wavin

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Below Ground Drainage Systems: UltraRib

Product Guide

FOR RESIDENTIAL,
COMMERCIAL AND
INDUSTRIAL APPLICATIONS

Intelligent Solutions for Below Ground Projects

Osma UltraRib System

Contents

Wavin

PVC water pipes were developed by the Overijssel Water Board in the early 1950s.

Wavin is credited with inventing and pioneering the use of plastic pipe for water distribution and for over forty years, has lead the way in the development and production of unplasticized polyvinyl chloride (PVC-U) underground drainage and sewerage systems.

Owned equally by the Overijssel Water Authority in Holland and CVC, the company has grown spectacularly since its formation in 1955 and now employs over 4500 people operating within 26 countries with a rapidly developing base in Central and Eastern Europe.

Here in the UK, utilising the Osma brand name, Wavin Plastics Limited has become market leader in both above and below ground drainage. Over 500 people are employed on a 30 acre site in Chippenham, Wiltshire, in design, manufacture and distribution.

The highly automated factory contains 35 microprocessor controlled injection moulding machines manufacturing fittings while 8 extrusion lines produce pipe and gutters. Wavin prides itself on the quality of these products and the services it provides. As a result, Wavin has achieved BS EN ISO 9002 (BS 5750) Registered Firm Status and is the first in the plastic pipes industry to be accredited with BS EN ISO 14001 (BS 7750), the new British Standard for environmental management.

Wherever possible, Wavin ensures that its products are manufactured to a British Standard or, where no standard exists, the components are independently assessed by the British Board of Agrément.

In addition to supplying the highest quality products, Wavin also offers unrivalled service levels including an extensive Computer Aided Design service for specifiers. Sixteen workstations provide drawings showing optimum drainage layouts together with a detailed schedule of components. This is a service which Wavin continues to offer free to the construction industry.

The Osma UltraRib system is Kitemarked under the BSI Certification Scheme.

The Osma UltraRib System, Material, Standards and Acceptance

1. 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 Water Industry Specification (WIS) 4-35-01 and Kitemarked under the BSI Certification Scheme. All Osma UltraRib fittings are covered by a British Board of Agrément Certificate.

1.1 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, watetight joint with two added benefits:

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

1.2 Fitting Design

The majority of Osma UltraRib fittings are socketed to provide total flexibility in use and to reduce installation time on site. Each Osma UltraRib component has concentric, external reinforcing ribs throughout its body section. 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.

2. THE 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.

3. STANDARDS

British Standards Institution

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

WIS 4-35-01 (July 2000: Issue 1) - Specification for thermoplastics structured wall pipes, joints and couplers with a smooth bore for gravity sewers for the size range 150-900 inclusive

British Board of Agrément

Osma UltraRib systems have been awarded the following certificates:

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

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

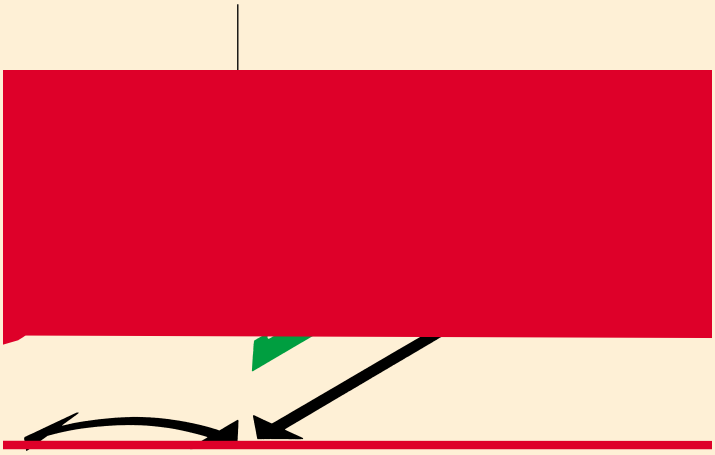
98/3472 - UltraRib Gravity Sewerage System - 150mm, 225mm and 300mm

4. ACCEPTANCE

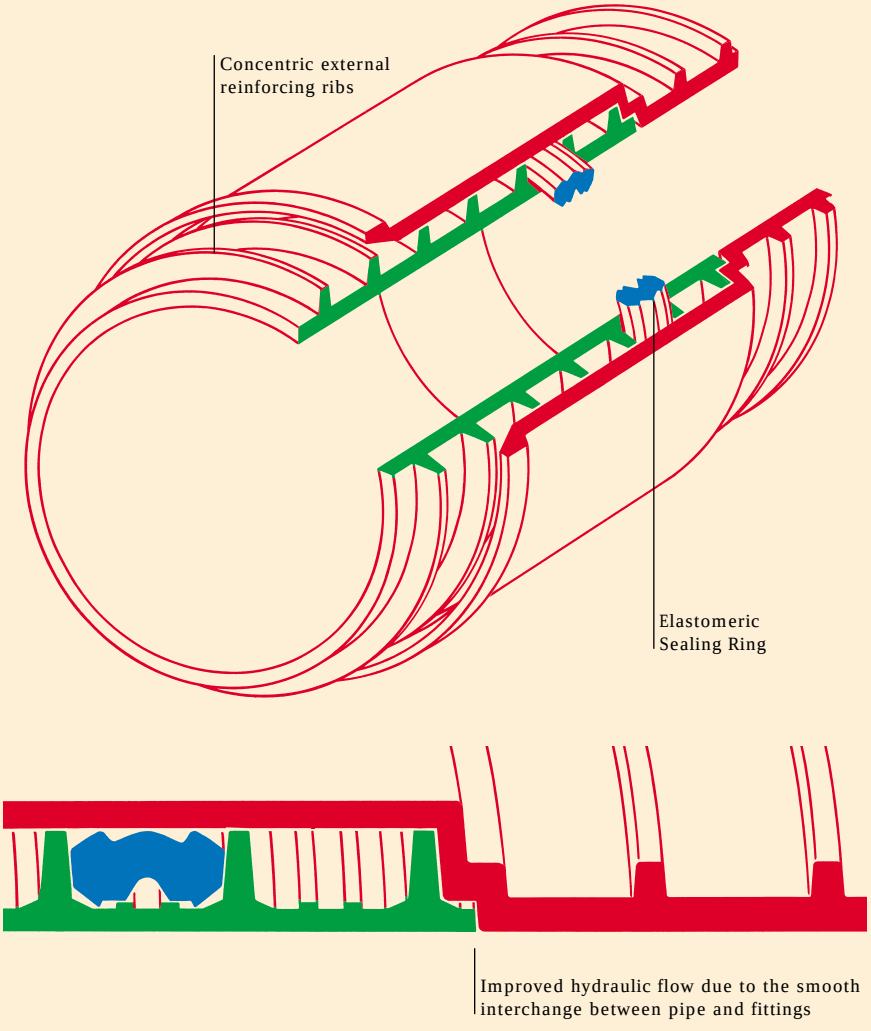
Osma UltraRib systems are included in the following publications:-

- Sewers for Adoption, 4th Edition, under its generic name Solid Wall, Concentric External Rib - Reinforced uPVC Sewer Pipe.
- Civil Engineering Specification for the Water Industry, under its generic name Solid Wall, Concentric External Rib-Reinforced uPVC Sewer Pipe.
- Specification for Highway Works, series 500 Drainage and Service Ducts.
- Standard Specification for Water and Sewerage Schemes, Third Edition under its generic name Solid Wall, Concentric External Rib - Reinforced uPVC Sewer Pipe.

Pipe Technology and Joint Design



The unique UltraRib high performance joint



General Information

5. GENERAL INFORMATION

5.1 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.

5.2 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.

5.3 Dimensions

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

5.4 Symbols

a) British Standard Kitemark

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

b) British Board of Agrément

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

5.5 Materials

a) Pipes and Fittings

All pipe is manufactured from unplastized Polyvinyl Chloride (PVC-U). Fittings are either manufactured from Polypropylene (PP) or PVC-U. Polyethylene (PE) is used for the range of Manhole Bases and Road Gully.

b) Sealing Rings

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

5.6 Colour

Most Pipe and Fittings - Golden Brown

Ring Seals - Black

5.7 Sealing Rings

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.

5.8 Supply

All Osma UltraRib systems are supplied through a nationwide network of merchant distributors. For further information contact the Sales Services Department at Chippenham.

5.9 Technical Advice

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

5.10 Literature

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

- Osma Below Ground Drainage Systems Trade Price List.
- Osma UltraRib Design Manual.
- Osma Handbook of Drainage.
- Wavin Rainwater & Stormwater Management Systems.
- Wavin Underground Drainage, Sewerage & Civils Systems.
- Wavin Twinwall, Surface & Stormwater Drainage systems.
- Wavin PolyChannel Surface Water Drainage systems.

5.11 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.

5.12 Head Office and Sales Enquiries

Wavin Plastics Limited,
Parsonage Way, Chippenham,
Wiltshire, SN15 5PN
Telephone: (01249) 766600.
Fax: (01249) 443473 - Sales Office.

Pipe Weights, Pipe and Socket Dimensions

PIPE WEIGHTS AND DIMENSIONS

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

The Osma UltraRib range of pipe comply with the requirements of WIS 4-35-01 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	2.0	6UR.073
225	3	4.3	9UR.073
300	3	7.2	12UR.073

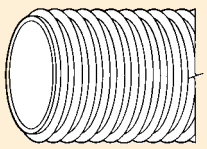
Single Socket (S/S)

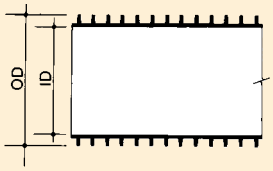
Nominal Size (mm)	Length (m)	Weight (kg/m)	Part Number
150	3	2.1	6UR.043
	6		6UR.046
225	3	4.5	9UR.043
	6		9UR.046
300	3	7.6	12UR.043

Table 2. Pipe and Socket Dimensions

Plain Ended Pipe (P/E)

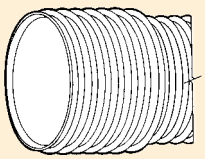
Nominal Size (mm)	OD	ID
150	170	152
225	250	226
300	335	300

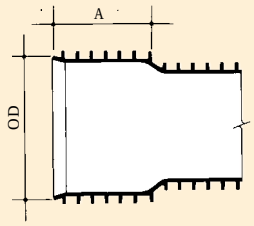




Single Socketed Pipe (S/S)

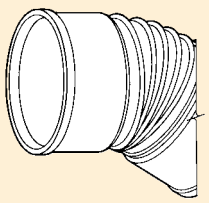
Nominal Size (mm)	OD	A
150	190	96
225	275	118
300	372	136

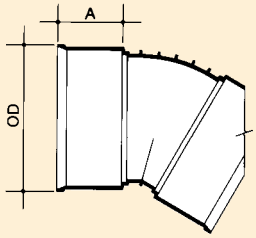




Osma UltraRib Socket

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





Product Selector

PRODUCT SELECTOR

The Product Selector lists the range of pipes and fittings detailed in the Product Range. Since the development of the UltraRib range is continually being extended, contact the Technical Design Department if a product is required which is not shown in the table.

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/½S	Fittings with half-spigot or half-socket ends.

Table 3. Product Selector

Product Description		Nominal Size (mm)	150	225	300
Pipe	Plain Ended (P/E) - 3 metre		☐	☐	☐
	Single Socket (S/S) - 3 metre		☐	☐	☐
	Single Socket (S/S) - 6 metre		☐	☐	-
Couplers	D/S Slip Coupler		☐	☐	☐
	D/S Pipe Coupler		☐	☐	☐
Adaptors	S/S Adaptor to Cast Iron and Clay Spigot		☐	-	-
	D/S Adaptor to Clay or Concrete Spigot		☐	☐	☐
	D/S Adaptor to thinwall Clay Spigot		☐	-	-
	S/S Adaptor - 6UR Socket x 160mm BS EN 1401 Spigot		☐	-	-
	D/S Adaptor - 6UR Socket x 160mm BS EN 1401 Socket		☐	-	-
	S/S Adaptor - 6UR Spigot x 160mm BS EN 1401 Socket		☐	-	-
Level Invert Reducers	S/S Reducer - to OsmaDrain BS EN 1401 Spigot		☐	-	-
	S/S Reducer - to UltraRib Spigot		-	☐	☐
Short Radius Bends	D/S - 87½° - 6UR Socket x 160mm BS EN 1401 Socket		☐	-	-
	D/S - 87½°		☐	☐	☐
	D/S - 45°		☐	☐	☐
	D/S - 30°		☐	☐	☐
	D/S - 15°		☐	☐	☐
Junctions	D/S Equal - 87½° - to UltraRib Spigot		☐	-	-
	D/S Equal - 45° - to UltraRib Spigot		☐	☐	☐
	D/S Unequal - 87½° - to BS EN 1401 Spigot		☐	-	-
	D/S Unequal - 45° - to BS EN 1401 Spigot		☐	☐	☐
	D/S Unequal - 45° - to UltraRib Spigot		-	☐	☐
	D/S Unequal Slip Junction - 45° - to UltraRib Spigot		-	☐	☐
Inspection Chambers	D/S Equal - 450mm diameter		☐	-	-
	D/S Unequal - 450mm diameter		☐	-	-
Manhole Bases	P/E Equal - 750mm diameter		☐	☐	-
	P/E Unequal - 750mm diameter		☐	☐	-
Sealed Rodding Access Fittings	P/E Screwed Access Cover		☐	-	-
	S/S Screwed Access Cover		☐	-	-

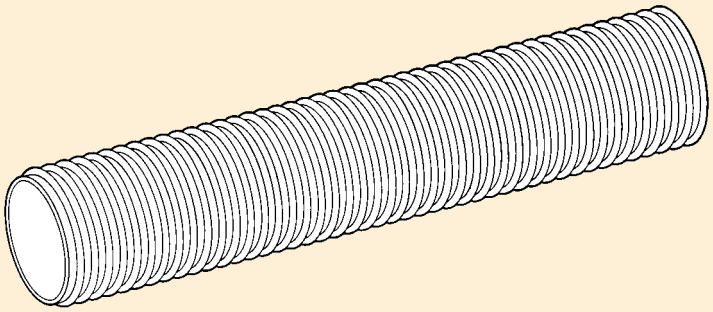
Product Selector continued

Table 3. Product Selector continued

Product Description		Nominal Size (mm)	150	225	300
Socket Plug	P/E Socket Plug		☐	☐	☐
Channel Fittings	P/E Channel Access Pipe		☐	☐	☐
	SW/½S Channel Access Pipe		☐	☐	-
	S/S Adjustable Channel Branch Bend - 45°		☐	-	-
	S/S Adjustable Channel Branch Bend - 87½°		☐	-	-
	SW/½S Short Radius Channel Bend - 87½°		☐	☐	-
	S/S Adjustable Channel Branch Bend - 45°		☐	☐	-
	S/S Adjustable Channel Branch Bend - 30°		☐	☐	-
	S/S Adjustable Channel Branch Bend - 15°		☐	☐	-
	SW/½S Equal Channel Access Junction - 45°		☐	☐	-
	SW/½S Unequal Channel Access Junction - 45°		☐	☐	-
	SW/S Channel Access Bend - Short - 45°		☐	-	-
	SW/S Channel Access Bend - Long - 45°		☐	☐	-
Road Gully	S/S Road Gully - 450mm diameter x 900mm invert		☐	-	-
Accessories	Joint Lubricant		Suitable for use with all sizes		
	Inflatable Testing Plug		☐	-	-

