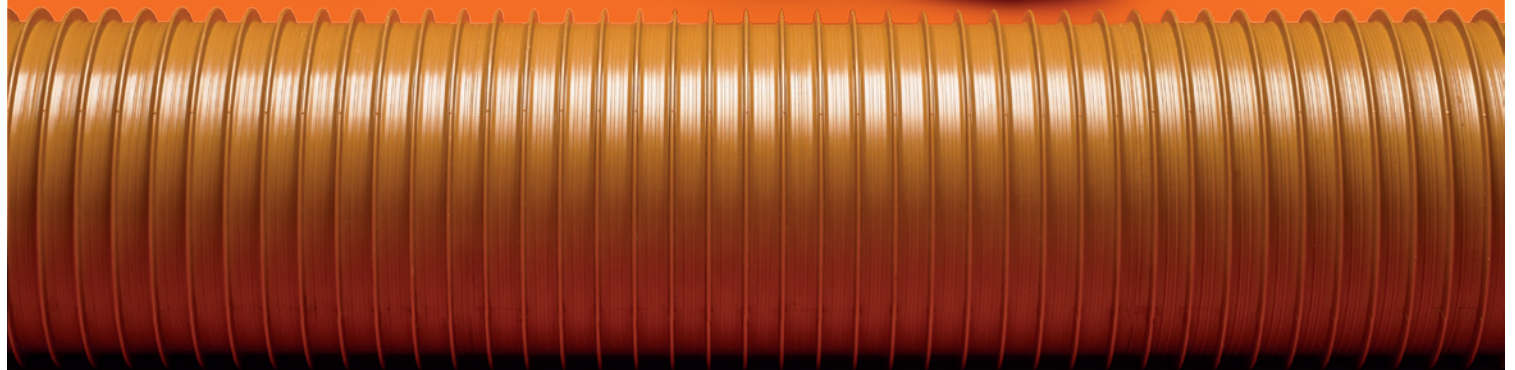


Product and installation manual

OSMA UltraRib

Foul and Surface Water Drainage



Contents Osma UltraRib



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Introduction

Osma UltraRib

The Osma UltraRib System

Osma UltraRib is a fully socketed system of pipe and fittings which combines secure jointing with ease of installation. The pipe has a smooth inner surface and externally has a repeating pattern of concentric ribs which gives the pipe its exceptional axial rigidity and enhanced radial strength.

Osma UltraRib pipe and fittings are offered in 150mm, 225mm and 300mm diameters. Pipe is manufactured to BS EN 13476-3 in addition complies with the requirements of: Water Industry Specification (WIS) 4-35-01 JULY 2000: Issue 1 and Kitemarked under the BSI Certification Scheme. The majority of Osma UltraRib fittings are covered by a British Board of Agrément Certificate.

Joint Design

Osma UltraRib joints are made by placing the sealing ring between the second and third external reinforcing ribs nearest the spigot end of the pipe, which is then inserted into a socket. The result is a high performance, watertight joint with two added benefits:

- ① No chamfering of the pipe ends.
- ① Ring displacement during installation is impossible.

Fitting Design

The majority of Osma UltraRib fittings are socketed to provide total flexibility in use and to reduce installation time on site. The sockets of the components are specially designed to allow the pipe and socket of the fitting to move as one, should differential settlement occur.

Material

The strength and performance qualities of PVC-U, PP and PE have been studied for a number of years to assess the material's long-term characteristics. Research has proven their suitability for the manufacture of large diameter drainage and sewerage systems, since they become an intrinsic part of the ground during settlement. This fact paved the way for a new development in pipe technology, not only in terms of manufacturing but also in the structural properties of the pipe itself i.e. Osma UltraRib.

Standards

British Standards Institution

Osma UltraRib pipe complies with the following requirements and is Kitemarked:

BS EN 13476-3 Plastics piping systems for non-pressure underground drainage and sewerage

Water Industry Specification (WIS) 4-35-01 July 2000: Issue 1

British Board of Agrément

Osma UltraRib systems have been awarded the following certificates:

10/H151 UltraRib HAPAS Roads & bridges Highway drainage System – 150mm, 225mm and 300mm.

98/3472 UltraRib Gravity Sewerage System – 150mm, 225mm and 300mm.

14/H214 UltraRib & TwinWall Road Gullies.

Acceptance

Osma UltraRib systems are included in the following publications:-

- ① Sewers for Adoption, 6th, 6A and 7th Editions, under its generic name of; Thermoplastic Structured Wall Sewer Pipe.
- ① Civil Engineering Specification for the Water Industry, under its generic name of; Thermoplastic Structured Wall Sewer Pipe.
- ① Specification for Highway Works, series 500 Drainage and Service Ducts.

To request details of components and/or for any technical enquires please contact:

Literature Request

Tel: 01249 766333

Email: literature@wavin.co.uk

Technical Design

Tel: 0844 856 5165

Email: technical.design@wavin.co.uk

Wavin Online

The complete range of Wavin/Osma product and installation guides are also available online at: wavin.co.uk

Pipe and Joint Technology Osma UltraRib

External reinforcing ribs give exceptional axial rigidity and radial strength

The unique UltraRib high performance joint

Concentric external reinforcing ribs

Elastomeric Sealing Ring

Improved hydraulic flow due to the smooth interchange between pipe and fittings

General Information

Osma UltraRib

Application

Osma UltraRib 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 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 pipe is manufactured from unplasticized Polyvinyl Chloride (PVC-U). Fittings are either manufactured from Polypropylene (PP) or PVC-U. Polyethylene (PE) is used for the range of Road Gullies.
- b) **Sealing Rings Osma UltraRib**
Sealing rings are manufactured from Ethylene Propylene Diene Monomer (EPDM) complying with the requirements of BS EN 681-1.

Colour

Most pipe and fittings – Golden Brown
Ring Seals – Black

Sealing rings

Sealing Rings are supplied loose with pipes and fittings and are included in the price.

Supply

The Osma UltraRib system is supplied through a nationwide network of merchant distributors. For further information contact Customer Services on 0844 856 5152.

Literature

The following Wavin publications are also available from the Literature Department at Chippenham.

General

- 🕒 Wavin Below Ground & Civils System: Trade Price List

Gravity Drain and Sewer Systems

- 🕒 OsmaDrain System:
Product and Installation Manual
- 🕒 Osma Non Man-Entry Inspection Chamber Range:
Product and Installation Manual

Stormwater Management Systems

- 🕒 Wavin AquaCell System:
Product and Installation Manual
- 🕒 Wavin Flow Control Range:
Product and Installation Manual
- 🕒 Wavin Commercial Rainwater Re-use System:
Product Overview
- 🕒 Wavin Poly-Concrete Channel Systems:
Product and Installation Manual
- 🕒 Wavin Quickstream Siphonic Roof Drainage Systems:
Product and Installation Manual

Weights and Dimensions Osma UltraRib

The following pages illustrate the 150mm, 225mm and 300mm Osma UltraRib range of underground gravity drainage and sewerage pipes, fittings and accessories. Part numbers, descriptions, dimensions and weights of pipe are included.

