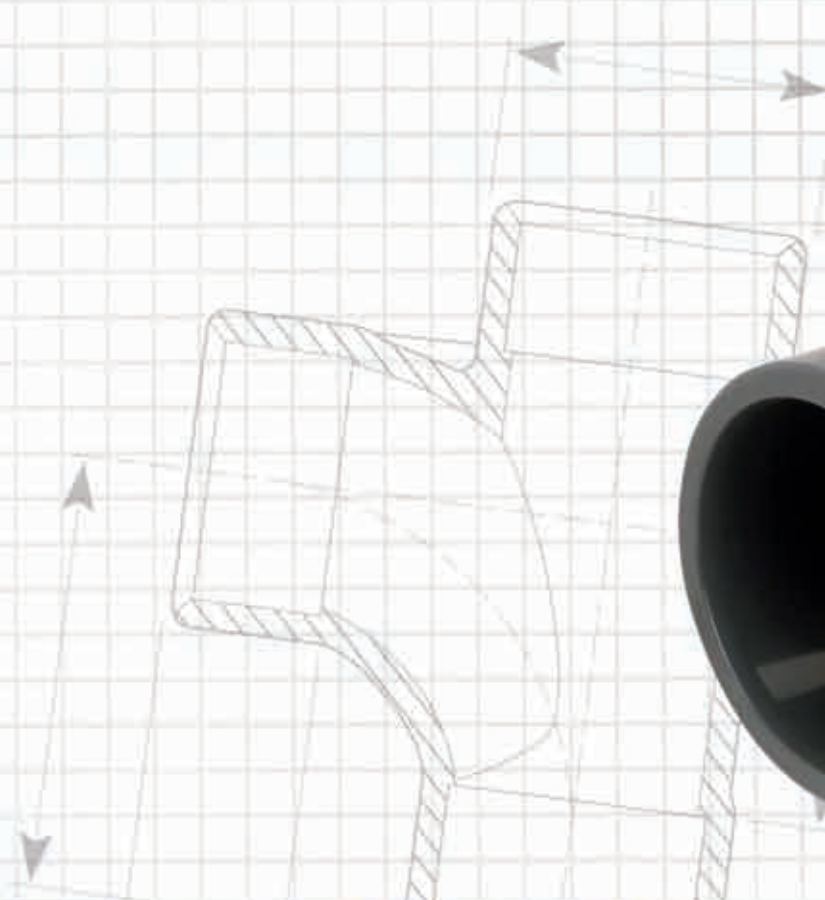




Pipes, Fittings & Valves

Imperial and Metric Systems



Durapipe PVC-U
including Guardian dual contained pipework

Technical Data

INDUSTRIAL FLUID HANDLING

Durapipe PVC-U – for process chemicals and industrial fluid handling.

Our PVC-U pipe and fittings provide excellent chemical resistance making it ideal for various industrial applications.

PVC-U allows the safe transportation of many acids, alkalis and chemical concentrates without fear of corrosion and environmental pollution.

Durapipe PVC-U is a solvent welded, fully matched pipework system incorporating pipe, fittings and valves that is available in both imperial and metric sizes.

PVC-U is lightweight and is extremely easy to install which can save both time and money on any given project when compared to other, more traditional pipework materials.

Furthermore, Durapipe PVC-U is fully WRAS approved and it also meets the requirements of other internationally recognised standards and approvals.

Durapipe UK PVC-U pipe is listed in the 'List of Approved Products' published by the DWI.



Key Product Information

- Size Range: 1/2" to 12" (*Imperial*), 16mm to 315mm (*Metric*)
- Pressure Rating: (*Metric*)
Pipe – 20mm to 225mm PN16, 160mm to 315mm PN10
Fittings – 12mm to 225mm PN16, 250mm to 315mm PN10
- Temperature Rating: 0° to 60°C
- Pressure Rating: (*Imperial*)
1/2" to 6" pipe Class E
up to 12" pipe Class C
1/2" to 6" fittings Class E
8" to 12" fittings Class C



PVC-U

Key Product Features

- Lightweight
- Easy to install
- Corrosion resistant

Typical Applications

- Acids and alkalis
- Effluents
- Potable water
- Chemical processing
- Effluent treatment



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Specialist pipework system for process chemicals and industrial fluid handling



- Fully integrated range of pipe, fittings and valves (manual and actuated)
- Available in both metric and imperial systems
- Unrivalled level of third party approvals
- Easy to Install
- Corrosion resistant
- Reduced installation costs
- 50 year design life for pipe and fittings (25 year design life for valves)

What is PVC-U?

PVC-U (Polyvinyl chloride unplasticised) is a highly reliable resin with high performance properties in terms of thermal stability, chemical resistance and mechanical operation which is obtained by the presence of chlorine in the molecular structure.

The different formulations obtained by the addition of suitable additives and stabilisers, make PVC one of the most versatile plastic materials, providing several opportunities to use PVC in different industrial applications.

PVC overcomes many problems that can be associated with other pipework materials when conveying corrosive chemical fluids or the distribution or treatment of general water.



Durapipe PVC-U has been used for the conveyance of water, effluents, acids and chemical concentrates within different industrial applications for many years.

Where is typically PVC-U used?

- Water and Waste Treatment
- Chemical Processing
- Process Engineering
- Food and Beverage Manufacturing
- Marine
- Power Generation

What is PVC-U typically used for?

- Effluent Treatment
- Acids and Alkalis
- Chemical Dosing
- Brine
- Sterilants
- Flocculants



Water Treatment

Wessex Water, Dorset Waste Treatment

"The team at Durapipe provided excellent service from the initial enquiry, continuing throughout the installation process."

Mike Back, Damar Group



South West Water Water Treatment

"We wanted to standardise our pipework specification to a single manufacturer which has all the required compliances and approvals to support our industry."

Graham Cookson, South West Water



Thames Water, Hampshire Effluent Treatment

"Durapipe PVC-U was the most appropriate solution due to its lightweight material and maintenance free qualities."

Darren Brighton, Tuke & Bell



Durapipe FIP
PVC-U

Case Study Examples

Process Industry

Wedge Group Contaminated Water

"Durapipe PVC-U was the obvious choice to carry our contaminated water, the product is reliable and hard-wearing."

Andrew MacLean, Newport Galvanisers



Autoglym Car Care Chemical Process

"Given the exacting requirements of this project, Durapipe PVC-U pipe, fittings and valves were installed for all pipework requirements, to ensure consistency throughout the factory."

Tim Sellicks, Brimair Engineering



Industrial General

BB Battery Plant, China Lead Oxide Slurry Distribution

"We needed to ensure the pipework system could cater for the substances that would be passing through it and the technical advice and support offered by Durapipe UK during the specification stage of the project was exceptional."

Mike Dunn, Chloride Technical & Trading



Hi-Tech Coatings Water based coatings for print

"We chose Durapipe PVC-U due to its high chemical resistance properties. Additionally Durapipe actuated valves allow us to control the flow remotely, making the operating process smoother and more efficient."

Martin Skillen, Director, Hi-Tech Coatings



For Durapipe Guardian Case Studies see Page 82

Why use PVC-U?



Chemical Resistance

PVC-U has excellent chemical resistance properties which allows the safe

transportation of a range of industrial fluids and aggressive chemicals without fear of corrosion and environmental pollution.

For a full details of the chemical resistance of Durapipe PVC-U please refer to the Durapipe website (www.durapipe.co.uk/Technical/Chemical-resistance) or contact our Technical Support Team on 01543 272445.



Cost-effective Pipework

PVC-U pipe and fittings are extremely cost-effective, both in terms of material

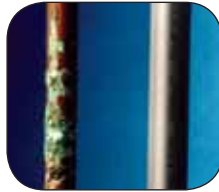
cost and even further when considering installed costs. A PVC-U system can offer economic benefits over many years due to its high performance qualities as well as low maintenance properties especially when compared to alternative materials. No expensive tooling, equipment or hot works are required for installation which makes the system extremely cost-effective.

Corrosion and Limescale Resistant

PVC-U is extremely corrosion resistant even when conveying chemical concentrates, acids and alkalis or contaminated water. Furthermore, the smooth-bore lining of PVC-U pipework prohibits any limescale build-up, which not only helps to maintain a consistent flow rate, but can also mean less maintenance costs during the lifetime of the system.



Corroded steel pipe



Copper pipe vs PVC-U pipe



Plastic pipe



Reduced Installation Costs

PVC-U is a solvent-weld jointed pipework system, which when coupled with the many other factors that make plastic pipework easier to install than traditional materials, mean that PVC-U can deliver reduced installation costs when compared to alternative pipework materials.

Lightweight

PVC-U is approximately one-sixth of the weight of steel pipework. Therefore, Durapipe PVC-U is much easier to handle, especially during installation on-site.



Fast, Simple and High Integrity Jointing

Solvent welding is a simple process which produces a permanent joint of strength equal to, or exceeding, the pipe itself. No special tools, equipment or hot works permits are required.



Sustainability and Environment

The energy used to make Durapipe PVC-U from raw material compares favourably with, for example steel pipe manufacture because lower conversion temperatures are needed. Furthermore, our processes are clean with low process emissions.

Durapipe PVC-U pipe and fittings are cheaper and easier to transport because they are lighter in weight than the equivalent metal pipes. They can be recycled at the end of life into other products, and scrap during the manufacturing process can also be recycled and reused. This minimises the need for any thermoplastic pipe scrap entering the waste stream.

Why use Durapipe FIP PVC-U?

Valves and Flow Control

A comprehensive range of valves is available to support the Durapipe FIP PVC-U system. These include ball, butterfly, diaphragm, non-return, metering ball valve, solenoid and air release valve types which can all be either pneumatically or electrically actuated.

Similarly, we also offer a wide selection of flow control products such as flowmeters and sophisticated measuring devices which can be easily incorporated into a matched Durapipe FIP PVC-U pipeline.

Our in-house Valve department, dedicated to our valves and flow control products, provides expert advice about product selection and system design.

Various tools including valve code builders can be found on the Durapipe UK website, or alternatively contact our Valve and Flow Control department.



Technical Support

We offer an unrivalled level of technical support where our experienced team can provide product training and installation advice on any given project. We will also provide material take-off advice if architects' drawings are supplied.

Unrivalled Third Party Standards and Approvals

Durapipe FIP PVC can boast the highest levels of international standards and approvals in the industry.

The system is both fully WRAS approved and is also listed in the 'List of Approved Products' published by the DWI.

This unrivalled level of third party approval offers total assurance to the designer, installer and end user that Durapipe PVC-U is a consistent and reliable pipework system.

Furthermore, Durapipe FIP PVC-U is manufactured to the highest level of quality and meets with the requirements of many international standards and approvals.

Durapipe FIP PVC-U has a 50 year design life on pipe & fittings (25 years on valves) with a residual safety factor of 2:1.



Approved for use within public water supplies and by the Secretary of State. Durapipe PVC-U is listed in the "List of Approved Products" published by the DWI.

Quality Manufacturing

Quality is central to the operation with BS EN ISO9001 certification and within an environmental management system which operates in accordance with the requirements of ISO14001.



Global Distribution Network

Durapipe FIP PVC-U is available from an extensive international network of distributors and stockists.

Please contact us for details of your nearest outlet.

Company Chemist

Our internal company chemist is at your disposal. If you have concerns regarding the chemical combination that a pipework system needs to convey, we can evaluate suitability of the chemical you wish to convey and advise on the best material to use for the system.



Abrasion Resistance

Durapipe FIP PVC-U offers good resistance to abrasion and erosion from aggressive slurries.

No Metallic Stabilisers

Durapipe FIP PVC-U does not contain any harmful metallic stabilisers, and is widely used to convey high purity deionised water in semi-conductor and pharmaceutical applications.

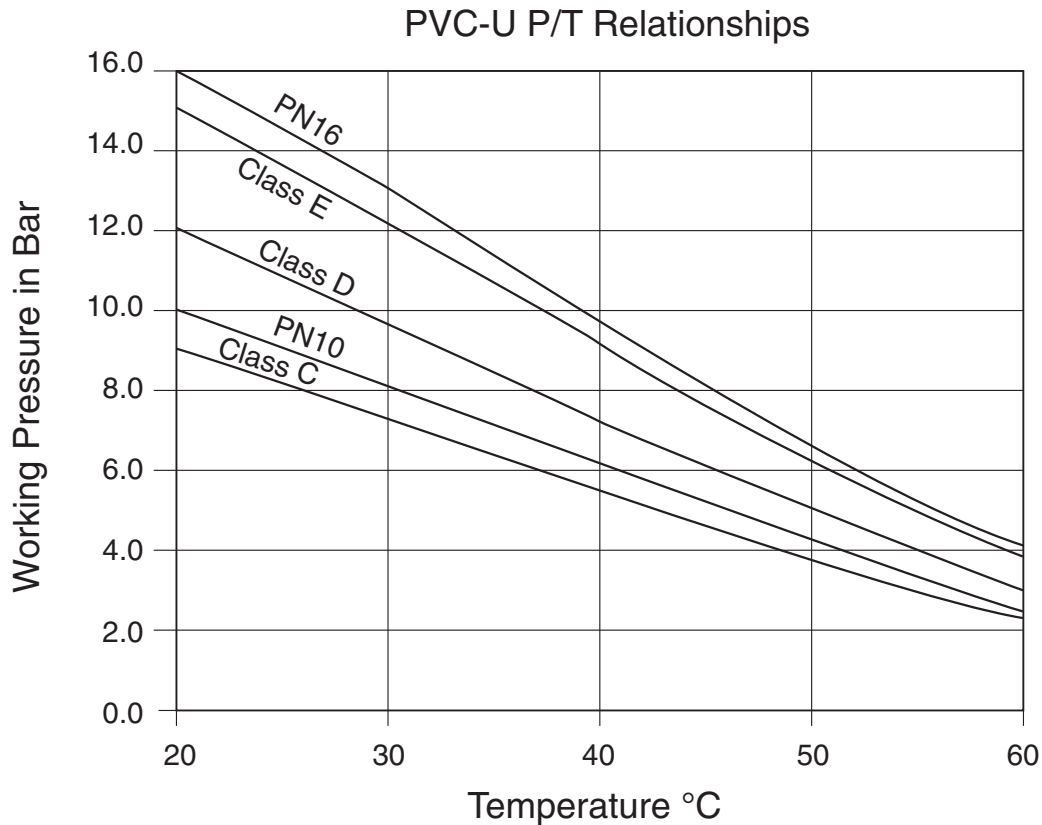
Non-Toxic

Materials used are selected for their toxicological properties, and suitability for conveying cold potable water.

