

Durapipe Guardian

Specification guide



DURAPIPE GUARDIAN

Durapipe Guardian is a completely new Dual Contained pipework system made from PVC-U material.

Guardian is a unique system that incorporates a patented Centra-Lok™ system, which provides a solid fixed fitting, offering a true point of difference from other dual contained systems on the market.

Manufactured in PVC-U material, Durapipe Guardian is ideal for water and waste treatment applications as it allows the safe transportation of different fluids and some chemical concentrates without fear of corrosion and environmental pollution.

Key Product Information

- Size Range: ½"#2" up to 8"#12"
- Pressure Rating: Class E 15 bar
- Temperature Rating: +5 to 60°C

Key Product Features

- Patented Centra-Lok™ system holds fitting in the correct place prior to installation
- Extremely easy to install - Solvent Weld jointing for both inner and outer
- Visual or automated leak detection system available

Typical Applications

- Water and waste water treatment
- Chemical process
- Pharmaceutical
- Industrial process
- Food and beverage
- Marine
- Potable water



Guardian

Guardian Introduction

Dual contained pipework for when leaks are not an option...

Durapipe Guardian – Your dual contained specialist

Creating a safe working environment, offering strong environmental control is imperative in many industrial applications, particularly within the water treatment, chemical processing and process application sectors. Pressures are increasing for businesses to provide extra reliability not only to their workforce, but also to the environment they are operating within, driving demand for extra reliability provided with a dual contained pipework system.

Durapipe Guardian dual contained pipework system utilises state-of-the-art technology, using pre-assembled components that guarantee reliability, ease of installation and fewer joints than many other competitor systems on the market, providing a perfect solution to applications **when leaks are NOT an option!**



What is Guardian?

Overview

- Dual contained pipework system
- Full range of pipe, fittings, valves and terminations
- Easy to install
- Fully imperial sized system

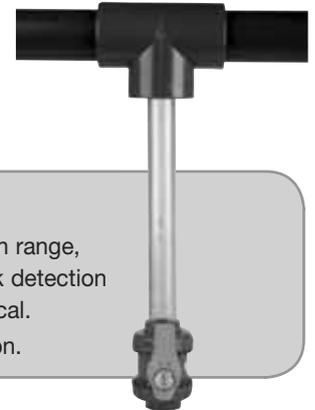
Material Selection

Durapipe Guardian is manufactured from PVC-U material which makes the system ideal for conveying industrial fluids in demanding environments.

Design

The Guardian system offers a complete selection of pretested modular components which are extremely easy to install.

Our Centra-Lok™ patented design means the Guardian system averages up to 60% fewer overall joints than other systems on the market. Since joints are always the most common source of premature failures and leaks, it is easy to realise the immense impact the patented Centra-Lok™ design has on maintenance, repair and installation costs.

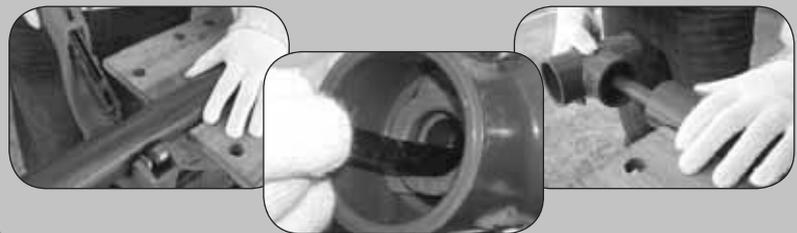


Leak Detection

As part of the Durapipe Guardian range, we can also offer a range of leak detection systems, both physical and optical. See Page 93 for more information.

Easy to install

Guardian is the easiest system of its kind (dual contained) to install. Following the same simple solvent cement jointing process as single-wall PVC-U, there are no special tools, equipment or hot works permits required. Please see page 83 for full jointing instructions.



Where is Guardian used?

- Water and Waste Treatment
- Chemical Waste
- Process Applications
- Chemical Manufacturing/ Pharmaceutical
- Electronics/Data Storage

What is it commonly used for?

- Chemical Treatment
- Unknown/Hazardous Waste
- Aggressive Chemicals
- High Value Contents
- Water Damage Prevention



Leak Prevention



Booster Pump Station, Audenshaw

The station delivers drinking water into North West water company United Utilities' Manchester ring main from the Thirlmere Aqueduct. Following a review, it became apparent that the phosphate dosing operation at the site was in need of attention, in particular, the existing pipework carrying the aqueous solution of sodium orthophosphate from the glass reinforced plastic storage tanks to the dosing rig.

Byzak Limited installed the Guardian pipework system to transfer the sodium orthophosphate from the storage tanks to the dosing rig, using 1" carrier pipe in 3" containment pipe.

Contamination Prevention



Water Treatment Works, Rivington

Durapipe Guardian installed at Rivington Water Treatment Works, specified to transport sodium hypochlorite safely from the bulk storage tanks to each of the seven new pumps installed within the plant.

The pipework is installed within the ceiling voids of the plant, therefore due to the nature of the chemicals planned for transportation, it was vital that the system is dual contained to prevent any potential leakages spilling out into the plant and endangering unprotected workers.

Durapipe Guardian Case Study Examples

Factory Installation



Armstrong World Industries, Gateshead

Durapipe Guardian installed at Armstrong World Industries, a global manufacturer of ceiling and floor products and commissioned ProMinent.

The system was specified as a dual contained pipework system to carry 2000ppm Carbon Dioxide from manufacturing through to settle tanks ready for discharge.

Chemical Transportation



Water Treatment Works, Egham

Durapipe Guardian installed at Egham Water Treatment Works during a period of pipework regeneration.