The Osma UltraRib range of pipes comply with the requirements of BS EN 13476-3 and are Kitemarked in accordance with the BSI certification scheme. Osma UltraRib pipe is supplied in three diameters, 150mm, 225mm and 300mm, either plain ended or single socketed and in standard lengths of either 3 or 6 metres.

Table 1: Pipe weights

Plain Ended (P/E)

Nominal Size (mm)	Length (m)	Weight (kg/m)	Part Number
150	3	2.3	6UR073
225	3	4.9	9UR073
300	3	7.2	12UR073

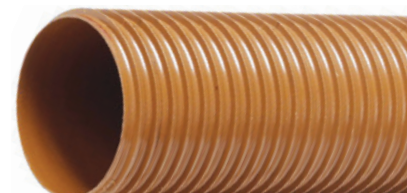
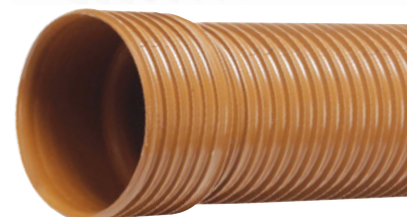
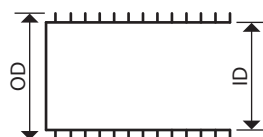
Single Socket (S/S)

Nominal Size (mm)	Length (m)	Weight (kg/m)	Part Number
150	3	2.4	6UR043
	6	2.3	6UR046
225	3	5.2	9UR043
	6	5.0	9UR046
300	3	7.8	12UR043

Table 2: Pipe and socket dimensions

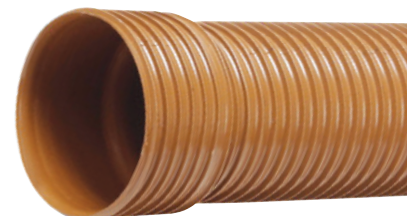
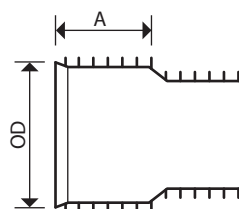
Plain Ended Pipe (P/E)

Nominal Size (mm)	OD	ID
150	170	152
225	250	226
300	335	300



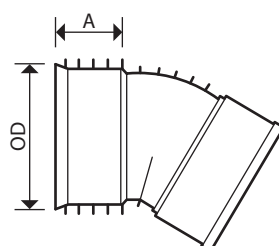
Single Socketed Pipe (S/S)

Nominal Size (mm)	OD	A
150	190	96
225	275	118
300	372	136



Osma UltraRib Socket

Nominal Size (mm)	OD	A
150	183	86
225	266	123
300	356	141



Product Range Summary

Osma UltraRib

The Product Range Summary lists the range of pipes and fittings detailed in the Product Range.

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

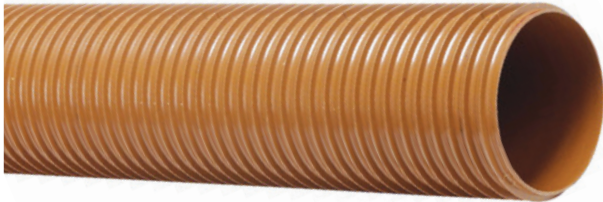
Fittings with ring-seal or push-fit sockets at all ends.

Table 3: The Product Range Summary

Product Description	Nominal Size (mm)	150	225	300	Page
Pipe	Plain Ended (P/E) – 3 metre	●	●	●	7
	Single Socket (S/S) – 3 metre	●	●	●	7
	Single Socket (S/S) – 6 metre	●	●		7
Rocker Pipe	S/S Rocker Pipe – 600mm effective length	●	●	●	7
Couplers	D/S Slip Coupler – for repairs	●	●	●	7
	D/S Pipe Coupler – for jointing pipe	●	●	●	8
Adaptors	D/S Adaptor to thinwall Clay Spigot	●			8
	S/S Adaptor – 6UR Socket x 160mm BS EN 1401 Spigot	●			8
	D/S Adaptor – 6UR Socket x 160mm BS EN 1401 Socket	●			8
	S/S Adaptor – 6UR Spigot x 160mm BS EN 1401 Socket	●			8
Level Invert Reducers	S/S Reducer – to OsmaDrain BS EN 1401 Spigot	●			9
	S/S Reducer – to 150mm UltraRib Spigot		●		9
	D/S Reducer – to 225mm UltraRib Spigot			●	9
Short Radius Bends	S/S – 45°	●			9
	D/S – 87.5° – 6UR Socket x 160mm BS EN 1401 Socket	●			9
	D/S – 87.5°	●	●	●	10
	D/S – 45°	●	●	●	10
	D/S – 30°	●	●	●	10
	D/S – 15°	●	●	●	10
Junctions	D/S Equal – 87.5° – to UltraRib Spigot	●			11
	D/S Equal – 45° – to UltraRib Spigot	●	●	●	11
	D/S Unequal – 87.5° – to BS EN 1401 Spigot	●			11
	D/S Unequal – 45° – to BS EN 1401 Spigot	●	●	●	11
	D/S Unequal – 45° – to UltraRib Spigot		●	●	12
Sealed Access Fittings	P/E Screwed Access Cover	●			12
	S/S Screwed Access Cover	●			12
Socket Plug	P/E Socket Plug	●	●	●	12
Road Gully	S/S Road Gully – 450mm diameter x 900mm invert	●			13
	S/S Road Gully – 450mm diameter x 750mm invert	●			13
Accessories	Joint Lubricant	Suitable for use with all sizes			13
	Inflatable Testing Plug	●			13
Spares	Ring Seal	●	●	●	13

Product Details Osma UltraRib

Pipe



Plain Ended Pipe

Material: PVC-U

Nominal Size (mm)	Part Number	Length (m)
150	6UR073	3
225	9UR073	3
300	12UR073	3

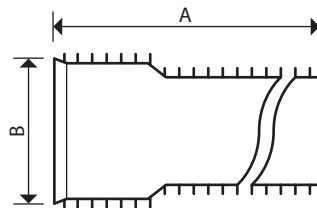
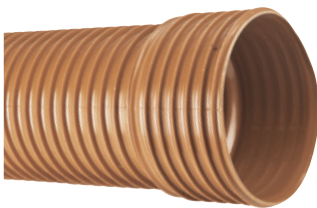


Single Socketed Pipe

Material: PVC-U

Nominal Size (mm)	Part Number	Length (m)
150	6UR043	3
225	9UR043	3
300	12UR043	3
225	6UR046	6
300	9UR046	6

Rocker Pipe



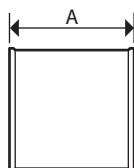
Single Socketed Rocker Pipe

Material: PVC-U

Nominal Size (mm)	Part Number	Dimensions (mm)	
		A	B
150	6UR869	600*	190
225	9UR869	600*	275
300	12UR869	600*	372