Technical Information

Maximum pressure/temperature relationship

1. Graph is based on an ambient temperature of 20°C.
2. For higher ambient temperatures decrease the working pressure by 5% for every 10°C above 20°C ambient.
3. Durapipe PVC-U systems should not be used at temperatures in excess of +60°C or below 0°C.



Flow calculations

Pressure drop due to friction can be determined for practical purposes using the flow nomogram on the page 10.

The pressure drop at a given flow rate can be determined as follows:

1. Obtain the internal diameter of the pipe to be used by referring to the dimension table right:
2. Mark this diameter on Scale A.
3. Mark the required flow rate in litres per second on Scale B.
4. Draw a straight line connecting the points on Scales A and B and extend this to Scales C and D.
5. The velocity of flow in metres per second is determined from the intersection with Scale C.
6. The frictional head loss in metres per 100 metres of pipe can then be read off Scale D.

Table of Pipe Internal Diameters

| Size | Class C | Class D | Class E | Class 7 | Size | PN10 | Size | PN16 |
|--------|---------|---------|---------|---------|------|-------|------|------|
| 1/2" | - | - | 17.6 | 13.4 | 20 | - | 20 | 17.0 |
| 3/4" | - | - | 22.3 | 18.3 | 25 | - | 25 | 21.2 |
| 1" | - | - | 28.6 | 24 | 32 | 28.8 | 32 | 27.2 |
| 1 1/4" | - | 37.2 | 36.2 | 31.8 | 40 | 36.2 | 40 | 34.0 |
| 1 1/2" | - | 42.7 | 41.5 | 37.3 | 50 | 45.2 | 50 | 42.6 |
| 2" | 54.7 | 53.5 | 51.9 | 48.5 | 63 | 57.0 | 63 | 53.6 |
| 2 1/2" | - | - | - | - | 75 | 67.8 | 75 | 63.8 |
| 3" | 81.3 | 78.9 | 76.5 | - | 90 | 81.4 | 90 | 76.6 |
| 4" | 104.5 | 101.3 | 98.5 | - | 110 | 101.6 | 110 | 96.8 |
| 5" | - | 125.4 | - | - | 125 | 115.4 | 125 | - |
| 6" | 154.1 | 149.3 | 144.9 | - | 140* | 125.4 | - | - |
| 8" | 203.2 | 198.2 | - | - | 160 | 147.6 | - | - |
| 10" | 253.2 | - | - | - | 200 | 184.6 | 200 | - |
| 12" | 300.2 | - | - | - | 250 | 230.8 | 225 | - |
| | | | | | 315 | 290.8 | 315 | - |

Note: Dimensions are given for guidance only.

*=PN12 pipe

Fittings

The calculation of pressure drop in fittings is more complex but calculations can be made for equivalent lengths of straight pipe using the Formula $E = F \times D$ where:

- E = the equivalent pipe length (metres)
- F = the fittings constant (see table)
- D = the fitting internal diameter in mm.

To calculate the total pressure drop in the system, the equivalent straight pipe lengths for fittings is then added to the total straight pipe length to obtain the total drop.

Fittings constant

| | |
|------------------------------------|-------|
| 90° Elbow | 0.03 |
| 45° Elbow | 0.01 |
| 90° Tee – straight through | 0.01 |
| 90° Tee – side branch | 0.06 |
| 90° Bend | 0.01 |
| 45° Bend | 0.01 |
| Reducing Bush (per size reduction) | 0.015 |
| Butterfly Valves | 0.13 |
| Diaphragm Valves | 0.23 |
| Check Valves | 0.05 |

These values are included as a guide to facilitate calculation of overall system performance and should not be used in isolation.

Flow nomogram

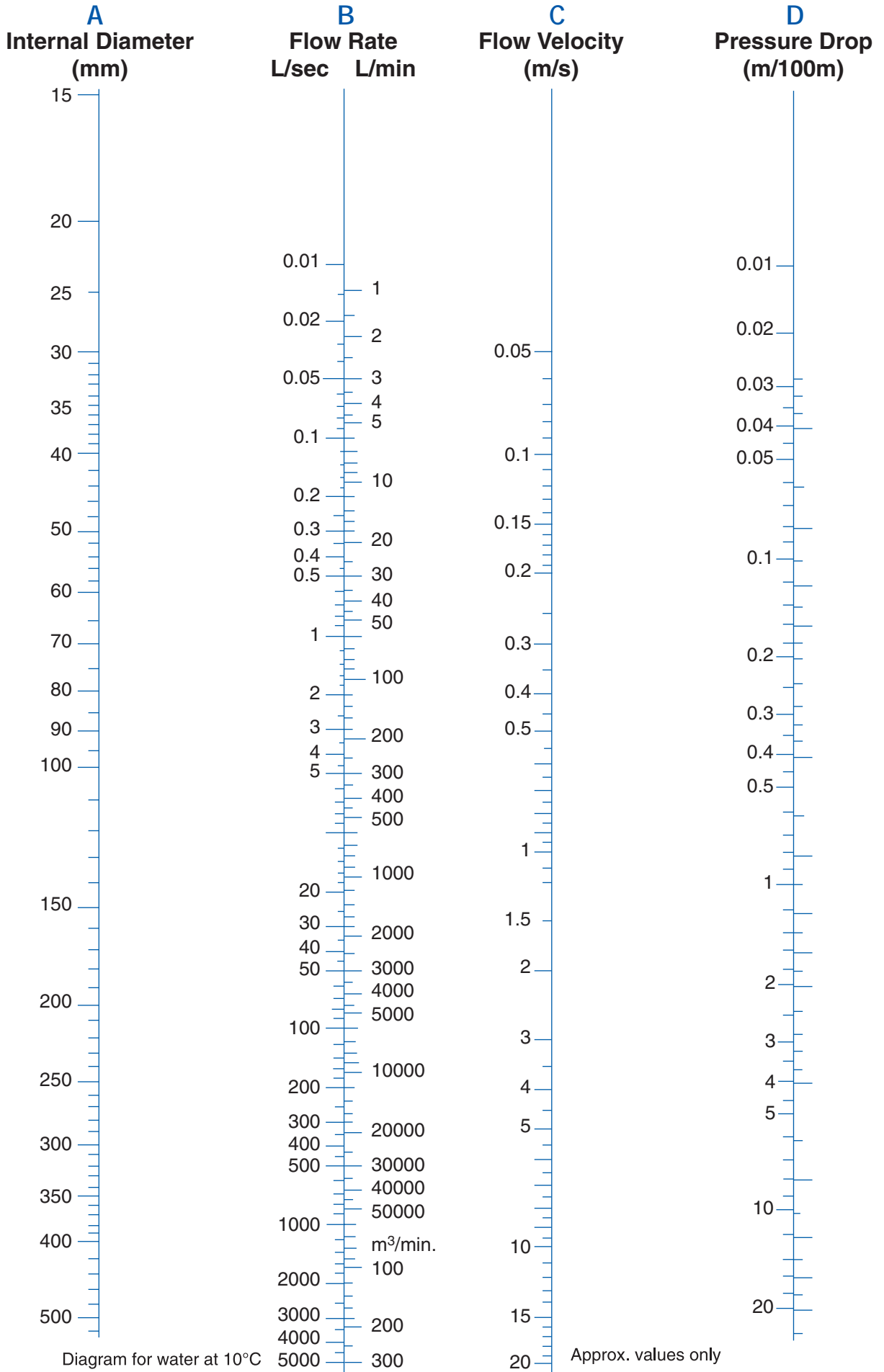


Diagram for water at 10°C

Approx. values only

Pipe routing

Systems installed above ground should be designed such that there are sufficient changes in direction to accommodate expansion or contraction. The support method described earlier will ensure that the pipework can move axially, without snaking. Utilise all available pipe flexibility. Do not place clips too close to changes in direction.

Calculating expansion and contraction

Temperature variations in a pipework system will increase or decrease the length of each pipe. This is the result of temperature changes in the fluid carried and also from ambient temperature variations.

The rate of expansion or contraction of pipework is dependent on its length, its coefficient of expansion and the temperature difference.

Increase/ decrease in pipe length is given by the formula:

$$\text{Expansion} = L \times \alpha \times \Delta T$$

where: L = length of pipe (mm)
 α = coefficient of linear expansion
 ΔT = temperature difference of the pipe (°C)

The coefficient of linear expansion for PVC-U = $6 \times 10^{-5}/^{\circ}\text{C}$
 Rule of thumb: PVC-U expands/contracts 0.6mm/ m per 10°C temperature change:

Example:

What is the expansion/contraction of an insulated, 30m long, PVC-U Condenser water main, installed at 15°C, operating at a maximum temperature of 35°C and a minimum temperature of 5°C?

Expansion:

$$\begin{aligned} L &= 30,000 \text{ mm} \\ \alpha &= 7 \times 10^{-5} \\ \Delta T &= 35 - 15 = 20^{\circ}\text{C} \\ \text{Expansion} &= 30,000 \times 7 \times 10^{-5} \times 20^{\circ}\text{C} \\ &= \underline{42\text{mm}} \end{aligned}$$

Contraction:

$$\begin{aligned} L &= 30,000 \text{ mm} \\ \alpha &= 7 \times 10^{-5} \\ \Delta T &= 15 - 5 = 10^{\circ}\text{C} \\ \text{Contraction} &= 30,000\text{mm} \times 7 \times 10^{-5} \times 10^{\circ}\text{C} \\ &= \underline{21\text{mm}} \end{aligned}$$

Hence the system must be designed, using expansion loops, the natural flexibility of pipe, or expansion bellows, to cater for a total differential movement of 63mm with an expansion of 42mm and a contraction of 21mm. When sizing expansion loops or free bending leg lengths at changes at direction, the greatest amount of movement should be used (expansion and / or contraction).

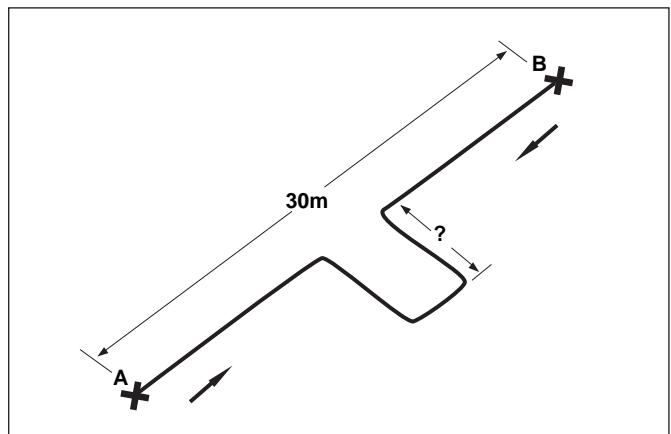
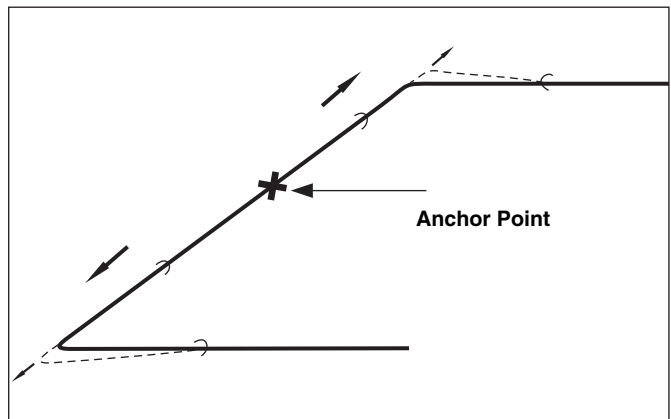
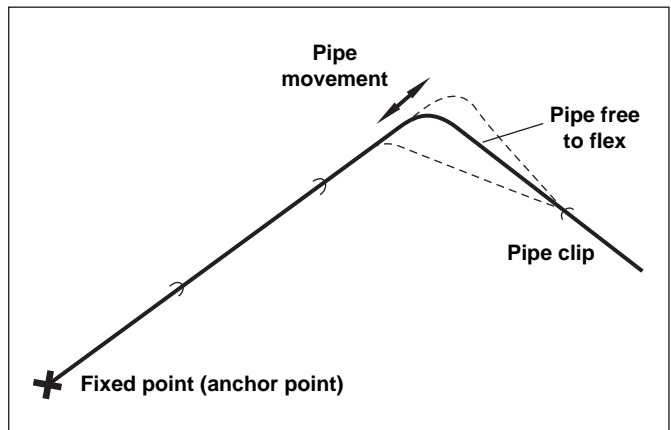
Catering for pipe movement