Pipe

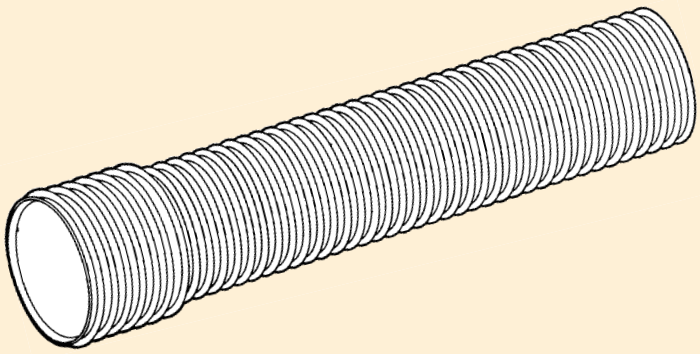
Pipe



P/E Pipe - 3 metre

Nominal Size	Part Number	
150	6UR.073	a
225	9UR.073	a
300	12UR.073	a

Material: PVC-U



S/S Pipe - 3 metre

Nominal Size	Part Number	
150	6UR.043	a
225	9UR.043	a
300	12UR.043	a

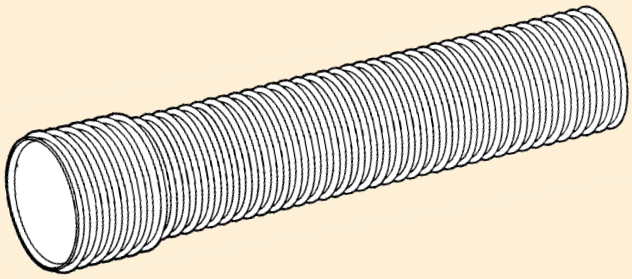
S/S Pipe - 6 metre

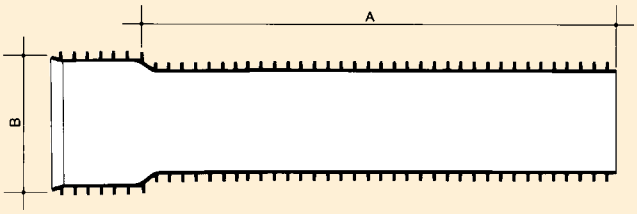
Nominal Size	Part Number	
150	6UR.046	a
225	9UR.046	a

Material: PVC-U

Rocker Pipe and Couplers

Rocker Pipe



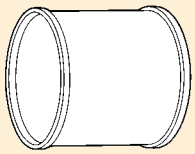


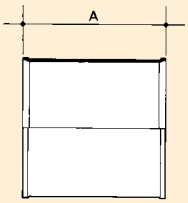
S/S Rocker Pipe
- 600mm effective length

Nominal Size	Part Number		A	B
150	6UR.869	a	600	190
225	9UR.869	a	600	275
300	12UR.869	a	600	372

Material: PVC-U

Couplers

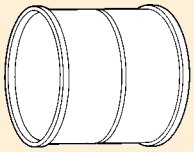


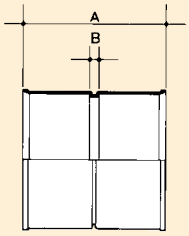


D/S Slip Coupler
- for new branch entry connections and repairs

Nominal Size	Part Number	A
150 ■	6UR.105	185
225 ▲	9UR.105	240
300 ▲	12UR.105	325

Material: ■ PVC-U ▲ PP





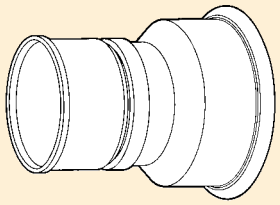
D/S Pipe Coupler
- for jointing pipe

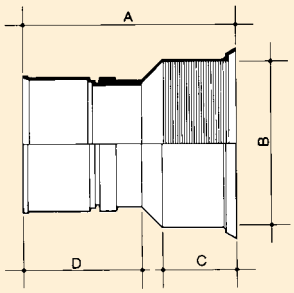
Nominal Size	Part Number	A	B
150 ■	6UR.205	185	12
225 ▲	9UR.205	241	12
300 ▲	12UR.205	301	15

Material: ■ PVC-U ▲ PP

Adaptors

Adaptors

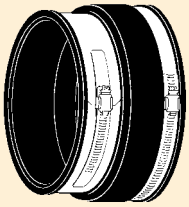


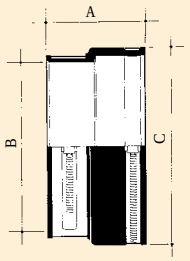


S/S Adaptor
- to cast iron and clay spigot

Nominal Size	Part Number	A	B	C	D
150	6UR.128	275	216	95	154

Material: PVC-U

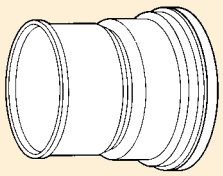


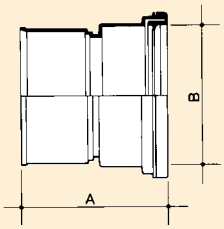


D/S Adaptor
- to clay or concrete spigot

Nominal Size	Part Number	A	B	C (min)	C (max)
150	6UR.106 a	150	170	180	200
225	9UR.109	150	250	260	285
300	12UR.112	190	335	355	385

Material: EPDM

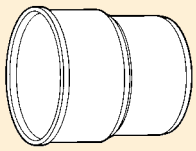


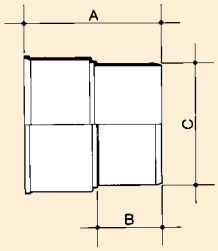


D/S Adaptor
- to thinwall clay spigot

Nominal Size	Part Number	A	B
150	6UR.129	193	180

Material: PVC-U

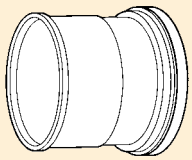


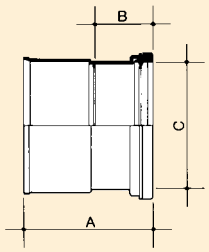


S/S Adaptor
- 6UR socket x 160mm BS EN 1401 spigot

Nominal Size	Part Number	A	B	C
150	6UR.141	180	84	160

Material: PVC-U

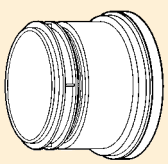


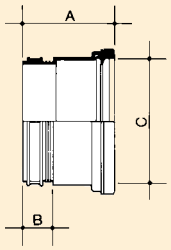


D/S Adaptor
- 6UR socket x 160mm BS EN 1401 socket

Nominal Size	Part Number	A	B	C
150	6UR.142	170	76	161

Material: PVC-U





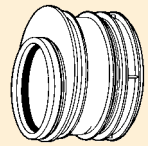
S/S Adaptor
- 6UR spigot x 160mm BS EN 1401 socket

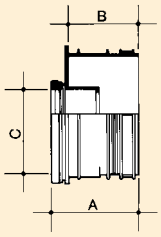
Nominal Size	Part Number	A	B	C
150	6UR.143	121	42	161

Material: PVC-U

Reducers and Short Radius Bends

Reducers

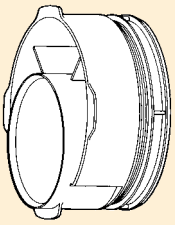


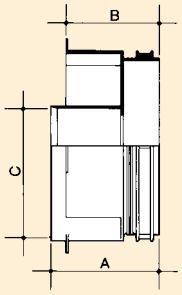


S/S Level Invert Reducer
- to OsmaDrain BS EN 1401 spigot

Nominal Size	Part Number	A	B	C
150 x 110	6UR.099	115	95	111

Material: PVC-U



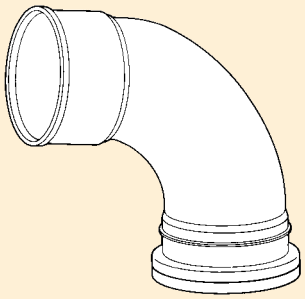


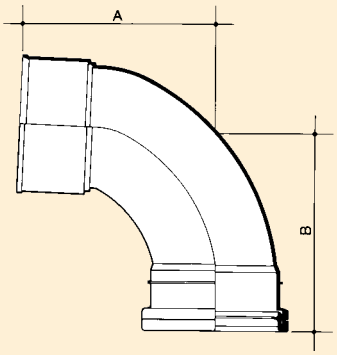
S/S Level Invert Reducer
- to UltraRib spigot

Nominal Size	Part Number	A	B	C
225 x 150	9UR.095	142	122	170
300 x 225	12UR.093	165	155	250

Material: PP

Short Radius Bends

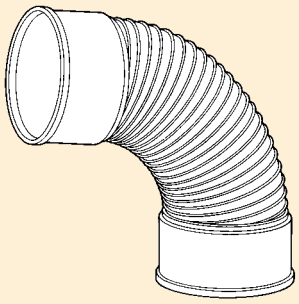


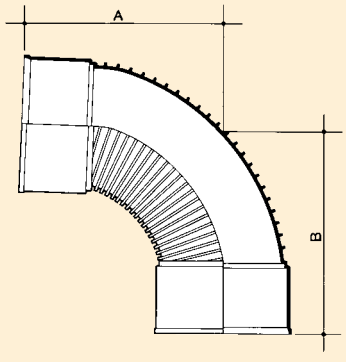


D/S Short Radius Bend - 87½°
- 6UR socket x 160mm BS EN 1401 socket

Nominal Size	Part Number	A	B
150	6UR.560	265	255

Material: PVC-U

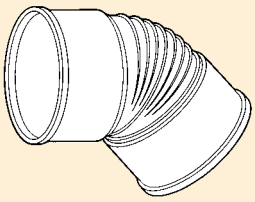


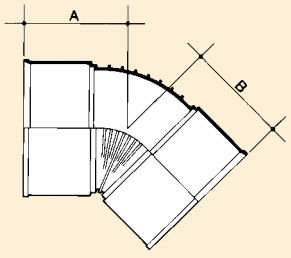


D/S Short Radius Bend - 87½°

Nominal Size	Part Number	A	B
150 ■	6UR.561	265	265
225 ▲	9UR.561	300	300
300 ▲	12UR.561	365	365

Material: ■ PVC-U ▲ PP





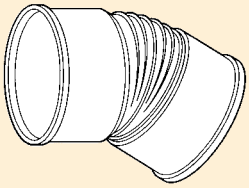
D/S Short Radius Bend - 45°

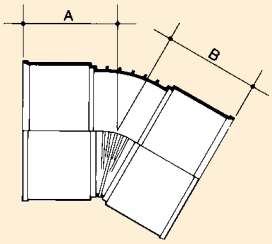
Nominal Size	Part Number	A	B
150 ■	6UR.563	138	138
225 ▲	9UR.563	200	200
300 ▲	12UR.563	225	225

Material: ■ PVC-U ▲ PP

Short Radius Bends continued and Equal Junctions

Short Radius Bends continued

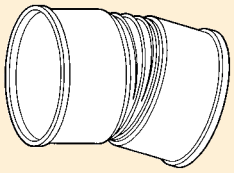


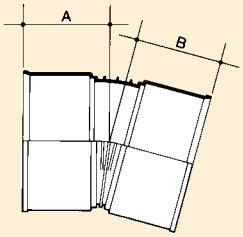


D/S Short Radius Bend - 30°

Nominal Size	Part Number	A	B
150 ■	6UR.566	125	125
225 ▲	9UR.566	205	205
300 ▲	12UR.566	230	230

Material: ■ PVC-U ▲ PP



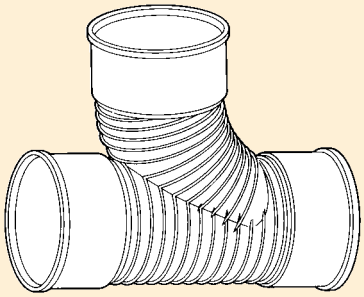


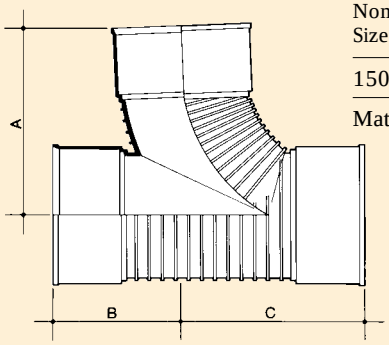
D/S Short Radius Bend - 15°

Nominal Size	Part Number	A	B
150 ■	6UR.567	114	114
225 ▲	9UR.567	165	165
300 ▲	12UR.567	180	180

Material: ■ PVC-U ▲ PP

Equal Junctions

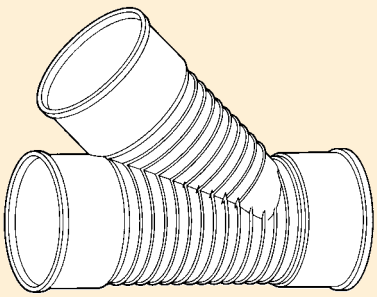


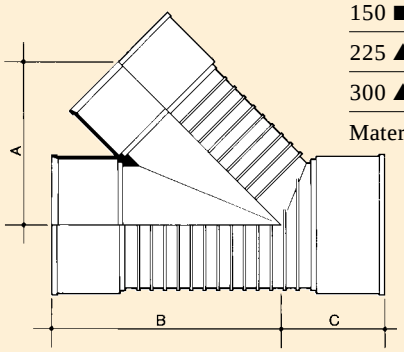


D/S Equal Junction - 87½°
- to UltraRib spigot

Nominal Size	Part Number	A	B	C
150	6UR.193	246	180	229

Material: PVC-U





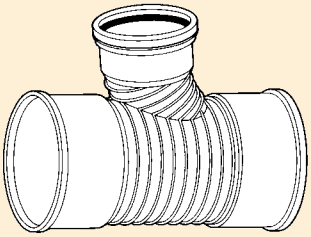
D/S Equal Junction - 45°
- to UltraRib spigot

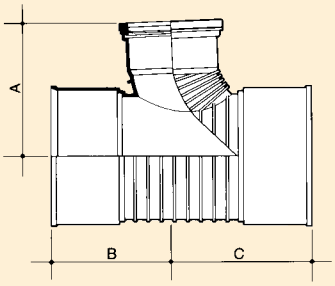
Nominal Size	Part Number	A	B	C
150 ■	6UR.213	210	299	136
225 ▲	9UR.213	280	410	180
300 ▲	12UR.213	430	580	215

Material: ■ PVC-U ▲ PP

Unequal Junctions

Unequal Junctions

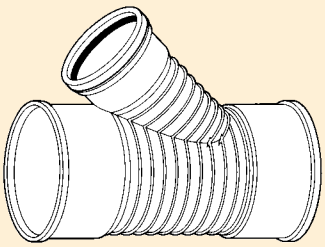


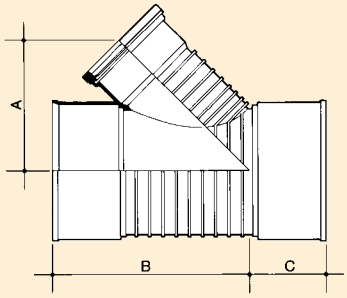


D/S Unequal Junction - 87½°
- to BS EN 1401 spigot

Nominal Size	Part Number		A	B	C
150 x 110	6UR.199	⌓	174	166	177

Material: PVC-U

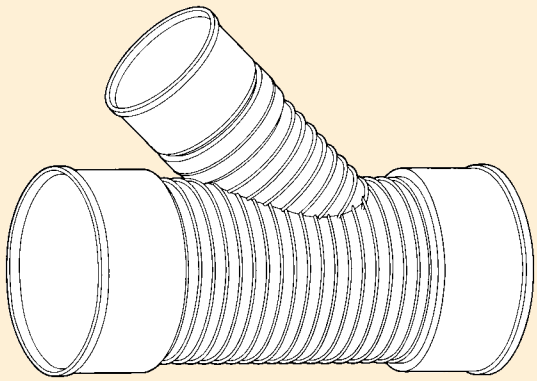




D/S Unequal Junction - 45°
- to BS EN 1401 spigot

Nominal Size	Part Number		A	B	C
150 x 110 ■	6UR.219	⌓	166	257	102
225 x 110 ▲	9UR.224	⌓	205	430	160
300 x 160 ▲	9UR.226	⌓	230	455	140
300 x 160 ▲	12UR.236	⌓	310	615	185