*Dimension A = effective length

Couplers



D/S Slip Coupler

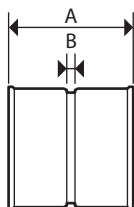
- For new branch entry connections and repairs

Material: PVC-U* / Polypropylene†

Nominal Size (mm)	Part Number	Dimensions (mm) A
150*	6UR105	185
225†	9UR105	240
300†	12UR105	325

Product Details

Osma UltraRib



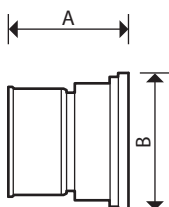
D/S Pipe Coupler

- For jointing pipe

Material: PVC-U* / Polypropylene†

Nominal Size (mm)	Part Number		Dimensions (mm)	
			A	B
150*	6UR205	▽▲ WIS	185	12
225†	9UR205	▽▲ WIS	241	12
300†	12UR205	▽▲ WIS	301	15

Adaptors

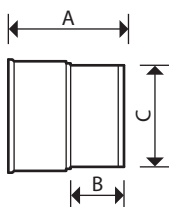


D/S Adaptor

- Connector to BS EN 295 thinwall clay spigot

Material: PVC-U

Nominal Size (mm)	Part Number		Dimensions (mm)	
			A	B
150	6UR129	▲	193	180

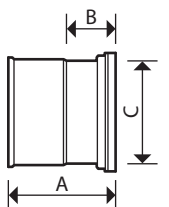


S/S Adaptor

- 6UR socket x 160mm BS EN 1401 spigot

Material: PVC-U

Nominal Size (mm)	Part Number		Dimensions (mm)		
			A	B	C
150	6UR141	▲	180	84	160

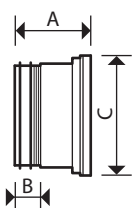


D/S Adaptor

- 6UR socket x 160mm BS EN 1401 socket

Material: PVC-U

Nominal Size (mm)	Part Number		Dimensions (mm)		
			A	B	C
150	6UR142	▲	170	76	161



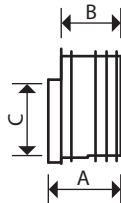
S/S Adaptor

- 6UR socket x 160mm BS EN 1401 socket

Material: PVC-U

Nominal Size (mm)	Part Number		Dimensions (mm)		
			A	B	C
150	6UR143	▲	121	42	161

Reducers

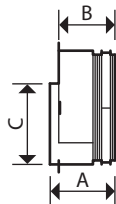
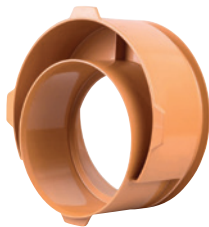


S/S Level Invert Reducer

- To 110mm OsmaDrain spigot

Material: PVC-U

Nominal Size (mm)	Part Number	Dimensions (mm)		
		A	B	C
150x110	6UR099 ▲	115	95	111



S/S Level Invert Reducer

- To 150mm UltraRib spigot

Material: Polypropylene

Nominal Size (mm)	Part Number	Dimensions (mm)		
		A	B	C
225x150	9UR095 ▲	142	122	170



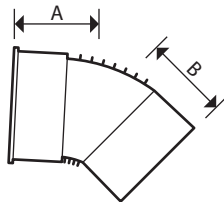
D/S Level Invert Reducer

- To 225mm UltraRib spigot

Material: Polypropylene

Nominal Size (mm)	Part Number	Dimensions (mm)		
		A	B	C
300x225	12UR093 ▲	165	155	250

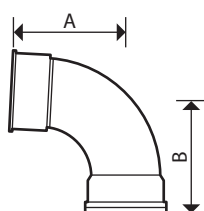
Short Radius Bends



S/S Short Radius Bend – 45°

Material: PVC-U

Nominal Size (mm)	Part Number	Dimensions (mm)	
		A	B
150	6UR163 ▲	138	65



D/S Short Radius Bend – 87.5°

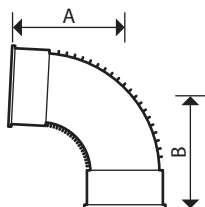
- 6UR socket x 160mm BS EN 1401 socket

Material: PVC-U

Nominal Size (mm)	Part Number	Dimensions (mm)	
		A	B
150	6UR560 ▲	265	255

Product Details

Osma UltraRib

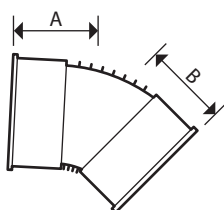


D/S Short Radius Bend – 87.5° ♦

- 225/300mm bend are long radius

Material: PVC-U* / Polypropylene†

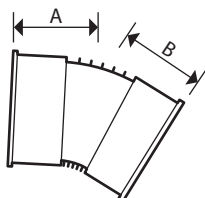
Nominal Size (mm)	Part Number	Dimensions (mm)	
		A	B
150*	6UR561 ▲	265	265
225†	9UR561 ▲	604	604
300†	12UR561 ▲	757	757



D/S Short Radius Bend – 45° ♦

Material: PVC-U* / Polypropylene†

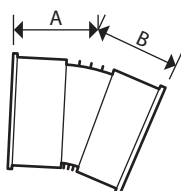
Nominal Size (mm)	Part Number	Dimensions (mm)	
		A	B
150*	6UR563 ▲	138	138
225†	9UR563 ▲	200	200
300†	12UR563 ▲	225	225



D/S Short Radius Bend – 30° ♦

Material: PVC-U* / Polypropylene†

Nominal Size (mm)	Part Number	Dimensions (mm)	
		A	B
150*	6UR566 ▲	125	125
225†	9UR566 ▲	205	205
300†	12UR566 ▲	230	230



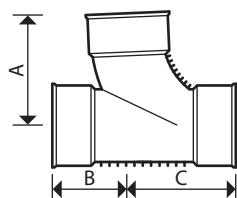
D/S Short Radius Bend – 15° ♦

Material: PVC-U* / Polypropylene†

Nominal Size (mm)	Part Number	Dimensions (mm)	
		A	B
150*	6UR567 ▲	114	114
225†	9UR567 ▲	165	165
300†	12UR567 ▲	180	180

♦ Actual product for the 9UR and 12UR sizes may differ from image shown.