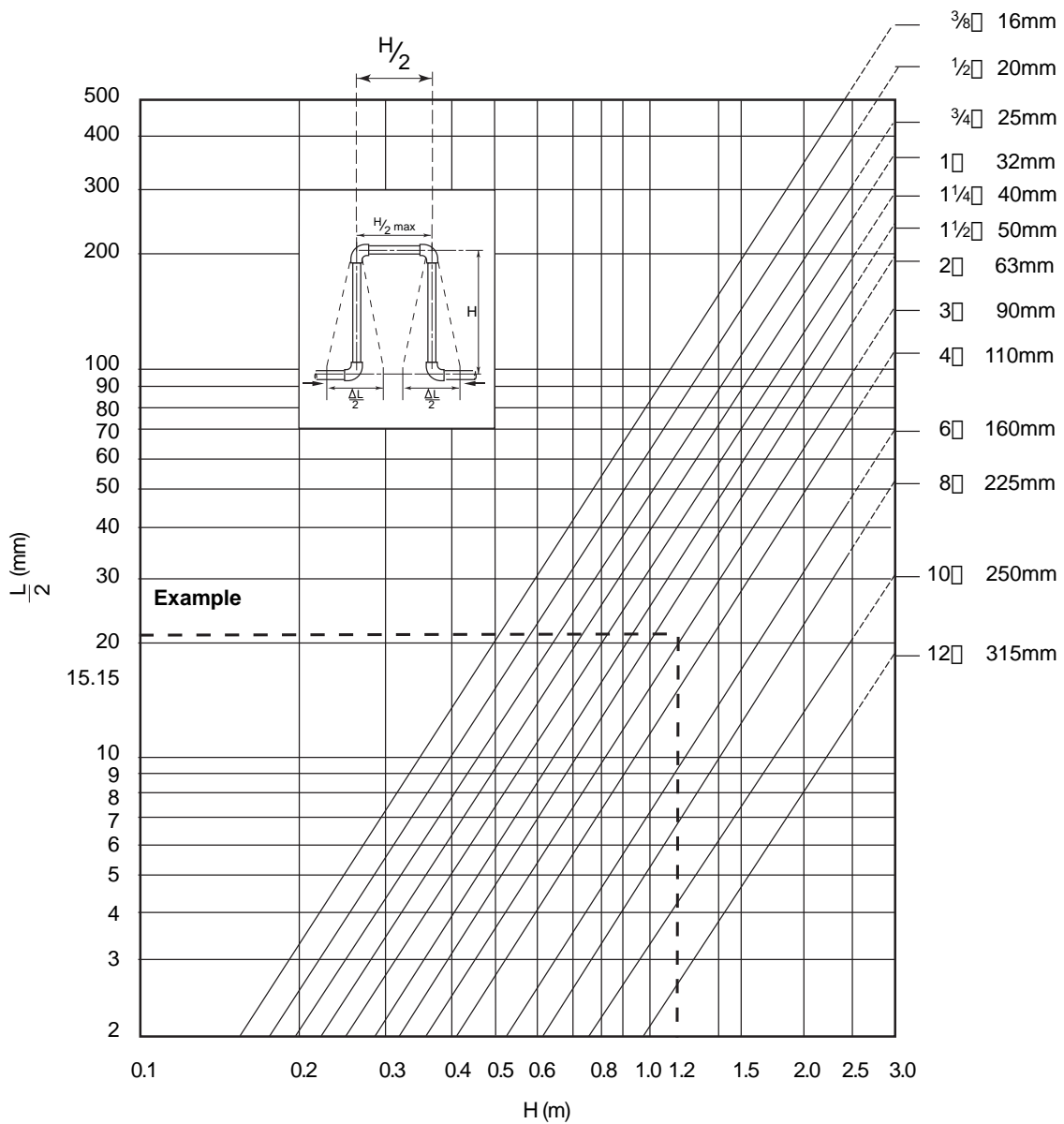
Systems installed above ground should be designed to ensure that there are sufficient changes in direction to accommodate expansion and contraction. The support method described later will ensure that the pipework can move axially without snaking.

If sufficient changes in direction are not available within the design of the system, alternative methods of catering for pipe movement can be considered such as expansion loops or flexible rubber bellows.

Expansion loops

The length of unrestrained pipe (free leg length) required to accommodate expansion can be calculated from the graph overleaf.





Example:

Calculate the size of expansion loop required for a 90mm diameter pipe expanding 42mm and contracting 21mm:

Based on the worst case ie. 42mm expansion, $\frac{\Delta L}{2} = 21\text{mm}$

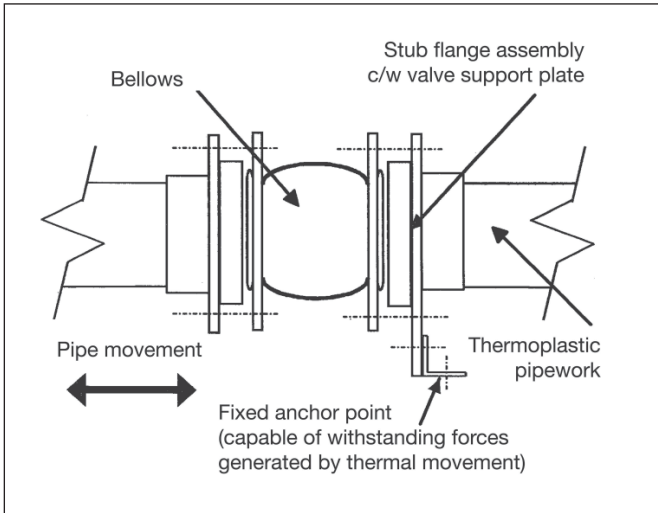
Draw a horizontal line from the vertical section to meet the 90mm pipe gradient line. Drop a perpendicular from the intersection point to the horizontal scale. The figure obtained is the free leg length of the loop required.

Hence, in this instance a loop measuring 1200mm long x 600mm wide will cater for $\pm 21\text{mm}$ movement i.e. the loop will cater for both the expansion and contraction of the pipe.

Expansion bellows

Axial expansion bellows may also be used in place of utilising the natural flexibility of the PVC-U. These must be of a suitable design to ensure correct operation with PVC-U pipework. Contact our Technical Support Department for further information.

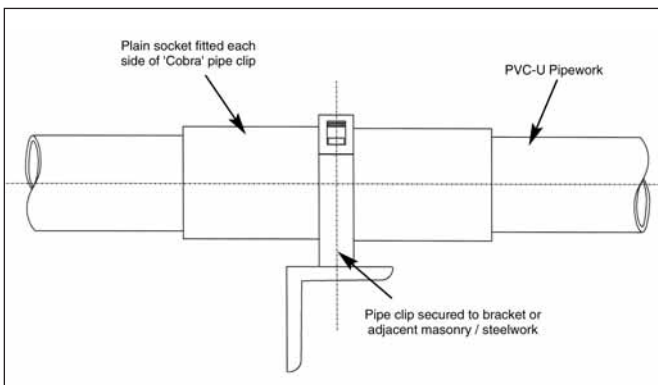
Typical bellows arrangement



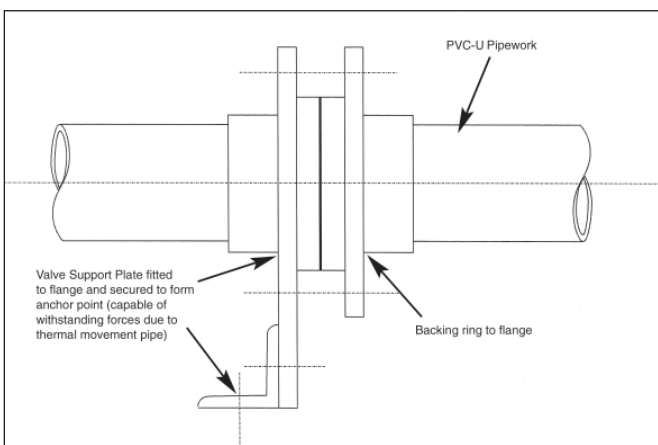
Anchor points

The direction of pipe movement can be controlled by the use of anchor points at strategic positions. There are a number of methods of securely anchoring plastic pipes, some of which are detailed below. However it should be noted that tight fitting pipe supports or U bolts should not be used since damage to the pipe could occur.

Construction of typical anchor points



1. Small Bore (up to 4" Pipework)



2. Larger pipe (above 4" Pipework)

Pipe supports and clips

Pipe supports and clips should provide lateral restraint and allow free, unrestricted, axial pipe movement. Standard 'drop rods' may not provide sufficient lateral restraint and the PVC-U pipe could start to 'snake'.

Durapipe Cobra clips are designed to meet these requirements. A suitable alternative would be mild steel saddle clips designed with a clearance between the pipe and the clip. All steel brackets in contact with the plastic pipe should be free of sharp edges to avoid damaging the pipe.

Support centres

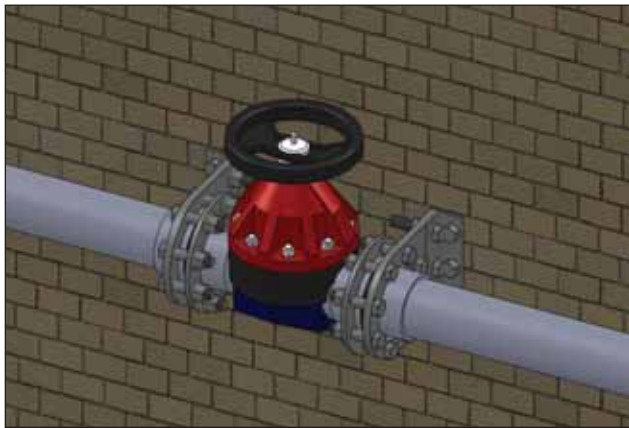
The recommended distance between supports for pipes filled with water is given in the table below. Where the contents have a specific gravity greater than 1 the distance must be decreased by dividing the recommended centre distance by the specific gravity. For vertical pipes, support centres may be increased by 50%.

Support distances

| mm | Inch | 20°C | 30°C | 40°C | 50°C |
|-----|------|------|------|------|------|
| 20 | ½ | 0.90 | 0.85 | 0.85 | 0.80 |
| 25 | ¾ | 1.00 | 0.95 | 0.90 | 0.90 |
| 32 | 1 | 1.10 | 1.05 | 1.00 | 1.00 |
| 40 | 1¼ | 1.30 | 1.25 | 1.20 | 1.15 |
| 50 | 1½ | 1.50 | 1.45 | 1.40 | 1.35 |
| 63 | 2 | 1.60 | 1.55 | 1.50 | 1.45 |
| 75 | 2½ | 1.80 | 1.75 | 1.70 | 1.60 |
| 90 | 3 | 2.10 | 2.05 | 1.95 | 1.90 |
| 110 | 4 | 2.40 | 2.30 | 2.25 | 2.10 |
| 125 | | 2.50 | 2.40 | 2.35 | 2.20 |
| 140 | 5 | 2.70 | 2.60 | 2.55 | 2.40 |
| 160 | 6 | 2.90 | 2.80 | 2.70 | 2.60 |
| 200 | | 3.20 | 3.10 | 3.00 | 2.90 |
| 225 | 8 | 3.45 | 3.30 | 3.25 | 3.10 |
| 250 | | 3.60 | 3.45 | 3.40 | 3.25 |
| 280 | 10 | 3.80 | 3.65 | 3.55 | 3.40 |
| 315 | 12 | 4.10 | 3.95 | 3.85 | 3.70 |

Support of heavy equipment

Large valves, strainers and other heavy equipment should always be independently supported to prevent undue loading onto the PVC-U system. Durapipe valve support plates have been designed for this purpose and may be used in place of flange backing rings.



Anchor blocks

For wholly solvent welded systems the pipework is pressure balanced and anchor thrust blocks are not required. When rubber ring joints are used it is necessary to provide concrete anchor blocks of changes in direction such as elbows, bends, tees etc. This is necessary to withstand the forces generated by system pressurisation.

For greater detail, users in the U.K. are recommended to study the Code of Practice CP 312 published by the Pipe and Fittings Group of the British Standards Institute covering installations above and below ground.

Buried pipes

Recommendations covering essential requirements for installations below ground may be summarised as follows:

In general, trenches should not be less than a metre deep. Trenches should be straight sided, approximately 300mm wider than the pipe diameter to allow proper consolidation of packing materials. Trench bottoms should be as level as is practical. Large pieces of rock, debris and sharp objects should be removed. Alternatively gravel can be laid approximately 100mm deep on the floor of the trench. (Sand may be used but subterranean water is liable to wash sand away and leave the pipe unsupported.)

If pipes are jointed above ground, they should remain undisturbed for 2 hours before being lowered into the trench.

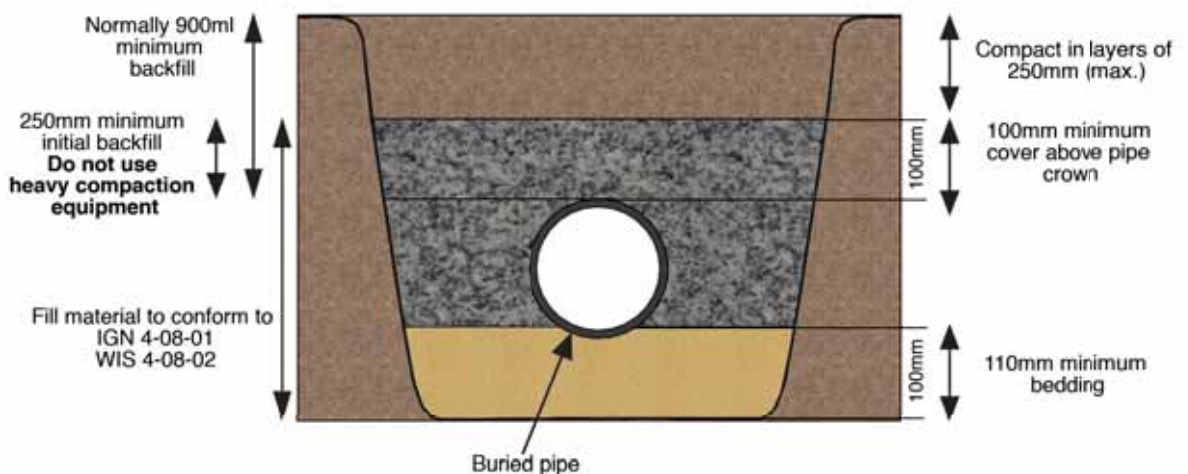
After laying, pipes should be covered with gravel or similar material to a depth of 100mm above the crown of the pipe. The gravel should be extended sideways to both trench walls and compacted. This should be done prior to testing, with joints left exposed.

