



**RADIUS**  
*Systems*

## **Puriton® barrier pipe and fittings system**

Protecting drinking water through contaminated land



## Puriton® by Radius Systems

### Barrier pipe and fittings system



The barrier pipe system of choice for the safe distribution of drinking water through contaminated land.

Contaminated soils are commonly found in brownfield sites. These are sites which were previously used for instance, for industrial or commercial purposes, but have subsequently fallen into disuse. The regeneration and development of these types of sites into housing, warehouses or factories is encouraged by governments to protect the green belt, minimise urban sprawl and make better use of disused land.

Depending on the level or type of soil contaminant found in brownfield sites, the water undertaker may specify the use of a barrier pipe system to ensure the drinking water is protected from the permeation of soil contaminants through the wall of the pipeline.

Puriton®, a cutting-edge barrier pipe system developed by Radius Systems, is specifically designed and approved to provide the level of protection required to safeguard potable water against contaminants commonly found in brownfield sites. A multi-layer composite

- ✓ No need to post-wrap the joints
- ✓ Protects drinking water
- ✓ Corrosion resistant system
- ✓ Lightweight and easy to install
- ✓ End load resistant - no need for thrust blocks

structure barrier pipe, Puriton® combines the benefits of polyethylene (PE) with the exceptional barrier properties of aluminium (Al), making it the barrier pipe system of choice to safeguard potable water.

Lightweight, flexible and corrosion resistant, the Puriton® system is easy to install, without the need to post-wrap the finished joints. The pipe can be joined using our comprehensive range of Puriton® fittings, specifically developed to give you the assurance of a safe and durable solution that protects your drinking water supply.



## Puriton® - a 'Type A' barrier pipe

Radius Systems' Puriton® pipe is a multi-layer composite structure 'Type A' pipe, as defined in the newly published British Standard BS 8588 ('Polyethylene pressure pipe with an aluminium layer and associated fittings for potable water supply in contaminated land').

'Type A' Puriton® pipes are multi-layer pipes, where the black PE core is designed to accommodate the internal pressure and where the aluminium layer and the outer PE layer are respectively, the barrier and protection layers. Both outer layers do not contribute to the pipe's overall pressure rating.

### Puriton® - a tried and tested barrier pipe system

The introduction of BS 8588 outlines the material and mechanical performance requirements for barrier pipe systems. Importantly, it also specifies their capability to protect the water quality when installed as part of a potable water supply system in contaminated ground. One of the key performance tests required by BS 8588 is the pipe system's resistance to the permeation of soil contaminants. Radius Systems' products evaluated in accordance with the permeation requirements, have been successfully tested without the need for external protective wrapping of the joint.

## Benefits of the Puriton® system

- Multi-layer pipe construction PE-Al-PE
- Brown stripes denote a multi-layer pipe
- Full barrier pipe system
- Combines the flexibility of polyethylene with the barrier properties of aluminium
- Safeguards drinking water quality
- Easy to handle, flexible and lightweight
- End load resistant system
- Installation cost savings - no requirement for thrust blocks
- No requirement to post-wrap the joints
- Suitable for most common installation techniques
- Suitable for new and replacement drinking water supply systems

## Product approval

- Polyethylene pipe material approved for use in drinking water supply for pipe diameters 90 to 180 mm
- WRAS approved material PE80 for pipe 25 to 63 mm
- WRAS approved product for Redman™ fittings 63 to 180 mm
- WRAS approved product for plastic mechanical fittings 25 to 63 mm
- BS EN 12201-3 (KM 597648) - Puriton® electrofusion fittings 90 to 180 mm
- KIWA UK Approved Product in compliance with UK Water Supply Regulations
  - 63 to 180 mm x 25 mm outlet tapping tees
  - 63 to 180 mm x 32 mm outlet tapping tees
- BS 8588:2017 (KM 672956) - 25 to 180 mm pipe
- WIS 4-32-19\* (KM 592372) - 25 to 180 mm pipe



KM 592372  
KM 597648  
KM 672956

## Jointing methods

- BS 8588 (KM 672956) and WIS 4-32-19\* (KM 592372)
  - Puriton® plastic mechanical fittings
  - Redman™ fittings
  - Puriton® electrofusion fittings
  - Puriton® gunmetal tapping tees
  - Butt-fusion in accordance with WIS 4-32-08 with maximum aluminium removal according to Radius Systems' installation guidance

