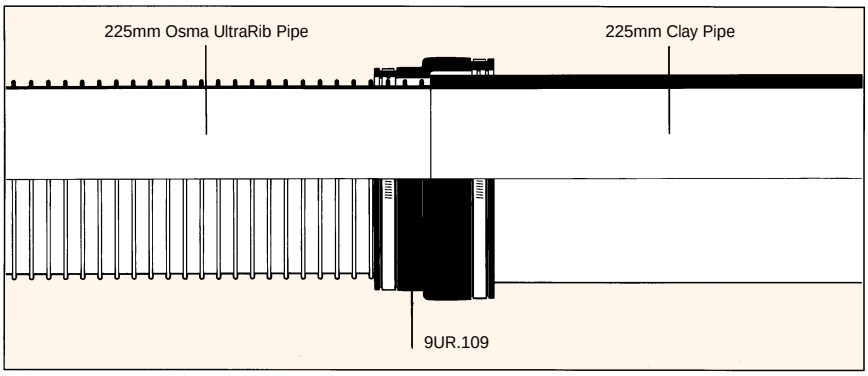
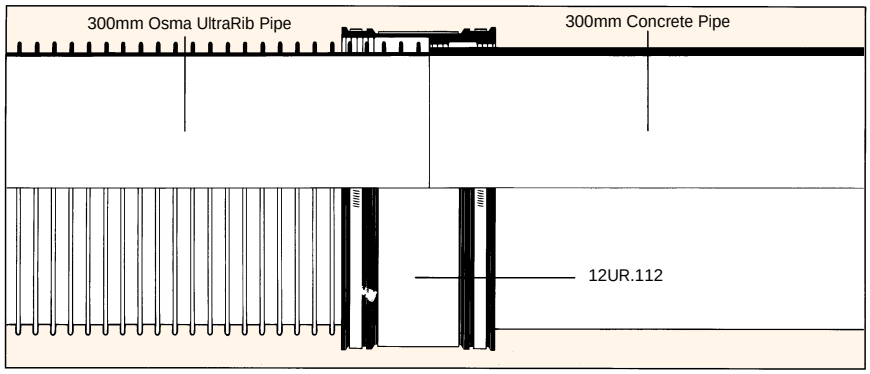


Figure 87. Connection to concrete spigot



Slip Junctions

SLIP JUNCTIONS

Extension of existing Osma UltraRib System

If the drainage system is likely to be extended in the future and this can be pre-planned, then install manholes and/or junctions with plugged sockets.

However, if a new junction is required to be installed into an existing system then the Osma UltraRib range of 45˚ Slip Junctions should be used.

Osma UltraRib Slip Junctions (9UR.229 and 12UR.239) are moulded from PVC-U and therefore are lightweight but robust. The unit's unique design enables them to be used with minimum trench excavation and therefore substantially reduced reinstatement costs.

The units are simple to install by means of their unique sliding sockets, which combine secure jointing with ease of installation.

Installation of Osma UltraRib Slip Junctions

1. Expose the existing pipe and cut out a length of pipe equal to the effective length of the Slip Junction in the closed position (see Figure 88), i.e.

   9UR.229 L = 855mm

   12UR.239 L = 930mm
2. Clean swarf and dirt from the pipe ends and correctly position the ring seals at the ends of both pipe spigots (see Figure 89 and Jointing, page 36).
3. Apply lubricant to the inside of the sliding sockets and position slip Junction as shown within trench (see Figure 90) ensuring that the junction and pipes are butted and aligned.
4. Slide both sockets over the pipe spigots, ensuring that the sockets are fully extended to reach the 5th rib on the pipe (see Figure 91).