Care should be taken to ensure that sharp objects, stones, etc, are prevented from falling into the trench before covering the pipe.

After pressure testing, joints should be covered with gravel or similar material, and back filling completed.

A section of pipe installed below ground to the above recommendations is shown in the illustration.

Buried Pipe Example



Additional Important Information

Thermal Insulation

Some insulation products can contain substances capable of having a detrimental effect on thermoplastic pipework.

Recommended insulation - A list of some of the common types of insulation materials known to be suitable with PVC-U pipework are as follows;

Fibre wool, such as 'Rockwool'
Armaflex Class 1 HT
Phenolic foam
Polystyrene

Note: the above list is not exclusive – please contact our Technical Support Department on 01543 272446 if further assistance is required.

Certain foam rubbers and adhesives used in conjunction with foam rubber insulation may be detrimental. We do not, therefore, recommend that insulation be bonded to the pipework. Adhesives should only be used to bond adjacent edges together.

Trace heating

Thermoplastic pipework can be damaged by plasticisers used in the outer coverings on some heating tapes. Tapes sheathed in plasticised PVC must be avoided, unless specifically approved by us. (This comment also applies to any tapes, adhesives, or other substances used to secure the heating tape to the pipework.)

Recommended heating tapes - The selection of heating tapes with silicone rubber, woven wire, or woven polyester outer sheaths will eliminate the risk of plasticiser migration. These tapes are therefore preferred for use on thermoplastic systems.

Pipe contents identification

Do not put self-adhesive labels directly on to pipe surfaces as this may cause stress cracking. It is recommended that some sort of barrier, such as aluminium foil, is placed between pipe and identification label.

Intumescent mastic and mastic sealants

Certain mastic sealants are formulated with phthalates. Phthalates are known to be extremely aggressive toward PVC-U materials, and therefore confirmation of the suitability of any mastic sealant should be determined before being used in conjunction with PVC-U pipework.

Pipe clips

It is important that the composition of pipe clips and their linings do not include substances which might have a detrimental effect upon the PVC-U pipe. Please check for suitability before use. We recommend the use of Durapipe Cobra clips for pipe sizes up to and including 160mm OD / 6" NB, wherever circumstances allow.

Freezing conditions

Precautions should be taken to prevent contents freezing, as this can cause pipework to split.

Contact with fluxes

Some fluxes can be detrimental to PVC-U. Care should be taken when soldering copper pipework directly above, or close to, PVC-U pipework.

Buried pipes

Do not lay PVC-U in contaminated ground eg. 'brown-field' sites. Do not lay PVC-U in ground where spillages of chemicals may occur.

Thread sealants

Some thread sealants can damage PVC-U. PTFE tape should be used when making threaded connections. See page 20 for further information.

Resistance to UV (sunlight)

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

Pressure surges

Durapipe PVC-U pipework can withstand pressure surges within the limitations detailed within CP312 Part 2:1973 and its amendment dated 1977. On no account should pressure surges be allowed to exceed the maximum continuous working pressure calculated using the graph on page 8.

Nominal pressure

Maximum allowed working pressure for continuous use at 20°C in conveying water must be less than or equal to the nominal pressure. If not otherwise stated, nominal pressure of Durapipe FIP fittings is as follow:

Solvent Welded Fittings:

From d16 up to d225 PN16.

From d250 up to d315 PN10.

Adaptor Fittings: From d16 up to d110 PN16.

Threaded Fittings: From 3/8" up to 4" PN16.

WARNING

DO NOT use PVC-U pipework to convey compressed air or gases. Do not test with compressed air or gases. This can result in explosive failure and may cause severe injury.

Durapipe PVC-U Jointing Guide

The cold solvent welding using 'Solvent Cement' is the standard procedure for jointing PVC-U pipes and fittings. The solvent cement operation is carried out by using solvent made from PVC-U polymer together with a mix of solvents. This mix of solvents softens the walls of the pipes and fittings and carries out the welding, resulting in a homogeneous welded joint.

Durapipe PVC-U pipes and fittings are designed for an interference fit. Although Durapipe PVC-U solvent cement has good gap filling properties no attempt should be made to increase the clearance between the pipes and fittings.

Solvent cement welding offers a simple and quick means of constructing high integrity, leak-free joints.

The solvent cement operates by chemically softening the joint surfaces. Joint integrity will be greatly reduced if these surfaces are not clean and properly prepared.

Durapipe PVC-U solvent cement **must** be used.

The jointing procedure detailed below must be followed.

This relates to the new "one-step" solvent cement. With this cement it is not necessary to abrade pipe or fitting.

Procedure

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.



2. 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.

Recommended Chamfer Distances

| Pipe size | Chamfer |
|-------------|---------|
| ½" - 20mm | 3mm |
| ¾" - 25mm | 3mm |
| 1" - 32mm | 3mm |
| 1¼" - 40mm | 3mm |
| 1½" - 50mm | 3mm |
| 2" - 63mm | 5mm |
| 2½" - 75mm | 5mm |
| 3" - 90mm | 5mm |
| 4" - 110mm | 5mm |
| 5" - 140mm | 5mm |
| 6" - 160mm | 5mm |
| 8" - 225mm | 5mm |
| 10" - 250mm | 5mm |
| 12" - 315mm | 5mm |

This operation is very important as non-chamfering can cause the solvent cement to be scraped away from the internal surface of the fitting, causing a poor joint.



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.

3. Mark the pipe a known distance from the end and clear of the area to be cleaned. This mark should be used to confirm full insertion of pipe into socket of fitting.



4. Ensure joint surfaces are clean and free from moisture. Clean surfaces thoroughly with Durapipe Eco-cleaner using lint free cloth/paper towel.



5. Using a clean brush, apply cement to the pipe and fitting. The joint surfaces should be completely covered by cement. Cement should be applied using an appropriate size brush. It is important to apply cement quickly to enable assembly without excessive force being required. When applying cement with brush, the size of the brush should be approximately half the size of the pipe to be jointed - brush size up to 2½" (63mm) for 0.5 litre and up to 3" (75mm) for 1 litre tins. Generally, it is best practice to apply more cement to the pipe than the fitting, as excess cement on the fitting can result to cement pooling and potential softening of the material.



Note: Before commencing the solvent weld procedure, please check the expiry date of the solvent cement being used. Cement should be used within 24 months from the date on the base of the tin.

6. Immediately after applications of cement, push pipe fully home into the fitting, as far as the internal stop, without rotation. After this operation, the fitting may be rotated if necessary for alignment (max. 1/4 turn). Hold the pipe and the fitting for times varying from a few seconds on sizes 1/2" or 20mm up to 1 minute on sizes 8" or 225mm and above. The slight taper moulded into the fitting may otherwise cause it to slide off the pipe with consequent loss of joint strength. Application of the correct amount of cement will result in a neat bead of cement at the edge of the fitting and at the edge of the pipe. Excessive deposits inside the fittings must be avoided as these can weaken the wall, particularly on smaller sizes. When working under cold conditions make sure the joints are free from frost and moisture.



7. Wipe off excess cement from the outside of the joint.



8. Using the mark previously made, check that the pipe has been fully inserted.



9. Do not disturb the joint for at least 15 minutes after assembly. Allow sufficient drying time prior to pressurisation of the system (see page 18).
10. Replace lids on containers.

CAUTION

- DO NOT use near naked flames
- DO NOT smoke in the working area
- DO NOT use in confined spaces
- DO NOT joint in the rain or wet conditions
- DO NOT use dirty brushes
- DO NOT use dirty or oily cleaning cloths
- DO NOT use the same brushes for different cements
- Follow safety instructions on Durapipe solvent cement and Eco-cleaner containers
- Always wear appropriate personal protective equipment

Notes:

1. The integrity of Durapipe PVC-U systems may be affected if Durapipe PVC-U solvent cement or HCR-36 chemically resistant cement is not used. Durapipe UK disclaims responsibility for any Durapipe PVC-U system constructed with any other cements or not fabricated in accordance with the instructions contained herein.
2. On sizes 6" or 160mm and above use 3" wide brushes.
3. To achieve the correct speed of application on sizes 4" or 110mm and above, cement should be applied simultaneously to pipe and fitting, by two people.
4. Application of the correct amount of cement will result in a neat ring of cement at both ends of the joint.
5. Where PVC-U pipework is to be used to convey concentrated chemicals please refer to page 18 for details on HCR-36 chemically resistant cement.
6. Durapipe have produced a series of videos demonstrating the correct jointing procedures for the various pipework systems. Please visit www.durapipe.co.uk/Technical/Video/Index.asp

Branch connections - Reduced bore

Reduced branch connections can be made as follows:

Imperial range:

Bushed equal tees.

Metric range:

Bushed equal tees, reduced branch tees or bolt-on saddles.

Drying times

The drying times will vary with fit, amount of solvent cement applied, ambient temperature and working pressure. It is recommended that, wherever possible, joints of sizes up to 8"/225mm are allowed to dry for at least 24 hours, and sizes 10" and 12"/250mm and 315mm for at least 48 hours. These guidelines are based on an ambient temperature of between 10°C to 40°C. Longer drying times will be required at lower ambient temperatures.

It is recognised that there will be occasions when the system will need to be put into service within a few hours of being made. A rough but safe working guide where the ambient temperature is between 10°C to 40°C and the contents temperature does not exceed 20°C is as follows:

| Size range | Drying time |
|------------------------|------------------|
| Up to 4"/Up to 125mm | 1.0 hour/bar |
| 5" & 6"/140mm & 160mm | 1.5 hours/bar |
| 8"/200mm & 225mm | 2.0 hours/bar |
| 10 & 12"/250mm & 315mm | 30 hours minimum |

Note: Minimum drying period should never be less than 1 hour.

The consumption of solvent cement for carrying out the jointing depends on different elements (ambient conditions, pipe dimensions, viscosity of the cement, workers' experience etc).

An indication of the number of joints likely to be made per litre of Durapipe PVC-U solvent cement is as follows:

| Size | | Joints per 500ml PVC-U |
|-----------|-------------|------------------------|
| mm | imperial | |
| 12 - 32 | 3/8" - 1" | 600 |
| 40 - 63 | 1 1/4" - 2" | 240 |
| 75 - 90 | 3" | 100 |
| 110 - 125 | 4" | 60 |
| 140 - 160 | 6" | 30 |
| 200 - 225 | 8" | 16 |
| 280 - 315 | 10" - 12" | 6 |

The solvent cement is made with PVC-U resin.

Instructions for use

1. Cut the pipe at right angles to its axis and chamfer it.
2. Clean surfaces to be welded together with HCR chemically resistant cleaner. Check dry fit. Pipe should insert easily into socket, approximately 1/4" to 3/4" of the total socket depth.
3. Apply solvent cement quickly in a thin and even coat into the fitting, and a thicker coat on the pipe-end, stroking the cement along and not round the surface.
4. If the solvent cement must fill a gap, a second (after 30 sec.) or even a third layer of the solvent cement can be necessary.
5. Immediately push the joint together and hold for a moment in this position. Remove any surplus cement. Do not charge the joint mechanically for the first 10 minutes. Do not use the solvent cement below temperatures of 5°C.

HCR-36 Chemically Resistant PVC-U Cement

HCR-36 Solvent Cement and HCR-36 Cleaner, is suitable for solvent weld jointing in applications where high chemical resistance may be required; HCR-36 is not sensitive to oxidation and contains no additives which dissolve in alkaline solutions, HCR-36 can be used as an effective alternative to Durapipe One Step Cement where chemical resistance is key.

Chemical resistance

For PVC-U system with the following chemicals, we would recommend the use of HCR-36 as a standard alternative to Durapipe one step solvent cement.

| | |
|-----------------------------|----------------------------------|
| Sulphuric acid | Concentration higher than 70% |
| Nitric acid | Concentration higher than 20% |
| Hydrofluoric acid | Each concentration |
| Sodium hypochlorite | Active chlorine higher than 7.5% |
| Bases (caustic soda) | Concentration higher than 35% |

| | |
|--------------------------|-------------------------|
| Maximum gap 0.3mm | Maximum pressure |
| 20°C | 12 bar |
| 50°C | 6 bar |
| 60°C | 4.5 bar |
| 80°C | 1.5 bar |

Maximum pressure depends also on the pipe system used and PN class.