Equal Junctions

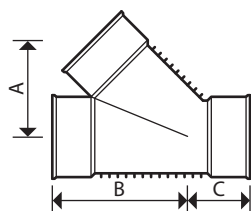


D/S Equal Junction – 87.5°

- D/S Junction to UltraRib spigot

Material: PVC-U

Nominal Size (mm)	Part Number	Dimensions (mm)		
		A	B	C
150	6UR193 ▲	246	180	229



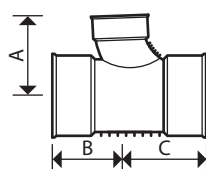
D/S Equal Junction – 45° ♦

- D/S Junction to UltraRib spigot

Material: PVC-U* / Polypropylene†

Nominal Size (mm)	Part Number	Dimensions (mm)		
		A	B	C
150*	6UR213 ▲	210	299	136
225†	9UR213 ▲	280	410	180
300†	12UR213 ▲	430	580	215

Unequal Junctions

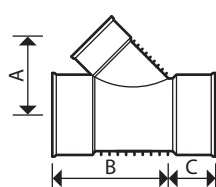


D/S Unequal Junction – 87.5°

- D/S Junction to BS EN1401 spigot

Material: PVC-U

Nominal Size (mm)	Part Number	Dimensions (mm)		
		A	B	C
150x110	6UR199 ▲	174	166	177



D/S Unequal Junction – 45° ♦

- D/S Junction to BS EN1401 spigot

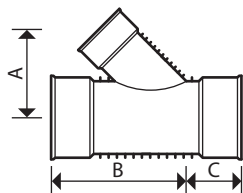
Material: PVC-U* / Polypropylene†

Nominal Size (mm)	Part Number	Dimensions (mm)		
		A	B	C
150x110*	6UR219 ▲	166	257	102
225x110†	9UR224	205	430	160
225x160†	9UR226	230	455	140
300x160†	12UR236	310	615	185

♦ Actual product for the 9UR and 12UR sizes may differ from image shown.

Product Details

Osma UltraRib



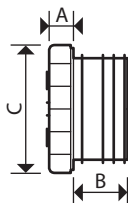
D/S Unequal Junction – 45° ♦

- D/S Junction to UltraRib spigot

Material: PVC-U* / Polypropylene†

Nominal Size (mm)	Part Number	Dimensions (mm)		
		A	B	C
225x150†	9UR227 ▲	298	455	140
300x150†	12UR237 ▲	327	615	185
300x225†	12UR240 ▲	430	580	215

Sealed Access Fittings

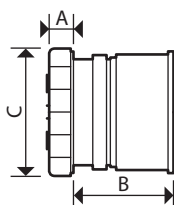


P/E Screwed Access Cover

- Allows full bore access to the sewerage system for cleaning, fits in to a standard UltraRib socket

Material: PVC-U

Nominal Size (mm)	Part Number	Dimensions (mm)		
		A	B	C
150	6UR292 ▲	41	87	196



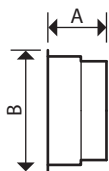
S/S Screwed Access Cover

- Allows full bore access to the sewerage system for cleaning, fits on to a standard UltraRib spigot

Material: PVC-U

Nominal Size (mm)	Part Number	Dimensions (mm)		
		A	B	C
150	6UR290 ▲	41	153	196

Socket Plug



P/E Socket Plug

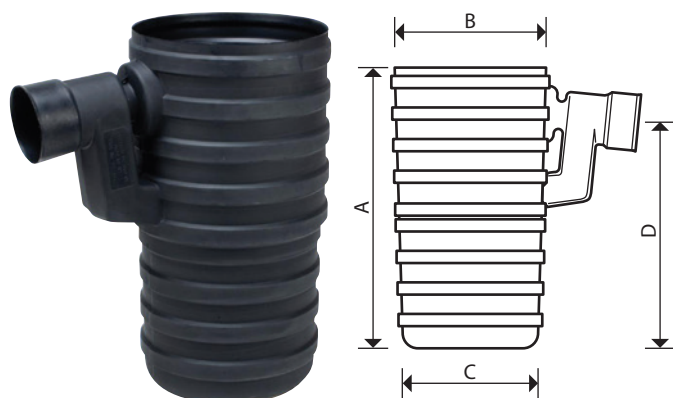
- Allows full bore access to the sewerage system for cleaning, fits in to a standard UltraRib socket

Material: PVC-U* / Polypropylene†

Nominal Size (mm)	Part Number	Dimensions (mm)	
		A	B
150*	6UR296 ▲	92	195
225†	9UR296 ▲	110	250
300†	12UR296 ▲	155	335

♦ Actual product for the 9UR and 12UR sizes may differ from image shown.

Road Gully



S/S Trapped Road Gully

- 6UR600 = 450mm diameter x 900mm deep
- 6UR590 = 450mm diameter x 750mm deep

Material: Polyethylene

Nominal Size (mm)	Part Number		Dimensions (mm)			
			A	B	C	D
150	6UR600	▲	900	465	444	720
150	6UR590	▲	760	402	368	580

Lubricant



Jointing Lubricant

- Soluble Lubricant

Nominal Size (kg)	Part Number
2.5kg tub	6UR395
5.0kg tub	6UR396

Spares – General



Ring Seal

- Spare, standard UltraRib socket

Material: EPDM

Nominal Size (mm)	Part Number
150	6UR117
225	9UR117
300	12UR117

Transport, Handling and Storage

Osma UltraRib

Resources and Planning

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

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

UltraRib pipes are manufactured from PVC-U and are about one tenth the weight of equivalent traditional pipes (See Figure 1). Nevertheless, care must be taken during transportation, 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.

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. Osma UltraRib 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.

Table 4: Pipe weights

Nominal Size (mm)	Number of 3m/6m lengths per bundle	Dimensions (mm)		Weight per bundle (kg)	
		height	width	3m	6m
150	24	655	970	172	331
225	12	730	970	187	360
300	9	966	970	210	—

Handling

Always be careful to avoid damage when handling pipe. Cold weather reduces the impact strength of PVC-U, so take extra care when handling pipe in wintry conditions.

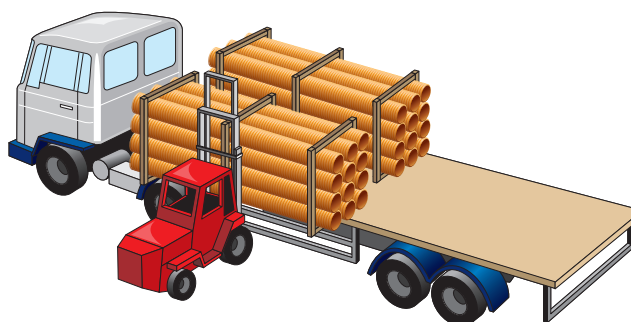
When unloading block bundles mechanically, use either nylon belt slings or fork lift trucks with smooth forks. Metal slings, hooks or chains must not come into direct contact with the pipe.

Load and unload loose pipes by hand and avoid using skids.

Figure 1: UltraRib PVC-U is approximately one tenth the weight of traditional pipes



Figure 2: Loading block bundles on to flat bed vehicle



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).

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

Sealing Rings for the majority of UltraRib fittings are supplied loose. The rings should be stored in their original packaging away from strong sunlight or weathering. They should never be placed on the ends of the pipes which are being stored.