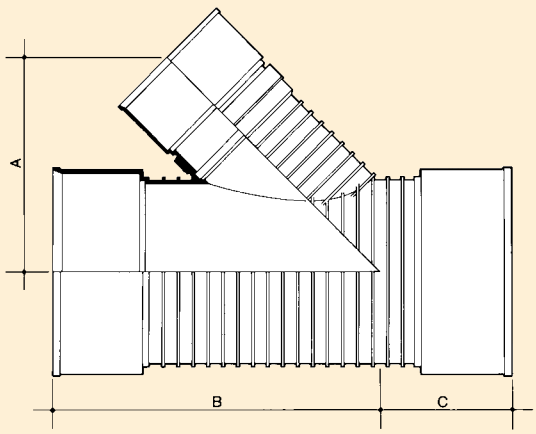
Material: ■ PVC-U ▲PP



D/S Unequal Junction - 45°
- to UltraRib spigot

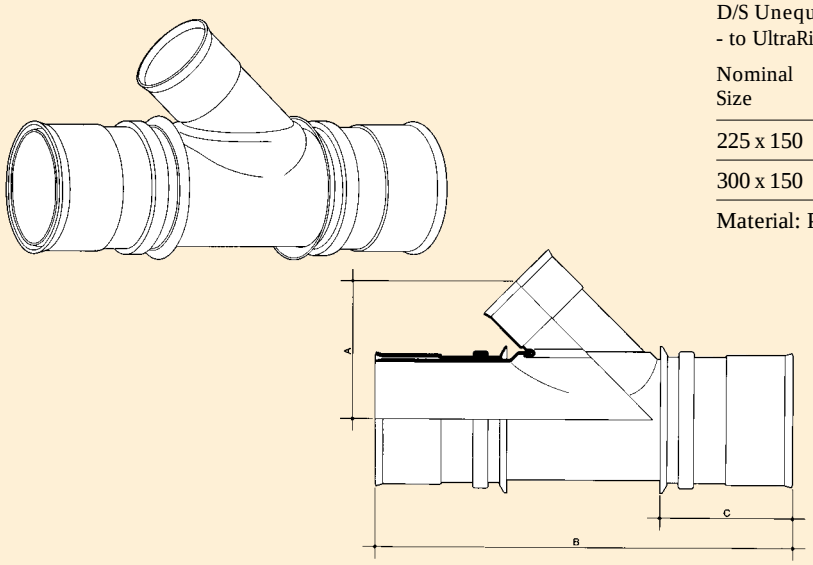
Nominal Size	Part Number		A	B	C
225 x 150	9UR.227	⌓	298	455	140
300 x 150	12UR.237	⌓	327	615	185
300 x 225	12UR.240	⌓	430	580	215

Material: PP



Slip Junction and Cover and Frame

Slip Junction

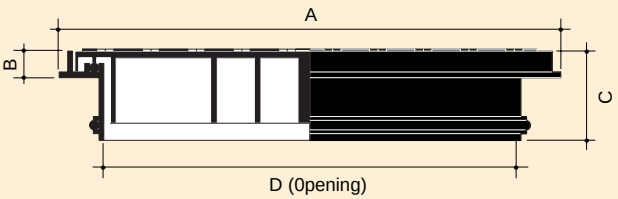


D/S Unequal Slip Junction - 45°
- to UltraRib spigot

Nominal Size	Part Number	A	B	C
225 x 150	9UR.229	270	855	270
300 x 150	12UR.239	300	930	300

Material: PVC-U

Polypropylene Cover and Frame



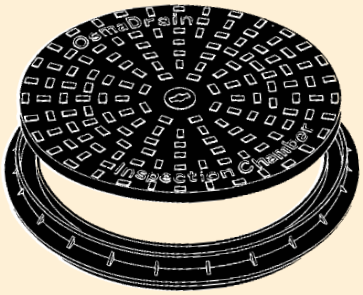
Polypropylene, Sealed, Square Cover and Frame
- suitable for use with foot traffic only. When surrounded by a concrete plinth, can be used in situations with loading up to 35kN (3.5 Tonnes) i.e. domestic driveways.

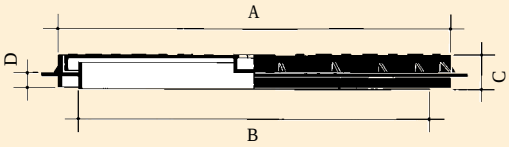
Nominal Size	Part Number	A	B	C	D
-	4D.943 a	534	31	98	435

Material: Polypropylene

Covers and Frames continued

Covers and Frames continued

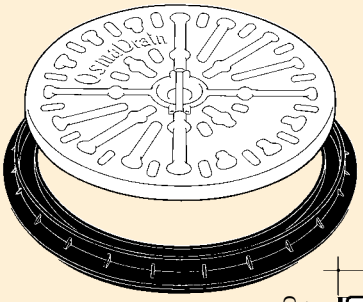


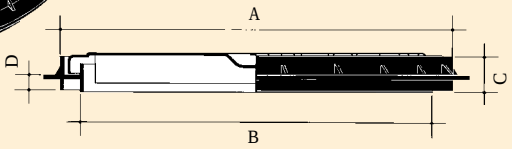


DI Cover and Frame
- Class BS EN 124-B125 Medium Duty, suitable for use in situations requiring a loading up to 125 kN (12.5 Tonnes), where the frame of the cover is supported by a concrete plinth, eg car parks and service roads.

Nominal Size	Part Number	A	B	C	D
-	4D.942	510	450	46	21

Material: Ductile Iron

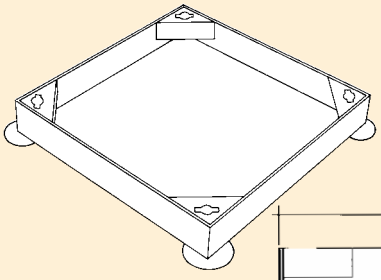


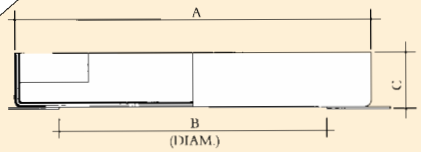


Steel Cover and Polypropylene Frame
- suitable for use in situations requiring a loading up to 25kN (2.5 Tonnes), where the frame of the cover is supported by a concrete plinth.

Nominal Size	Part Number	A	B	C	D
-	4D 944	510	450	46	21

Material: Steel/Polypropylene

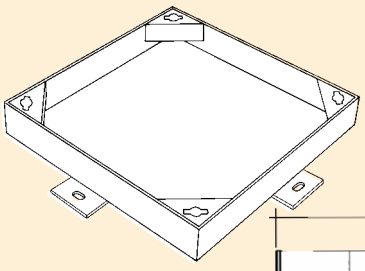


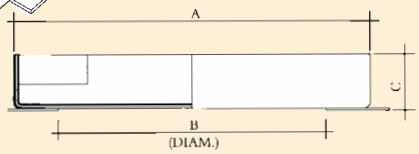


Square Recessed Steel Cover and Frame
- for optimal surface finish using block paviors/concrete, suitable for use in situations requiring a loading upto 25kN (2.5 Tonnes), where the frame of the cover is supported by a concrete plinth.

Nominal Size	Part Number	A	B	C
-	4D 945	534	450	80

Material: Pressed Steel





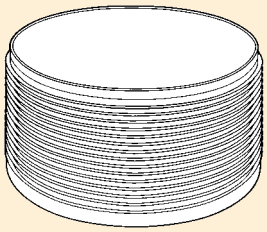
Square Recessed Steel Cover and Frame
- sealed, for optimal surface finish in internal situations requiring a loading upto 25kN (2.5 Tonnes), where the frame of the cover is supported by a concrete plinth. eg garages.

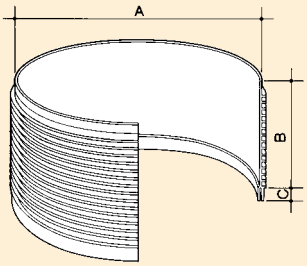
Nominal Size	Part Number	A	B	C
-	4D 946	534	450	52

Material: Pressed Steel

Inspection Chambers

Inspection Chambers

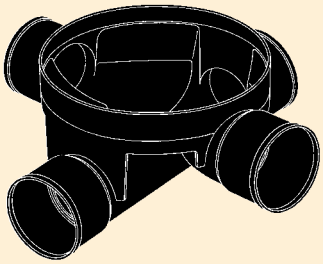




Inspection Chamber Shaft - 450mm diameter
- cut shaft on site to required height

Nominal Size	Part Number	A	B	C
-	4D.925 a	475	230	25

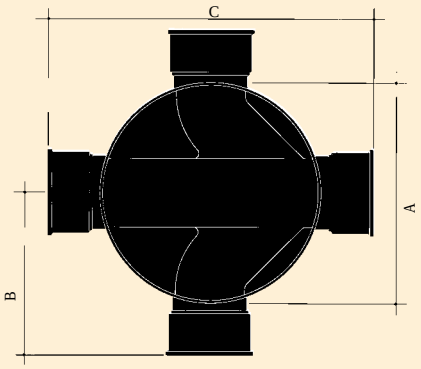
Material: PP

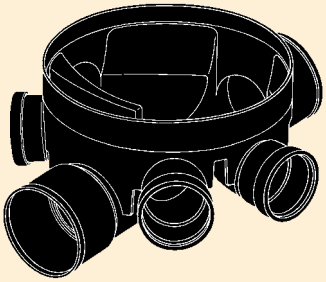


D/S Equal Inspection Chamber Base - 450mm dia
- 150mm straight main channel with two 150mm x 90° right/left hand branch entries. Supplied with 1 blank-off plug for use in unused side entry.

Nominal Size	Part Number	Invert Depth A	B	C
160	6UR.928 a	270 480	355	710

Material: PP

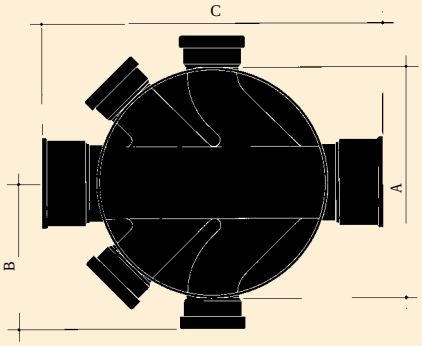




D/S Unequal Inspection Chamber Base - 450mm dia
- 150mm straight main channel with four 110mm (2 x 45° and 2 x 90°) right/left hand branch entries. Supplied with 3 blank-off plugs for use in unused side entry.

Nominal Size	Part Number	Invert Depth A	B	C
150 x 110	6UR.929 a	270 480	315	710

Material: PP



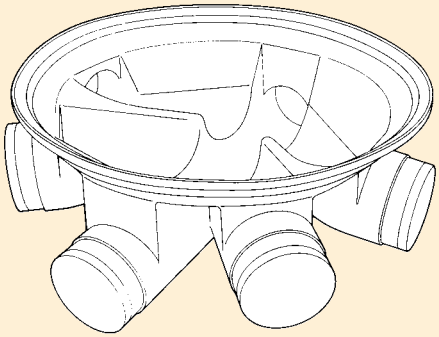
Manhole Bases

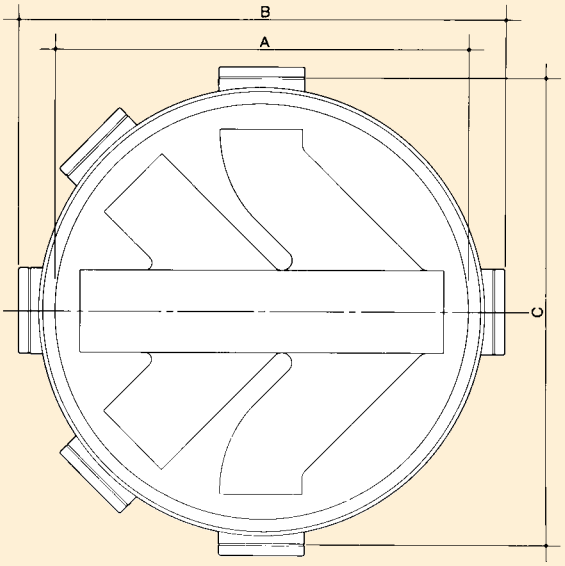
Manhole Bases

P/E Manhole Base - 750mm diameter
- supplied with all inlets and outlet sealed

Nominal Size	Part Number	Invert Depth	A	B	C
150	6UR.876	345	760	900	868

Material: PE

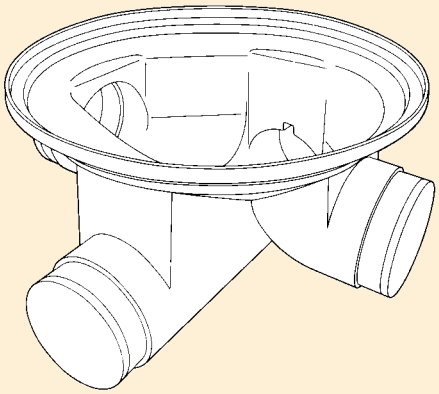


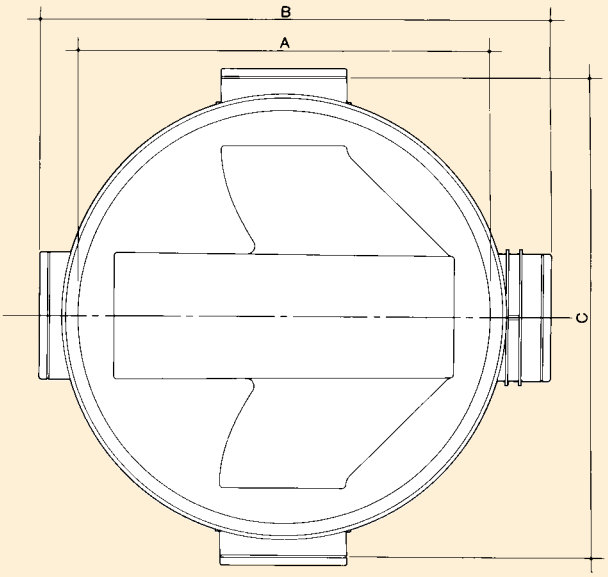


P/E Equal Manhole Base - 750mm diameter
- supplied with all inlets and outlet sealed

Nominal Size	Part Number	Invert Depth	A	B	C
225	9UR.877	370	760	1048	884

Material: PE





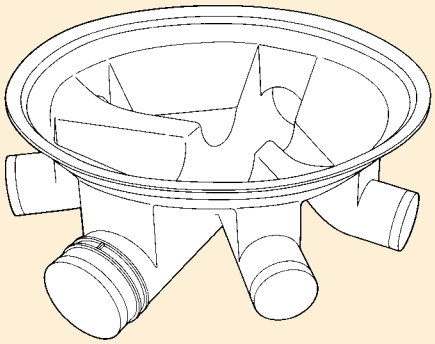
Manhole Bases continued

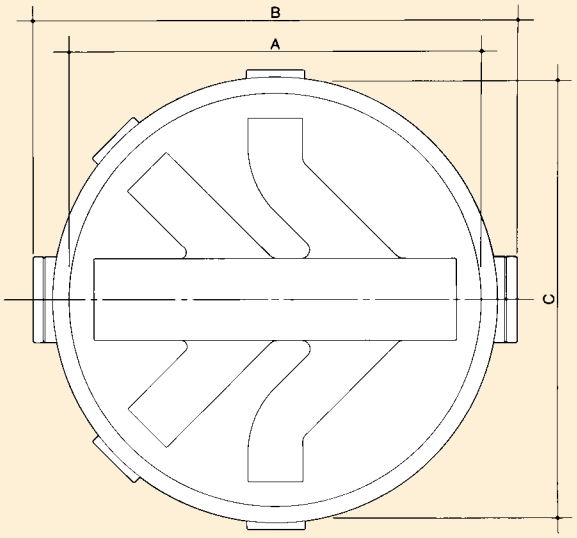
Manhole Bases continued

P/E Unequal Manhole Base - 750mm diameter
- supplied with all inlets and outlet sealed

Nominal Size	Part Number	Invert Depth	A	B	C
150	6UR.875	345	760	896	850

Material: PE

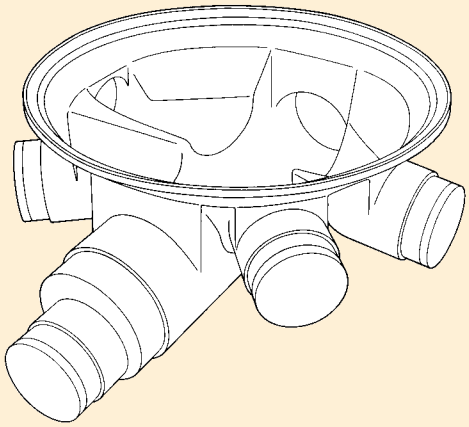


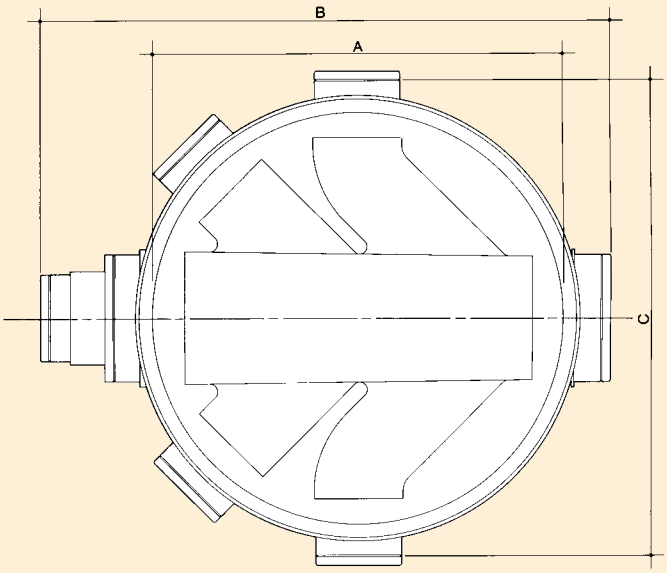


P/E Unequal Manhole Base - 750mm diameter
- supplied with all inlets and outlet sealed