Consumption: HCR-36 Solvent Cement:

Pipe Diameter (Amount of joints) per 1 Litre Container

| Pipe Diameter (OD) | Average Joints per (1L) |
|--------------------|-------------------------|
| 1/2" - 20mm | 1300 |
| 1" - 32mm | 650 |
| 1 1/4" - 40mm | 290 |
| 1 1/2" - 50mm | 160 |
| 2 1/2" - 75mm | 90 |
| 3" - 90mm | 70 |
| 4" - 110mm | 30 |



Consumption: HCR-36 Chemically Resistant Cleaner:

Pipe Diameter (Amount of joints) per 1 Litre Container

| Pipe Diameter (OD) | Average Joints per (1L) |
|--------------------|-------------------------|
| 1/2" - 20mm | 2000 |
| 1" - 32mm | 800 |
| 1 1/4" - 40mm | 700 |
| 1 1/2" - 50mm | 650 |
| 2 1/2" - 75mm | 330 |
| 3" - 90mm | 240 |
| 4" - 110mm | 140 |



Application

HCR-36 solvent cement is suitable for jointing pipes, couplings, fittings in PVC-U pressure and drainage systems up to 110mm. HCR-36 Cleaner should be used over standard Eco-cleaners when using HCR-36 solvent cement to ensure required chemical resistance.

Setting times

We advise when using HCR-36, please allow 48 hours drying time at a consistent temperature (medium temperature 20°C) and rinse the system with water before use.

Jointing properties

The welded joint is resistant to temperatures up to 80°C, the solvent cement joint is waterproof, and the chemical resistance against aggressive chemicals such as inorganic acids and bases is high compared with standard PVC-U one step solvent cement. **HCR 36 is not suitable for jointing in temperatures below 5°C**

Shelf life

HCR-36 Solvent Cement has a shelf life of 9 months from the date of manufacture.
HCR-36 Cleaner has a shelf life of 24 months from the date of manufacture.

| Recommended Brush Size | |
|----------------------------|---------------------|
| Pipe size | Brush size |
| 16mm - 32mm (3/8" - 1") | 8mm Round Brush |
| 40mm - 110mm (1 1/4" - 4") | 25 x 3mm Flat Brush |

Dates of manufacture can be located on the base of the tin.

HCR-36 Chemically Resistance Jointing Guide

1. The pipe must be cut clean and square. A suitable wheel cutter is recommended which will eliminate swarf from entering the system.
2. Chamfer the end of the pipe using a coarse file or chamfering tool, the chamfer on the outside of the pipe should be approximately 45° by 3mm to 5mm depending on the pipe size.

This operation is very important as non-chamfering can cause the solvent cement to be scraped away from the internal surface of the fitting, resulting in a poor joint.

3. Clean the mating surface of the pipe and fitting to be jointed with **HCR-36 Cleaner** (Product Code: 03 467 395) to remove any dirt, grease or moisture.
4. Measure the insertion depth of the socket and mark this onto the pipe after adding a known measurement (so insertion depth can be checked after installation).
5. Check the dry fit of the pipe and fitting, the pipe should enter the fitting easily into the socket, approximately 1/4 to 3/4 of its initial depth.
Note: Before applying the HCR-36 Cleaner or HCR-36 Solvent Cement, please check the expiry dates.
6. Apply the solvent cement to the surface of the inner fitting with a thin even coating and apply a thicker coat to the pipe end, stroking the cement along and not around the surface. The cement should be applied using an appropriate sized brush, the size of the brush should be approximately half the size of the pipe that is being jointed (Please refer to the brush sizing table).

Excess cement deposits inside the fitting must be wiped away with a clean dry cloth, as this can weaken the wall, particularly on the smaller sizes.

7. If HCR-36 is required to fill a gap, please allow 30 seconds before a second or third coat is due to be applied.
8. Immediately after the application of cement, push the pipe fully into the fitting, as far as the internal stop without rotation, hold the joint still for a few seconds ensuring the pipe is secured into the fitting (Larger sizes may require extra time). After this operation, the fitting may be rotated if necessary. A neat bead of solvent cement should be evident around the pipe and fitting juncture, which will indicate the correct amount of solvent cement has been applied,
9. Replace lids securely on the **HCR-36 CR Solvent Cement** and **HCR-36 CR Cleaner** to avoid unnecessary evaporation.
10. Do not disturb the joint for at least 15 minutes after the initial assembly, allow 48 hours drying time at a consistent temperature prior to pressurisation or testing of the system see page 18.

The use of bushes and reducers

Reducing bushes

Reducing bushes offer a neat and simple method of reducing socket size in the minimum of space.

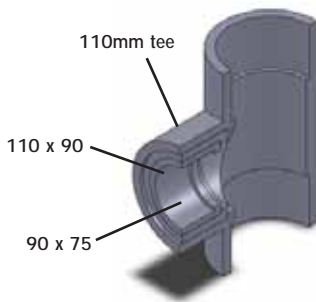
Care must be taken to prepare properly all jointing surfaces as recommended earlier, with the end of the bush being chamfered (unless a moulded chamfer is included).

Ensure that adequate solvent cement is applied to surfaces to be jointed. The shape of the bush can make it difficult to hold when applying cement to the outer surface. A short length of pipe pushed into the bush can be used as a handle, to make this operation easier.

The correct amount of solvent cement will result in a complete ring of cement being formed at both ends of the joint.

The use of reducers

All fittings have female ends, dimensionally controlled for cold fusion jointing. In addition the metric series reducers are provided with controlled outside diameter at the large end. They can therefore be used as male or female components as shown.



Example in the use of reducing bushes.

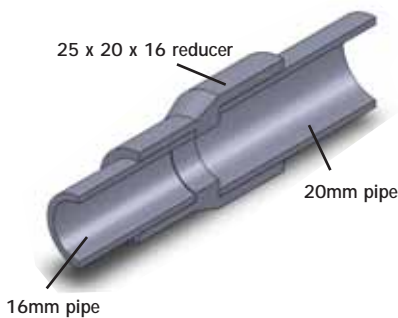


Illustration shows use of the inner socket of the reducer.

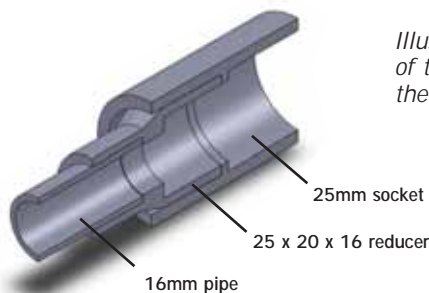


Illustration shows use of the outer spigot of the reducer.

Threaded connections

Connections - plastics to metal

There are several recommended methods to connect metal and plastic systems:

- Composite unions
- Flanges
- Male threaded fittings
- Female threaded fittings

Plastics expand or contract more than metals for any given change in temperature. The practice of connecting plastic threaded fittings to metal threads is not recommended where the joint is likely to experience a temperature change of more than +/-5°C, otherwise leaks may occur.

Composite unions are available with brass male or female BSP threaded adaptors.

If it is required to cut a thread on to Durapipe PVC-U pipe, use a sharp die especially reserved for plastic pipes and cut full thread depth without lubricant, in one operation.

This should only be attempted on pipe sizes up to 2" n.b. Class 7 pipe must be used. Pipes from Durapipe PVC-U metric range are not suitable for threading.

Assembly should be carried out by hand and final tightening by a strap wrench, if necessary.

Extra care must be taken not to overtighten or damage the thread. **Pipe wrenches must not be used.**

It is recommended that PTFE tape be used when making threaded joints/connections.

Any other sealing compound must be confirmed by Durapipe UK as being suitable.

'Boss White' and anaerobic adhesive sealants, such as Loctite 542 and 572, can chemically attack PVC-U and must **not** be used.

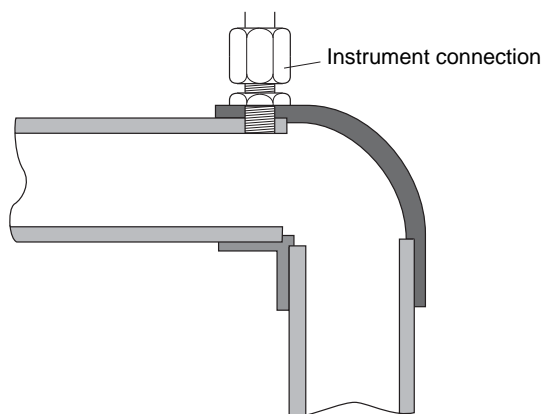


Connections for instrumentation

Instrumentation connections can be made by drilling through pipe and socket where the material is at its thickest and tapping the hole to receive a threaded fitting, as shown below:

| Pipe size | Size of connection |
|--------------------------|-------------------------------------------------|
| 16mm-63mm/3/8"-2" | Use tees, reducing bushes and threaded fittings |
| 75mm-110mm/2 1/2"-4" | Max. tapping 1/2" BSP |
| 125mm-140mm/5" | Max. tapping 3/4" BSP |
| 160mm & above/6" & above | Max. tapping 1 BSP |

Such connections, if correctly drilled and tapped with a full thread form, will be limited to Class C pressures.



Flanged joints

Full face flanges are available from 1/2" to 4" and 25mm to 110mm. Stub flanges are available from 2" to 12" and in metric sizes from 20mm to 315mm.

The correct galvanised mild steel backing ring and rubber gasket must be used with stub flanges (backing rings not required on moulded full face flanges).

Flange bolting procedure

The following procedure is recommended for installing Durapipe PVC-U flanges:

1. Inspect flange faces and ensure that they are clean and undamaged.
2. Check that the correct backing ring and rubber gaskets have been supplied. Durapipe UK supplies a matched system of flanges and backing rings - do not interchange Metric and Imperial components.
3. Loosely assemble flanges. Ensure that flanges and bolt holes align and that the flange faces are parallel. Ensure that the gasket is correctly positioned between the flanges.
4. Ensure that the appropriate sized washer are placed under both bolt heads and nuts.
5. Tighten the nuts and bolts in a diagonally opposite sequence (see right) to ensure even loading around the flange to avoid distortion. It is recommended that the nuts and bolts be tightened as uniformly as possible progressively from a finger tight start.
6. Repeat as necessary until recommended torque value at all bolts is achieved.

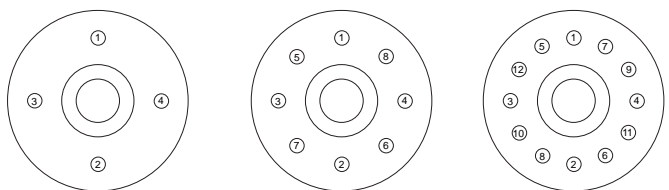
Tightening torques for flange bolts in PVC-U piping systems

Recommended Torque Values (Nm)

| Size | Torque |
|------|--------|
| 16 | 15 |
| 20 | 15 |
| 25 | 15 |
| 32 | 15 |
| 40 | 20 |
| 50 | 30 |
| 63 | 35 |
| 75 | 40 |
| 90 | 40 |
| 110 | 40 |
| 125 | 50 |
| 140 | 50 |
| 160 | 60 |
| 200 | 70 |
| 225 | 70 |
| 250 | 80 |
| 315 | 100 |

The tolerance on torque is +/- 10%

Tightening sequence



Comparison of PVC-U Imperial and Metric Sized Pipe

Tabulated below is a comparison of imperial sized PVC-U pipe to BS3505 and metric sized pipe to EN 1452-2. They are produced to different standards, but can be joined together using flanges or adaptors.

The systems are also designated differently; the imperial system refers to the nominal bore size; the metric system relates to the outside diameter.

Both systems are produced with the outside diameter as the controlled dimension. This enables the same fitting of a particular size to be joined to all classes of pipe in that size.

Please refer to the pipe section in this brochure for pipe sizes available from Durapipe UK.

Threaded systems

Imperial systems Class 7 pipe can be machined to BSP parallel or BSP taper thread forms. Metric pipe is not produced with an outside diameter suitable for threading.

| Imperial System (BS EN 1452) | | | | | | | Metric System (EN 1452-2) | | | | Design Coefficient |
|------------------------------|------------------------------------|-----------------------------|---------|---------|---------|---------|----------------------------|---------------------------------|--------------------------|------|--------------------|
| Size (nominal bore) (inch) | Minimum mean outside diameter (mm) | Minimum wall thickness (mm) | | | | | Size outside diameter (mm) | Min. mean outside diameter (mm) | Min. wall thickness (mm) | | |
| | | Class B | Class C | Class D | Class E | Class 7 | | | PN10 | PN16 | |
| | | | | | | | 16 | 16.0 | | | 2.5 up to 90mm |
| 1/2 | 21.2 | | | | 1.7 | 3.7 | 20 | 20.0 | | 1.5 | |
| 3/4 | 26.6 | | | | 1.9 | 3.9 | 25 | 25.0 | | 1.9 | |
| 1 | 33.4 | | | | 2.2 | 4.5 | 32 | 32.0 | 1.6 | 2.4 | |
| 1 1/4 | 42.1 | | | | 2.7 | 4.8 | 40 | 40.0 | 1.9 | 3.0 | |
| 1 1/2 | 48.1 | | | 2.5 | 3.1 | 5.1 | 50 | 50.0 | 2.4 | 3.7 | |
| 2 | 60.2 | | 2.5 | 3.1 | 3.9 | 5.5 | 63 | 63.0 | 3.0 | 4.7 | |
| 2 1/2 | 75.2 | | 3.0 | 3.9 | 4.8 | | 75 | 75.0 | 3.6 | 5.6 | |
| 3 | 88.7 | 2.9 | 3.5 | 4.6 | 5.7 | | 90 | 90.0 | 4.3 | 6.7 | 2.0 from 110mm |
| 4 | 114.1 | 3.4 | 4.5 | 6.0 | 7.3 | | 110 | 110.0 | 4.2 | 6.6 | |
| | | | | | | | 125 | 125.0 | 4.8 | 7.4 | |
| 5 | 140.0 | 3.8 | 5.5 | 7.3 | 9.0 | | 140 | 140.0 | 5.4 | 8.3 | |
| 6 | 168.0 | 4.5 | 6.6 | 8.8 | 10.8 | | 160 | 160.0 | 6.2 | 9.5 | |
| | | | | | | | 180 | 180.0 | 6.9 | 10.7 | |
| | | | | | | | 200 | 200.0 | 7.7 | 11.9 | |
| 8 | 218.8 | 5.3 | 7.8 | 10.3 | 12.6 | | 225 | 225.0 | 8.6 | 13.4 | |
| 10 | 272.6 | 6.6 | 9.7 | 12.8 | 15.7 | | 250 | 250.0 | 9.6 | 14.8 | |
| 12 | 323.4 | 7.8 | 11.5 | 15.2 | 18.7 | | 315 | 315.0 | 12.1 | 18.7 | |

Properties guide

| Chemical resistance and performance data | Typical applications | Unsuitable for the following uses | Sizes and jointing information |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strong mineral acids Caustic and ammoniacal solutions Some organics Most detergents Temperature range 0°C to 60°C | Chemicals, potable water, general purpose water, waste water etc. | Aromatic solvents temperatures below 0°C temperatures over 60°C | Pipe and fittings for solvent welding manufactured in metric sizes 12mm to 315mm to DIN and ISO standards and 3/8" to 12" British Standards. Threaded fittings also available. |

Note: Temperatures given are for guidance only, please check before specifying.