Figure 88. Slip junction, effective length

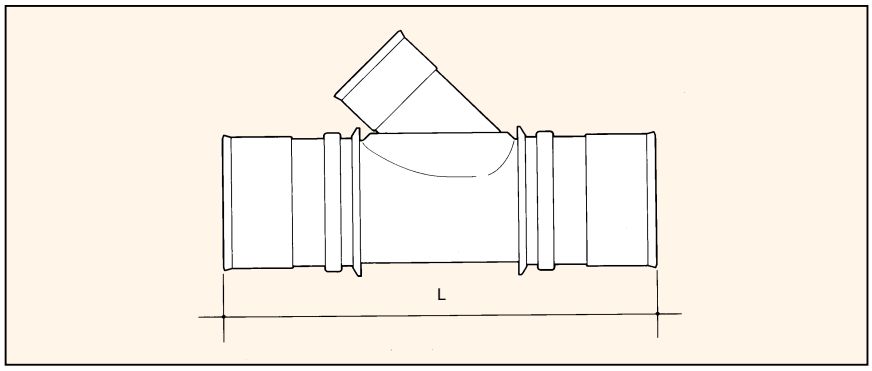


Figure 89. Osma UltraRib Sealing Ring

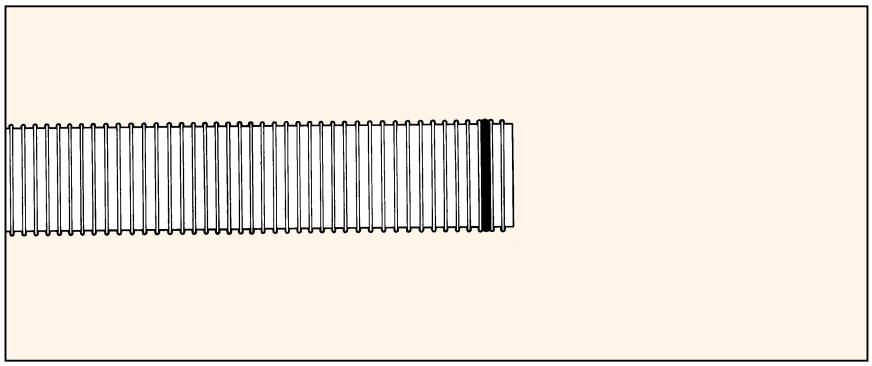


Figure 90. Positioning of Slip Junction

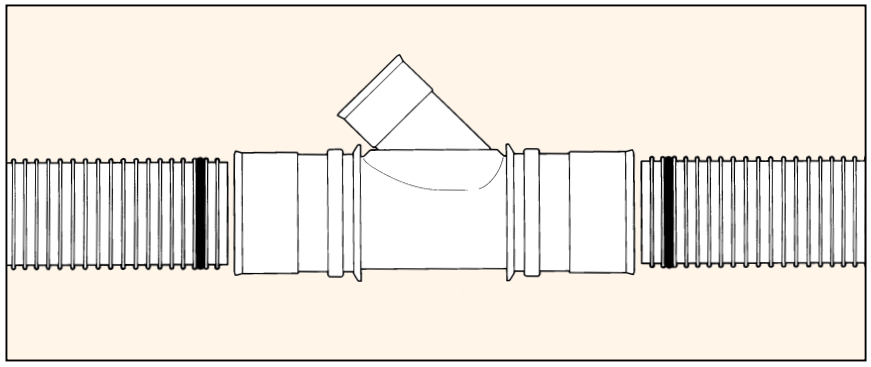
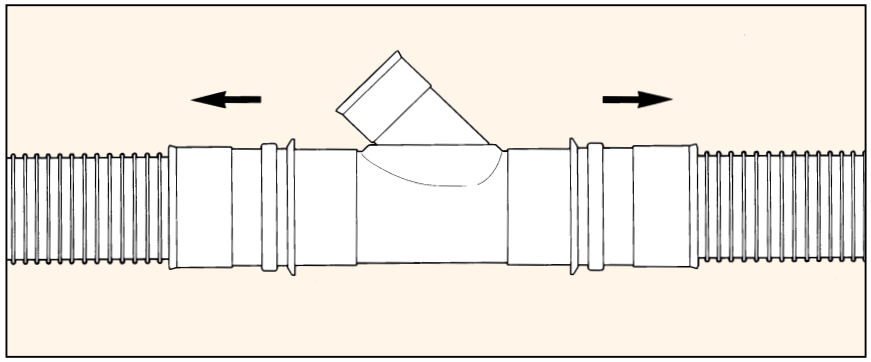
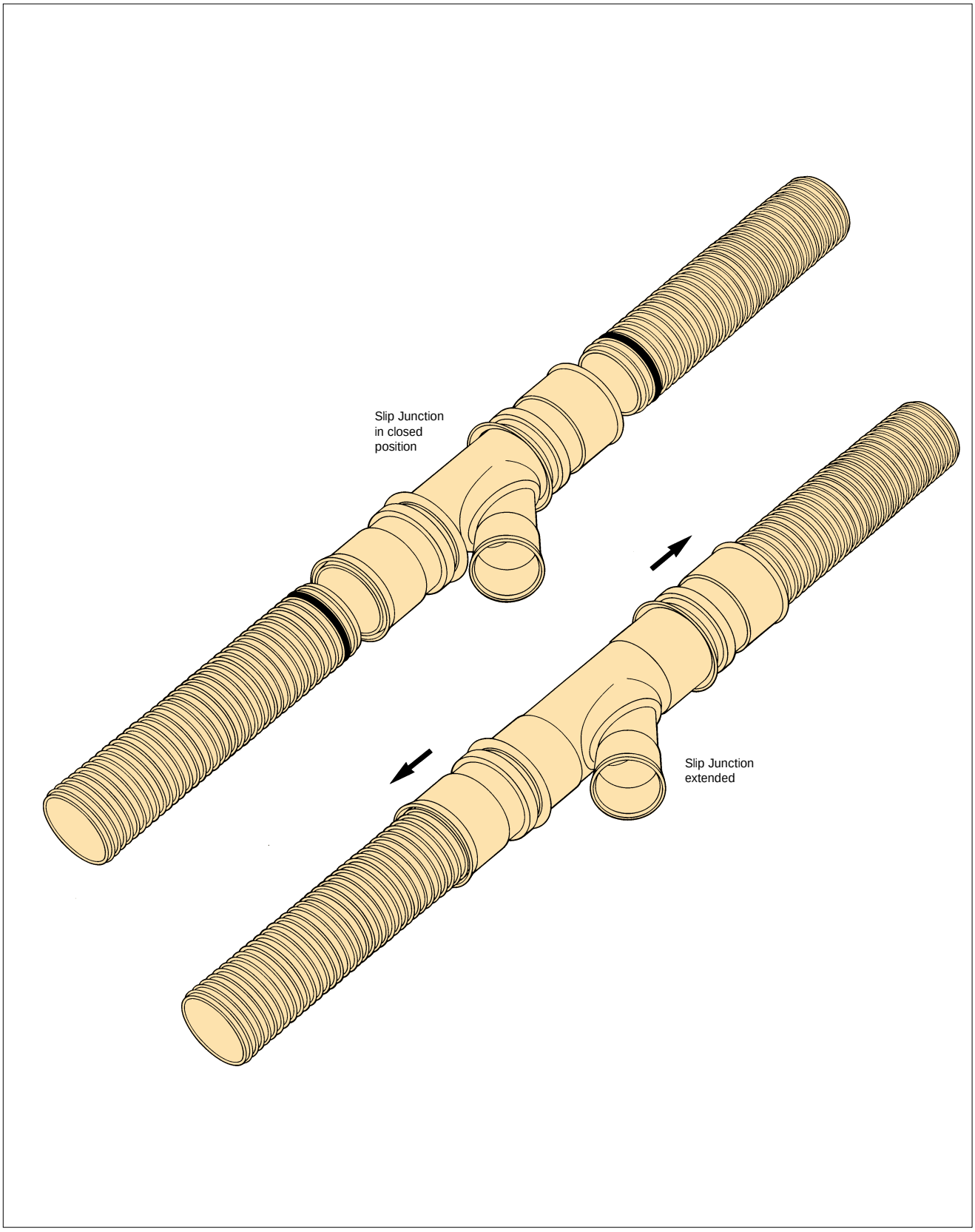


Figure 91. Installation of Slip Junction



Slip Junctions continued

Figure 92. Osma UltraRib Slip Junction – typical installation



Contents

Jointing

JOINTING

Unlike traditional methods for jointing PVC-U systems, the Wavin TwinWall method is unique and innovative, since the ring seal is positioned over the pipe spigot rather than being retained within a pipe or fitting socket.

The major advantages of the Wavin TwinWall jointing method are:

a) There is no need to chamfer pipe ends

b) The ring seal cannot be displaced during jointing

c) The design of the joint ensures a flush fit between the internal bore of the pipe and the fitting.