Contractors IDS required a dual contained system in order to transport orthophosphoric acid and polyaluminium chloride around the plant safely.

Guardian Installation

Solvent Cement Jointing (Individual)

PVC

1. The pipe must be cut clean and square. A suitable wheel cutter will eliminate swarf. As an alternative (and on larger sizes) a carpenter's saw should be used, however this may create dust and swarf which can enter the system. Remove all burrs from both the inside and outside edge of the pipe with a knife, file or reamer and chamfer the end of the pipe using a coarse file or suitable chamfering tool. The chamfer should be approximately 45° by 3mm to 5mm depending on the pipe size. Remove any dirt, grease or moisture. A thorough wipe with a clean, dry rag is usually sufficient. Check dry fit. Pipe should insert easily into socket, approximately 1/4 to 3/4 of the total socket depth.

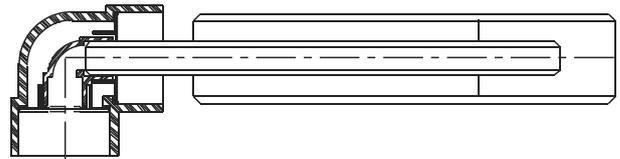


2. Clean surfaces thoroughly with Durapipe Eco-cleaner using lint free cloth/paper towel.



3. Using a clean brush, apply Durapipe PVC One-step cement to the carrier pipe and inner fitting. HCR-36 cement and cleaner should be used for aggressive chemicals, for more information please see page 18.

The joint surfaces should be completely covered by cement. Cement should be applied using an appropriate size brush and tin of cement. It is important to apply cement quickly to enable assembly without excessive force being required. When applying cement with a brush, the size of the brush should be approximately half the size of the pipe to be jointed - brush size up to 2 1/2" for 0.5 litre tins.



4. Without delay assemble while cement is still wet, push the pipe fully home into the fitting using sufficient force to ensure that pipe bottoms in socket. Hold together for about thirty seconds to make sure joint does not separate. With a rag, wipe off excess cement. Avoid disturbing the joint.



5. Repeat step 3, but this time for the containment pipe and outer fittings.



6. Without delay assemble the outer joint as described in step 4. This process (points 3-6), can be repeated using standard PVC sockets to extend the pipe lengths, until there is a change of direction needed.



Solvent Cement Jointing (Simultaneous)

There will be circumstances where it will not be possible to joint the carrier pipework and the containment pipework separately. At this point a simultaneous joint will be required.

- 7a. Determine proper carrier pipe lengths to achieve desired centre-to-centre dimension. Cut to size and prep ends as detailed in steps 1 & 2.



- 7b. Generally containment pipe needs to be shorter than the carrier pipe. This distance can be worked out from the data on pages 90-91. $A2 - A1 =$ Additional length of carrier pipe eg. for $1/2"$ # 2" (90° Elbow) this equates to $35.1 - 12.7 = 22.4\text{mm}$

Hence the carrier pipe needs to be 22.4mm longer than the containment pipe, for simultaneous jointing. Measure and cut both the carrier and containment pipes to the required distance and chamfer and clean the pipe and fittings as described in steps 1 & 2.



8. Install Centra-guide support at pipe's end. Distance between the fitting and support should not exceed $1\frac{1}{2}$ metres. Install additional supports if required.
9. Clean surfaces thoroughly with Durapipe Eco-cleaner and apply solvent cement to carrier and containment sockets and pipe ends. Push the fitting fully home so that it is against the pipe stop.



10. Wipe off excess cement from the outside of the joint.
11. Do not disturb the joint for at least 15 minutes. On larger sizes do not subject the joint to bending or twisting forces for at least 4 hours. When making subsequent joints, which can be done without waiting, take care not to transmit forces to freshly made joints in the system.

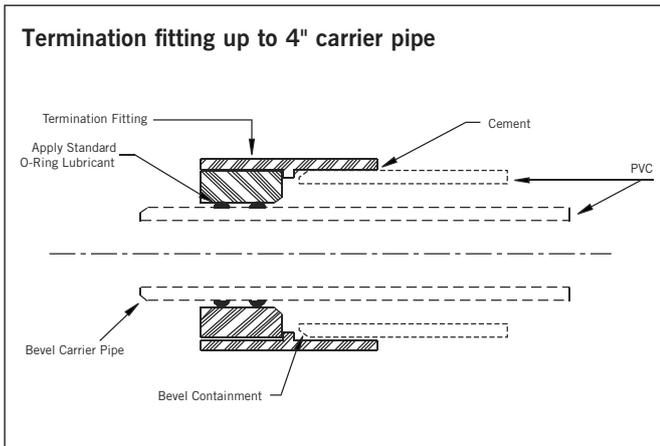
Depending upon the chemical being used HCR cement may be required. Please refer to Page 18.

IMPORTANT: Always apply Eco-cleaner and cement liberally. Do not take shortcuts. Follow Guardian instructions explicitly.

Termination Fittings

Guardian PVC termination fittings (up to 4" carrier pipe) are supplied as one-piece components, complete with carrier pipe O-Rings. Always bevel carrier pipe end or damage to the O-Rings will occur. Clean surfaces of both the containment pipe and the socket of the termination fitting thoroughly with Durapipe Eco-cleaner. Apply cement to both containment pipe and termination socket and slide into position. Allow 24 hours cure time prior to testing. The fitting is supplied as standard with taps to allow for venting, draining, leak detection etc. If this plug is not needed it can be plugged with a standard 1/2" BSP PVC plug (Durapipe code 02 155 102)

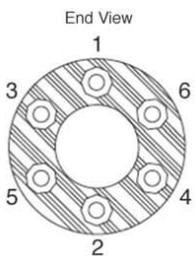
Do not apply Eco-cleaner or solvent cement to O-Rings.