Figure 3: Storage of loose pipes on the ground

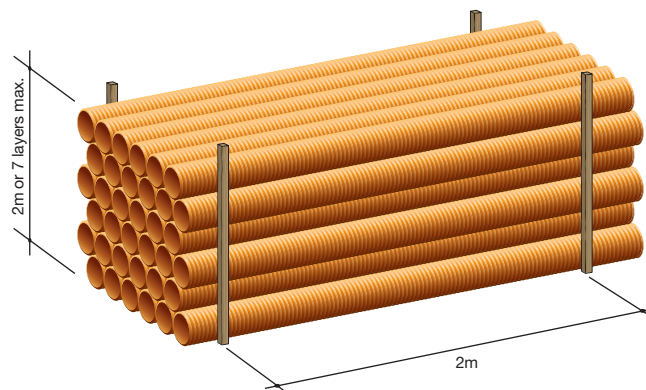
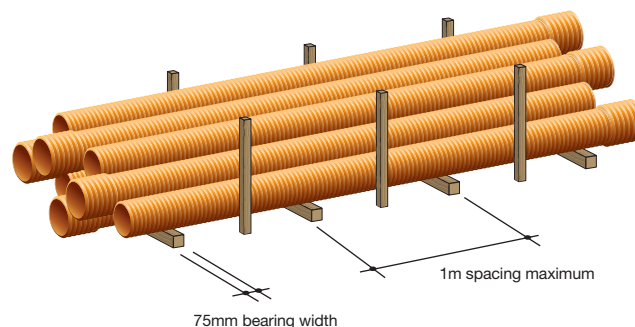


Figure 4: Storage of loose pipes on bearers



Installation Osma UltraRib

Installation Notes

The information included on this page is based on the recommendations given in BS 8000 -14: 1989, BS EN 1610: 1998, BS EN 752: 2008, Sewers for Adoption, 6th, 6A and 7th Editions and British Board of Agrément – Certificates: 98/3472 and 10/H151.

Bedding and backfill must be of the correct specification. Excavated ‘as-dug’ material may be suitable. (See BS EN 1610 and BS 8000: Part 14).

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.

Table 5: Processed granular bedding and sidefill materials for flexible pipes

Nominal Pipe Bore (mm)	Nominal maximum particle size (mm)	Material Specification see Note
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 EN 12620 or lightweight aggregates conforming to BS EN 13055-1 are suitable as processed bedding and sidefill materials.

Bedding

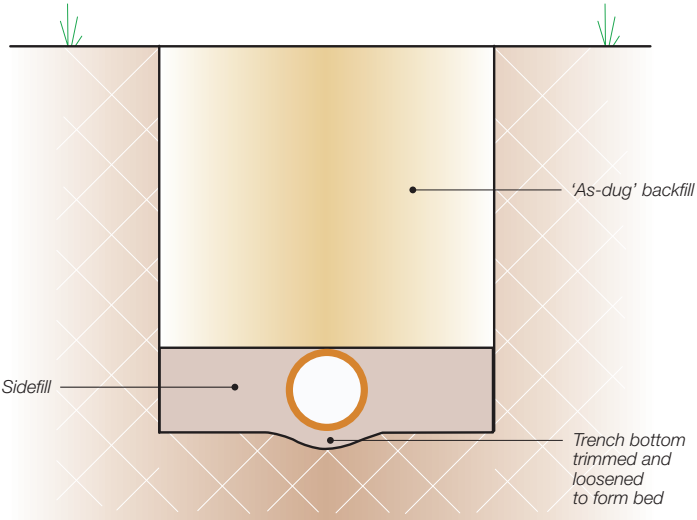
Osma UltraRib pipes laid on trench bottom

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 EN 1610 and BS 8000 -14.

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.

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

Figure 5: Osma UltraRib pipes laid on trench bottom



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.

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 EN 1610 and BS 8000: Part 14.

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

In the case of 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).

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: Osma UltraRib pipes laid on 50mm minimum of processed granular material

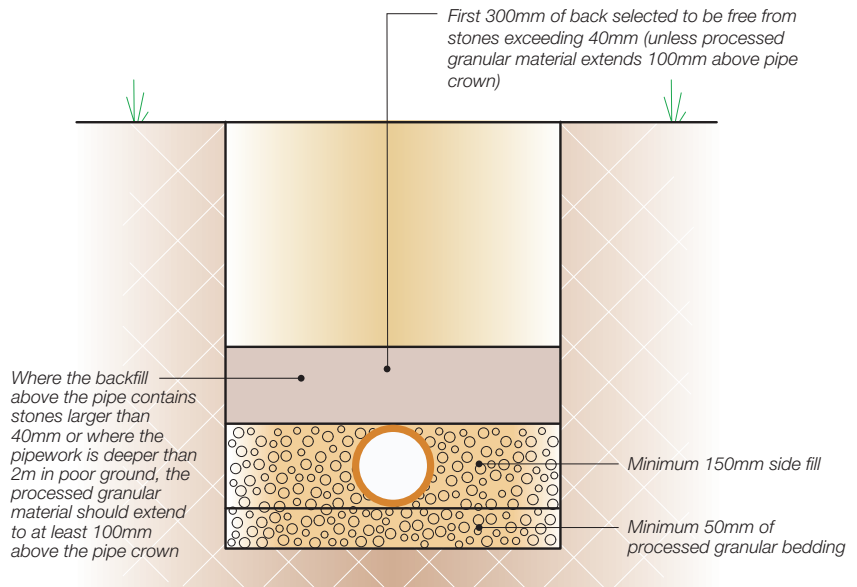
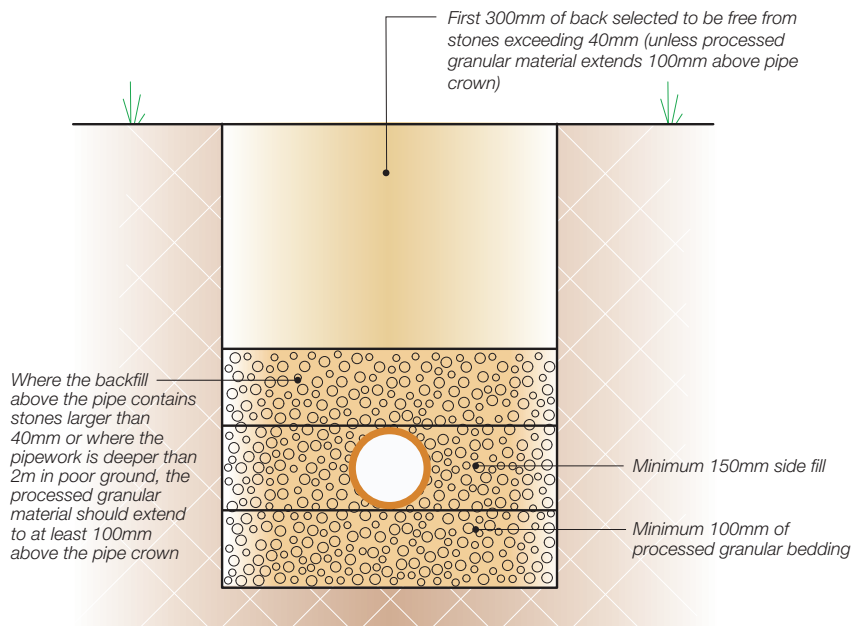


Figure 7: Osma UltraRib pipes laid on 100mm minimum of processed granular material



Installation Osma UltraRib

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, 225mm in adoptable situations, has been placed over the pipe.
4. 'As-dug' material may be backfilled in 300mm/225mm 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 bedding material, suitably tamped up to the invert level of the incoming pipe (Backdrops) or to ground level. 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.