Nominal Size	Part Number	Invert Depth	A	B	C
225	9UR.878	370	760	1048	884

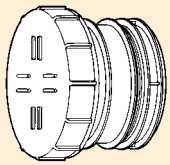
Material: PE

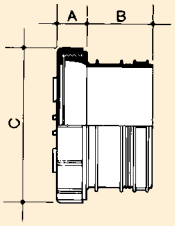




Sealed Rodding Access Fittings and Socket Plugs

Sealed Rodding Access Fittings

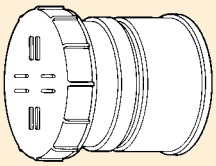


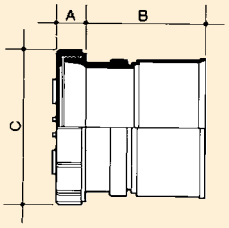


P/E Screwed Access Cover
- allows full bore access to sewerage system for cleaning, fits into an Osma UltraRib socket

Nominal Size	Part Number	A	B	C
150	6UR.292	41	87	196

Material: PVC-U



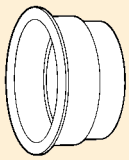


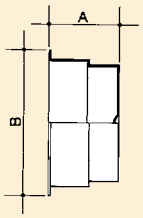
S/S Screwed Access Cover
- allows full bore access to sewerage system for cleaning, fits onto an Osma UltraRib spigot

Nominal Size	Part Number	A	B	C
150	6UR.290	41	153	196

Material: PVC-U

Socket Plugs

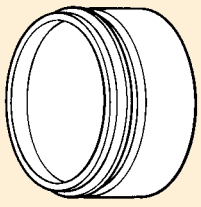


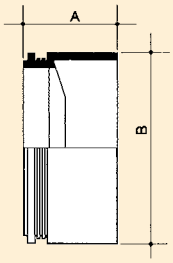


P/E Socket Plug
- allows full bore access to sewerage system for cleaning, fits into an Osma UltraRib socket

Nominal Size	Part Number	A	B
150	6UR.296	92	195

Material: PVC-U





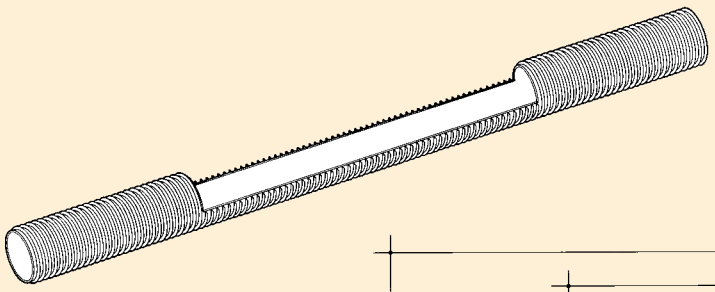
P/E Socket Plug
- allows full bore access to sewerage system for cleaning, fits into an Osma UltraRib socket

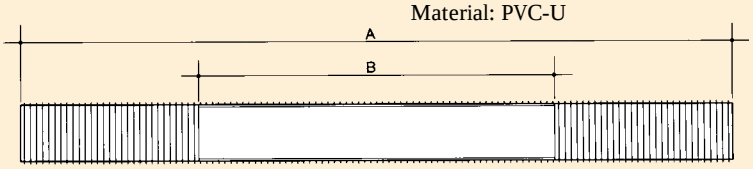
Nominal Size	Part Number	A	B
225	9UR.296	110	250
300	12UR.296	155	335

Material: PP

Channel Fittings

Channel Fittings

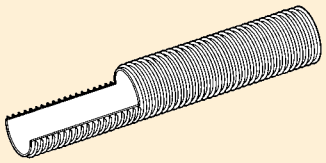


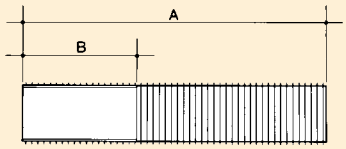


P/E Channel Access Pipe
- accommodates 6 x 150mm side branch entries, three per side

Nominal Size	Part Number	A	B
150	6UR.874	2000	1000
225	9UR.874	2000	1000
300	12UR.874	2000	1000

Material: PVC-U

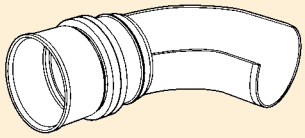


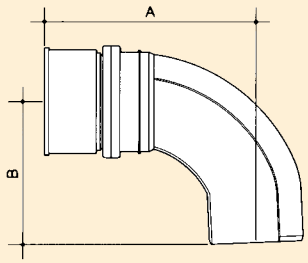


SW/½S Channel Access Pipe
- level invert, with channel spigot

Nominal Size	Part Number	A	B
150	6UR.868	1000	425
225	9UR.868	1000	425

Material: PVC-U

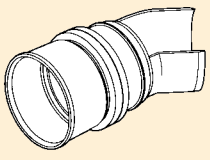


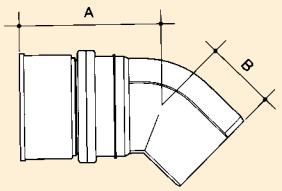


S/S Adjustable Channel Branch Bend - 87½°
- ¾ section

Nominal Size	Part Number	A	B
150	6UR.784 LH	322	196
150	6UR.785 RH	322	196

Material: PVC-U Left hand illustrated

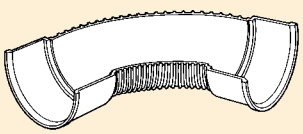


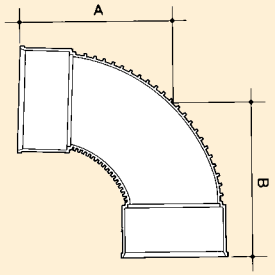


S/S Adjustable Channel Branch Bend - 45°
- ¾ section

Nominal Size	Part Number	A	B
150	6UR.780 LH	238	118
150	6UR.781 RH	238	118

Material: PVC-U Left hand illustrated





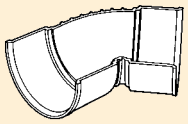
SW/½S Short Radius Channel Bend - 87½°
- ½ section

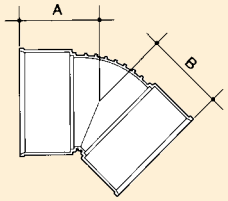
Nominal Size	Part Number	A	B
150 ■	6UR.861	265	265
225 ▲	9UR.861	300	300

Material: ■ PVC-U ▲ PP

Channel Fittings continued

Channel Fittings continued

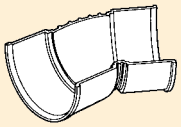


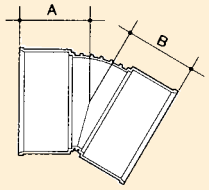


SW/½S Short Radius Channel Bend - 45°
- ½ section

Nominal Size	Part Number	A	B
150 ■	6UR.863	138	138
225 ▲	9UR.863	200	200

Material: ■ PVC-U ▲ PP

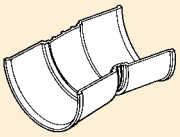


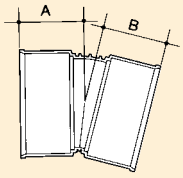


SW/½S Short Radius Channel Bend - 30°
- ½ section

Nominal Size	Part Number	A	B
150 ■	6UR.866	125	125
225 ▲	9UR.866	205	205

Material: ■ PVC-U ▲ PP

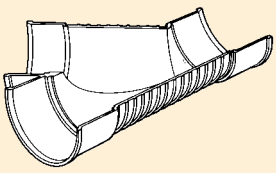


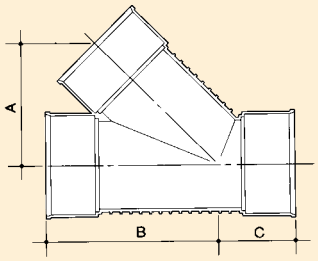


SW/½S Short Radius Channel Bend - 15°
- ½ section

Nominal Size	Part Number	A	B
150 ■	6UR.867	114	114
225 ▲	9UR.867	265	265

Material: ■ PVC-U ▲ PP

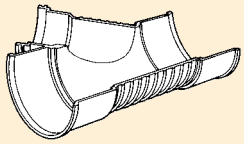


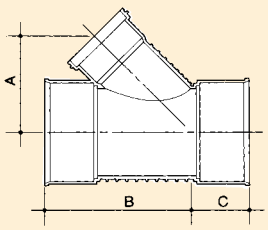


SW/½S Equal Channel Access Junctions - 45°
- level invert

Nominal Size	Part Number	A	B	C
150 ■	6UR.794 LH	210	299	136
150 ■	6UR.795 RH	210	299	136
225 ▲	9UR.794 LH	280	410	180
225 ▲	9UR.795 RH	280	410	180

Material: ■ PVC-U ▲ PP Right hand illustrated





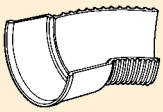
SW/½S Unequal Channel Access Junctions - 45°
- level invert

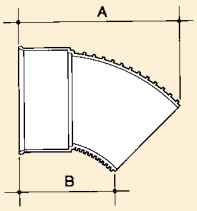
Nominal Size	Part Number	A	B	C
150 x 110	6UR.796 LH	166	257	102
150 x 110	6UR.797 RH	166	257	102

Material: PVC-U Right hand illustrated

Channel Fittings continued

Channel Fittings continued



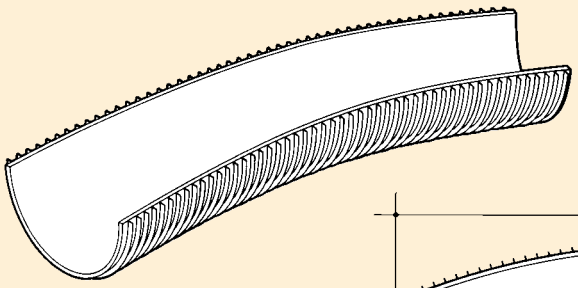


SW/S Channel Access Bends - Short - 45°
- level invert

Nominal Size	Part Number	A	B
150	6UR.798 LH	265	169
150	6UR.799 RH	265	169

Material: PVC-U

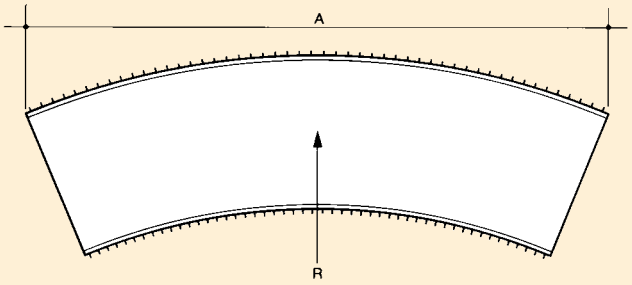
Left hand illustrated



SW/S Channel Access Bends - Long - 45°
- level invert, right/left hand

Nominal Size	Part Number	A	R
150	6UR.853	900	1050
150	9UR.853	900	1050

Material: PVC-U



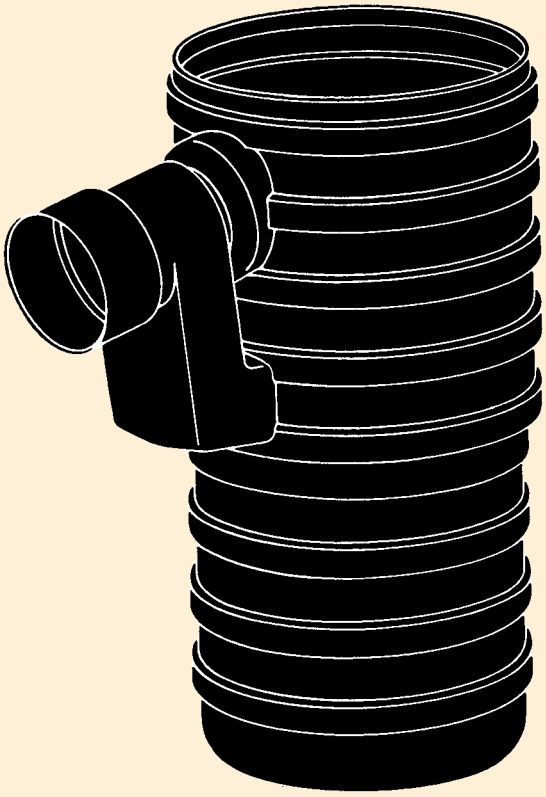
Road Gully

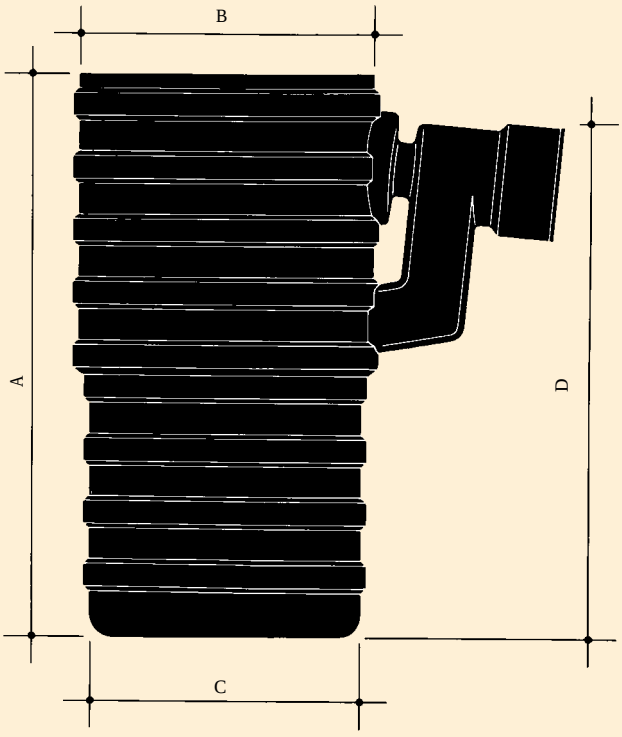
Road Gully

S/S Trapped Road Gully
- 450mm diameter x 900mm overall depth

Nominal Size	Part Number	A	B	C	D
150	6UR.600	900	465	444	770

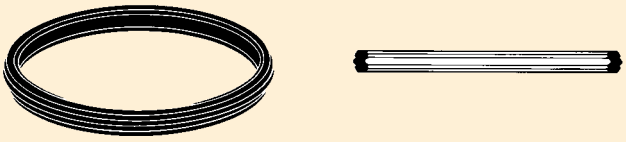
Material: PE





Spares and Accessories

Spares



Ring Seal
- spare, standard UltraRib socket

Nominal Size	Part Number
150	6UR.117
225	9UR.117
300	12UR.117

Material: SBR

Ring Seal
- spare, Manhole Bases

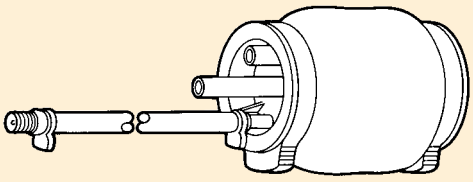
Nominal Size	Part Number
150	6UR.118

Material: SBR

Accessories

Jointing Lubricant
- soluble

Nominal Size	Part Number
2.5 kg tub	6UR.395
5.0 kg tub	6UR.396



Inflatable Testing Plug
- fits any pipe between 89mm (3½") and 150mm (6") diameter

Nominal Size	Part Number
-	6UR.993

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 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 clay 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.

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.