All C-style termination fittings (for carrier pipe larger than 4") are shipped completely assembled and ready for field installation.

Slide the termination fitting over the carrier pipe and into the end of the containment pipe, recessing it approximately one inch from the containment pipe end. As the bolts are tightened, the end plates compress the elastomeric material creating a seal between the carrier and containment pipe. Tighten all bolts following the torque sequence (as below).

NOTE: I.D. and O.D. of termination fitting are sized per specified carrier and containment pipe.



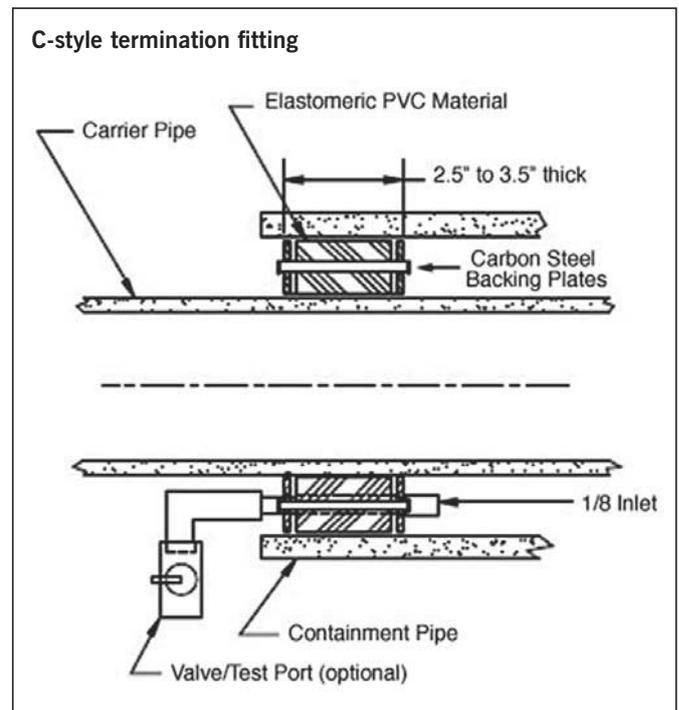
Pipe Size	No. of Bolts	Bolts Size	Max Torque (Nm)
1 x 3	3	1/4 NC	10.85
1 x 4	4	1/4 NC	10.85
1 1/2 x 4	4	1/4 NC	10.85
2 x 4	4	1/4 NC	10.85
3 x 6	6	1/4 NC	10.85
4 x 8	6	5/16 NC	13.56
6 x 10	6	5/16 NC	13.56
8 x 12	6	5/16 NC	13.56

Using a C-style termination to pressure test installed pipework.

To properly test the containment pipe joints, first seal the interstitial space located at both ends of the pipe run.

Second, provide a port to pressurise and depressurise the section of pipe to be tested. A C-style termination fitting can be used to seal the interstitial space and provide a pressurisation port for testing purposes. When permanently installed, it acts as a termination fitting with a drain valve. It is also used temporarily to test containment joints in subassemblies before joining to your next subassembly.

Once a successful pressure test is completed, the fitting can be removed and used again.



Cleaning and Installation

Following installation, the installer shall check the operation of all valves, leak detection, devices and ancillary items. The annular space should be purged of moisture containing air, by replacing the volume of air with clean, dry nitrogen.

Common Mistakes

- Insufficient amount of cement
 - Incorrect or outdated cement
 - Eco-cleaner not being used
 - Pipe ends not chamfered
 - Pipes not fully inserted (Inner pipe too short)
 - Pipes misaligned
 - Contamination (dirt) on cementing area
 - Improper positioning of closure coupling on containment pipe
 - Movement of pipe sections before cement is fully cured
 - Wrong size brush
1. Always use containment pipe dimensions as the basis for determining piping layout, centre-to-centre dimensions and expansion loop size.
 2. Termination fittings are usually required at the beginning, end and at any branch line of double containment systems, except when draining back to a collection sump, pit or tank.
 3. Systems with long runs or extreme temperature changes may require expansion loops or elbows, TEDs or changes in direction.
 4. Durapipe UK technical support team should be consulted for correct determination of suitability of chemicals.
 5. For above-ground and outdoor applications, UV protection may be required on certain materials.

Care should be taken to avoid exposure to UV light, eg. sunlight, particularly during storage.

This will cause discolouration and deterioration of the PVC-U material.

Whilst this is a surface effect only, it is recommended that precautions be taken to prevent this happening.

If stored outdoors pipe should be covered with opaque sheeting.

If installed outdoors it can be protected from the effects of UV by insulating or painting.

NOTE: Always allow 24 hours or more, depending on environmental conditions, before testing carrier/containment pipe. Please allow 48 hours for sizes above 8".



External Support

Support and spacing requirements for double containment pipe systems should be equal to standard above-ground PVC-U piping. It is important to place hangers near interstitial supports. Additional external support considerations should be given to components such as valves, in-line pumps or other heavy items.

Horizontal piping systems should be supported on uniform centers, which are determined by maximum containment pipe temperatures (see support chart for recommendations). Values apply to uninsulated lines either in a building or exposed to the environment.

Regardless of the type of hanger selected, it is important to note that a wide surface is recommended, free from burrs and sharp edges. Do not anchor by means of a U-bolt directly to the containment pipe.

When pipe clips are used, they should not force the pipe fittings into position. Each pipe section should be laid out and jointed to its mating section. Once the joints have been completed, the final support is in place. When correctly installed, a clip or anchor can be loosened or removed without the pipe shifting.