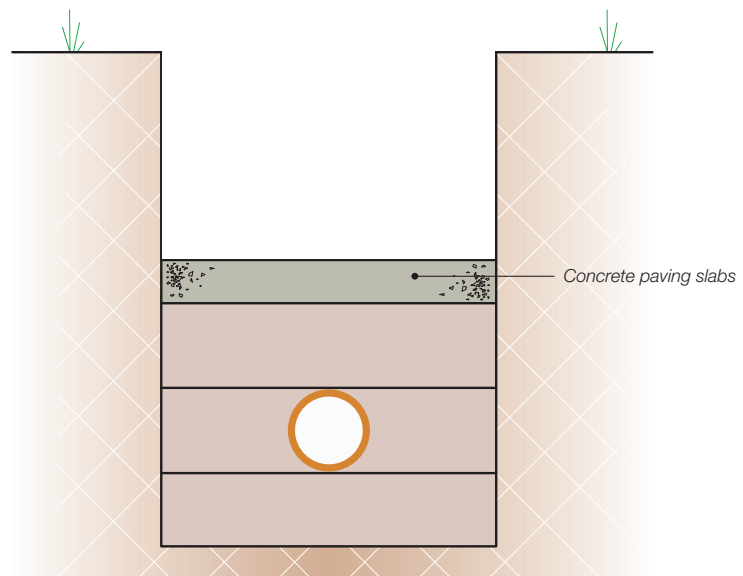
Public highways / adoptable situations

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 Figure 9) or alternatively surrounded in concrete (See Figure 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



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 (See Figure 10). These boards must be at least the width of the concrete surrounds.

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. 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

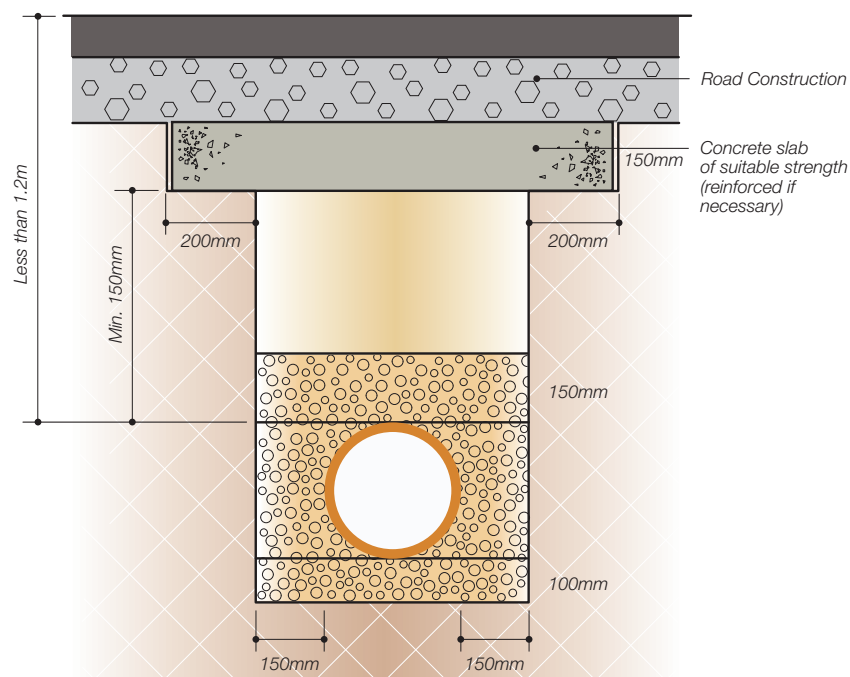
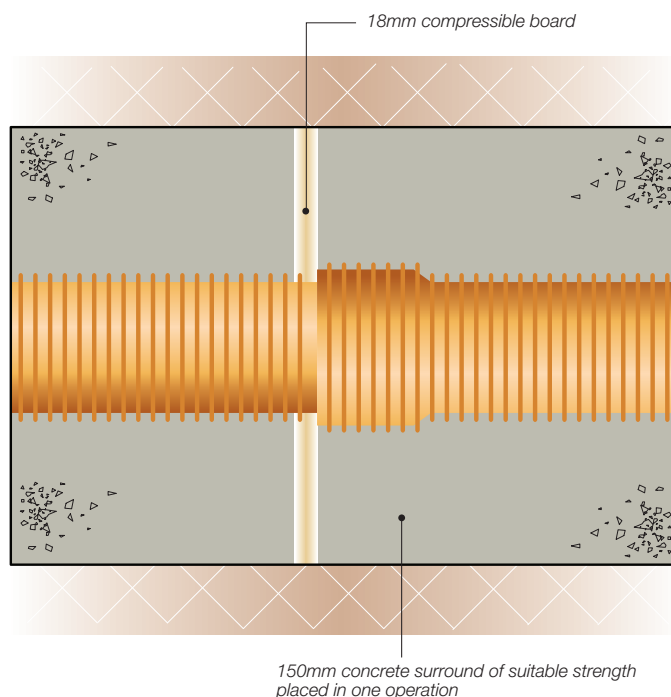


Figure 10: Pipe Protection – concrete surround



Installation Osma UltraRib

Joining

Unlike traditional methods for joining PVC-U systems, the 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 12).

The major advantages of the UltraRib joining method are:

- ③ There is no need to chamfer pipe ends
- ③ The ring seal cannot be displaced during joining
- ③ The design of the joint ensures a flush fit between the internal bore of the pipe and the fitting thus increasing its hydraulic performance

Preparation

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

Cutting

Pipe 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 11).

Joining 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 12, ie 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 13).
4. To make the joint, offer up the pipe to the socket, align pipe and push home. Alignment is important to facilitate joining.

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 14).

A good technique is to lift the pipe up by passing a rope underneath (See Figure 15). This makes it easier to align the spigot into the socket. Mechanical pulling or pushing methods are unnecessary.