\* BS 8588:2017 supersedes WIS 4-32-19





## Puriton® product range at a glance

Description	Diameter	Pressure rating	Material(s)	Joining
<b>Service pipe</b>				
	<ul style="list-style-type: none"> <li>• 25 to 63 mm SDR11</li> </ul>	<ul style="list-style-type: none"> <li>• 12.5 bar</li> </ul>	<ul style="list-style-type: none"> <li>• PE80</li> <li>• Aluminium</li> </ul>	<ul style="list-style-type: none"> <li>• Puriton® mechanical fittings</li> <li>• Redman™ fittings (63 mm)</li> <li>• Tapping tees (63 mm)</li> <li>• Spigot fittings (63 mm)</li> </ul>
<b>Mains pipe</b>				
	<ul style="list-style-type: none"> <li>• 90 to 180 mm SDR11</li> <li>• 90 to 180 mm SDR17</li> </ul>	<ul style="list-style-type: none"> <li>• 16 bar</li> <li>• 10 bar</li> </ul>	<ul style="list-style-type: none"> <li>• PE100</li> <li>• Aluminium</li> </ul>	<ul style="list-style-type: none"> <li>• Electrofusion fittings</li> <li>• Redman™ fittings</li> <li>• Spigot fittings</li> <li>• Tapping tees</li> <li>• Butt-fusion technique</li> </ul>
<b>Mechanical fittings</b>				
	<ul style="list-style-type: none"> <li>• 25 to 63 mm</li> </ul>	<ul style="list-style-type: none"> <li>• 12.5 bar</li> </ul>	<ul style="list-style-type: none"> <li>• Polypropylene</li> </ul>	<ul style="list-style-type: none"> <li>• Puriton® service pipe</li> </ul>
<b>Electrofusion fittings</b>				
	<ul style="list-style-type: none"> <li>• 90 to 180 mm</li> </ul>	<ul style="list-style-type: none"> <li>• 16 bar</li> </ul>	<ul style="list-style-type: none"> <li>• Polyethylene</li> </ul>	<ul style="list-style-type: none"> <li>• Puriton® mains pipe</li> </ul>
<b>Redman™ fittings</b>				
	<ul style="list-style-type: none"> <li>• 63 mm SDR11</li> <li>• 90 - 110 mm SDR11</li> <li>• 90 - 180 mm SDR17</li> </ul>	<ul style="list-style-type: none"> <li>• 12.5 bar</li> <li>• 16 bar</li> <li>• 10 bar</li> </ul>	<ul style="list-style-type: none"> <li>• Steel insert</li> <li>• Steel and copper outer shell</li> </ul>	<ul style="list-style-type: none"> <li>• Puriton® service pipe (63 mm)</li> <li>• Puriton® mains pipe</li> </ul>
<b>Tapping tees</b>				
	<ul style="list-style-type: none"> <li>• 63 to 180 mm x 25 mm</li> <li>• 63 to 180 mm x 32 mm</li> </ul>	<ul style="list-style-type: none"> <li>• 12.5 bar</li> <li>• 12.5 bar</li> </ul>	<ul style="list-style-type: none"> <li>• Gunmetal body</li> <li>• Polypropylene outlet</li> </ul>	<ul style="list-style-type: none"> <li>• Puriton® service pipe (63 mm)</li> <li>• Puriton® mains pipe</li> </ul>
<b>Spigot fittings</b>				
	<ul style="list-style-type: none"> <li>• 63 mm SDR11</li> <li>• 90 to 180 mm SDR11</li> <li>• 90 to 180 mm SDR17</li> </ul>	<ul style="list-style-type: none"> <li>• 12.5 bar</li> <li>• 16 bar</li> <li>• 10 bar</li> </ul>	<ul style="list-style-type: none"> <li>• Polyethylene with stainless steel insert</li> </ul>	<ul style="list-style-type: none"> <li>• Puriton® service pipe (63 mm)</li> <li>• Puriton® mains pipe</li> </ul>

# Puriton® service pipe

BS 8588 (WIS 4-32-19\*) 'Type A' pipe

Available in diameters 25 to 63 mm, our Puriton® service pipe is manufactured from a black PE80 core, an aluminium barrier layer and a light blue PE80 outer layer with brown stripes.

Our Puriton® service pipes are available in coils and also in straight lengths for the 63 mm pipe. They are quick and easy to join without the need for surface preparation, using our range of cutting edge mechanical fittings and Redman™ fittings for our 63 mm pipe.



## Pipe dimensions

Nominal diameter mm	Materials	SDR	Pressure rating bar	Core pipe external diameter mm	Core pipe wall thickness mm	Internal diameter mm	Overall external diameter mm	Pipe weight kg/m	Pipe length m	Product code
25	PE80/Al	11	12.5	25.0 - 25.3	2.3 - 2.7	19.6 - 20.7	27.0 - 27.6	0.3	50	XQ2528
32	PE80/Al	11	12.5	32.0 - 32.3	3.0 - 3.4	25.2 - 26.3	34.0 - 34.6	0.5	50	XQ2535
63	PE80/Al	11	12.5	63.0 - 63.4	5.8 - 6.5	50.0 - 51.8	64.8 - 65.8	1.5	6	XQ2568
									25	XQ2570
									50	XQ2571
									100	XQ2572



## Pipe coil dimensions

Nominal diameter mm	SDR	Pressure rating bar	Coil inner diameter mm	Coil outer diameter mm	Coil width mm	Coil length m	Coil weight kg
25	11	12.5	800	930	175	50	14.5
32	11	12.5	800	930	175	50	22.0
63	11	12.5	1275	1510	221	25	36.3
			1275	1815	208	50	72.5
			1275	1815	310	100	145.0

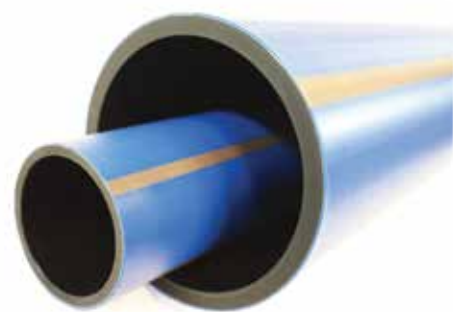
Pipe weights are for lifting and handling purposes. They are calculated on a per metre length and are based on a maximum diameter and pipe wall thickness.

\* BS 8588:2017 supersedes WIS 4-32-19

## Puriton® mains pipe

BS 8588 (WIS 4-32-19\*) 'Type A' pipe

Available in diameters 90 to 180 mm, our Puriton® mains pipe is manufactured from a black PE100 core, an aluminium barrier layer and a dark blue PE100 outer layer with brown stripes. Our Puriton® mains pipes are joined using our range of state of the art Redman™ fittings, Radius Systems' electrofusion fittings and the butt-fusion jointing technique detailed within this brochure.