Table 1. Size of block bundles

Nominal Pipe Size	Number of 3m/6m lengths per bundle	Dimensions in mm		Weight per bundle kg	
		height	width	3m	6m
150	24	655	970	153	300
225	12	730	970	163	317
300	9	966	970	206	

Figure 1. UltraRib PVC-U is approximately one tenth the weight of clay pipe

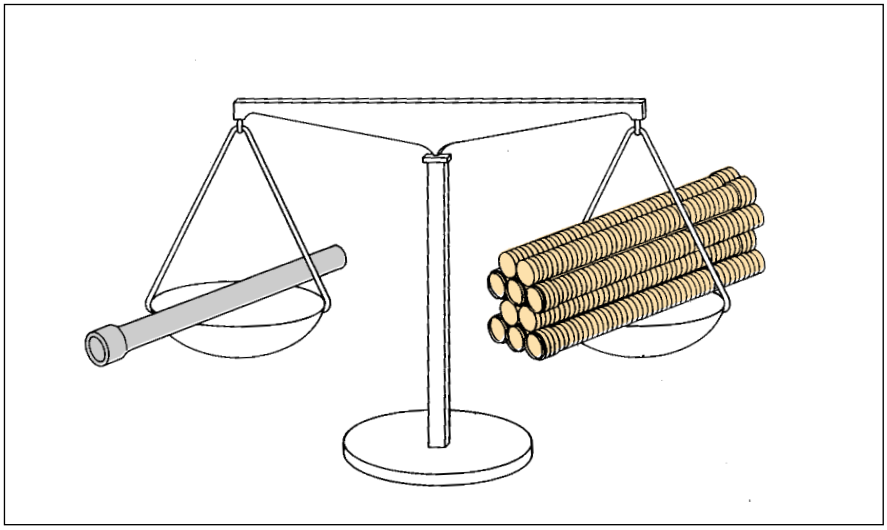
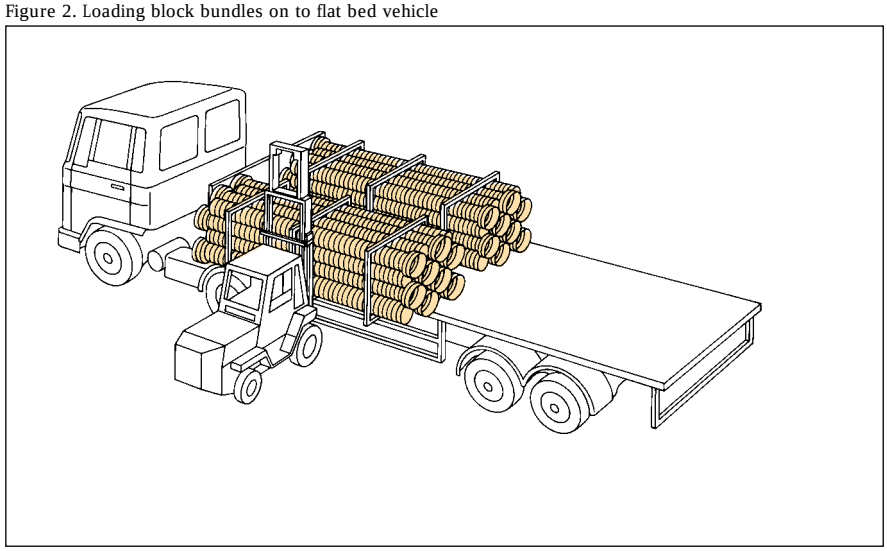


Figure 2. Loading block bundles on to flat bed vehicle



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

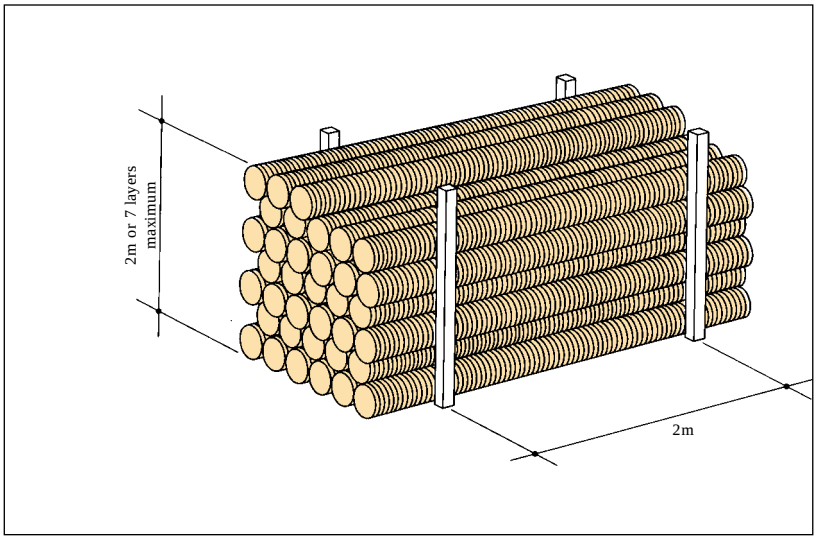
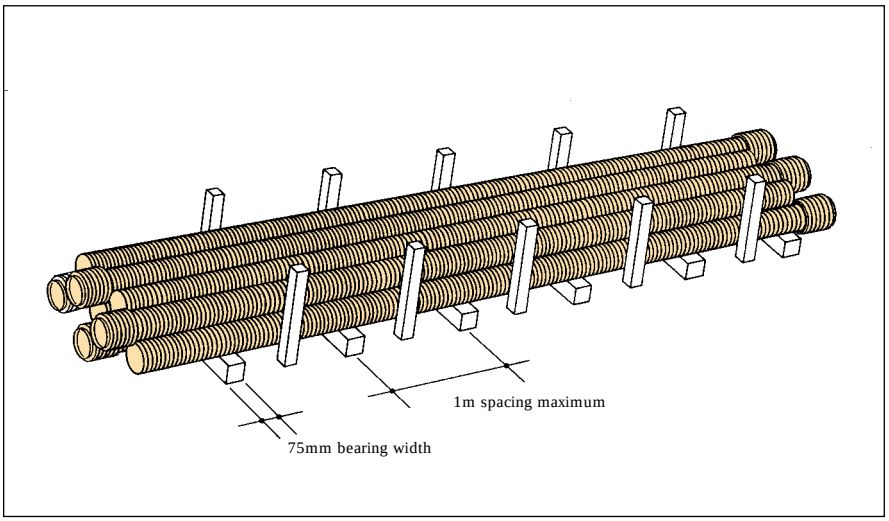


Figure 4. Storage of loose pipes on bearers



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

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.

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), Water Industry Specification (WIS), No 4-08-02 (Specification for bedding and sidefill Materials for buried Pipelines) Sewers for Adoption, 4th Edition and British Board of Agrément Certificate Nos : 89/46, 91/58 and 98/3472.

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. Osma UltraRib 750mm Manhole Bases.

Osma UltraRib 450mm diameter 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.
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. For adoptable situations processed bedding and sidefill material should conform to WIS No. 4-08-02.

BEDDING

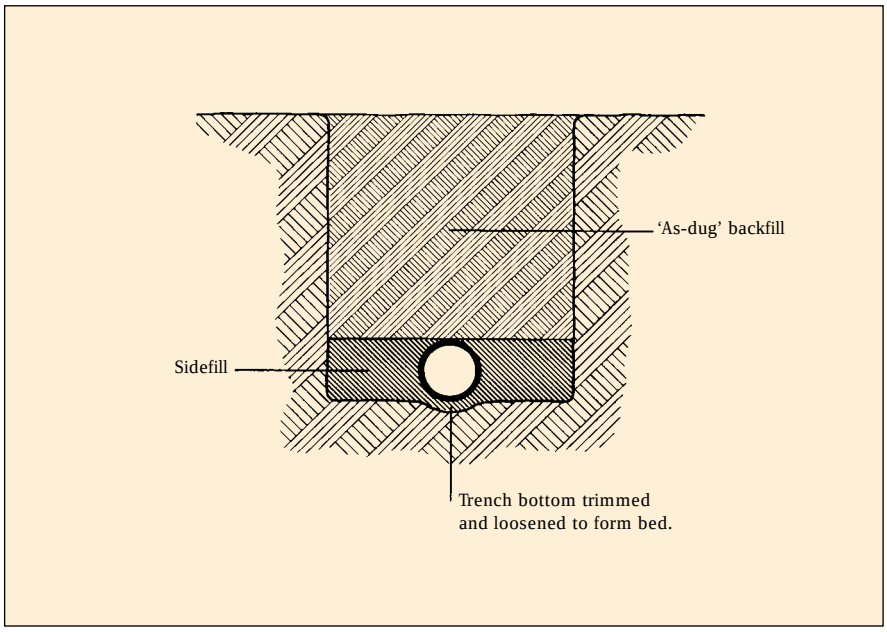
Osma UltraRib pipes laid on trench bottom

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 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. Osma UltraRib pipes laid on trench bottom



Bedding continued

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

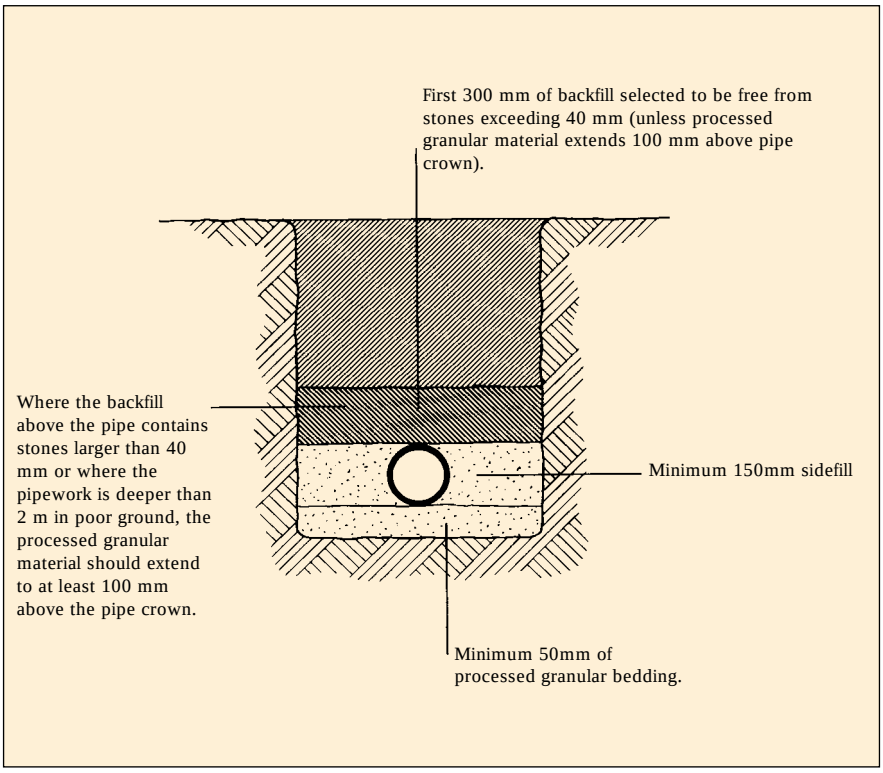
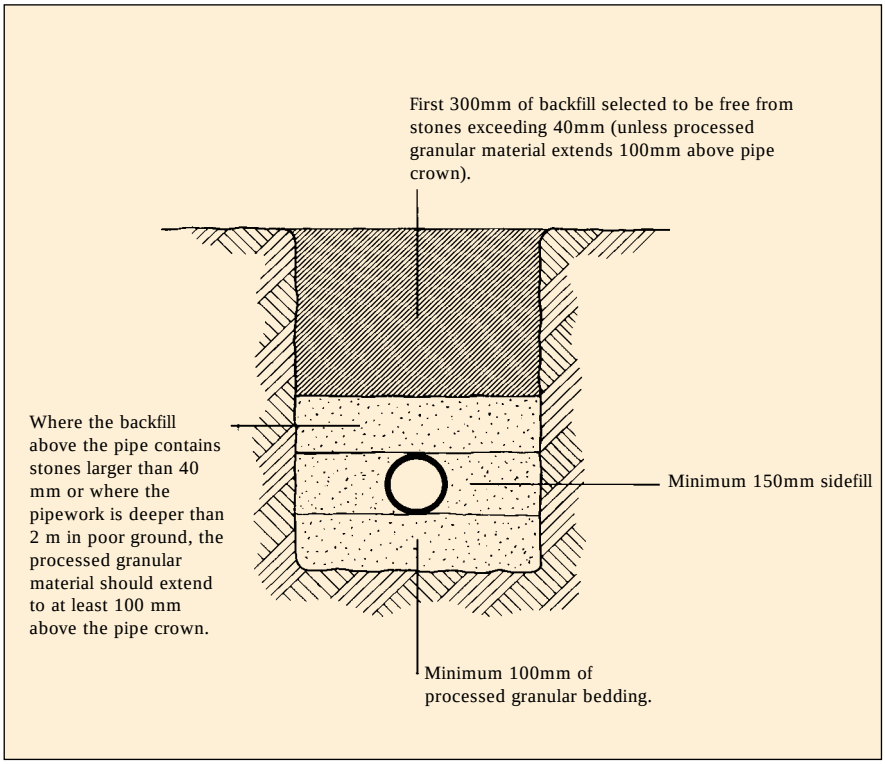


Figure 7. Osma UltraRib pipes laid on 100mm minimum of processed granular material



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.

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.

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 agregate (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).

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, 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 metres, 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.

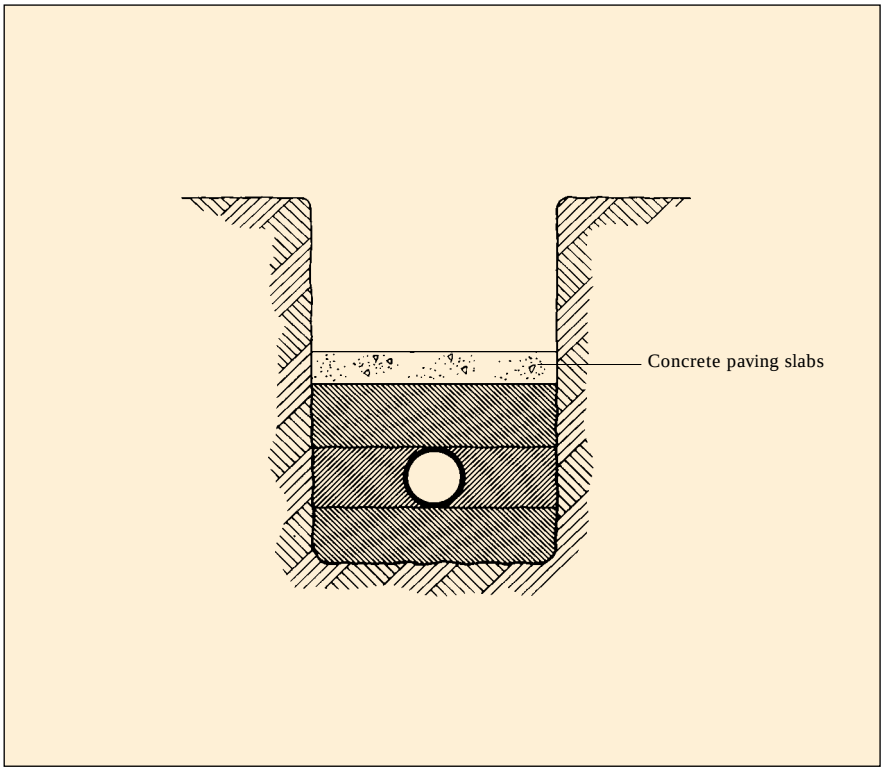
Public Highways / Adoptable Situations

In areas where loading is expected, pipes laid at depths less than 0.9 metres 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