General Information

Handling and storage

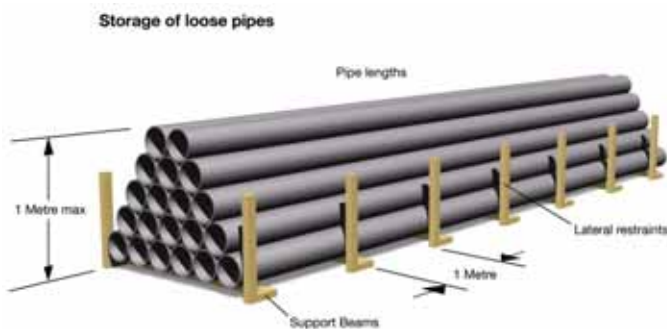
The high impact strength of Durapipe PVC-U systems provides some protection against damage but care should be taken at all stages of handling, transportation and storage.

Pipe must be transported by a suitable vehicle and properly loaded and unloaded, eg., wherever possible moved by hand or mechanical lifting equipment. It must not be dragged across the ground.

The storage should be flat, level and free from sharp stones.

Lengths

Pipe lengths stored individually should be stacked in a pyramid not more than one metre high, with the bottom layer fully restrained by wedges. Where possible, the bottom layer of pipes should be laid on timber battens at one-metre centres. On site, pipes may be laid out individually in strings. (Where appropriate, protective barriers should be placed with adequate warning signs and lamps.)

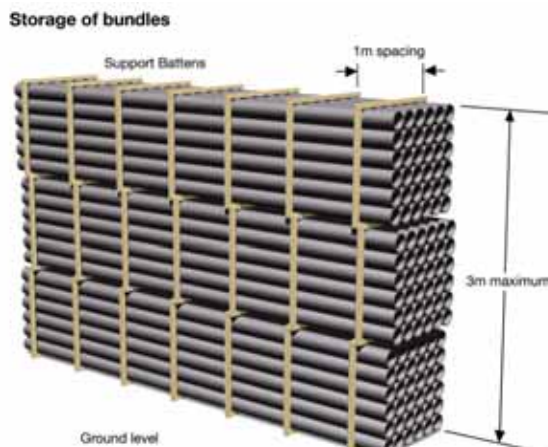


Bundles

Bundled packs of pipe should be stored on clear, level ground with the battens supported from the outside by timbers or concrete blocks. For safety, bundled packs should not be stacked more than three metres high.

Smaller pipes may be nested inside larger pipes. Side bracing should be provided to prevent stack collapse.

Similar precautions should be taken with fittings and these should be kept in protective wrappings until required for use.



Health and Safety at Work Act and COSHH Regulations

Attention is drawn to the requirements in the UK of this Act and to the Control of Substances Hazardous to Health (COSHH) Regulations. Durapipe UK cannot accept responsibility for accidents arising from the misuse of its products because of bad installation or incorrect application.

Material safety data

Material Safety Data sheets are available on our website.

Filling and flushing

When purchasing chemicals for either flushing or long-term system use, suppliers should be advised that this is for PVC-U material. Guidance on the suitability of various system flushing or filling fluids with PVC-U can be found in the Durapipe Chemical Resistance brochure, 04900004 for further details.

Testing

It is suggested that the following test procedure be followed, after joints have been allowed to dry for the appropriate minimum time (at least 24 hours up to 8"/225mm, sizes 10"/250mm and 12"/315mm require a minimum of 48 hours at 20°C).

The system should be divided conveniently into test sections.

Fill section with cold water making sure that no air pockets remain. Do not pressurise at this stage.

Check system for leaks. If none are apparent, check for and remove any remaining air. Increase pressure up to 3 bar. Do not pressurise further at this stage.

Leave section pressurised for 10 minutes. If pressure decays, inspect for leaks and rectify as necessary. If pressure remains constant, slowly increase the hydrostatic pressure to 1 1/2 times nominal operating pressure.

Leave section pressurised for a period not exceeding 1 hour. During this time pressure should not change.

Caution

Personnel must stand well clear when pressure testing systems. Similarly, under no circumstances should pressure tests be carried out using pressurised gases. Such a test could be extremely dangerous and serves no useful purpose.

Note: If extended times are required to achieve hydrostatic pressure, either leakage has occurred or air remains in the line. Inspect for leakage and if none is apparent, reduce pressure and check for trapped air. This must be removed before further pressurisation commences.

Colour

Durapipe PVC-U products are a grey colour, generally in accordance with BS5252, colour ref. RAL 7011.

Auto CAD drawings

Both 2D & 3D drawings of both metric and imperial products contained in this brochure are available either on our website www.durapipe.co.uk or via our technical support department.

Approvals and Quality Marks

Durapipe PVC-U pipe and fittings

Durapipe UK offer PVC-U pipework systems comprising pipes, fittings and valves, joined by solvent welding, together with associated accessories. Products are available in Imperial sizes from 1/2" to 12" (nominal bore) and Metric sizes from 16mm to 315mm (outside diameter).

PVC-U dimensions and standards

Imperial

The Durapipe PVC-U Imperial System is manufactured in accordance with the relevant British Standards as shown below. Kitemark licences are also held, where applicable, for both pipes and fittings BS 5391 (pipe) BS 5392 (fittings).

Metric

The Durapipe PVC-U Metric System is manufactured generally in accordance with the relevant international standards as shown below:

ISO 15493
EN 1452-2

Threaded fittings conform to the requirements of BS 21/DIN 2999/ISO7. Socket dimensions of Durapipe PVC-U Metric fittings for solvent welding comply with ISO/DIS 727-1.

Materials

Durapipe PVC-U material is UK Water Regulations Advisory Scheme approved for cold water services and is listed in the Water Fittings and Materials Directory.

Gaskets and seals

Gaskets and O-Ring seals are made from EPDM except where stated otherwise.

Compatibility

The components of each dimensional system are not interchangeable with each other, except for sizes 75mm/2 1/2" and 140mm/5". They can be joined by using the mm/imperial adaptor fittings or by flanges. They are, however, interchangeable with other piping products manufactured in accordance with the standards referred to.

Approvals and quality marks

- BSI (British Standard Institution UK) Licence N. KM 05802**
 Durapipe FIP PVC-U Imperial series fittings are covered by Kitemark Licence No. KM 05802 BS 4346-1.
 Durapipe FIP PVC-U solvent cement is covered by Kitemark Licence No. KM6218 to BS 4346: Part 3.
- WRAS (Water regulations advisory scheme - UK) Certificate N. M103019 / 0402050 / 0201506 and 0201512**
 Durapipe FIP PVC-U Imperial series pipes and fittings are UK Water Regulations Advisory Scheme approved for conveying potable water certificate number M103019 / 0402050
 Durapipe FIP PVC-U materials are also UK Water Regulations Advisory Scheme approved and are listed under 0706050 (2012), 0902701 (2014) and 1012518 (2015).
 Durapipe FIP PVC-U solvent cement is UK Water Regulations Advisory Scheme approved under 1011527.
- Regulation 31 approved**
 Approved for use within public water supplies and by the Secretary of State and listed in the 'List of Approved Products' published by the DWI.
- IIP N. 122 Istituto Italiano dei Plastici (Italian Institute of Plastics)**
 Durapipe FIP PVC-U fittings are manufactured in accordance with UNI EN 1452.
- ACS France (Attestation de conformité Sanitaire) N. 98 MAT NY 418**
 Durapipe FIP PVC-U is suitable for alimentary applications.
- NSF (National Sanitation Foundation USA) Certificate N. 11370/11371A**
 Suitability of Durapipe FIP PVC-U for use with drinking water.
- KIWA (Keurings Institut Voor Waterleiding Artikelen Holland) Certificate N. K5034/01**
 PVC-U fittings according to KIWA BRL K504.
- IRH**
 Durapipe FIP PVC-U fittings are acknowledged by IRH for ACS Certificate N. 05 MAT NY 006.
- BUREAU VERITAS (France) Certificate N. 07123 / CO BV**
 Suitability of Durapipe FIP PVC-U for transporting and treatment of sanitary water for naval applications.
- Ukrainian hygienic, safety and quality regulation. Certificate N. UA1.094.0052575-04**
 Durapipe FIP PVC-U fittings are certified in compliance with Ukrainian hygienic, safety and quality regulation.
- RINA – Registro Italiano Navale (Italian Register Naval) Certificate N. MAC/36401/TO/01**
 Suitability of Durapipe FIP PVC-U for transport and treatment of sanitary water and of conditioning for naval applications.



Reference standards that product is produced to

- **ISO 15493** - Plastics piping systems in PVC-U for industrial applications.
- **BS EN 1452** - Characteristics of PVC-U fittings and pipes of piping systems for water supply.
- **ISO 727** - Pipes and fittings in PVC-U. Dimensions and tolerances metric series.
- **ISO 4422** - Characteristics of PVC-U fittings of piping systems for water supply.
- **DIN 8063** - PVC-U fittings, dimensions.
- **KIWA (Keurings Instituut Voor Waterleiding Artikelen Holland) KIWA BRL – K504 e KIWA BRL502** Characteristics of PVC-U fittings and pipes of piping systems for water supply.
- **BSI (British Standard Institution UK) BS 4346-1** - Characteristics of PVC-U fittings of piping systems for fluids under pressure.
- **BS 3505-3506** - Characteristics of PVC-U pipes for industrial fluids and cold water.
- **UNI ISO 228/1:1983** - PVC-U fittings with threaded connections.
- **DIN 2999** - PVC-U fittings with threaded connections.
- **BS 21** - PVC-U fittings with threaded connections.
- **ISO R7:1984** - PVC-U fittings with threaded connections sealing tight.
- **ISO 161/1** - PVC-U pipes and fittings dimensions, metric series.
- **DIN 8062** - PVC-U pipes dimensions.
- **ASTM D696 e DIN 53752** - Coefficient of linear thermal expansion, test and method.
- **DVS 2204-1** - Solvent welding of thermoplastic materials PVC-U.
- **UNI 11242** Solvent welding of PVC-U pipes, fittings and valves.

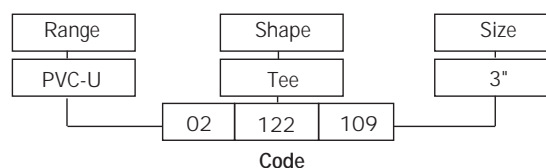
The production of the PVC-U product is in accordance with the highest quality standards and in full observance of the environmental practices imposed by current legislation.

All products are manufactured in accordance with **ISO 9001** certified quality assurance programme. For more information please visit our website www.durapipe.co.uk

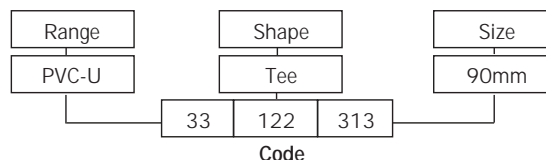
Ordering by code

Code numbers should be used when ordering products eg.

Imperial



Metric



Abbreviations

The following list of abbreviations is used in this catalogue:

| | | |
|-------|---|------------------------------------------------------------|
| ABS | - | Acrylonitrile Butadiene Styrene |
| ANSI | - | American National Standards Institute |
| BS | - | British Standards |
| BSP | - | British Standard Pipe Thread |
| DIN | - | Deutsche Industrie Normen (German Industrial Standards) |
| EPDM | - | Ethylene Propylene Rubber |
| FPM | - | Fluorine Rubber (eg. Viton®) |
| ISO | - | International Standards Organisation |
| MEK | - | Methyl Ethyl Ketone |
| PN | - | Nominal Pressure |
| PTFE | - | Polytetrafluoroethylene (eg. Teflon®) |
| PVC-C | - | Corzan, Chlorinated Polyvinyl Chloride |
| PVC-U | - | Unplasticised Polyvinyl Chloride |

® Dupont registered trade name.

| Mechanical, Physical and Electrical Data | Value |
|---------------------------------------------|---------------------------|
| Mechanical | |
| Ultimate tensile strength (23°C) | 53 MN/m ² |
| Tensile strength at break | 45.00 MPa |
| Young's Modulus | 3060 MPa |
| Compressive strength | 55 MN/m ² |
| Poisson's Ratio | 0.35 |
| Izod impact strength at 23°C (notched) | 0.08 kJ/m ² |
| Physical | |
| Specific gravity | 1.41 |
| Softening point (ISO 306: 1994 method B120) | 77°C |
| Linear coefficient of thermal expansion | 0.6mm/m/10°C |
| Heat distortion point | 74°C |
| ASTM D648 – 4.5 MN/m | |
| Thermal Conductivity | 0.147 W/m °C |
| Specific heat | 0.84-2.1 J/g |
| Electrical | |
| Dielectric constant | 3.0 at 10 ⁶ Hz |
| Volume resistivity | 10 ¹⁶ ohm/cm |

Product Specification

IMPERIAL RANGE

DURAPIPE PVC-U PIPES

In accordance with the dimensional and testing requirements of BS EN 1452, Third Party Approved with British Standard Kitemark Licence.