### Pipe dimensions

Nominal diameter mm	Materials	SDR	Pressure rating bar	Core pipe external diameter mm	Core pipe wall thickness mm	Internal diameter mm	Overall external diameter mm	Pipe weight kg/m	Pipe length m	Product code
90	PE100/Al	11	16	90.0 - 90.6	8.2 - 9.2	71.6 - 74.2	92.2 - 93.8	2.8	6	XQ0125
									12	XQ0126
									50	XQ0128
									100	XQ0129
90	PE100/Al	17	10	90.0 - 90.6	5.4 - 6.1	77.8 - 79.8	92.2 - 93.8	2.1	6	XQ0143
									12	XQ0145
									50	XQ0146
									100	XQ0147
110	PE100/Al	11	16	110.0 - 110.7	10.0 - 11.1	87.8 - 90.7	112.2 - 113.9	3.9	6	XQ0233
									12	XQ0235
									50	XQ0236
									100	XQ0237
110	PE100/Al	17	10	110.0 - 110.7	6.6 - 7.4	95.2 - 97.5	112.2 - 113.9	2.9	6	XQ0251
									12	XQ0253
									50	XQ0254
									100	XQ0255
125	PE100/Al	11	16	125.0 - 125.8	11.4 - 12.7	99.6 - 103.0	127.2 - 129.0	5.0	6	XQ0287
									12	XQ0289
									50	XQ0290
									100	XQ0291
125	PE100/Al	17	10	125.0 - 125.8	7.4 - 8.3	108.4 - 111.0	127.2 - 129.0	3.6	6	XQ0305
									12	XQ0307
									50	XQ0308
									100	XQ0309
160	PE100/Al	11	16	160.0 - 161.0	14.6 - 16.2	127.6 - 131.8	162.2 - 164.2	8.0	6	XQ0458
									12	XQ0460
									50	XQ0461
									100	XQ0462
160	PE100/Al	17	10	160.0 - 161.0	9.5 - 10.6	138.8 - 142.0	162.2 - 164.2	5.7	6	XQ0476
									12	XQ0478
									50	XQ0479
									100	XQ0480
180	PE100/Al	11	16	180.0 - 181.1	16.4 - 18.2	143.6 - 148.3	182.2 - 184.3	9.9	6	XQ0530
									12	XQ0532
									50	XQ0534
									100	XQ0535
180	PE100/Al	17	10	180.0 - 181.1	10.7 - 11.9	156.2 - 159.7	182.2 - 184.3	7.1	6	XQ0550
									12	XQ0552
									50	XQ0554
									100	XQ0555

Pipe weights are for lifting and handling purposes. They are calculated on a per metre length and are based on a maximum diameter and pipe wall thickness.

# Puriton® mains pipe

BS 8588 (WIS 4-32-19\*) 'Type A' pipe

## Pipe coil dimensions

Nominal diameter mm	SDR	Pressure rating bar	Coil inner diameter mm	Coil outer diameter mm	Coil width mm	Coil length m	Coil weight kg
90	11	16	1800	2220	320	50	137.9
	11	16	1800	2440	410	100	275.7
90	17	10	2500	2930	320	50	102.7
	17	10	2500	3000	410	100	205.4
110	11	16	2500	3000	400	50	197.1
	11	16	2500	3200	500	100	394.1
110	17	10	2500	3000	400	50	145.7
	17	10	2500	3200	500	100	291.4
125	11	16	2500	3000	450	50	251.0
	11	16	2500	3200	600	100	502.0
125	17	10	2500	3000	450	50	181.6
	17	10	2500	3200	600	100	363.1
160	11	16	3000	3590	530	50	397.6
	11	16	3000	3850	700	100	795.2
160	17	10	3000	3590	530	50	284.4
	17	10	3000	3850	700	100	568.8
180	11	16	3000	3800	630	50	496.3
	11	16	3000	4000	800	100	992.6
180	17	10	3000	3800	630	50	353.0
	17	10	3000	4000	800	100	706.0

To ensure that the barrier properties of the Puriton® system are maintained, Puriton® fittings must be used with Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the system.

## Puriton® fittings

### Mechanical fittings

Quick and easy to install, our range of Puriton® mechanical fittings for service pipes are manufactured from polypropylene and supplied with integral inserts, grip rings and O-ring seals for maximum contamination protection. The system is easy to construct with no requirement for pipe surface preparation and no need to post-wrap the joint after installation.

#### Couplers



Diameter mm	Pack quantity	Product code
25	1	XR5244
32	1	XR5245
63	1	XR5251

#### 90° elbows



Diameter mm	Pack quantity	Product code
25	1	XR5249
32	1	XR5250
63	1	XR5252

#### Male adaptors



Diameter mm	Pack quantity	Product code
25 x ¾"	1	XR5235
32 x ¾"	1	XR5236
32 x 1"	1	XR5237
63 x 1½"	1	XR5258
63 x 2"	1	XR5259



#### Equal tees



Diameter mm	Pack quantity	Product code
25	1	XR5247
32	1	XR5248
63	1	XR5253

#### Reducers



Diameter mm	Pack quantity	Product code
32 x 25	1	XR5246
63 x 25	1	XR5257
63 x 32	1	XR5254

#### Female adaptors



Diameter mm	Pack quantity	Product code
25 x ¾"	1	XR5240
32 x ¾"	1	XR5241
32 x 1"	1	XR5242
63 x 2"	1	XR5260

#### C ring wrenches



Pipe diameter	Pack quantity	Product code
25-32 mm	1	XR4998
63 mm	1	XR4999



## Redman™ fittings

Simple and quick to install with little pipe preparation, the Redman™ joint is made by pressurising the outer shell of the fitting using a dedicated hydraulic pump. Once made, our Redman™ fittings provide a 'fit and forget' end-load-bearing joint.

Available in diameters 63 mm to 180 mm, the fittings are supplied ready to install with the appropriate number of outer shells and inserts, offering full corrosion resistance and barrier protection against contamination to your potable water system.