Pipe Size Inner#Outer (Inch)	Minimum Support Spacing at 20°C (m)
1/2#2	1.80
3/4#3	2.25
1#3	2.15
1 1/4#4	2.40
2#4	2.20
3#6	2.75
4#8	3.10
6#10	3.30
8#12	3.50

Pressure Testing Guardian PVC-U Dual Contained Pipework

Test Method: Carrier (inner) Pipework

After the joints have been allowed to cure for the appropriate minimum drying time (at least 24 hours @ 20°C).

- The system should be divided into sections (if appropriate) for testing. Fill with cold water ensuring no air pockets remain. **Do not** pressurise at this stage.
- Check the pipework for any obvious leaks, if none are apparent, check for and remove any remaining air.
- Increase the pressure up to 3 bar. **Do not** pressurise further at this stage.
- Leave pressurised for 10 minutes, if pressure decays, inspect for leaks and rectify as necessary. If pressure remains constant, slowly increase the hydrostatic pressure to 1½ times the nominal operating pressure (max 22.5 bar).
- Leave pressurised for a period not exceeding 1 hour. During this time the pressure should not change.
- If extended times are required to achieve hydrostatic pressure, either leakage has occurred or air remains in the line, inspect for leaks and if none are apparent, reduce the pressure and check for trapped air. This must be removed prior to further pressurisation.

NOTE: If leaks are found at any stage, the system must be depressurised and drained. It is not possible to make a repair to leaking pipe or fittings, therefore such components must be cut out and replaced. All new joints must be fully cured prior to re-testing.

THE USE OF GAS OR COMPRESSED AIR IS NOT PERMITTED AS A TEST MEDIUM FOR CARRIER PIPE.

Test Method: Containment (outer) Pipework

A low-pressure air test is the recommended method for testing the containment pipe. However, a hydrostatic water test is possible for the containment zone.

Low-pressure air test

After the joints have been allowed to cure for the appropriate minimum drying time (at least 24 hours up to 8", sizes 10" & 12" require a minimum of 48 hours @ 20°C).

- The containment pipe can be low-pressure air tested at up to 0.5 bar regulated pressure.
- If the pipework contains 'zone fittings' each zone of the pipework will need to be tested individually.
- The system must not be directly connected to a compressed air-line, nitrogen bottle or any unregulated pressure device. It is imperative that a working pressure regulator be used during the pneumatic test to ensure over pressurisation does not occur.
- The test equipment must have a pressure limiting device, set to 0.5 bar, at the source and an air relief device, set to 0.5 bar, at the end of the system.
- Use a spray bottle containing soap and water solution to examine for leaks in the containment pipework.
- If any leaks are discovered, the system must be depressurised before components are cut out and replaced.

NOTE: Some compressor oils can contain damaging elements to PVC-U pipe, check with the manufacturer of the compressor oil for its suitability with PVC-U pipe.

Alternative hydrostatic pressure test for containment pipe

After the joints have been allowed to cure for the appropriate minimum drying time (at least 24 hours up to 8", sizes 10" & 12" require a minimum of 48 hours @ 20°C).

- The carrier pipe must be filled with water.
- The containment pipe should be divided into sections **see notes below** (if appropriate) for testing.
- Fill with cold water ensuring no air pockets remain. **Do not** pressurise at this stage.
- Check the pipework for any obvious leaks, if none are apparent, check for and remove any remaining air.

The carrier pipe must be pressurised to equal or greater than the maximum test pressure of the containment pipe.

- Increase the pressure up to 3 bar. **Do not** pressurise further at this stage.
- Leave pressurised for 10 minutes, if pressure decays, inspect for leaks and rectify as necessary. If pressure remains constant, slowly increase the hydrostatic pressure to 1½ times the nominal operating pressure (Maximum 13.5 bar).
- Leave pressurised for a period not exceeding 1 hour. During this time the pressure should not change.
- If extended times are required to achieve hydrostatic pressure, either leakage has occurred or air remains in the line, inspect for leaks and if none are apparent, reduce the pressure and check for trapped air. This must be removed prior to further pressurisation.

NOTES: The Guardian Zone fittings are not designed to hold the maximum working pressure of the system from zone to zone, if zone fittings are incorporated within the system they MUST NOT BE USED to divide the system into sections for hydrostatic testing. For testing, each side of the zone fittings must be pressurised to an equal amount at all times.

If leaks are found at any stage, the system must be depressurised and drained. It is not possible to make a repair to leaking pipe or fittings, therefore such components must be cut out and replaced. All new joints must be fully cured prior to re-testing.

When using C-style termination fittings and applying a test pressure of more than 2.5 bar, measures need to be taken to prevent slippage of the secondary containment fitting by installation of suitable anchors.