Figure 93. Correct cutting position

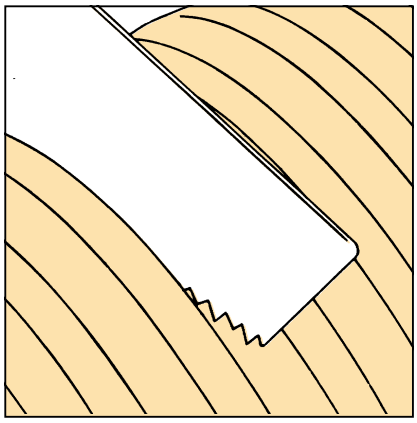


Figure 94. Wavin TwinWall Sealing Ring

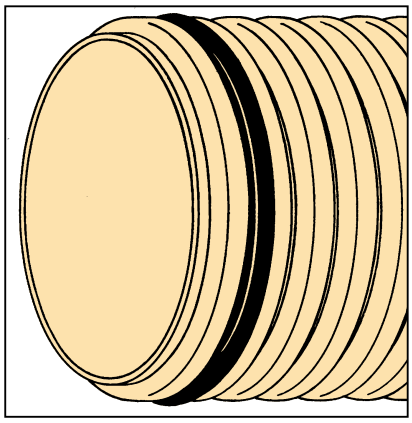


Figure 95. Applying the lubricant

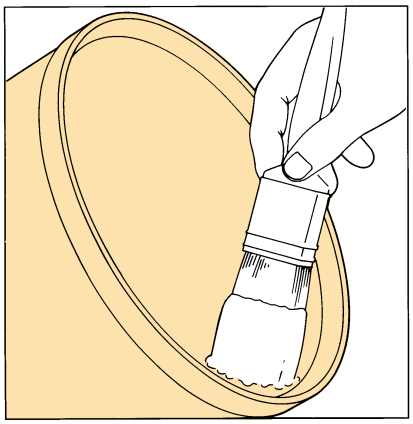


Figure 96. Protecting the pipe end

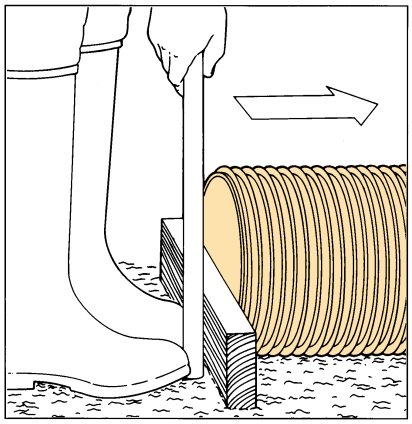
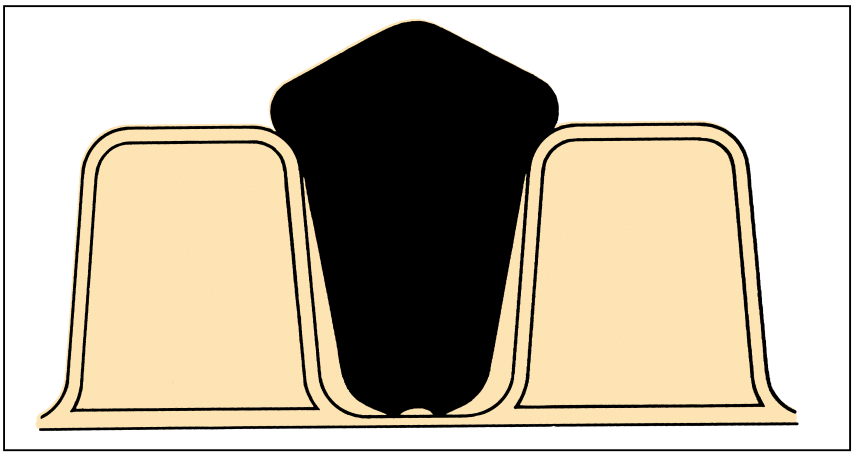


Figure 97. Placement of Ring Seal, between 2nd and 3rd ribs.



Preparation

Ensure that the two ribs that retain the sealing ring are sound.