### Couplers



Diameter mm	Pipe SDR	Pack quantity	Product code
63	11	1	RE0001
90	11	1	RE0002
90	17	1	RE0009
110	11	1	RE0003
110	17	1	RE0010
125	17	1	RE0005
160	17	1	RE0007
180	17	1	RE0047

### Repair couplers



Diameter mm	Pipe SDR	Pack quantity	Product code
63	11	1	RE0065
90	11	1	RE0064
90	17	1	RE0067
110	11	1	RE0066
110	17	1	RE0069
125	17	1	RE0071
160	17	1	RE0078
180	17	1	RE0080

### 45° elbows



Diameter mm	Pipe SDR	Pack quantity	Product code
63	11	1	RE0032
90	11	1	RE0033
90	17	1	RE0034
110	11	1	RE0035
110	17	1	RE0036
125	17	1	RE0038
160	17	1	RE0040
180	17	1	RE0045

### 90° elbows



Diameter mm	Pipe SDR	Pack quantity	Product code
63	11	1	RE0011
90	11	1	RE0012
90	17	1	RE0013
110	11	1	RE0014
110	17	1	RE0015
125	17	1	RE0017
160	17	1	RE0019
180	17	1	RE0021

Note: the Redman™ fittings' inserts are not interchangeable between pipe SDRs.

## Redman™ fittings

### Flange adaptors



Diameter mm	Pipe SDR	Pack quantity	Product code
63 x DN50	11	1	RE0073
63 x DN80	11	1	RE0083
90 x DN80	11	1	RE0074
90 x DN80	17	1	RE0075
110 x DN100	11	1	RE0076
110 x DN100	17	1	RE0077
125 x DN100	17	1	RE0079
160 x DN150	17	1	RE0081
180 x DN150	17	1	RE0089

Flange drilling BS 4504 NP16. Supplied with galvanised iron backing ring. Nuts, bolts, washers and gaskets not supplied.

### Adaptors



Diameter mm	Pipe SDR	Pack quantity	Product code
63 x 1½" BSPF/2" BSPM	11	1	RE0123

Note: the Redman™ fittings' inserts are not interchangeable between pipe SDRs.

## Tooling

### Hydraulic pump



Description	Pack quantity	Product code
Redman hydraulic pump	1	XR0211

### Hydraulic oil



Description	Pack quantity	Product code
Biodegradable hydraulic oil for Redman pump - 5 litres	1	XR0212

For calibration and servicing of the Redman™ hydraulic pump, contact Fluidlink:

t: +44(0)1249 818555  
w: [www.fluidlink.co.uk](http://www.fluidlink.co.uk).

## Electrofusion Fittings

Available in diameters 90mm to 180mm, our range of Puriton® electrofusion fittings are manufactured from high strength black PE100 and are suitable for Puriton® pipe in SDR17 and SDR11. The fittings are welded in a single fusion operation using a 40V electrofusion control unit, and when correctly installed in accordance with Radius Systems' guidance, there is no requirement to post-wrap the joint.

For guidance on the correct preparation of Puriton® pipe for electrofusion jointing, please refer to the jointing guidance within the brochure or visit our website: [www.radius-systems.com](http://www.radius-systems.com).



### Couplers



Diameter mm	Pack quantity	Product code 4.0 mm pin
90	1	WA0210
110	1	WA0211
125	1	WA0212
160	1	WA0214
180	1	WA0215

### Equal tees



Diameter mm	Pack quantity	Product code 4.0 mm pin
90	1	WA2210
110	1	WA2211
125	1	WA2212
160	1	WA2214
180	1	WA2215

### 45° elbows



Diameter mm	Pack quantity	Product code 4.0 mm pin
90	1	WA3318
110	1	WA3319
125	1	WA3320
160	1	WA3322
180	1	WA3323

### 90° elbows



Diameter mm	Pack quantity	Product code 4.0 mm pin
90	1	WA3347
110	1	WA3348
125	1	WA3349
160	1	WA3351
180	1	WA3352

### Reducers



Diameter mm	Pack quantity	Product code 4.0 mm pin
110 x 90	1	WA4286
125 x 90	1	WA4289
125 x 110	1	WA4291
160 x 110	1	WA4294
180 x 125	1	WA4297

## Service pipe off-take connections

Radius Systems offer a dedicated range of gunmetal tapping tees, which are suitable for Puriton® pipe in both SDR11 and SDR17. A 25 or 32mm mechanical outlet is fitted to enable the Puriton® service pipe connection. The tapping tees incorporate a unique sleeve, which, as part of the tapping operation, is 'swaged' into the pipe wall, sealing the aluminium barrier layer from contact with the water supply.



### Tapping tees

Diameter mm	Pack quantity	Product code
63 x 25	1	XR5111
90 x 25	1	XR5112
110 x 25	1	XR5113
125 x 25	1	XR5114
160 x 25	1	XR5115
180 x 25	1	XR5116
63 x 32	1	XR5117
90 x 32	1	XR5118
110 x 32	1	XR5119
125 x 32	1	XR5120
160 x 32	1	XR5121
180 x 32	1	XR5122

Maximum operating pressure 12.5 bar



### Ferrule adaptors

Diameter mm	Pack quantity	Product code
25 x 3/4"	1	XR5055

To ensure that the barrier properties of the Puriton® system are maintained, Puriton® fittings must be used with Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the system.

## Spigot fittings

Our Puriton® flange adaptors have been specifically designed with a unique stainless steel insert, which is fitted during the manufacturing process to provide effective barrier properties to the polyethylene stub flange.