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

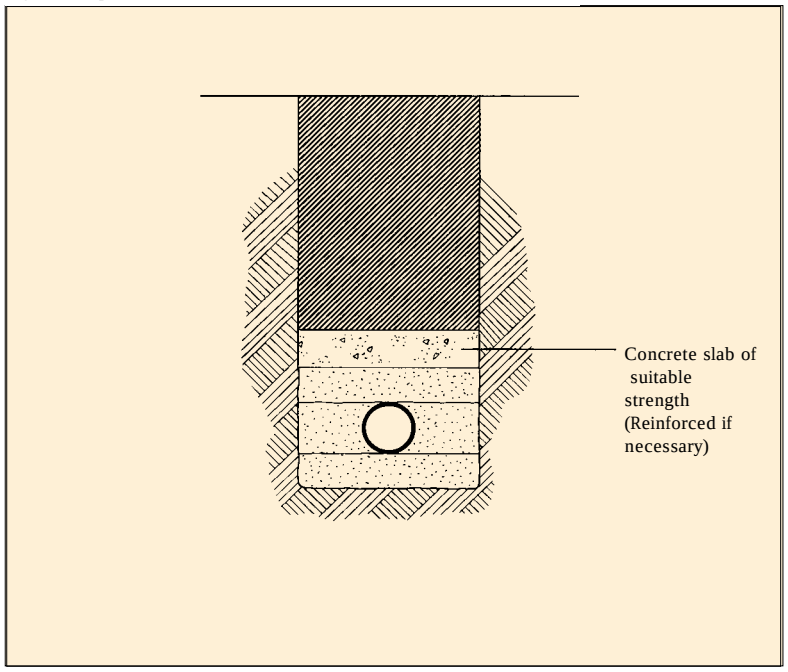
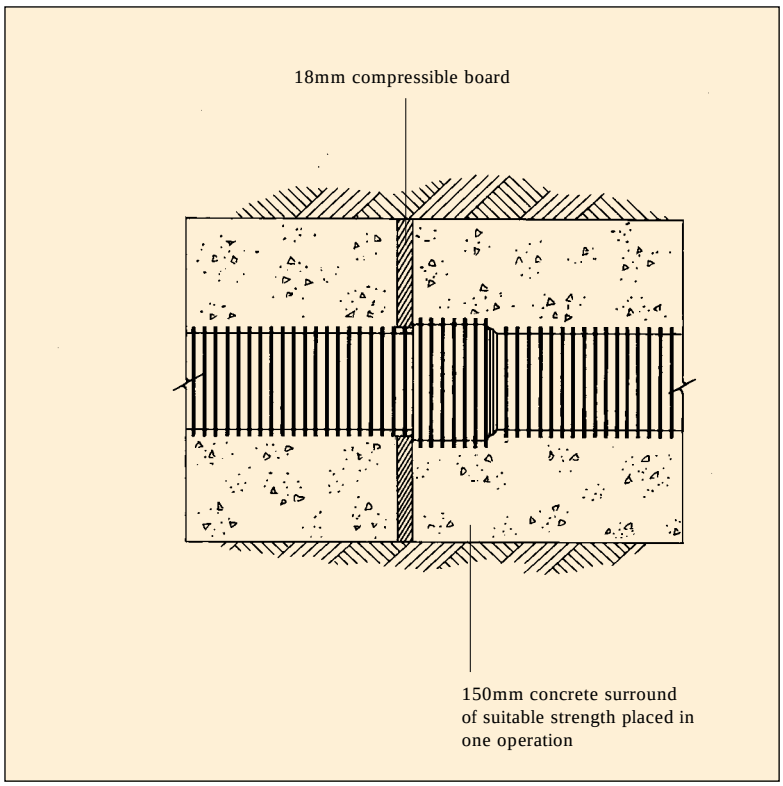


Figure 10. Pipe Protection - concrete surround



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 Under Buildings

A sewer 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. Where the crown of the pipe is within 300mm of the underside of the slab, concrete encasement should be used integral with the slab.

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 metres. 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.

Jointing

JOINTING

Unlike traditional methods for jointing 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 jointing method are:

i. There is no need to chamfer pipe ends.

ii. The ring seal cannot be displaced during jointing.

iii. 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).

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 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 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 neccessary 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

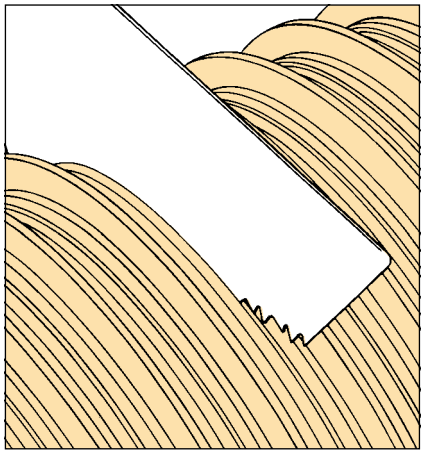


Figure 12. UltraRib Sealing Ring

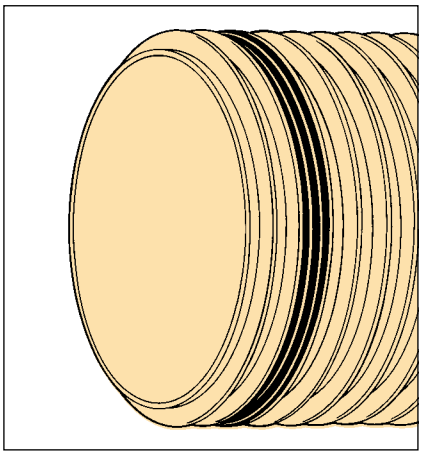


Figure 13. Applying the lubricant

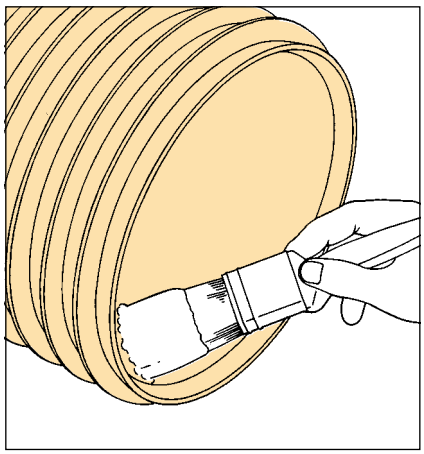


Figure 14. Protecting the pipe end

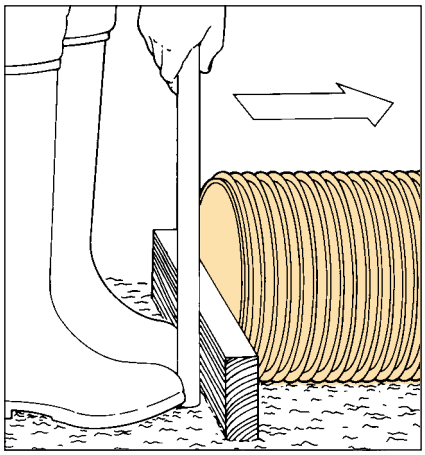


Figure 15. Aligning spigot into socket

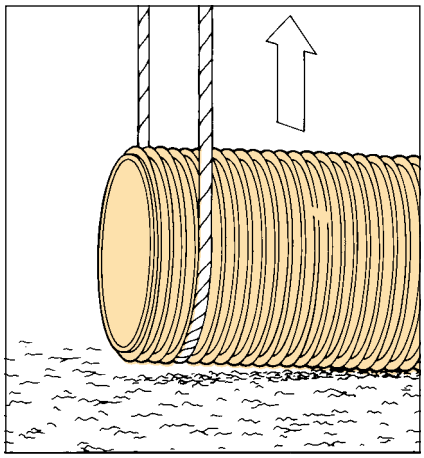
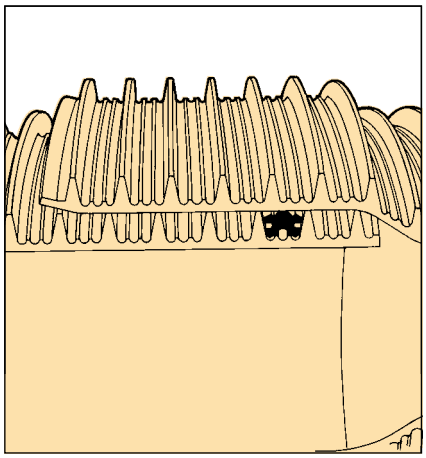


Figure 16. Section through pipe joint



Inspection Chambers

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 unused 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 31).

   b) 6UR.929 - Make connections in the same way as for the standard jointing sequence for OsmaDrain pipe and for Osma UltraRib pipe (see Jointing, page 31).
3. 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 sockets 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 Pressed Steel Cover and Polypropylene Frame (4D.944) will sit (see Figure 17).
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 18). This will ensure that all loadings are transferred to the surrounding ground.

Figure 17. Universal Inspection Chamber – non-load installation

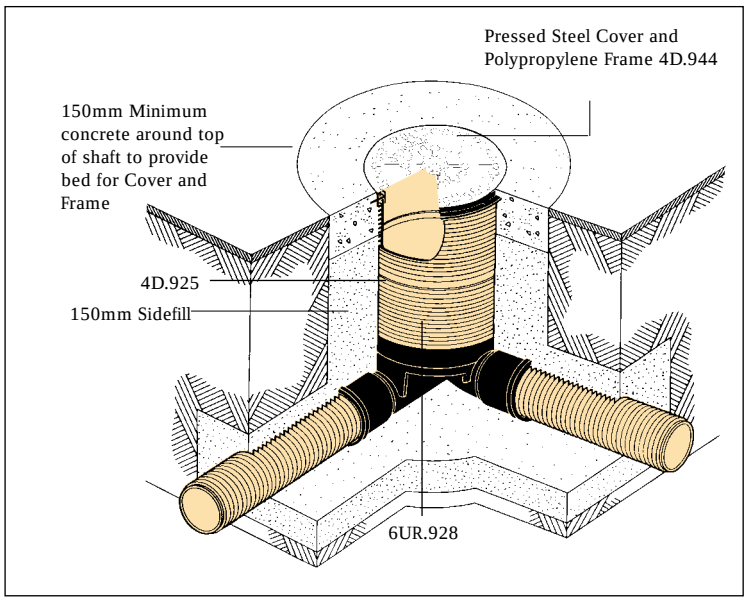
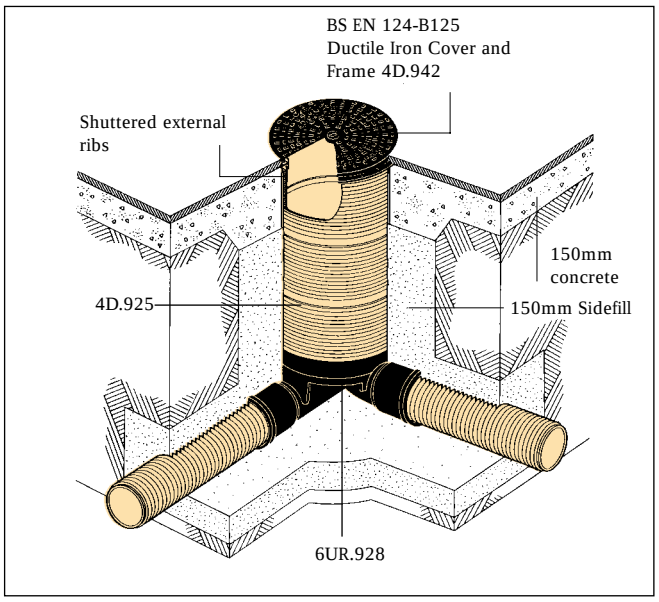


Figure 18. Universal Inspection Chamber – in areas requiring a BS EN 124-B125 Cover and Frame



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 EN 1401 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.

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.

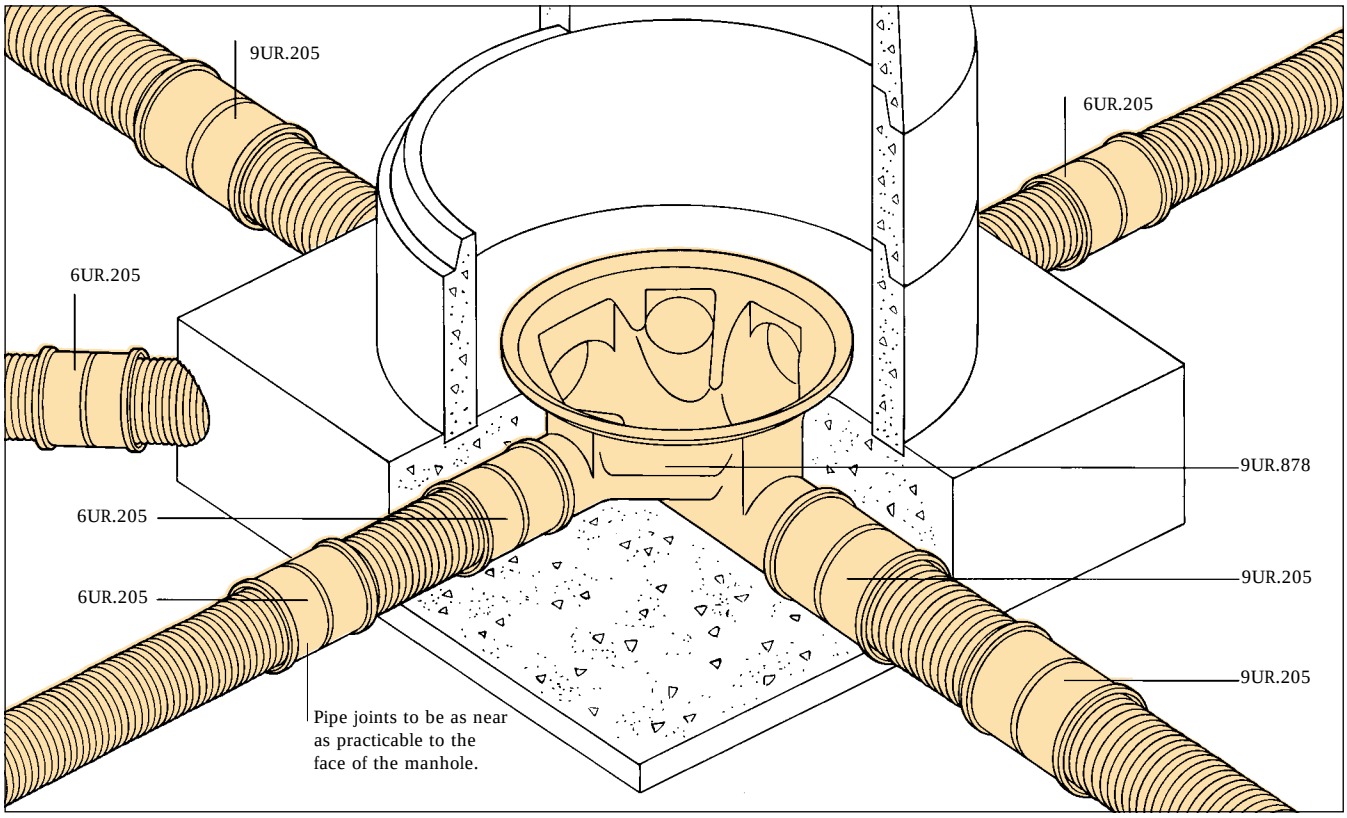
1. Make connections to the Base by removing the integral spigot end of any required inlet or outlet using a fine tooth saw. A pre-marked line shows the correct cutting position. Remove any swarf and using a rasp or file chamfer the edge to approximately 15°.
2. Connection to the Base is then made by 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 31).
3. If using Manhole Base (6UR.875) and a 110mm BS EN 1401 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 19).

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

Manhole Bases and Inspection Chamber Bases should not be used in Adoptable Sewer installations.

Figure 19. 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.

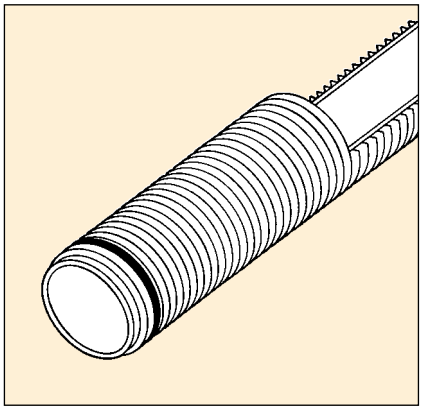
The Osma UltraRib range of Long and Short Radius Channel Access Bends (6UR/9UR.853/861/863/866/867) together with the range of Channel Branch Bends (6UR.780/781/784/785) offer the installer total flexibility by simply butt-jointing the bends to either Channel Access Bends (6UR.796/797) or straight Channel Access Pipes (6UR/9UR.868).

Construct all manholes to meet the requirements of the Building Regulations, BS Codes of Practice and also BS 5955: Part 6: 1980, and also Sewers for Adoption, 4th Edition.