Cutting

Pipes must be cut midway between the ribs. The design of the ribs allows the pipe to be cut square using a coarse toothed saw (see Figure 93).

Jointing Sequence

1. Clean pipe spigots and sockets. All dust, dirt and grit which could prevent an effective seal must be removed from pipe ends and sockets.
2. The correct position for the sealing ring is indicated in Figure 94 i.e. between the second and third ribs from the pipe end. Ensure the Ring Seal is correctly handed and is also correctly seated and not twisted.
3. Lubricant should be applied to the whole of the inside of the socket.
4. To make the joint, offer up the pipe to the socket, align pipe and push home. Alignment is important to facilitate jointing.

The force required to push the pipe home will vary according to pipe size and ambient temperature. Whatever method is used to apply the necessary force, care must be taken to ensure that there is no risk of damaging the pipe ends. The most convenient method is to use a lever ensuring the pipe end is protected.

A good technique is to lift the pipe up by passing a rope underneath. This makes it easier to align the spigot into the socket. Mechanical pulling or pushing methods are unnecessary.

Connections to other materials

Figure 98. Connection to BS 4660 pipe

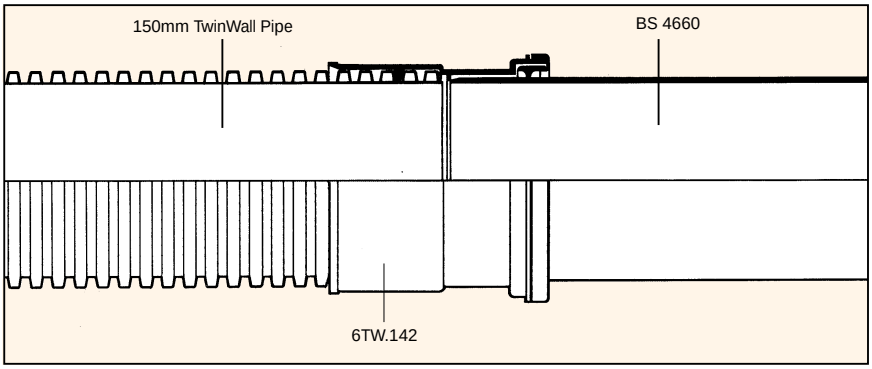
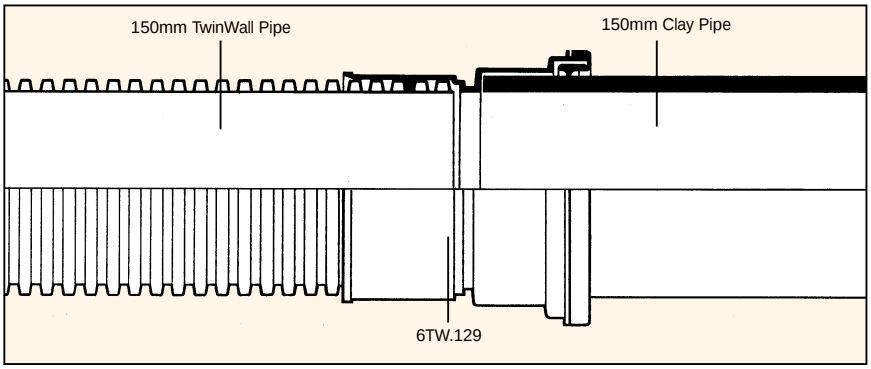


Figure 99. Connection to Thin - wall Clay Spigot



CONNECTIONS TO OTHER MATERIALS

The Wavin TwinWall range offers a number of Adaptors which enables the system to be connected to both traditional and plastic systems.

Wavin TwinWall Spigot to BS 4660 Spigot

Ensure spigot end of the BS 4660 pipe is clean cut, lubricate and push the ring seal end of the Adaptor (6TW.142) fully on to the pipe withdrawing it by a minimum of 12mm. Make Wavin TwinWall connection in the normal way (see Figure 98 and Jointing, page 47).

Wavin TwinWall Spigot to Thin-wall Clay Spigot

Lubricate spigot end of clay pipe and push the ring seal end of Adaptor (6TW.129) fully on to the pipe. Make Wavin TwinWall connection in the normal way (see Figure 99 and Jointing, page 47).