### Flange adaptors

Diameter mm	SDR	Pack quantity	Product code
63 x DN80	11	1	XR0290
90 x DN80	11	1	XR0291
90 x DN80	17	1	XR0300
110 x DN100	11	1	XR0310
110 x DN100	17	1	XR0303
125 x DN100	11	1	XR0311
125 x DN100	17	1	XR0301
160 x DN150	11	1	XR0312
160 x DN150	17	1	XR0304
180 x DN150	11	1	XR0313
180 x DN150	17	1	XR0302

Flange drilling BS 4504 NP16. Supplied with Rilsan coated backing ring. Nuts, bolts and gaskets are not supplied.

## Tooling

### Tapping tee T key



Description	Pack quantity	Product code
3/8" T key	1	XR0215

## Joining guidance

The Puriton® pipe system has been developed for ease of joining with a range of fittings specifically designed to suit the pipe type. Minimal pipe surface preparation is required when using our mechanical or Redman™ fittings. However, pipe surface preparation is mandatory when joining Puriton® pipe using the electrofusion or butt-fusion techniques.

To ensure that the barrier properties of the Puriton® system are maintained, only Puriton® fittings must be used with Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the system.

### Pipe joining methods and pipe surface preparation requirements

Pipe diameter (mm)		25	32	63	90	110	125	160	180
Mechanical compression fittings		●	●	●					
Redman™ hydraulic fittings	SDR11			●	●	●			
	SDR17				●	●	●	●	●
Electrofusion					●	●	●	●	●
Butt-fusion					●	●	●	●	●
Gunmetal tapping tee				●	●	●	●	●	●

- No pipe surface preparation required. Ensure the pipe outer surface is clean and free from damage
- Pipe surface preparation mandatory

When joining Puriton® pipe in diameters 90 to 180 mm using the electrofusion or butt-fusion joining techniques, the preparation of the pipe surface is mandatory. Dedicated equipment has been designed to locally remove the outer polyethylene and aluminium barrier layers. This equipment is available for sale or hire from the suppliers below:

- Caldervale Technology [www.caldertech.co.uk](http://www.caldertech.co.uk)
- PSS Hire [www.psshire.com](http://www.psshire.com)
- Hy-Ram [www.hynam.com](http://www.hynam.com)
- MCA-Fusion Hire [www.mcafusionhire.co.uk](http://www.mcafusionhire.co.uk)



Rotary pipe surface preparation tools

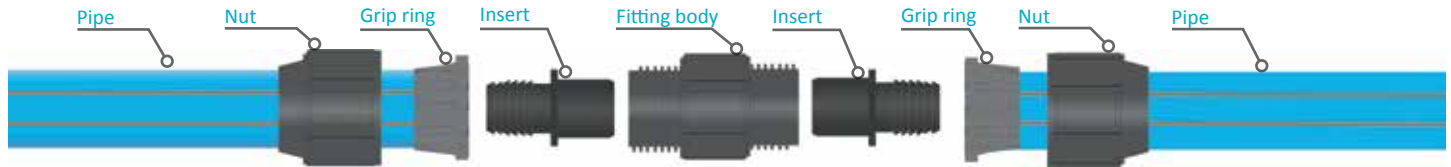


## Joining overview

### Mechanical fitting - coupler joining overview



Minimum recommended personal protection equipment



1 Ensure the pipe is cut square and damage free. Re-round if necessary. Slide the nut and grip ring on the pipe.



2 Using a rubber mallet, gently tap the insert fully into the pipe end.



3 Push the pipe with the insert fully into the body of the fitting.



4 Slide the grip ring so it is flush with the pipe insert.



5 Hand tighten the nut onto the body of the fitting.



6 Repeat steps 1 to 5 for the second pipe to be joined.



7 Using C ring wrenches fully tighten the nuts onto the body of the fitting.



8 The joint is complete. Carry out a water industry approved joint pressure test to check for leak-tightness. There is no requirement to wrap the finished joint.

### Redman™ fittings - coupler joining overview



1 Ensure the pipe is cut square and damage free. Re-round if necessary. Slide the outer shell over the pipe and push the insert into the pipe end.



2 Fit the second pipe onto the insert. Ensure that both pipes are pushed up to the insert stop.



3 Slide the outer shell over both pipes, ensuring it is centralised over the two pipes.



4 Using the Redman™ pump, pressurise the fitting following Radius Systems' pressurisation procedure on our website: [www.radius-systems.com](http://www.radius-systems.com).

Operate the pump at a safe distance away from the joint, using the full length of the hose. Do not touch the fitting or the pipe during the pressurisation and de-pressurisation processes.

## Electrofusion fittings - coupler jointing overview

Pipe preparation is mandatory before carrying out an electrofusion joint. **A 2-pass pipe surface preparation process is required** for jointing Puriton® pipes. Please visit our website for the complete jointing guidance at [www.radius-systems.com](http://www.radius-systems.com).



Ensure the pipe surface is clean and free from damage. Re-round if necessary. Measure and mark the fitting insertion depth on the pipe.



**First pass**  
Select the correct size tooling and cutting blade and carry out the first pass of the pipe surface preparation.



Rotate the tool anti-clockwise, to remove the outer PE and aluminium layers up to the fitting insertion depth mark.



**Second pass**  
Select the standard pipe preparation blade to carry out the second pass of the pipe surface preparation.



Rotate the tool continuously in an anti-clockwise direction. This will remove a continuous layer of polyethylene swarf.



Place the fitting on the pipe end as shown. Keep the fitting in its packaging to the point of inserting the second pipe, to avoid contamination.



Repeat the pipe surface preparation for the second pipe to be joined and fully insert into the fitting.



Fit alignment clamps and follow industry best practice to fuse the fitting. There is no requirement to wrap the finished joint.