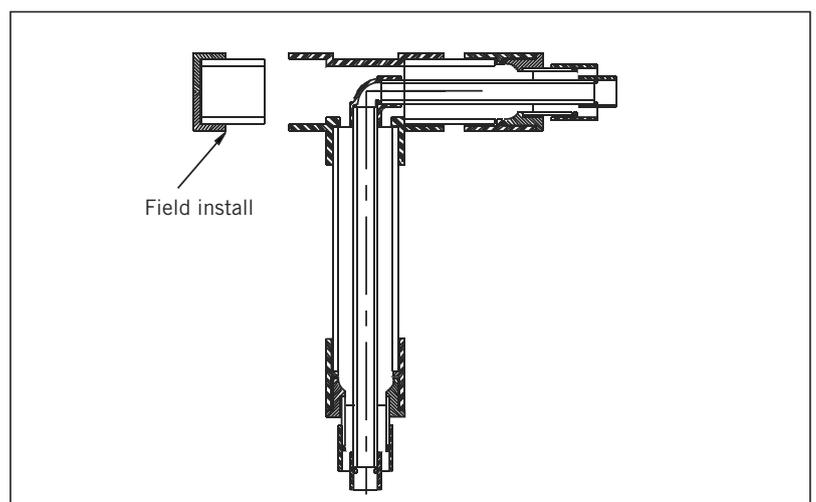
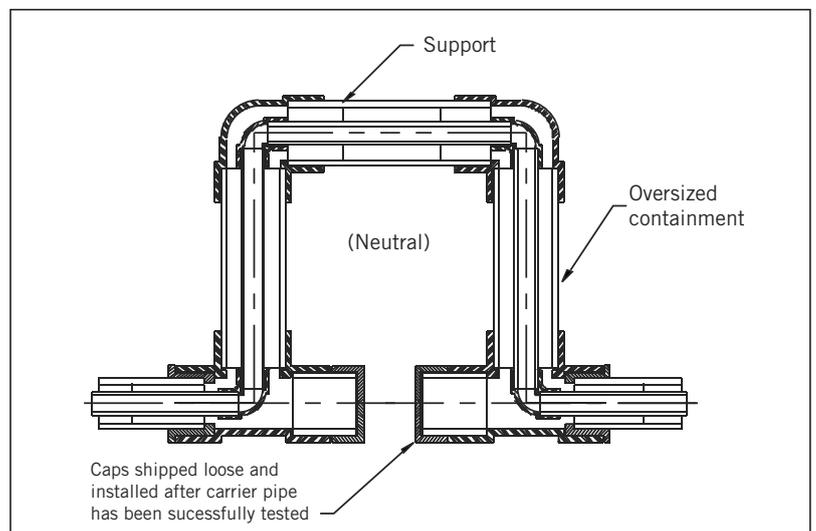
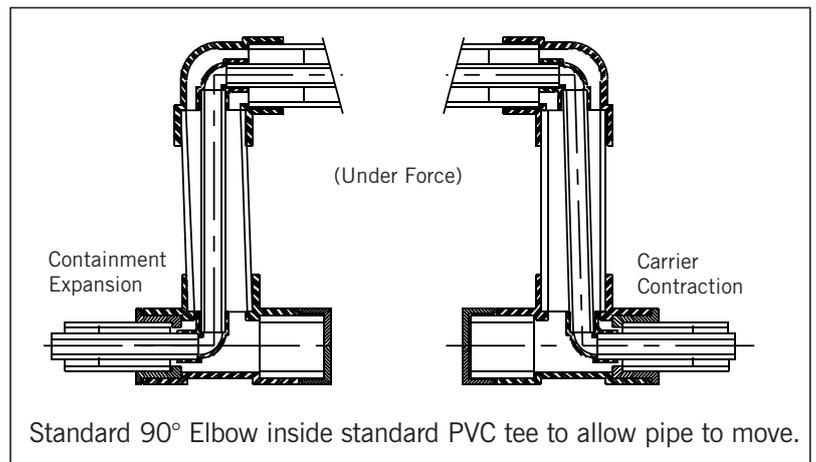
Expansion Loop and Elbows

A common method to control the effects of expansion or contraction in a piping system is to install a combination of anchors and guides with expansion loops. Anchors direct pipe to free movement area. Guides control the carrier pipe movement down the bore of the containment pipe to, and away from, the expansion loop.

A relaxed expansion loop as well as one subjected to temperature change are depicted below. As you can see, when a pipe is subjected to temperature change, some degree of movement will occur. Failure to compensate for temperature change may cause stress and ultimately failure.

The carrier and containment pipes are anchored together at every change of direction due to the way in which the unique Centra-Lok™ component connects the fittings together.

For this reason it is important to install standard tees (outer) and 90° elbows (inner) in order to allow for the carrier pipe to move independently. The open socket can then be plugged once the system has been pressure tested. See pages 11-13 for details on calculating expansion loop size.



Expansion Joints

We have introduced a new expansion joint that provides an easy to install solution for the complex expansion and contraction of a double contained piping system. This piston style expansion joint features:

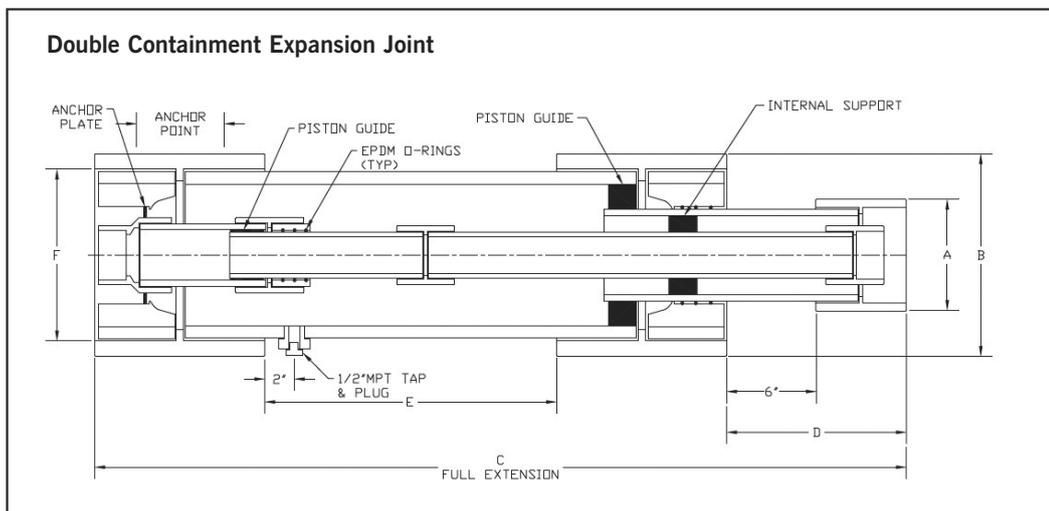
- 150mm of travel for both carrier and containment pipe
- Triple O-ring design for a reliable water tight seal
- Independent movement for both carrier and containment pipe
- Tap and plug on containment for drainage
- Piston guides to ensure smooth motion without buckling
- Pressure rated design up to 16 bar