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 20. Position of ring seal



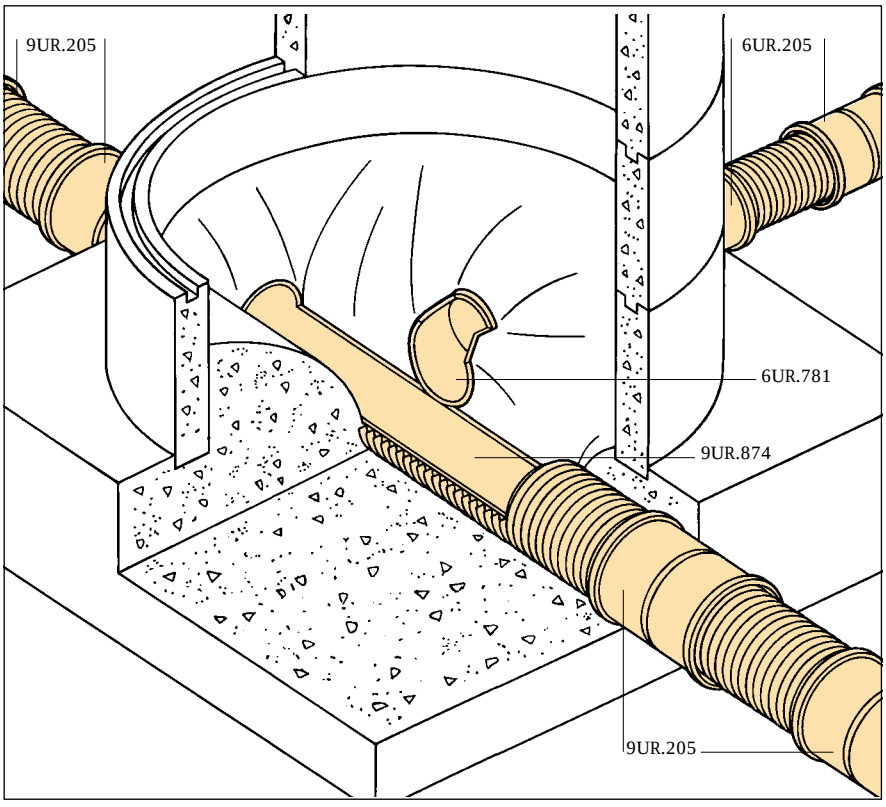
2. Connection to Channel Access Pipe (6UR/9UR/12UR.874) is made by using a standard Pipe Coupler or Bend. Connection to Channel Access Bends(6UR/9UR.853/861/863/866 /867) is made by simply butt-jointing the bends to either Channel Access Bend (6UR.796/797) or straight Channel Access Pipes (6UR/9UR.868).
3. The Osma UltraRib range offers a number of ¾ 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 or straight Channel Access Pipes.

Figure 21. Open Channel Manhole - typical installation



Channel Access Fittings continued

Figure 22. Open Channel Manhole with stepped invert branch entry

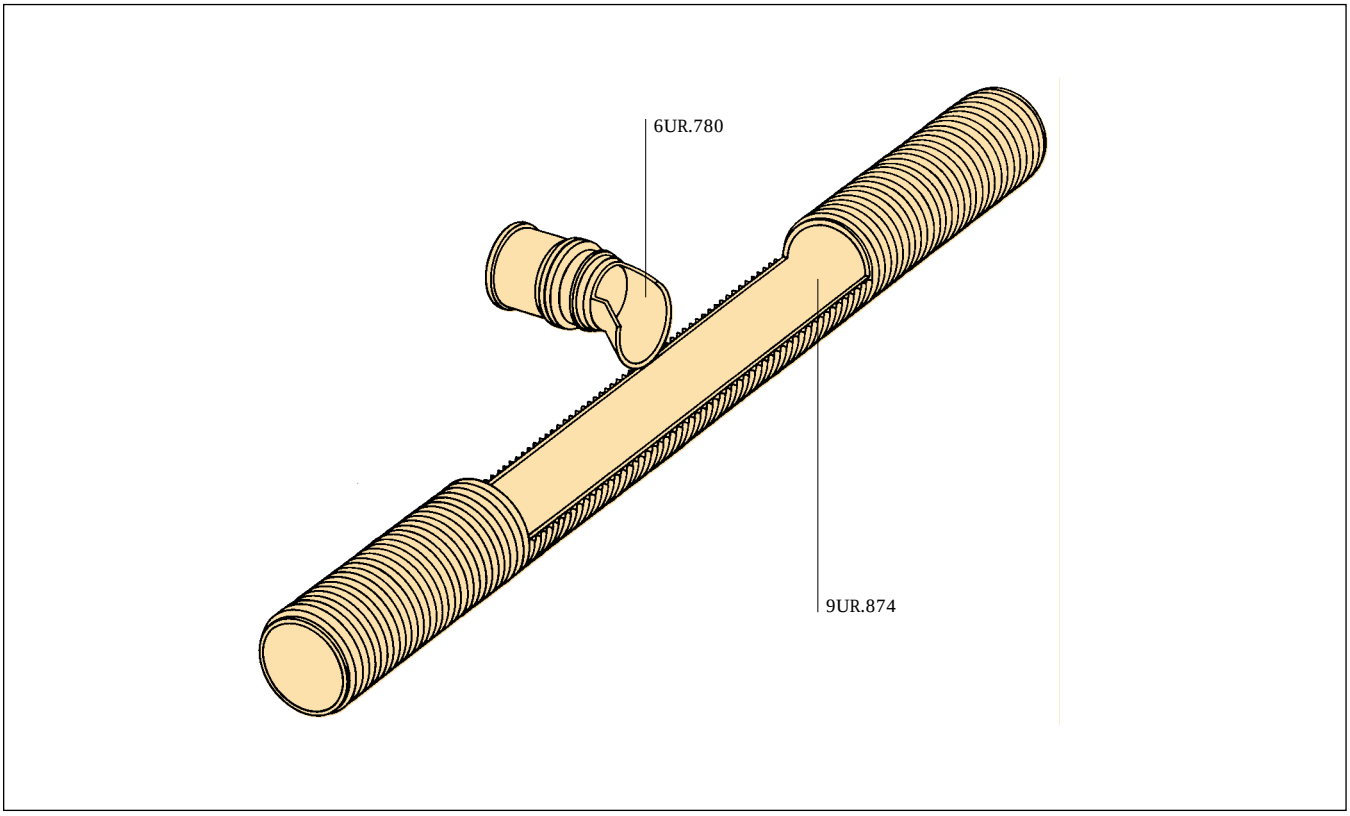
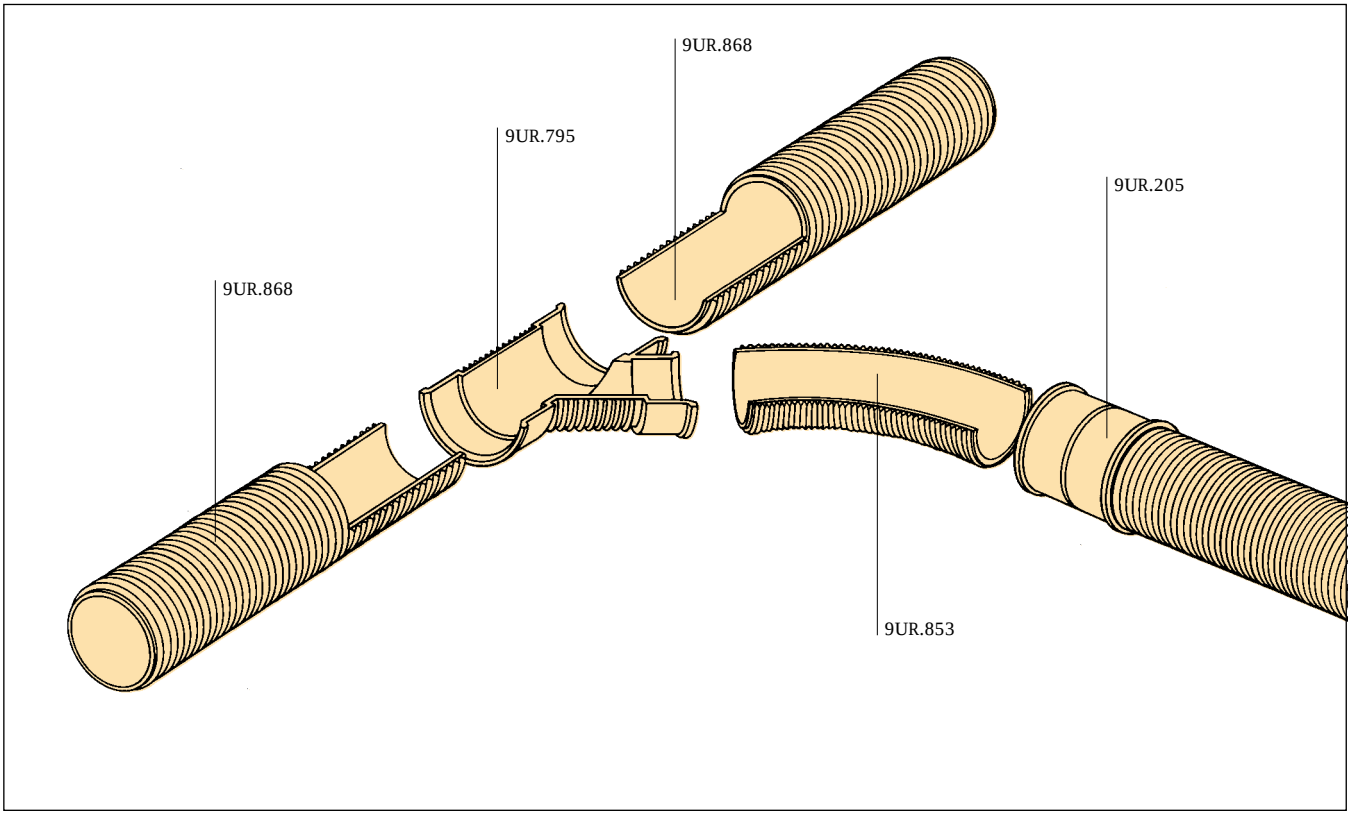


Figure 23. Open Channel Manhole with level invert branch entry



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.

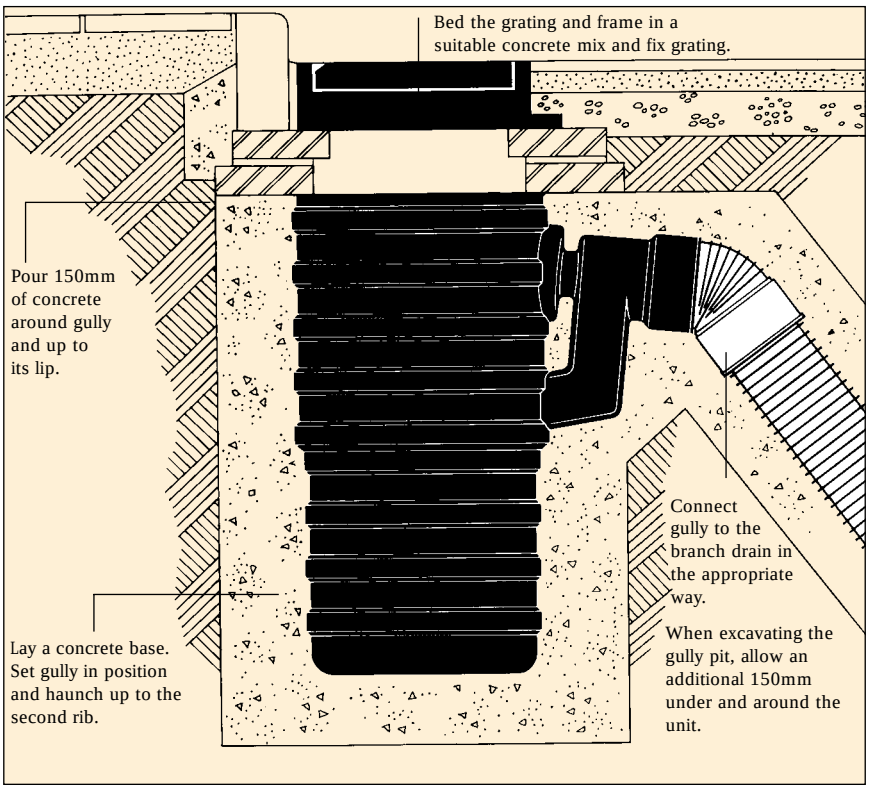
Gully Connection - 150mm Osma UltraRib

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.

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 24).

Figure 24. Osma UltraRib Road Gully - typical installation



Connections to Other Materials

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 (6UR.141) and insert into 160mm BS EN 1401 Socket. Make Osma UltraRib connection in the normal way (see Figure 25 and Jointing, page 31).

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 (6UR.142) fully on to the pipe withdrawing it by a minimum of 12mm. Make Osma UltraRib connection in the normal way (see Figure 26 and Jointing, page 31).

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 (6UR.143) fully on to the pipe withdrawing it by a minimum of 12mm. Make Osma UltraRib connection in the normal way (see Figure 27 and Jointing, page 31).

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 28). Make Osma UltraRib connection in the normal way (see Jointing, page 31).

Figure 25. Connection to BS EN 1401 socket

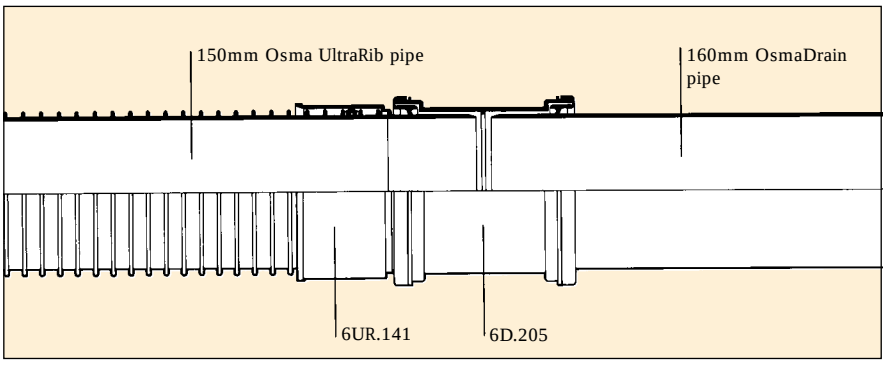


Figure 26. Connection to BS EN 1401 spigot

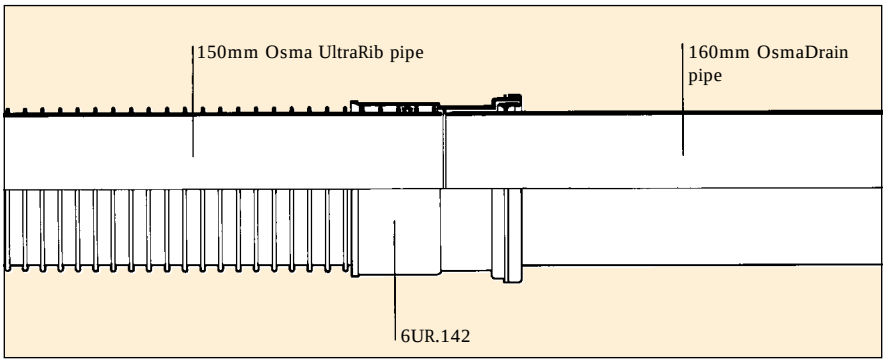


Figure 27. Connection to BS EN 1401 spigot

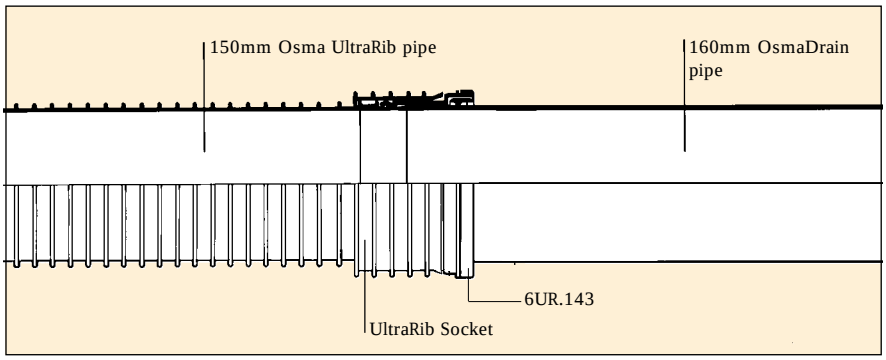
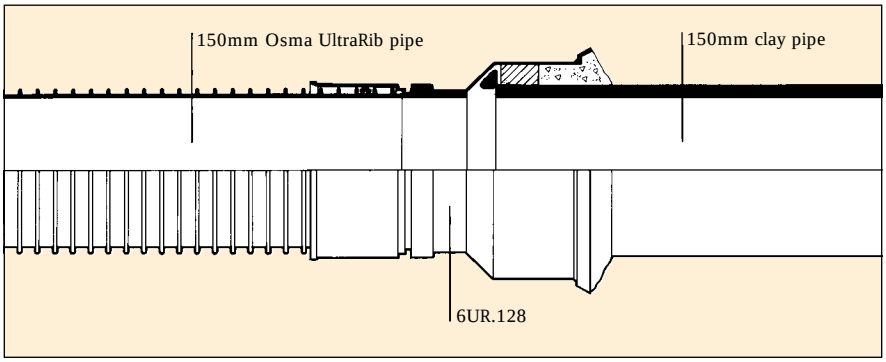