## Butt-fusion jointing overview

Pipe preparation is mandatory before carrying out an electrofusion joint. **A 2-pass pipe surface preparation process is required** for jointing Puriton® pipes. Please visit our website for the complete jointing guidance at [www.radius-systems.com](http://www.radius-systems.com).



Ensure the pipe surface is clean and free from damage. Re-round if necessary. Mark the minimum pipe preparation distance using the Puriton® butt-fusion gauge.



**First pass**  
Select the correct size tooling and cutting blade and carry out the first pass of the pipe surface preparation.



Rotate the tool anti-clockwise, to remove the outer PE and aluminium layers up to the fitting insertion depth mark.



**Second pass**  
Select the standard pipe preparation blade to carry out the second pass of the pipe surface preparation.

(Cont...)

## Butt-fusion jointing overview (...Cont.)



Rotate the tool continuously in an anti-clockwise direction. This will remove a continuous layer of polyethylene swarf.



Check the correct pipe surface distance using the Puriton® butt-fusion gauge. Prepare the second pipe following steps 1 to 5.



Follow the water industry standard butt-fusion procedure. Program the butt-fusion unit with the correct pipe parameters.



Finished joint. Remove the external bead and perform a bend back test to assess the joint quality. There is no requirement to wrap the finished joint.

## Tapping tee jointing overview



Ensure the pipe surface is clean and free from damage. Place the O-ring seal into the recess of the tapping tee base and place the fitting onto the main.



Equally tighten the nuts on both sides of the tapping tee.



Ensure the distances between the 'lugs' are identical and parallel on both sides.



Carry out the service pipe connection to the tapping tee outlet following the jointing overview in this brochure.

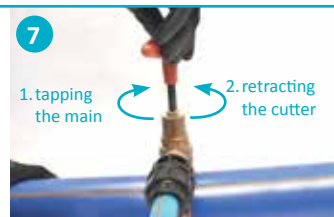


Using C ring wrenches fully tighten the nuts onto the tapping tee outlet.

Carry out a water industry approved joint pressure test to check for leak-tightness.



Using a 3/8" T key, remove the tapping tee dust cap and seal.



**1. Tapping the main**  
Use a hexagonal 3/8" T key and turn in a clockwise direction. The cutter must come to a definite stop.

**2. Retracting the cutter**  
Turn the T key in an anti-clockwise direction. The cutter will come to a definite stop at the top of the tapping tee stack.



Replace the dust cap and tighten. The connection is complete. Visually check for leak-tightness. There is no requirement to wrap the finished joint.

## Coil banding & coil dispensing

When pipes are packaged into coils, Radius Systems use restraining straps around the pipe to retain the pipe's coil shape. Coils contain a considerable amount of stored energy, which could potentially cause injury to personnel, if the coils are not handled and dispensed correctly. To allow the safe handling and dispensing of coils, Radius Systems use specialist straps, fitted at different positions around the pipe's turns and layers that form the coil. When the coil is ready to be dispensed, the straps are removed in sequence, ensuring that the energy contained in the coil is released in a controlled and safe manner. (See diagrams below).

To ensure a safe working environment during the installation of pipe coils, these should only be dispensed from specially designed coil dispensers, supplied by a reputable manufacturer.

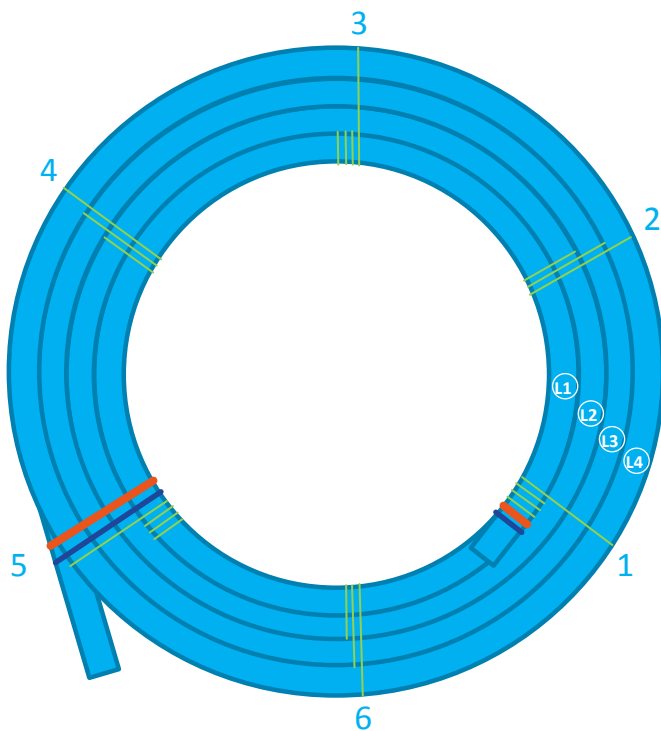
Radius Systems recommend that personnel involved in the handling and dispensing of pipe coils are adequately trained for this operation. Courses in the safe and correct handling and dispensing of pipe coils are available from industry bodies.