Figure 11: Correct cutting position

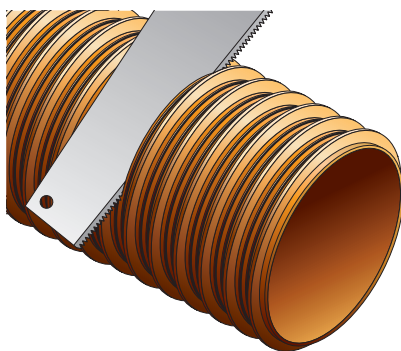


Figure 12: UltraRib Sealing Ring

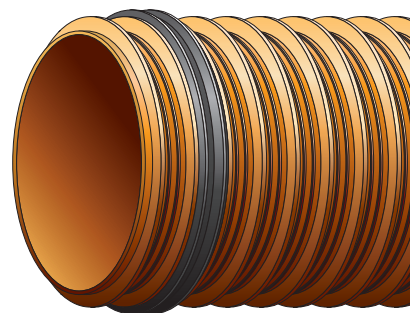


Figure 13: Applying the lubricant

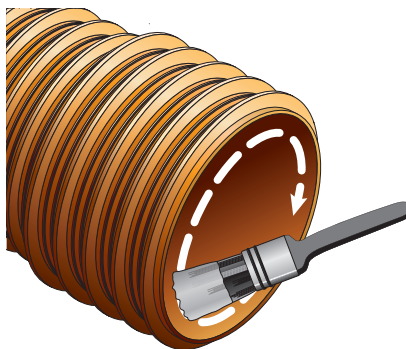


Figure 14: Protecting the pipe end

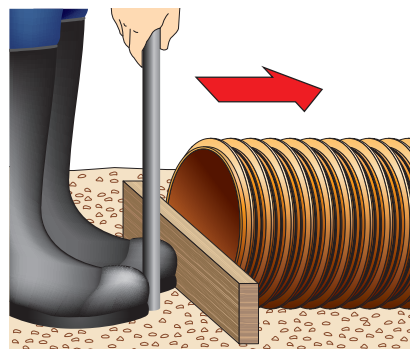


Figure 15: Aligning spigot into socket

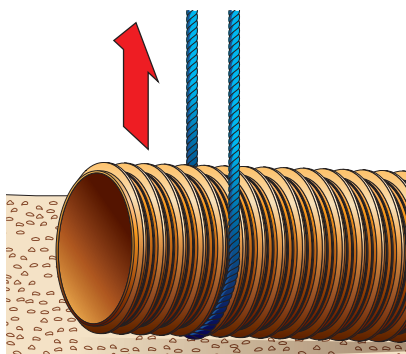
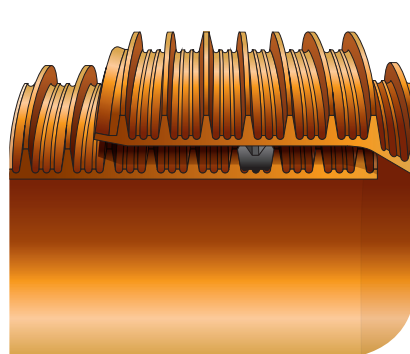


Figure 16: Section through pipe joint



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.

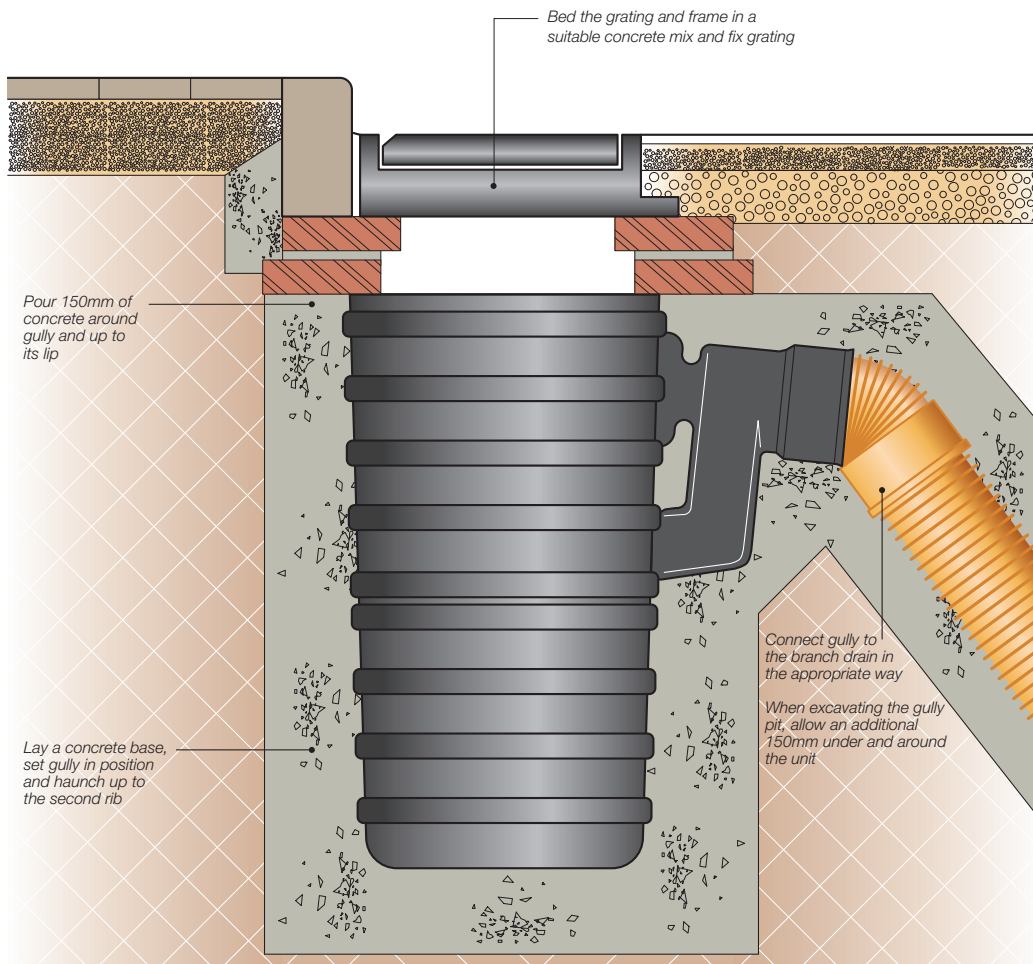
2. Correctly position the Osma UltraRib ring seal between the second and third ribs from the pipe end or on the spigot end of the Osma UltraRib S/S Bend – 45° (6UR163), ensuring that the ring seal is correctly seated and not twisted.
3. Lubricate the whole of the inside of the gully socket.
4. Offer up the pipe or bend to the socket, align and push home.

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 17).

Figure 17: Osma UltraRib Road Gully – typical installation



Installation

Osma UltraRib

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 EN 1401 socket

Lubricate spigot end of Adaptor (6UR141) and insert into 160mm BS EN 1401 Socket. Make Osma UltraRib connection in the normal way (see Figure 18 and Jointing, page 20).

Osma UltraRib spigot to BS EN 1401 spigot

Ensure spigot end of the BS EN 1401 pipe is clean cut, lubricate and push the ring seal end of the Adaptor (6UR142) fully on to the pipe withdrawing it by a minimum of 12mm. Make Osma UltraRib connection in the normal way (see Figure 19 and Jointing, page 20).

Osma UltraRib socket to BS EN 1401 spigot

Ensure spigot end of the BS EN 1401 pipe is cut clean, lubricate and push the ring seal end of the Adaptor (6UR143) fully on to the pipe withdrawing it by a minimum of 12mm. Make Osma UltraRib connection in the normal way (see Figure 20 and Jointing, page 20).

Osma UltraRib spigot to thin-wall clay spigot

Lubricate spigot end of clay pipe and push the ring seal end of Adaptor (6UR129) fully on to the pipe. Make Osma UltraRib connection in the normal way (see Figure 21 and Jointing, page 20).