Connections to other materials continued

Wavin TwinWall Socket to flexible, corrugated spigot - for connection to Road Gully.

Ensure spigot end of the flexible, corrugated pipe is clean. Push the socket end of adaptor (6TW.144) which incorporates a retaining rib on to the pipe. Make the Wavin TwinWall spigoted connection in the normal way (see Figure 100 and jointing, Page 47).

Osma UltraRib Socket to Wavin TwinWall Spigot - for connection to Road Gully/ Inspection Chamber Bases.

Ensure spigot end of the adaptor (6TW.145) is clean and that the UltraRib ring seal is correctly seated and not twisted. Lubricate and push into the appropriate Osma UltraRib Socket. Make the Wavin TwinWall connection in the normal way (see Figure 101and Jointing, Page 47).

Wavin TwinWall Spigot to Flexible, Corrugated Spigot - for connection of flexible pipe from road gully to branch drain.

Ensure spigot end of the flexible, corrugated pipe is clean. Push the socket end of adaptor (6TW.146) which incorporates a retaining rib on to the pipe. Make the Wavin TwinWall spigoted connection in the normal way (see Figure 102 and jointing, Page 47).

Figure 100. 150mm UR Spigot x 160mm flexible, corrugated socket

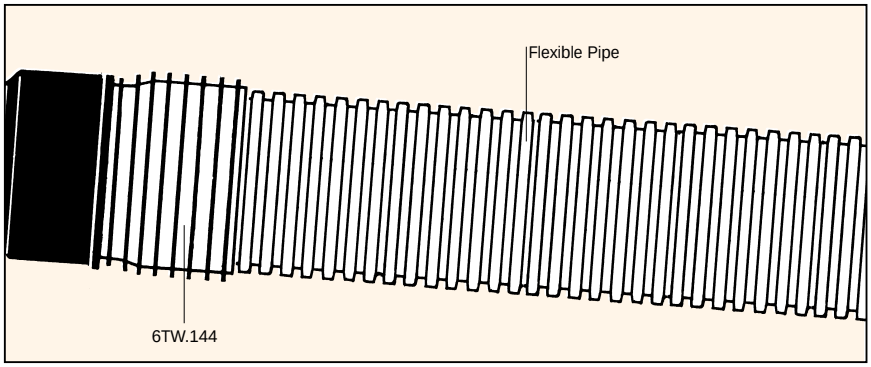


Figure 101. 150mm UR Socket to TwinWall Spigot.

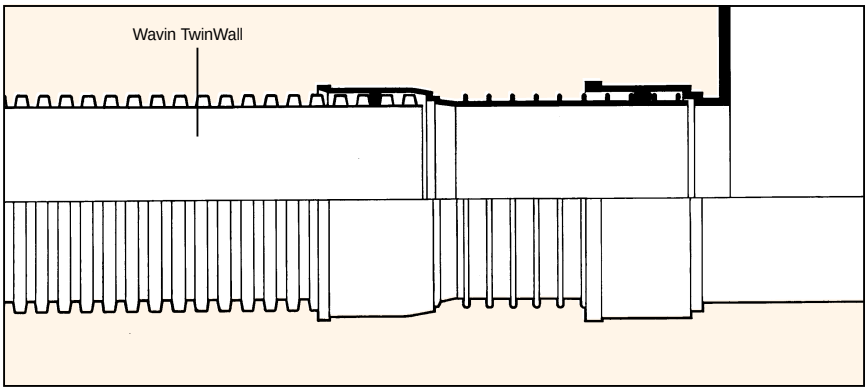
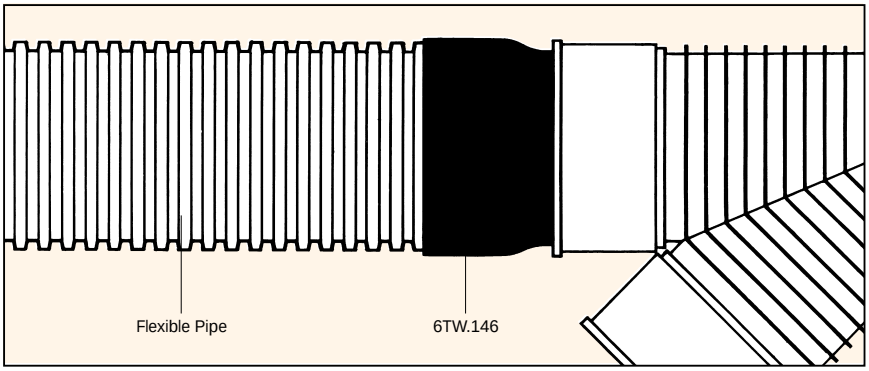