Figure 28. Connection to clay or concrete spigot



Connections to Other Materials continued

Figure 29. Connection to thin-wall clay spigot

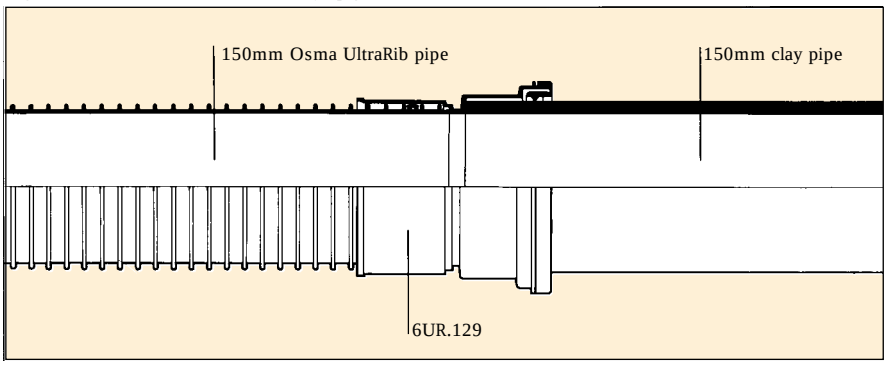


Figure 30. Connection to clay or concrete spigot

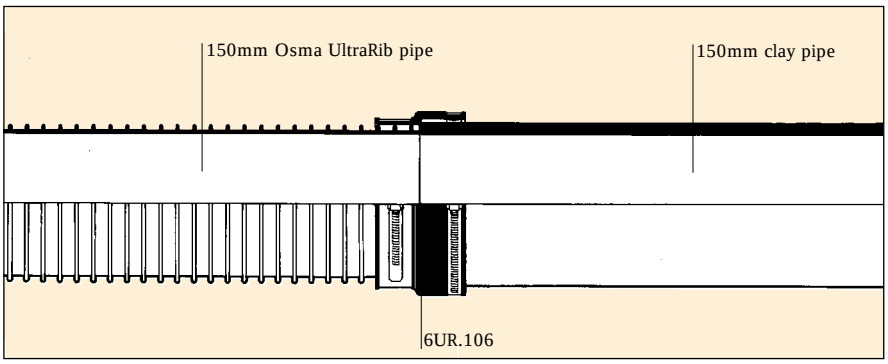


Figure 31. Connection to clay spigot

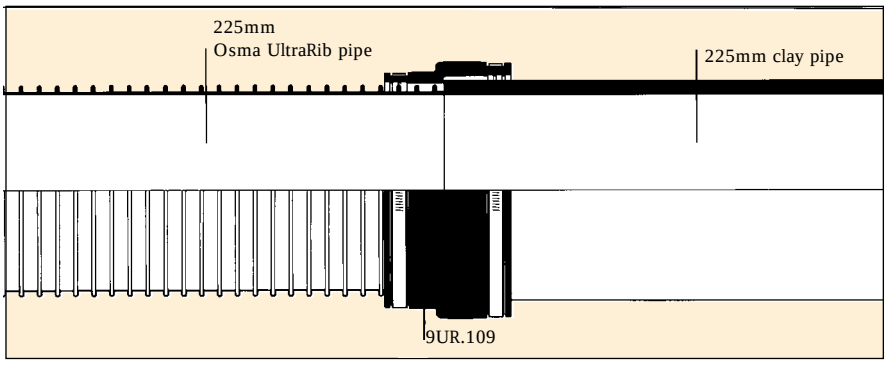
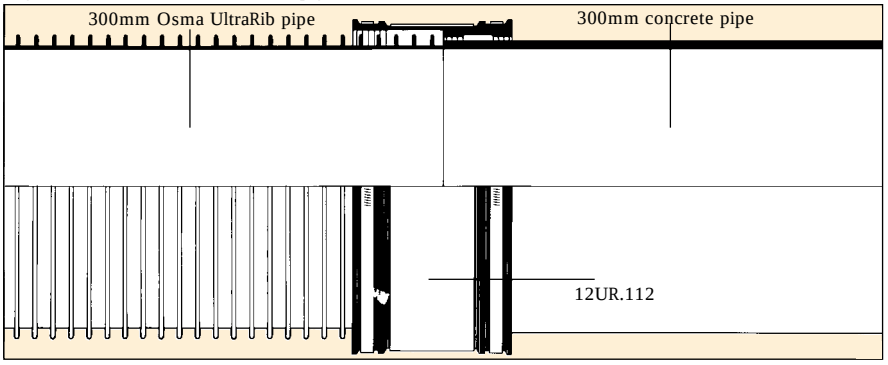


Figure 32. Connection to concrete spigot



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 29 and Jointing, page 31).

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 30).

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 31).

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 32).

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 33), 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 34 and Jointing, page 31).
3. Apply lubricant to the inside of the sliding sockets and position slip Junction as shown within trench (see Figure 35) 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 ends (see Figure 36).

Figure 33. Slip Junction, effective length

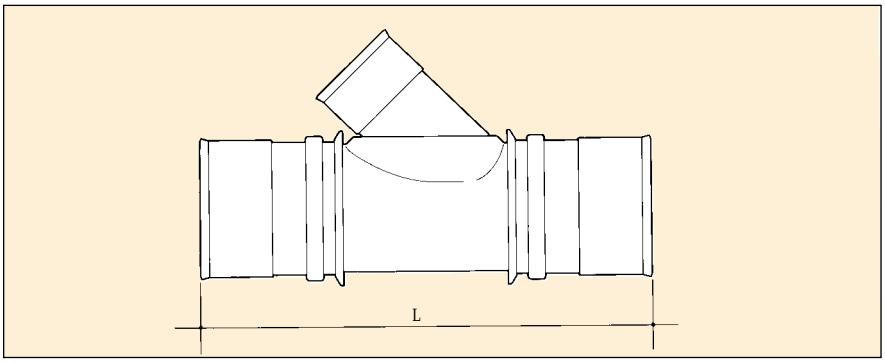


Figure 34. Osma UltraRib Sealing Ring

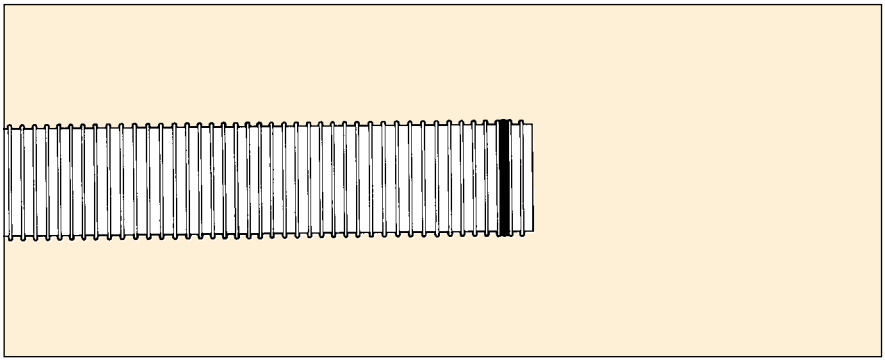


Figure 35. Positioning of Slip Junction

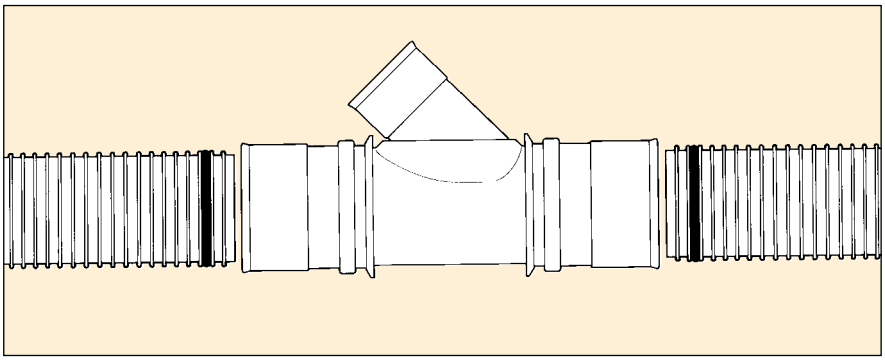
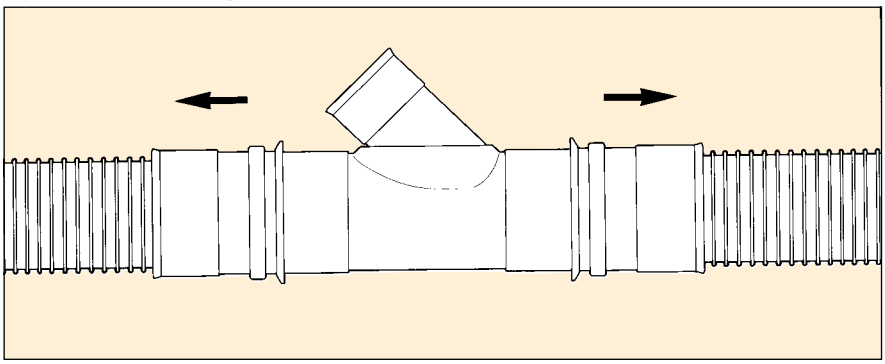
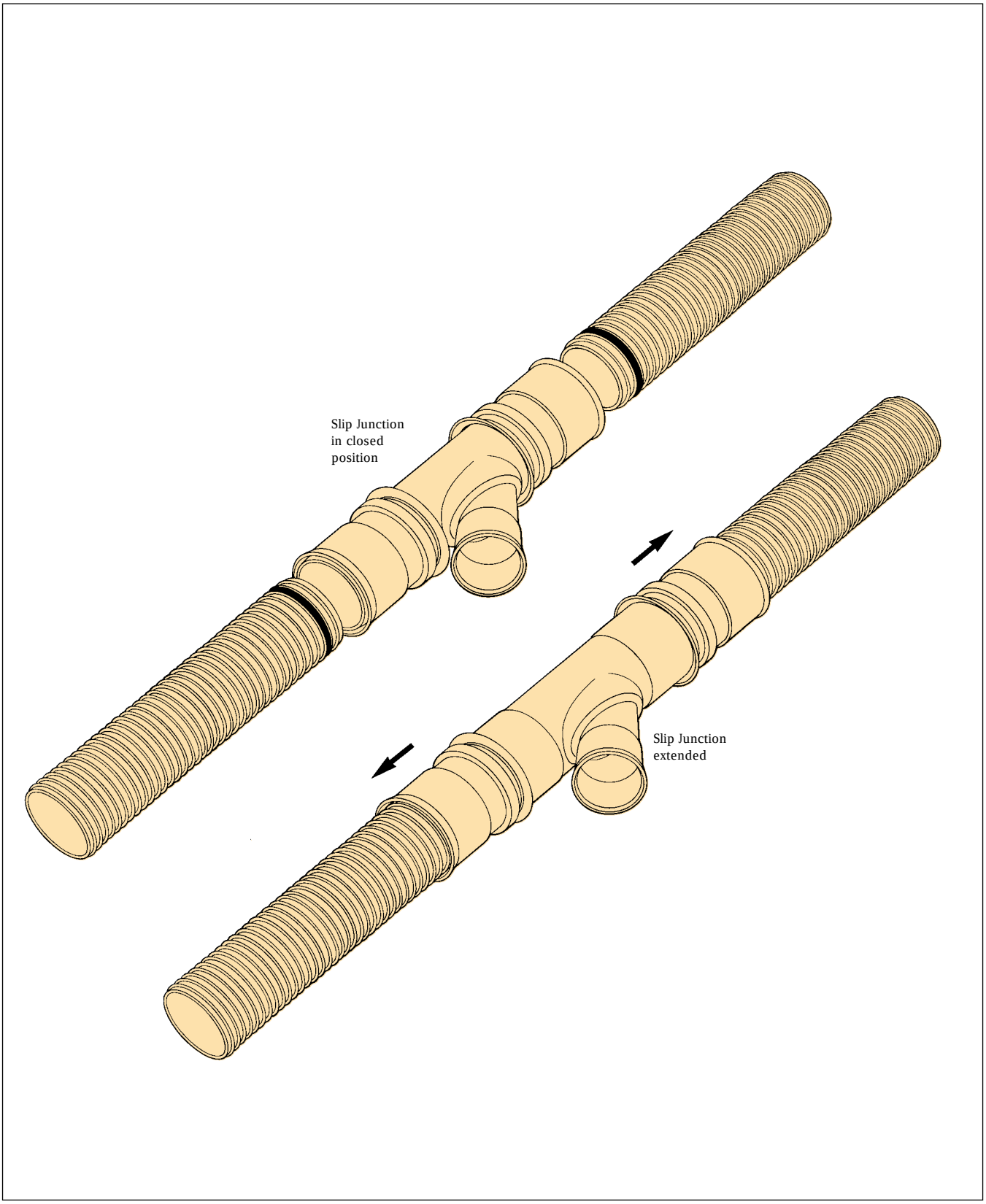


Figure 36. Installation of Slip Junction



Slip Junctions continued

Figure 37. Osma UltraRib Slip Junction - typical installation



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 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 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 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. 1st Edition, Sections 5.4.2., 5.4.3. and 5.4.4.

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Blagrove
Swindon
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Tel: 01793 511711
EMail: Publications@wrcplc.co.uk

Notes

Notes

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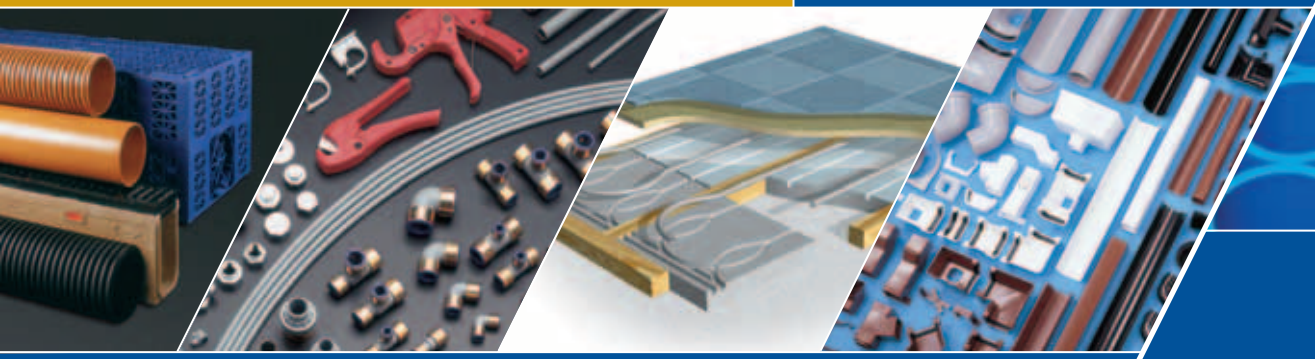
OSMA

Below Ground Drainage Systems: UltraRib

Product Guide



Meeting your needs

Below Ground Drainage systems, developed by Wavin Plastics Limited, form part of a comprehensive range of systems to provide intelligent solutions for all building, construction and utilities projects.

These include:

Above Ground Projects

- OSMA Rainwater systems
- OSMA Soil & Waste systems

Plumbing & Heating Projects

- OSMA Flexible Plumbing systems
- OSMA Underfloor Heating systems

Below Ground Projects

- OSMA Below Ground Drainage systems
- OSMA Water Management systems
- OSMA Ducting systems

Pressure Pipe Projects

- OSMA Pressure Pipes for Water
- OSMA Pressure Pipes for Gas

All OSMA systems are backed by full technical literature and project support.

BSI REGISTERED

ISO 9001:2000

wavin

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