Durapipe Guardian Double Containment Expansion Joints are engineered to accommodate the various expansion and contraction found in a contained piping system. The carrier and containment pipe are allowed to expand and contract independently of each other to ensure proper compensation regardless of ambient or process temperature differentials, pipe size, or layout differences. The expansion joint is shipped fully assembled, using factory tested joints, to eliminate the need for costly field joints that could create leak paths.

NOTE: Free space area denotes maximum movement of carrier to initial interference with containment.

Unwanted stresses resulting from thermal expansion can be minimised or eliminated by providing for flexibility in a double containment piping system. This is achieved by incorporating expansion loops or elbows.

Maximum Expansion Per Loop Size	
Size (inch)	Free Space Area (mm)
1/2#2	16.00
3/4#3	26.00
1#3	23.00
1 1/2#4	27.00
2#4	13.00
3#6	22.00
4#8	34.00
6#10	22.00
8#12	14.00

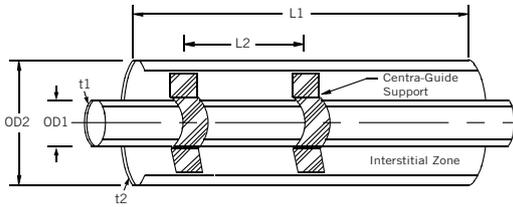


Carrier/ Containment	A	B	C	D	E	Code
1" # 3"	106.68	134.62	889.41	259.08	383.54	08 TED 104
2" # 4"	134.62	193.04	939.80	312.42	469.90	08 TED 107
3" # 6"	198.12	218.44	1295.4	304.80	438.15	08 TED 109
4" # 8"	254.00	273.05	1346.2	330.20	438.15	08 TED 110

*Optional
FPM seals available

Guardian Dimensional Information

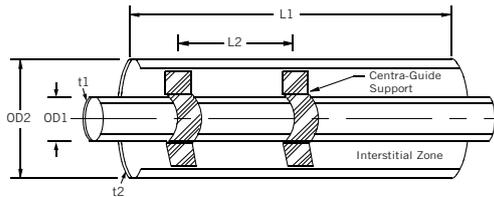
PVC Dual Contained pipe



Carrier/ Containment	Class	L ₁ m	L ₂ m	OD1 mm	t ₁ mm	OD2 mm	t ₂	Code
1/2"#2"	E/C	6	1.5	21.2	1.9	60.2	3.4	08 513 102
3/4"#3"	E/C	6	1.5	26.6	2.4	88.7	5.0	08 513 103
1"#3"	E/C	6	1.5	33.4	3.0	88.7	5.0	08 513 104
1 1/2"#4"	E/C	6	1.5	48.1	4.4	114.1	6.4	08 513 106
2"#4"	E/C	6	1.5	60.2	5.4	114.1	6.4	08 513 107
3"#6"	E/C	6	1.5	88.7	8.1	168.0	9.4	08 513 109
4"#8"	E/C	6	1.5	114.1	10.3	218.8	12.2	08 513 110
6"#10"	E/C	TBA	TBA	TBA	TBA	TBA	TBA	08 513 112
8"#12"	D/C	TBA	TBA	TBA	TBA	TBA	TBA	08 512 113

Carrier pipe is Class E or Class D. Containment pipe is Class C.

PVC Dual Contained pipe clear out

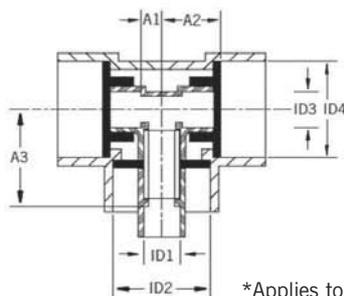
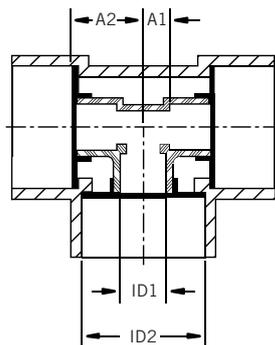


Carrier/ Containment	Class	L ₁ m	L ₂ m	OD1 mm	t ₁ mm	OD2 mm	t ₂	Code
1/2"#2"	E/C	6	1.2	21.2	1.9	60.3	5.19	08 514 102
3/4"#3"	E/C	6	1.2	26.6	2.4	88.9	7.27	08 514 103
1"#3"	E/C	6	1.2	33.4	3.0	88.9	7.27	08 514 104
1 1/2"#4"	E/C	6	1.2	48.1	4.4	114.3	10.15	08 514 106
2"#4"	E/C	6	1.2	60.2	5.4	114.3	10.15	08 514 107
3"#6"	E/C	6	1.2	88.7	8.1	168.3	15.32	08 514 109
4"#8"	D/C	6	1.2	114.1	10.3	218.8	20.17	08 514 110

This product is supplied as:

- 1 x 6m length of grey inner pipe
- 2 x 3m lengths of clear outer pipe
- 1 x socket (loose)
- 6 x Centra-guide spacers