Figure 102. TwinWall Spigot to Flexible, Corrugated Spigot



Testing, Safety and Maintenance

TESTING

All lengths of the drain and all manholes and inspection chambers must be inspected for straightness, obstructions and for ground water infiltration.

They must also pass the following tests which must be carried out in the presence of an Authority's Inspector.

Water Test

Authorities require this test to be carried out in suitable lengths as work proceeds as well as after backfilling is completed.

Gravity drains should be tested to an internal pressure of:

1.5 metres head of water above the invert of the pipe at the high end of the line and not more than 4 metres head of water above the invert of the pipe at the lower end of the line.

Fill the pipe and allow two hours for settlement, topping up as necessary. Then add water for 30 minutes to maintain the test head. Note the quantity of water needed. Water loss may be due to trapped air or leakage. The rate of water loss should not exceed 1 l/h per metre diameter per linear metre run of pipe (see BS 8301:1985 Clause 25.6.2.3).

Air Test

It may be quicker and more convenient to carry out an air test, especially for large pipes or when water is not available. However because this test is more sensitive than a water test and is affected by any changes in temperature, failure is not conclusive. And since it is difficult to detect the point of failure with an air test a water test should be carried out if failure does occur.

Pump air into the system until a pressure of:

– 100mm head of water is shown on a connected U-tube for standard pipe lines, or:

– 50mm head of water is shown on a connected U-tube where gullies and/or ground floor appliances are connected.

The 100mm head of water pressure should not fall by more than 25mm over a period of five minutes.

The 50mm head of water pressure should not fall by more than 12.5mm over a period of five minutes.

Smoke Test

Smoke tests are not officially accepted tests but are used to detect leakage points after other tests have failed.

Certain smoke canisters are not suitable for use with PVC-U drainage systems. Obtain the advice of the canister manufacturers before testing by this method.

SAFETY

The relevant regulations detailed in the Health and Safety at Work Act 1974 must be adhered to on site.

Solvent Cements, Fillers and Degreasing Cleaners

When making solvent weld joints, it is essential to observe normal safety rules for handling solvents.

- Never smoke or bring naked flames near the area of work.
- Work in a well ventilated area to avoid inhaling fumes.
- Close the solvent container after use and store in a cool place.
- Do not allow solvents or cleaners to come into contact with the skin.

Handling and Trench Safety

- Take care when removing pipes from bundles as the straps are under considerable tension and may flail when cut.
- Follow the relevant British Standard Codes of Practice when digging trenches to prevent accidents from trench collapse.
- Use the correct fencing and marking whenever a trench is accessible to the public.

MAINTENANCE

The smooth bore of OsmaDrain, Osma UltraRib and Wavin TwinWall pipes combined with their long lengths reduce the risk of blockages. However if a blockage does occur, use only flexible or roller type rods. Pointed or boring type metal fittings are NOT recommended. Tests have been carried out on PVC-U pipes and fittings from specialist drain cleaning contractors and their normal equipment is suitable. Do not use specialist cutting attachments.

General Information

GENERAL INFORMATION

Application

Osma Below Ground Drainage systems are designed for use in gravity drainage and sewerage installations at depths of up to 10 metres. Adaptors and Reducers are available for connection to traditional materials.

Descriptions

Descriptions and illustrations in this publication are for guidance only. The fittings illustrated are generally typical of the OsmaDrain 110mm and Osma UltraRib 150mm sizes. No responsibility can be accepted for any errors, omissions or incorrect assumptions. Refer to the product itself if more detailed information is required. Due to the continuing programme of product improvement the Company reserves the right to amend any published information or to modify any product without prior notice.

Dimensions

Unless otherwise stated all dimensions are in millimetres (mm).