DURAPIPE PVC-U FITTINGS

In accordance with the dimensional and testing requirements of BS 4346 Part 1, Third Party Approved with British Standard Kitemark Licence.

MATCHED SYSTEM

The PVC-U products are designed to ensure complete integrity, quality and compatibility between pipes, fittings and valves. Manufacturers warranties may be compromised if a system is installed with materials from various manufacturers. Where this is not possible then any alternative products should be confirmed as being at least equivalent to that which is normally supplied.

QUALITY SYSTEM

Pipes, fittings and valves shall be manufactured in an environment, which operates a Quality Assurance System assessed to ISO 9001.

ENVIRONMENTAL SYSTEM

The manufacturer of pipes, fittings and valves shall be able to demonstrate compliance with applicable environmental legislation and products shall be manufactured in an environment where documented performance reviews are undertaken and an Environmental Management System is successfully assessed to ISO 14001.

DRINKING WATER/ APPROVAL FOR USE IN CONTACT

Within private property boundaries all PVC-U pipes, fittings and solvent cement shall be listed in the Water Fittings and Materials Directory to show compliance with the requirements of the United Kingdom Water Regulations Advisory Service.

In any situation which could result in the PVC-U pipes, fittings and solvent cement coming into contact with water which is intended for human consumption these shall be in accordance with the requirements of BS 6920 Part 1.

Copies of certification of compliance with these approvals are available for inspection.

Approved for use within public water supplies and by the Secretary of State. Durapipe UK PVC-U pipe is listed in the 'List of Approved Products' published by the DWI.

THIRD PARTY APPROVALS

The manufacturer shall have the following Third Party Approvals:

BRITISH STANDARD KITEMARK LICENCE

KM06218 for solvent cement to BS 4346 Part 3

WRAS WATER REGULATIONS ADVISORY SCHEME

0112065 for Imperial fittings

0610503 for Durapipe solvent cement (5560)

DWI PRODUCT APPROVAL

DWI 56.4.937 Durapipe grey

PVC-U pipe NGS

DESIGN LIFE

Durapipe pipes and fittings are designed to operate continuously for 50 years at their maximum rated pressure at a working temperature of 20°C (valves have a design life of 25 years).

CHEMICAL SUITABILITY

The manufacturer shall publish detailed chemical resistance data to enable the suitability of the PVC-U material, seals and gaskets to be determined by designers and specifiers.

The manufacturer shall also employ a qualified and experienced Chemist and provide a free-of-charge advisory service for assessing the suitability of its PVC-U material, seals and gaskets.

INSTALLATION SPECIFICATION

The installation must be carried out by competent persons.

The contractor shall be required to provide technical documentation relating to the manufacturers recommended Installation procedures.

The manufacturer shall publish Installation recommendations, and shall also provide a free-of-charge training service for designers and installers, with appropriate written confirmation of attendance.

Temperature range 0°C to +60°C (see page 8 for more details).

DURAPIPE PVC-U BALL VALVES

True union design, end load resistant with full pressure and shock resistant anti blow out device which conforms to design and endurance testing requirements of DIN 3441 Part 1, and DIN 3230 Part 3 Leak Rate One (Water and Air).

Drop Tight and Bubble Tight testing have been satisfactorily completed.

In addition, the following testing has been successfully conducted:

Hydrostatic Shell Test 1.5 x Maximum Working Pressure.

Seat Test 1.1 x Maximum Working Pressure.

PRESSURE RATING

PN16 at 20°C

SEATS AND SEALS

Seats: PTFE material fitted with O-Ring compensators.

Seals: Standard size O-Ring type for ease of replacement, in EPDM or FPM material.

END CONNECTIONS

Plain socket ends, or BSP threaded.

ACTUATION

Options: Electric or pneumatic.

DURAPIPE PVC-U TKD 3-WAY BALL VALVES

True union design. Options of 'L' or 'T' port configuration.

The following testing will have been successfully completed:

Drop Tight and Bubble Tight Test.

Hydrostatic Shell Test 1.5 x maximum recommended pressure.

Seat Test 1.1 x maximum working pressure.

PRESSURE RATING

1/2" to 2" – PN16 at 20°C.

SEATS AND SEALS

Seats: PTFE material fitted with O-Ring compensators.

Seals: Standard size O-Ring type for ease of replacement, in EPDM or FPM material.

END CONNECTIONS

Plain socket ends or BSP threaded.

DURAPIPE PVC-U DIAPHRAGM VALVES

Will be equipped with a maintenance free hand wheel actuator with spindle extension to indicate the position of the valve open or closed.

The body retaining bolts will be fixed from the underside, to provide a crevice free outer surface to prevent accumulation of debris or risk of corrosion of exposed steel bolts from chemical spillage.

Valves will have been hydrostatically pressure tested to the requirements BS 4346 Part 1, BS 5156, ISO 7508 and DIN 3230 Part 3 Leak Rate One.

PRESSURE RATING

1/2" to 4" – PN10 at 20°C

DIAPHRAGM TYPE

Choice of EPDM, FPM or PTFE will be available.

END CONNECTION

Socket union ended 1/2" to 2". Spigot ended 2 1/2" to 4".

ACTUATION

Options – Pneumatic

DURAPIPE PVC-U BALL CHECK VALVES

These shall be double union with plain socket or BSP threaded end.

PRESSURE RATING

1/2" to 2" – PN16 at 20°C.

SEALS

Seals: Will be EPDM or FPM material.

DURAPIPE BUTTERFLY VALVES

Reinforced Polypropylene body, fully lined, with PVC disc.

Full flanged design, with oval holes/inserts to suit various standard flange drillings.

Lever operated, with 10 x 10° position stops, and locking device.

PRESSURE RATING

1 1/2" to 2" – PN16

2" to 10" – PN10 at 20°C

12" – PN8 at 20°C

PRIMARY LINER

Available in EPDM or FPM

ACTUATION

Electric, Pneumatic, or Gearbox (standard on sizes over 8")

METRIC RANGE

DURAPIPE PVC-U PIPES

In accordance with the requirements of EN 1452-2, DIN 8061/2, and ISO DIS 15493. Pressure rating PN10 or 16.

DURAPIPE PVC-U FITTINGS

In accordance with the requirements of EN 1452-3, DIN 8063, ISO 727 and ISO DIS 15493. Pressure rating PN16 up to size 160mm, and PN10 in larger sizes.

MATCHED SYSTEM

Durapipe PVC-U products are designed to ensure complete integrity, quality and compatibility between pipes, fittings and valves. Warranties are compromised if a system is installed with materials from various manufacturers. Where this is not possible then any alternative products should be confirmed as being at least equivalent to that which is normally supplied.

QUALITY SYSTEM

Pipes, fittings and valves shall be manufactured in an environment which operates a Quality Assurance System assessed to ISO 9001.

ENVIRONMENTAL SYSTEM

The manufacturer of pipes, fittings, and valves shall be able to demonstrate compliance with applicable environmental legislation and products shall be manufactured in an environment where documented performance reviews are undertaken and an Environmental Management System is successfully assessed to ISO 14001.

APPROVAL FOR USE IN CONTACT WITH DRINKING WATER

Within private property boundaries all PVC-U pipes, fittings and solvent cement shall be listed in the Water Fittings and Materials Directory to show compliance with the requirements of the United Kingdom Water Regulations Advisory Service.

In any situation which could result in the PVC-U pipes, fittings and solvent cement coming into contact with water which is intended for human consumption these shall be in accordance with the requirements of BS 6920 Part 1.

Copies of certification of compliance with these approvals are available for inspection.

Approved for use within public water supplies and by the Secretary of State. Durapipe UK PVC-U pipe is listed in the 'List of Approved Products' published by the DWI.

THIRD PARTY APPROVALS

The manufacturer shall have the following Third Party Approvals:

WRAS WATER REGULATIONS ADVISORY SCHEME

0402050 for Metric size pipe and fittings

0610503 for Durapipe solvent cement (5560)

DWI PRODUCT APPROVAL

DWI 56.4.937 Durapipe grey

PVC-U pipe NGS

DESIGN LIFE

Durapipe pipes and fittings are designed to operate continuously for 50 years at their maximum rated pressure at a working temperature of 20°C (valves have a design life of 25 years).

CHEMICAL SUITABILITY

The manufacturer shall publish detailed chemical resistance data to enable the suitability of the PVC-U material, seals and gaskets to be determined by designers and specifiers.

The manufacturer shall also employ a qualified and experienced Chemist and provide a free-of-charge advisory service for assessing the suitability of its PVC-U material, seals and gaskets.

INSTALLATION SPECIFICATION

The installation must be carried out by competent persons.

The contractor shall be required to provide technical documentation relating to the manufacturers recommended Installation procedures.

The manufacturer shall publish Installation recommendations, and shall also provide a free-of-charge training service for designers and installers, with appropriate written confirmation of attendance. Temperature range +5°C to +60°C (see page 8 for more details).

DURAPIPE PVC-U BALL VALVES

True union design, end load resistant with full pressure and shock resistant anti blow out device which conforms to design and endurance testing requirements of DIN 3441 Part 1, and DIN 3230 Part 3 Leak Rate One (Water and Air).

Drop Tight and Bubble Tight testing have been satisfactorily completed.

In addition, the following testing has been successfully conducted:

Hydrostatic Shell Test 1.5 x Maximum Working Pressure.

Seat Test 1.1 x Maximum Working Pressure.

PRESSURE RATING

PN16 at 20°C

SEATS AND SEALS

Seats: PTFE material fitted with O-Ring compensators.

Seals: Standard size O-Ring type for ease of replacement, in EPDM or FPM material.

END CONNECTIONS

Plain socket ends, BSP threaded or flanged.

ACTUATION

Options: Electric or Pneumatic.

DURAPIPE PVC-U TKD 3-WAY BALL VALVES

True union design. Options of 'L' or 'T' port configuration.

The following testing will have been successfully completed:

Drop Tight and Bubble Tight Test.

Hydrostatic Shell Test 1.5 x maximum recommended pressure.

Seat Test 1.1 x maximum working pressure.

PRESSURE RATING

16mm to 63mm – PN16 at 20°C.

SEATS AND SEALS

Seats: PTFE material fitted with O-Ring compensators.

Seals: Standard size O-Ring type in EPDM or FPM material.

END CONNECTIONS

Plain socket ends or BSP threaded.

DURAPIPE PVC-U DIAPHRAGM VALVES

These are equipped with a maintenance free hand wheel actuator with spindle extension to indicate the position of the valve open or closed.

The body retaining bolts are fixed from the underside to provide a crevice free outer surface to prevent accumulation of debris or risk of corrosion of exposed steel bolts from chemical spillage.

Valves have been hydrostatically pressure tested to the requirements of DIN 8063, ISO 5208, ISO 7508 and DIN 3230 Part 3 Leak Rate One.

PRESSURE RATING

20mm to 110mm – PN10 at 20°C

DIAPHRAGM TYPE

Choice of EPDM, FPM or PTFE will be available.

END CONNECTION

Socket union ended 20mm to 63mm. Spigot ended 75mm to 110mm.

ACTUATION

Options: Pneumatic

DURAPIPE PVC-U BALL CHECK VALVES

These shall be double union with plain socket or BSP threaded end.

PRESSURE RATING

20mm to 63mm – PN16 at 20°C.

SEALS

Seals: Will be EPDM or FPM material.

DURAPIPE BUTTERFLY VALVES

Reinforced Polypropylene body, fully lined, with PVC disc.

Full flanged design, with oval holes/inserts to suit various standard flange drillings.

Lever operated, with 10 x 10° position stops, and locking device

PRESSURE RATING

50mm to 63mm – PN16

75mm to 250mm – PN10 at 20°C

315mm – PN8 at 20 °C

PRIMARY LINER

Available in EPDM or FPM

ACTUATION

Electric, Pneumatic, or Gearbox (standard on sizes over 225mm).