Figure 18: Connection to BS EN 1401 socket

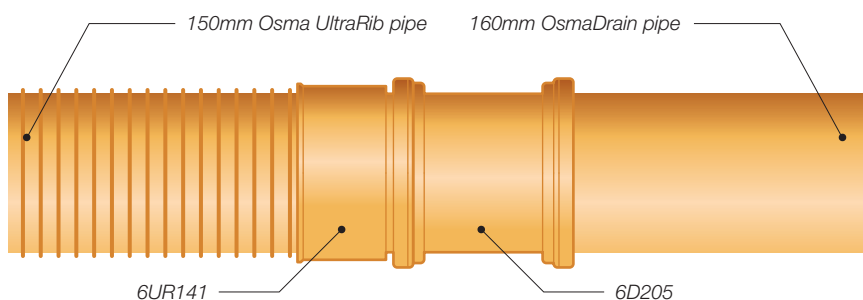


Figure 19: Connection to BS EN 1401 spigot

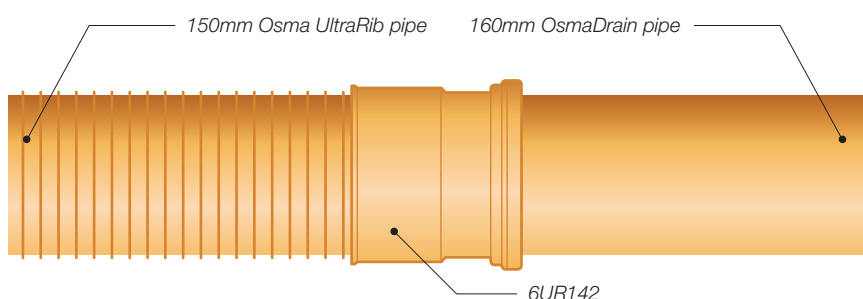


Figure 20: Connection to BS EN 1401 spigot

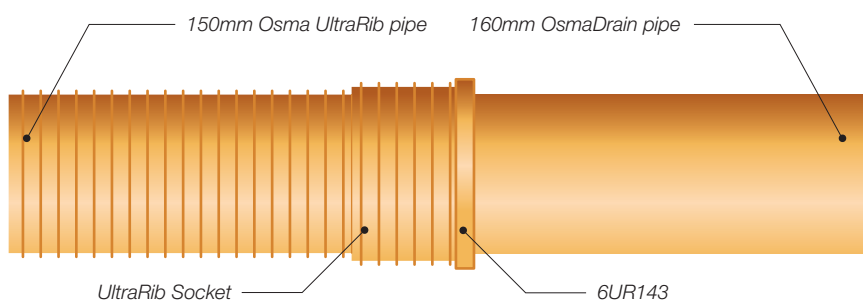
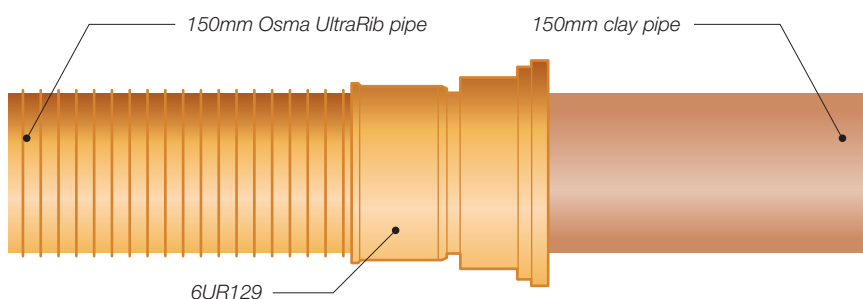


Figure 21: Connection to thin-wall clay spigot



Testing, Safety and Maintenance

Osma UltraRib

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 8000: Part 14: 1989 Clause 5.1.4.3).

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 gullied 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 and Sewers for Adoption 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 Osma UltraRib 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.

Water jetting

For guidance on good working practice when using water jetting equipment for the unblocking and cleaning of all types of drains and sewers refer to the WRc Sewer Jetting Code of Practice. 2nd Edition, Sections 5.4.2., 5.4.3. and 5.4.4.

Copies are available from: Publications, WRc plc, Frankland Road, Blagrove, Swindon, SN5 8YF

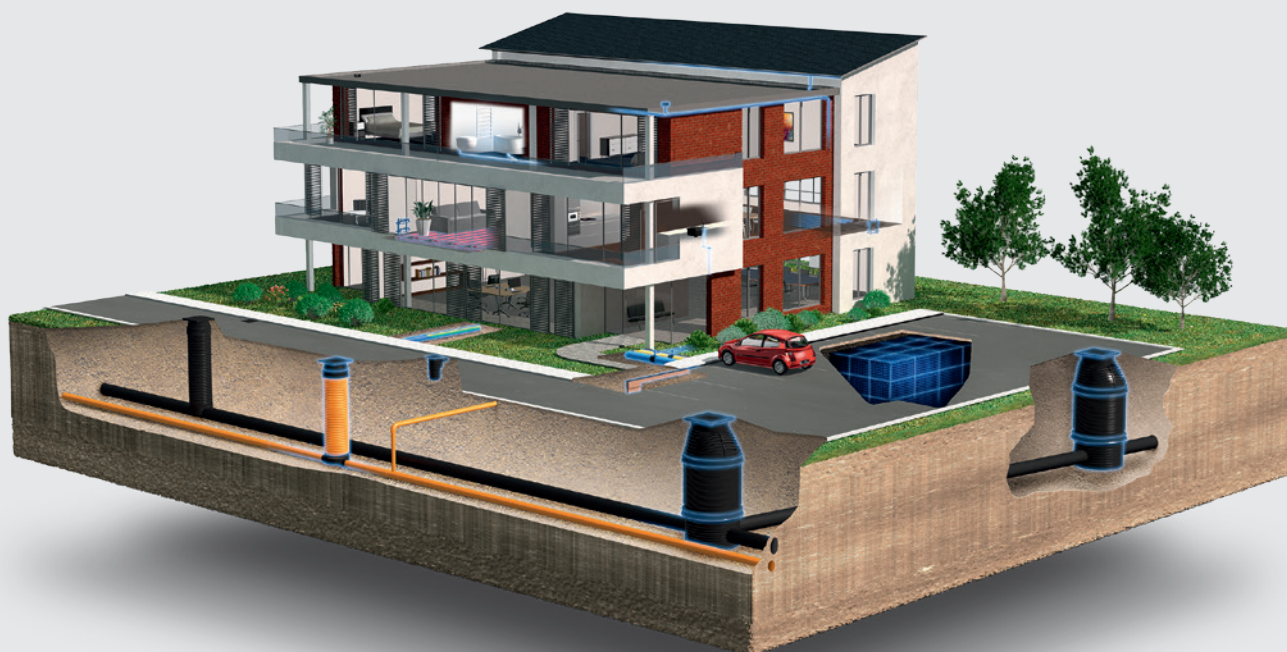
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Notes

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