Symbols

a) British Standard Kitemark

Identifies pipes and fittings which are manufactured under the B.S.I. Certification Scheme.

b) British Board of Agrément

Identifies non-Kitemarked fittings which are covered by a British Board of Agrément Certificate.

Materials

a) Pipes and Fittings

All pipes and most fittings are manufactured from unplastized Polyvinyl Chloride (PVC-U). Polypropylene is used for the Universal Inspection Chamber, Shallow Inspection Chamber, Adjustable Bends and certain ancillary components. Polyethylene is used for the range of Inspection Chamber, Manholes Bases, Yard / Road Gullies and most of the Subsoil Drainage fittings.

Wavin TwinWall is manufactured from HDPE - High Density Polyethylene.

b) Sealing Rings

OsmaDrain, Osma UltraRib and Wavin TwinWall sealing rings are manufactured from Styrene Butadiene Rubber (SBR) complying with the requirements of BS 2494:1986.

Colour

Most Pipes and Fittings – Golden Brown

Ring Seals – Black

Sealing Rings

a) OsmaDrain

Where applicable, OsmaDrain 110mm and 160mm sockets are supplied complete with a captive ring seal.

b) Osma UltraRib

Sealing rings are supplied either loose with pipes and fittings or pre-fixed in the case of Inspection Chamber and Manhole Bases and are included in the price.

b) Wavin TwinWall

All pipe and fittings prices are exclusive of ring seals, which must be ordered separately if required.

Supply

All Osma Below Ground Drainage Systems are supplied through a nationwide network of merchant distributors. For further information contact the Sales Services Department at Chippenham.

Technical Advice

Advice on specific applications for any OsmaDrain, Osma UltraRib or Wavin TwinWall systems may be obtained from Wavin's Technical Design Department. Telephone: (01249) 766655.

Literature

The following OsmaDrain/Osma UltraRib publications are also available from the Literature Department at Chippenham.

- Osma Below Ground Drainage and Civils Systems Trade Price List.

Conditions of Sale

The Company will not accept responsibility for the malfunction of any installation which includes components not supplied by Wavin Plastics Limited. Goods are sold subject to Company conditions of sale.

Head Office and Sales Enquiries

Wavin Plastics Limited, Parsonage Way, Chippenham, Wiltshire, SN15 5PN

Telephone: (01249) 766600.

Fax: (01249) 443286.

Acceptance and Abbreviations

ACCEPTANCE

a) British Standards Institution

OsmaDrain below ground drainage systems comply where applicable with the requirements of the following British Standards:

BS EN124:1994 Gully tops and manhole tops for vehicular and pedestrian areas.

BS 4660:1989 Unplasticized polyvinyl chloride (PVC-U) pipes and plastics fittings of nominal size 110mm and 160mm for below ground gravity drainage and sewerage and/or BS EN 1401-1.

BS 7158:1989 Plastic inspection chamber for drains.

BS 4962:1989 Plastic pipes for use as light duty sub-soil drains.

Osma UltraRib pipes comply with the requirements of the following Water Industry Specifications (WIS):

WIS 4-31-05: July 1991: Issue 2 Specifications For Solid Wall Concentric External Rib-Reinforced UPVC Sewer Pipe.

b) British Board of Agrément

Agrément Certificates have been awarded to the following Osma Below Ground Drainage Systems.

87/1835 OsmaDrain Underground Drainage System.

90/2563 UltraRib Gravity Drainage and Sewerage System – 150mm.

91/58 Roads and Bridges
UltraRib Gravity Drainage and Sewerage System – 150mm.

89/2268 UltraRib Gravity Sewerage System – 225/300mm.

89/46 Roads and Bridges
UltraRib Gravity Sewerage System – 225/300mm.

99/R105 Roads and Bridges Highway Drainage System.

ABBREVIATIONS

P/E Pipes and Fittings with both ends plain or with one plain end and one special end.

S/S Pipes and Fittings with one or more ring-seal or push-fit sockets, but always one plain or special end.

D/S Fittings with ring seal or push-fit sockets at all ends.

SW/1/2S Fittings with half-spigot or half-socket ends.

S/SW Fittings with one or more ring seal sockets but always one solvent socket.

SW/S Fittings with one solvent socket and one plain or special end.

Notes

Notes

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