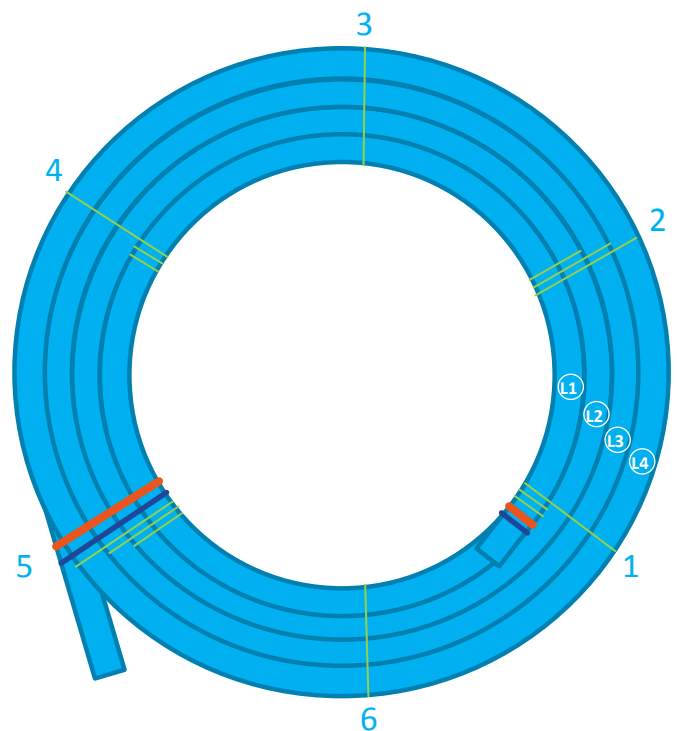
Minimum personal protection equipment (PPE)

- Always wear the minimum PPE
- Restrict the work area to essential personnel only
- Always dispense coils from a coil dispenser
- Only use a suitable round-nosed cutting tool to cut the strap to prevent the pipe from being damaged
- Never cut all of the restraining straps at once
- Only cut the required number of straps to allow the required pipe length to be dispensed
- Take care when cutting the straps to release the pipe
- Always ensure the tail ends of the coil are released in a restrained and controlled manner
- Ensure the tail ends of a part used coil are secured before transporting it from the site
- Do not transport coiled pipes containing water

● For coils with inner diameter  $\geq 2.5$  m



● For coils with inner diameter  $\leq 1.8$  m



Illustrations showing the banding positions on a 4 layer coil



## Banding position for coils

Coils consist of a minimum of 2 layers and the number of layers and turns in a coil will depend on its length and may exceed the ones shown below. If the coil consists of only 2 layers, the 'final layer' banding sequence is applied to layer 2.

### • Layer 1 (L1)



#### • Coil internal diameter $\geq 2.5$ m

Anti-vandal steel band and length & caution tape are applied around turns T1 & T2 of L1  
Position 1

#### • Coil internal diameter $\leq 1.8$ m

Anti-vandal steel band and length & caution tape are applied around turns T1 & T2 of layer 1 (L1)  
Position 1



Polyester strap around turns T1 & T2 of L1  
Positions 1, 3 & 5

Not applicable



Polyester strap around turns T1, T2 & T3 of L1  
Positions 1, 3 & 5

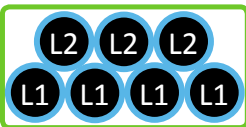
Polyester strap  
Around turns T1, T2 & T3 of L1  
Positions 1 & 4



Additional turns on L1 follow the same banding sequence as above

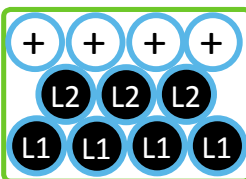
Additional turns on L1 follow the same banding sequence as above

### • Additional layers



Once layer 2 (L2) is completed Polyester straps are applied around L1 and L2  
Positions 2, 4 & 6

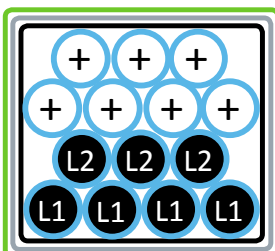
Once layer 2 (L2) is completed Polyester straps are applied around L1 and L2  
Positions 2 & 5



Additional layers follow the same banding sequence as above

Additional layers follow the same banding sequence as above

### • Final layer



Anti-vandal steel band and coil length & caution tape are applied to the coil end. Polyester straps are applied at all positions.

Anti-vandal steel band and coil length & caution tape are applied to the coil end. Polyester straps are applied at all positions.





### ? Why are there 2 different polyethylene pipe materials used within the range of Puriton® pipes?

- To maintain the current industry convention that PE80 materials are used for small diameter service pipes and PE100 materials are used for mains pipes:
- Puriton® pipes in diameters 25, 32 and 63 mm are manufactured from a PE80 black inner core and a PE80 light blue outer
- Puriton® pipes in diameters 90 to 180 mm are manufactured from a PE100 black inner core and a PE100 dark blue outer.

### ? When referring to barrier pipe systems, what does the term 'Type A' refer to?

The term 'Type A' is defined within BS 8588 and refers to pipes 'where one or more of the polymer layers form a core pipe which is designed to bear the stress associated with the hydrostatic pressure'. The aluminium provides protection against contamination and the outer polyethylene layer protects the aluminium.

### ? Are the dimensions of Puriton® pipes the same as those of conventional SDR11 and SDR17 pipes?

The Puriton® pipe being a 'Type A' pipe, its overall wall thickness exceeds the requirements of BS EN 12201 for SDR11 and SDR17 pipes.

The dimensions of the black core pipe meet the requirements of BS EN 12201-2, to which the aluminium and outer protective polyethylene layers are added, increasing the wall thickness and the outer diameter over conventional polyethylene pipes to BS EN 12201.

### ? What are the pressure ratings of Puriton® pipes?

Puriton® pipe maximum operating pressures:

- PE80 SDR11 service pipe 25 to 63 mm: 12.5 bar
- PE100 SDR11 mains pipe 90 to 180 mm: 16 bar
- PE100 SDR17 mains pipe 90 to 180 mm: 10 bar

### ? What are the recommended jointing techniques for Puriton® 'Type A' service pipes?

- For ease of installation, Radius Systems offer a range of mechanical fittings in diameters 25, 32 and 63 mm. In addition, for 63 mm diameter pipe our Redman™ hydraulic compression fittings range can be used.
- Do not undertake electrofusion jointing on Puriton® service pipes in 25, 32 and 63 mm, as this is not an approved jointing procedure.
- For 'Type B' legacy Puriton® service pipes jointing guidance, please contact Radius Systems.