Centra-Lok™ 90° Tees Equal plain

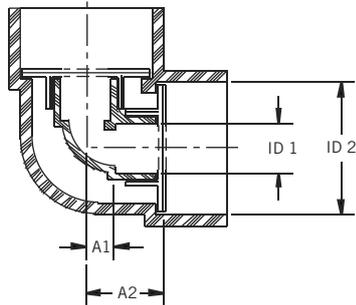


*Applies to 6#10" & 8#12"

Carrier/ Containment	A1	A2	ID1	ID2	Code
1/2"#2"	12.7	35.1	21.3	60.5	08 122 102
3/4"#3"	17.3	49.8	26.7	88.9	08 122 103
1"#3"	19.1	49.8	33.5	88.9	08 122 104
1 1/2"#4"	26.9	65.8	48.3	114.3	08 122 106
2"#4"	31.8	65.8	60.5	114.3	08 122 107
3"#6"	46.7	95.0	88.9	168.1	08 122 109
4"#8"	59.4	122.2	114.3	218.9	08 122 110
6"#10"	155.4	238.3	168.1	273.1	08 122 112
8"#12"	180.8	301.5	218.9	323.9	08 122 113

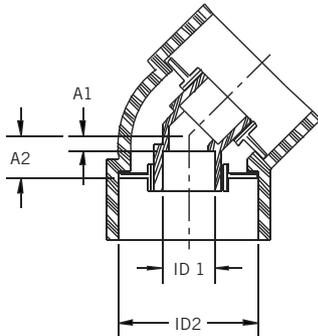
CAUTION: Do not use or test the products in this manual with compressed air or other gases.

Centra-Lok™ 90° Elbows Plain



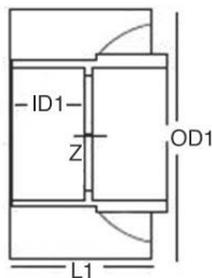
Carrier/Containment	A1	A2	ID1	ID2	Code
1/2"#2"	12.7	35.1	21.3	60.5	08 115 102
3/4"#3"	17.3	49.8	26.7	88.9	08 115 103
1"#3"	19.1	49.8	33.5	88.9	08 115 104
1 1/2"#4"	26.9	65.8	48.3	114.3	08 115 106
2"#4"	31.8	65.8	60.5	114.3	08 115 107
3"#6"	46.7	95.0	88.9	168.1	08 115 109
4"#8"	59.4	122.2	114.3	218.9	08 115 110
6"#10"	88.9	150.6	168.1	273.1	08 115 112
8"#12"	115.8	176.0	218.9	323.9	08 115 113

Centra-Lok™ 45° Elbows Plain



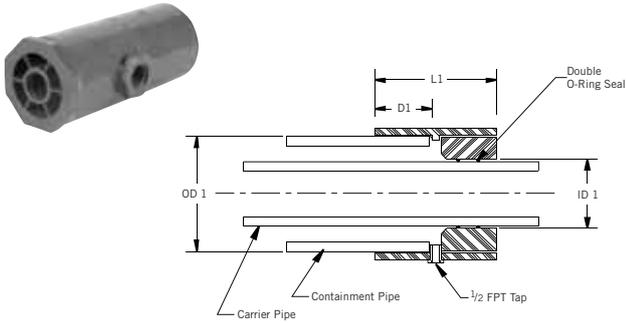
Carrier/Containment	A1	A2	ID1	ID2	Code
1/2"#2"	6.4	22.1	21.3	60.5	08 119 102
3/4"#3"	8.6	25.4	26.7	88.9	08 119 103
1"#3"	9.7	25.4	33.5	88.9	08 119 104
1 1/2"#4"	12.7	31.8	48.3	114.3	08 119 106
2"#4"	15.7	31.8	60.5	114.3	08 119 107
3"#6"	19.1	50.8	88.9	168.1	08 119 109
4"#8"	25.4	57.2	114.3	218.9	08 119 110
6"#10"	44.5	120.7	168.1	273.1	08 119 112
8"#12"	50.8	173.0	218.9	323.9	08 119 113

Guardian Zone fitting Plain



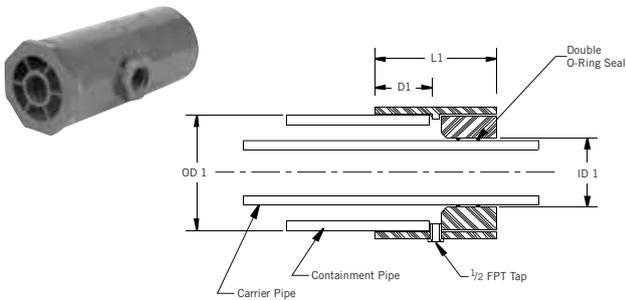
Carrier/Containment	ID1	OD1	L1	Z	Code
1/2"#2"	25	36	135	11	08 496 102
3/4"#3"	29	44	140	15	08 496 103
1"#3"	36	60	140	24	08 496 104
1 1/2"#4"	49	78	196	29	08 496 106
2"#4"	56	95	196	39	08 496 107
3"#6"	64	101	220	37	08 496 109
4"#8"	78	120	235	42	08 496 110