### ? What are the recommended jointing techniques for Puriton® 'Type A' mains pipes?

For Puriton® pipes in diameters 90, 110, 125, 160 and 180 mm the following jointing techniques are recommended:

- Redman™ hydraulic compression fittings.
- Butt-fusion jointing  
To maintain the barrier properties of the system this method of jointing must be undertaken in accordance with the Radius Systems' jointing procedure.
- Electrofusion jointing  
To maintain the barrier properties of the system only the Radius Systems' electrofusion fittings identified within the Puriton® product range are recommended. The jointing method must be undertaken in accordance with the Radius Systems' jointing procedure.
- Electrofusion jointing must not be undertaken on Puriton® 'Type B' PE80 legacy pipe systems (90 and 110 mm pipe). For guidance on jointing legacy pipes, please contact Radius Systems.

- When making either a butt-fusion or an electrofusion joint onto Puriton® pipe, both the outer polyethylene and aluminium layers must be locally removed using the tooling recommended by Radius Systems. Care must be taken to ensure that additional external material is not removed.

### ? Where can I find detailed jointing instructions for the system?

Jointing instructions in PDF format and videos are available to download from the Radius Systems' website: [www.radius-systems.com](http://www.radius-systems.com). The jointing instructions for the mechanical fittings, Redman™ fittings and the tapping tees are also included in the fittings' packaging.

### ? How do I connect 90 mm Puriton® pipe to 63 mm Puriton® pipe?

63 mm and 90 mm Puriton® pipes are joined together using 63 x DN80 and 90 x DN80 Redman™ flange adaptors.

### ? When I have made a joint or connection onto Puriton® pipe using Puriton® fittings and following Radius Systems' Puriton® jointing guidance, do I need to wrap the joint with an additional aluminium or protective barrier tape?

Once the joint is made, there is no requirement to wrap the Puriton® joint with additional aluminium or protective barrier tape.

Radius Systems have evaluated their Puriton® jointing system without the use of additional aluminium or protective barrier tape.

### ? Can I use fittings from other manufacturers with Puriton® pipe?

Radius Systems only recommend the use of Puriton® fittings with Puriton® pipe, to ensure that the barrier properties of the Puriton® system are maintained. The use of non Puriton® fittings may compromise the barrier properties of the system.

### ? What are the recommended installation techniques for Puriton® pipe?

Puriton® pipe is typically installed using the open-cut technique. However, alternative techniques like 'slip lining' and 'horizontal directional drilling' can be used. Particular care must be taken to ensure that the outer polyethylene layer is not damaged to an extent that the aluminium barrier is exposed. This will compromise the barrier properties of the pipe.

### ? When installing a Puriton® pipe, what should I do if the outer polyethylene layer becomes damaged and the aluminium layer is exposed?

To maintain the integrity of the aluminium layer and the barrier properties of the system, we recommend that the damaged pipe is removed and replaced with undamaged pipe.

### ? Do I need to use a PTFE thread tape for the male threaded connection when using mechanical fittings and the Redman™ 63 x 1½" BSPF/2" BSPM fitting?

To ensure that the system is leak-tight, only WRAS approved PTFE thread tape should be used.

### ? Who can I contact if I have additional product or technical queries on the Puriton® system?

If you have additional questions relating to our Puriton® pipe, please contact Radius Systems' Sales or Technical Support teams:

**Sales:**  
t: +44 (0)1773 811112  
e: [sales@radius-systems.com](mailto:sales@radius-systems.com)

**Technical support:**  
t: +44 (0)1773 811112  
e: [techsupport@radius-systems.com](mailto:techsupport@radius-systems.com)

# Radius Systems

Radius Systems are a market leader in the innovation and manufacture of plastic pipe systems for the utilities and construction industries. With extensive research and development at the heart of our products and systems, we take care of the entire pipe life cycle - from design and manufacture through to installation, repair and rehabilitation. We strive to improve industry practices, with good health and safety policies at the forefront of our philosophy of 'getting it right first time'. Our continuous customer inspired research and development, combined with successful customer partnerships represent our total dedication to the plastic piping industry.

## ○ Manufacturing facilities

With 2 production sites in the UK, we have complete control over quality and the ability to meet the expectations of our customers.

## ○ Innovative approach

We are leaders in our field with a history of research and new product development. Practicality, durability and adaptability are all high on our agenda to meet our clients' needs.

## ○ Flexible product and service provision

Our comprehensive range of services is designed to fit the variable demands of our clients' developments in pipes, fittings, training and support services.

## ○ Reliability and safety

With over 50 years experience of design and manufacture, our clients know that they can count on us to meet not just their product and service needs, but also their delivery and safety requirements.

## ○ Outstanding customer service

We have a dedicated Customer Services team to answer queries from our customers in the UK and overseas. Our service is not just about the delivery of products - contact our team if you have a product or installation enquiry or a post-delivery query.



For more information please visit our website:  
[www.radius-systems.com](http://www.radius-systems.com) or contact us:

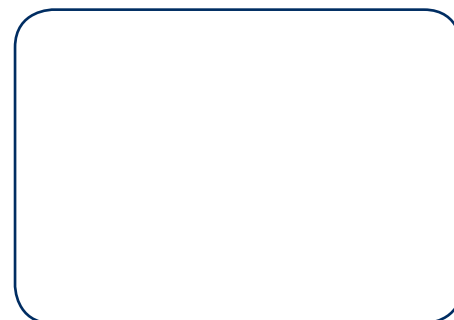
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