PVC/PVC Termination fitting EPDM Plain/O-Ring seal



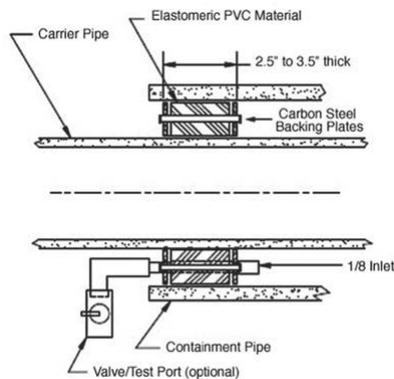
Carrier/Containment	L1	D1	ID1	OD1	Code
1/2"#2"	61.2	38.1	21.3	60.5	08 143 102
3/4"#3"	100.8	47.8	26.7	88.9	08 143 103
1"#3"	100.8	47.8	33.5	88.9	08 143 104
1 1/2"#4"	119.1	57.2	48.3	114.3	08 143 106
2"#4"	119.1	57.2	60.2	114.3	08 143 107
3"#6"	158.8	76.2	88.9	168.4	08 143 109
4"#8"	215.9	101.6	114.3	219.2	08 143 110

PVC/PVC Termination fitting FPM Plain/O-Ring seal



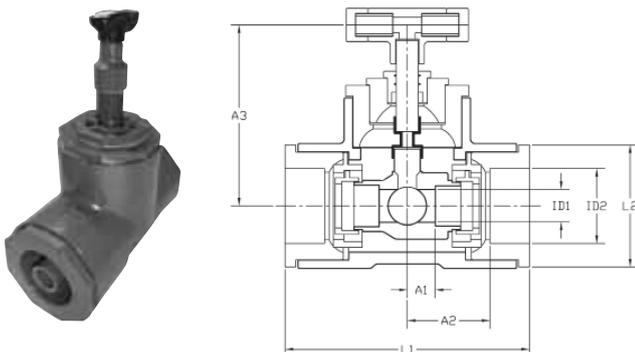
Carrier/Containment	L1	D1	ID1	OD1	Code
1/2"#2"	61.2	38.1	21.3	60.5	08 144 102
3/4"#3"	100.8	47.8	26.7	88.9	08 144 103
1"#3"	100.8	47.8	33.5	88.9	08 144 104
1 1/2"#4"	119.1	57.2	48.3	114.3	08 144 106
2"#4"	119.1	57.2	60.2	114.3	08 144 107
3"#6"	158.8	76.2	88.9	168.4	08 144 109
4"#8"	215.9	101.6	114.3	219.2	08 144 110

C-Style Termination fitting



Size	No of Bolts	Bolt Size	Max Torque	Code
6#10	6	5/16NC	10ft lbs	08 143 112
8#12	6	5/16NC	10ft lbs	08 143 113

PVC/PVC VKD valve Plain



Carrier/Containment	L1	L2	A3	ID1	ID2	Code
1/2"#2"	192	104	186	21.3	60.5	08 DKE 102
3/4"#3"	196	106	213	26.7	88.9	08 DKE 103
1"#3"	260	135	242	33.5	88.9	08 DKE 104
1 1/2"#4"	310	200	269	48.3	114.3	08 DKE 106
2"#4"	370	200	299	60.5	114.3	08 DKE 107
3"#6"	460	270	370	88.9	168.1	08 DKE 109
4"#8"	620	310	480	114.3	218.9	08 DKE 110

Option:

Available with FPM seals. To order use 08 DKF ***

CAUTION: Do not use or test the products in this manual with compressed air or other gases.

Guardian Leak Detection Kits

Standard leak detection kit Consisting of equal tee, bush, 1m clear PVC pipe and VXE Easyfit PVC ball valve



Description	Code
Leak detection tee kit to fit 2" OD containment pipe	08 191 107
Leak detection tee kit to fit 3" OD containment pipe	08 191 109
Leak detection tee kit to fit 4" OD containment pipe	08 191 110
Leak detection tee kit to fit 6" OD containment pipe	08 191 112
Leak detection tee kit to fit 8" OD containment pipe	08 191 113

Retrofit leak detection kit Consisting of clamp saddle, threaded socket, threaded adaptor, 1m clear PVC pipe and VXE Easyfit PVC ball valve

Description	Code
Leak detection saddle kit to fit 2" OD containment pipe	08 192 107
Leak detection saddle kit to fit 3" OD containment pipe	08 192 109
Leak detection saddle kit to fit 4" OD containment pipe	08 192 110
Leak detection saddle kit to fit 6" OD containment pipe	08 192 112
Leak detection saddle kit to fit 8" OD containment pipe	08 192 113

Leak Detection System

Durapipe Guardian dual contained pipework accepts many forms of leak detection equipment. Our technical support team can advise on your leak detection options. For all leak detection queries, please contact our technical support on +44(0)1543 272445.

Accessories

One-step solvent cement



Litres	gms	Code
0.5	500	03 462 395

Durapipe PVC-U solvent cement must be used for jointing of Durapipe PVC-U pipework systems.

Cleaner for use with HCR-36 Chemically resistant PVC cement



Description	Code
1/2 litre	03 467 395

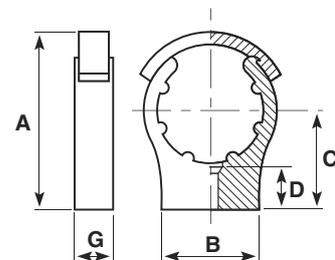
Eco-cleaner



Litres	gms	Code
0.5	500	03 457 395

Durapipe Eco-cleaner must be used for jointing of Durapipe PVC-U pipework systems.

Cobra pipe clips



HCR-36 Chemically resistant PVC cement



Description	Code
1 litre	03 468 396

Size	A	B	C	D	G	Bolt/Screw	gms	Code
2	102	60	60	19	21	M.6/0BA/ No 10	42	13 434 311
3	148	80	90	39	31	M.8	121	13 434 313
4	171	90	96	36	35	M.8	185	13 434 314
6	243	170	150	40	40	M.8	185	13 434 317

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