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Optima Pipe
page 30



Pipe
page 31



PVC-U Clear Pipe
(plain)
page 31



Sockets (plain)
page 32



Reducing bushes (plain)
page 32



Elbows 45° (plain)
page 32



Elbows 90° (plain)
page 33



Tees 90° equal (plain)
page 33



Bends 22¹/₂°
long radius
page 34



Bends 45°
long radius (plain)
page 34



Bends 90°
long radius (plain)
page 34



Bends 90°
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End caps (plain)
page 35



Socket unions (plain)
page 35



Imperial/Metric socket
adaptors (plain)
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Sockets
(plain/threaded)
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Elbows 90°
(plain/threaded)
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Tee (plain/threaded)
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Reducing bushes
(plain/threaded)
page 37



Male threaded adaptors
(plain/threaded)
page 37



Female threaded adaptors
(plain/threaded)
page 37



Barrel nipples
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Hose adaptors
(male threaded -
short pattern)
page 39



Hose adaptors
(male threaded -
long pattern)
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Hose adaptors
(female threaded)
page 39



Tank connectors
(plain/threaded)
page 39



Composite unions
(plain/threaded male
brass)
page 39



Composite unions
(plain/threaded female
brass)
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Socket unions
(plain/threaded)
page 40



Sockets (threaded)
page 40



Reducing bushes
(threaded)
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Reducers
(threaded)
page 40



Reducers (threaded)
page 41



Elbows 45° (threaded)
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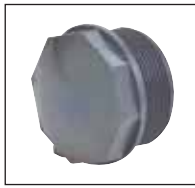
Elbows 90° (threaded)
page 41



Tees 90° equal
(threaded)
page 42



End caps (threaded)
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Plugs (threaded)
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Hexagon nipples
(threaded)
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Back nuts (threaded)
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Socket unions (threaded)
page 43



Flanges stub serrated
page 43



Flanges full face
(drilled and undrilled)
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Flanges blanking
(drilled and undrilled)
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Backing rings
page 45-47



Gaskets flat
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Gaskets full face (drilled)
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Valve support plates
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Valves



Flange assemblies
page 49



VKD Double union ball valves (manual)
page 50



TKD 3-way valves
page 50



VXE Double union ball valves (manual)
page 51



SXE Easyfit ball
check valves
page 51



SXA Easyfit air
release valves
page 51



RV Y-Type Strainers
page 52



VM Diaphragm valves
page 52



FK Butterfly valves
page 52



VKR Metering ball valve
page 53

Accessories



Transparent service plugs
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Die cut labels
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One-step solvent cement
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Eco-cleaner
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HCR-36 Chemically
resistant PVC cement
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Cleaner for use with
HCR-36 Chemically
resistant PVC cement
page 54



Cobra pipe clips
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Saddle clips
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Chamfering and
de-burring tools
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Pipe cutters
page 55

Durapipe offers two different PVC-U Pipe options... you decide!



Option 1

Premium Price
to reflect market leading levels of approvals

Fully approved PVC-U pipe

For where approved materials are required

Approvals

- WRAS approved
- BSI Kitemark licensed
- Regulation 31 (DWI)

Application

- Drinking water supply
- Water treatment

Option 2

Up to 27% LOWER PRICE
than Approved pipe

Optima PVC-U pipe

For where standard PVC-U is ideal

Approvals

- WRAS approved

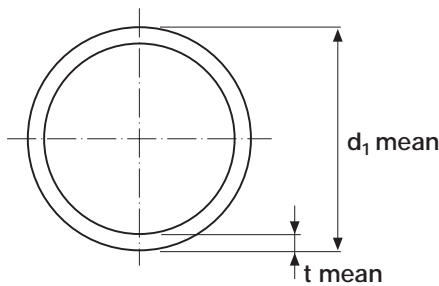
Application

- Standard PVC-U applications

See page 58 for metric sizes.

Optima Pipe Plain

NEW



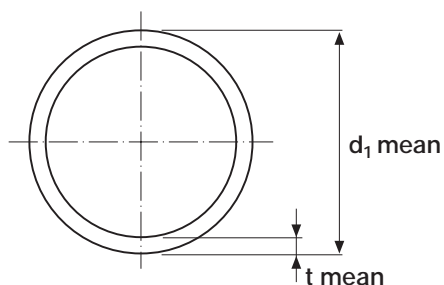
Class C 9 bar @ 20°C

| Size | d ₁ | t | SL | kg/m | Code |
|------|----------------|------|----|-------|------------|
| 2 | 60.3 | 2.8 | 6 | 0.73 | 06 515 107 |
| 3 | 88.9 | 3.8 | 6 | 1.05 | 06 515 109 |
| 4 | 114.3 | 4.9 | 6 | 2.43 | 06 515 110 |
| 5 | 140.0 | 5.9 | 6 | 3.49 | 06 515 111 |
| 6 | 168.3 | 7.1 | 6 | 4.89 | 06 515 112 |
| 10 | 272.6 | 9.7 | 6 | 11.90 | 06 511 114 |
| 12 | 323.4 | 11.5 | 6 | 16.80 | 06 511 115 |

Class E 15 bar @ 20°C

| Size | d ₁ | t | SL | kg/m | Code |
|-------|----------------|------|----|------|------------|
| 1/2 | 21.4 | 1.9 | 6 | 0.16 | 06 516 102 |
| 3/4 | 26.7 | 2.2 | 6 | 0.23 | 06 516 103 |
| 1 | 33.6 | 2.5 | 6 | 0.32 | 06 516 104 |
| 1 1/4 | 42.2 | 3.0 | 6 | 0.52 | 06 516 105 |
| 1 1/2 | 48.3 | 3.4 | 6 | 0.67 | 06 516 106 |
| 2 | 60.3 | 4.2 | 6 | 1.00 | 06 516 107 |
| 3 | 88.9 | 6.2 | 6 | 2.13 | 06 516 109 |
| 4 | 114.3 | 7.9 | 6 | 3.73 | 06 516 110 |
| 6 | 168.3 | 11.7 | 6 | 8.02 | 06 516 112 |

PVC-U Pipe Imperial System Plain



Class C 9 bar @ 20°C

| Size | d ₁ | t | SL | kg/m | Code |
|------|----------------|-----|----|------|------------|
| 2 | 60.3 | 2.8 | 6 | 0.73 | 06 511 107 |
| 3 | 88.9 | 3.8 | 6 | 1.05 | 06 511 109 |
| 4 | 114.3 | 4.9 | 6 | 2.43 | 06 511 110 |
| 6 | 168.3 | 7.1 | 6 | 4.89 | 06 511 112 |
| 8 | 218.8 | 8.4 | 6 | 7.69 | 06 511 113 |

Class D 12 bar @ 20°C

| Size | d ₁ | t | SL | kg/m | Code |
|-------------------------------|----------------|------|----|------|------------|
| 1 ¹ / ₄ | 42.2 | 2.5 | 6 | 0.42 | 06 512 105 |
| 1 ¹ / ₂ | 48.3 | 2.8 | 6 | 0.54 | 06 512 106 |
| 2 | 60.3 | 3.4 | 6 | 0.84 | 06 512 107 |
| 3 | 88.9 | 5.0 | 6 | 1.85 | 06 512 109 |
| 4 | 114.3 | 6.5 | 6 | 3.12 | 06 512 110 |
| 5 | 140 | 7.3 | 6 | 4.54 | 06 512 111 |
| 6 | 168.3 | 9.5 | 6 | 6.97 | 06 512 112 |
| 8 | 218.8 | 11.1 | 6 | 9.98 | 06 512 113 |

Class E 15 bar @ 20°C - 6m lengths

| Size | d ₁ | t | SL | kg/m | Code |
|-------------------------------|----------------|------|----|------|------------|
| 1/2 | 21.4 | 1.9 | 6 | 0.16 | 06 513 102 |
| 3/4 | 26.7 | 2.2 | 6 | 0.23 | 06 513 103 |
| 1 | 33.6 | 2.5 | 6 | 0.32 | 06 513 104 |
| 1 ¹ / ₄ | 42.2 | 3.0 | 6 | 0.52 | 06 513 105 |
| 1 ¹ / ₂ | 48.3 | 3.4 | 6 | 0.67 | 06 513 106 |
| 2 | 60.3 | 4.2 | 6 | 1.00 | 06 513 107 |
| 3 | 88.9 | 6.2 | 6 | 2.13 | 06 513 109 |
| 4 | 114.3 | 7.9 | 6 | 3.73 | 06 513 110 |
| 6 | 168.3 | 11.7 | 6 | 8.02 | 06 513 112 |

Class 7 12 bar @ 20°C after threading

| Size | d ₁ | t | SL | kg/m | Code |
|-------------------------------|----------------|-----|----|------|------------|
| 1/2 | 21.4 | 4.0 | 6 | 0.31 | 06 514 102 |
| 3/4 | 26.7 | 4.2 | 6 | 0.43 | 06 514 103 |
| 1 | 33.6 | 4.8 | 6 | 0.62 | 06 514 104 |
| 1 ¹ / ₄ | 42.2 | 5.2 | 6 | 0.85 | 06 514 105 |
| 1 ¹ / ₂ | 48.3 | 5.5 | 6 | 1.04 | 06 514 106 |
| 2 | 60.3 | 5.9 | 6 | 1.43 | 06 514 107 |

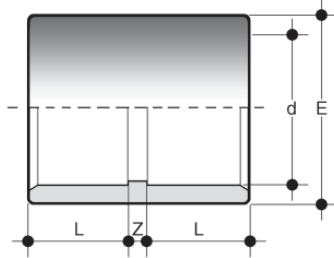
PVC-U Clear Pipe Plain



| Size | Class | d ₁ | t | SL | kg/m | Code |
|-------------------------------|-------|----------------|-------|----|------|------------|
| 1/2 | E | 21.4 | 1.52 | 3 | 0.23 | 06 517 102 |
| 3/4 | E | 26.7 | 2.42 | 3 | 0.30 | 06 517 103 |
| 1 | E | 33.4 | 2.61 | 3 | 0.46 | 06 517 104 |
| 1 ¹ / ₄ | E | 42.2 | 3.45 | 3 | 0.62 | 06 517 105 |
| 1 ¹ / ₂ | E | 48.3 | 4.03 | 3 | 0.72 | 06 517 106 |
| 2 | D | 60.3 | 5.19 | 3 | 0.98 | 06 517 107 |
| 3 | D | 88.9 | 7.27 | 3 | 2.00 | 06 517 109 |
| 4 | D | 114.3 | 10.15 | 3 | 3.05 | 06 517 110 |
| 5 | C | 168.3 | 15.32 | 3 | 2.30 | 06 517 112 |
| 8 | C | 218.8 | 20.17 | 3 | 7.91 | 06 517 113 |

Sockets Plain

MLV



| Size | PN | L | Z | E | gms | Code |
|--------|----|-----|----|-----|------|------------|
| 1/2 | 15 | 17 | 2 | 27 | 13 | 02 100 102 |
| 3/4 | 15 | 20 | 2 | 33 | 15 | 02 100 103 |
| 1 | 15 | 23 | 2 | 41 | 36 | 02 100 104 |
| *1 1/4 | 12 | 26 | 3 | 50 | 58 | 02 100 105 |
| 1 1/2 | 15 | 31 | 3 | 61 | 118 | 02 100 106 |
| 2 | 15 | 38 | 3 | 76 | 206 | 02 100 107 |
| *2 1/2 | 12 | 44 | 4 | 90 | 250 | 33 100 312 |
| 3 | 15 | 51 | 6 | 108 | 420 | 02 100 109 |
| 4 | 15 | 63 | 5 | 131 | 680 | 02 100 110 |
| 5 | 15 | 78 | 7 | 171 | 1240 | 33 100 316 |
| 6 | 15 | 90 | 10 | 195 | 1800 | 02 100 112 |
| *8 | 12 | 116 | 12 | 257 | 4950 | 02 100 113 |
| **10 | 9 | 150 | 10 | 307 | 5800 | 02 100 114 |
| **12 | 9 | 165 | 13 | 362 | 9800 | 02 100 115 |

*Class D **Class C

Reducing bushes Plain

DLV

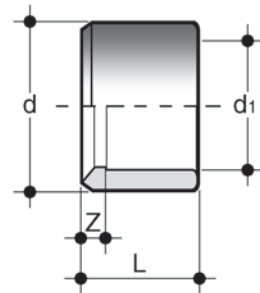


Fig. A

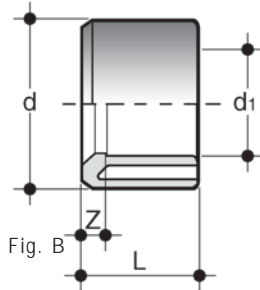


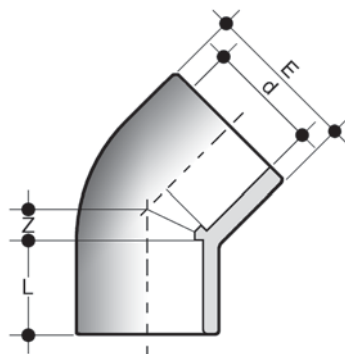
Fig. B

| Size | PN | L | Z | gms | Fig | Code |
|---------------|----|-----|----|------|-----|------------|
| 3/4 x 1/2 | 15 | 20 | 3 | 6 | A | 02 109 122 |
| 1 x 1/2 | 15 | 23 | 7 | 18 | A | 02 109 123 |
| 1 x 3/4 | 15 | 23 | 3 | 10 | A | 02 109 124 |
| 1 1/4 x 1 | 15 | 27 | 4 | 19 | A | 02 109 125 |
| 1 1/2 x 3/4 | 15 | 30 | 10 | 40 | B | 02 109 119 |
| 1 1/2 x 1 | 15 | 30 | 8 | 42 | A | 02 109 126 |
| 1 1/2 x 1 1/4 | 15 | 31 | 4 | 20 | A | 02 109 127 |
| 2 x 3/4 | 15 | 36 | 17 | 75 | B | 02 109 120 |
| 2 x 1 | 15 | 36 | 7 | 50 | B | 02 109 128 |
| 2 x 1 1/4 | 15 | 38 | 12 | 80 | B | 02 109 129 |
| 2 x 1 1/2 | 15 | 38 | 7 | 50 | B | 02 109 130 |
| 2 1/2 x 2 | 15 | 44 | 8 | 100 | A | 02 109 131 |
| 3 x 1 1/2 | 15 | 51 | 21 | 200 | B | 02 109 134 |
| 3 x 2 | 15 | 51 | 13 | 167 | B | 02 109 135 |
| 3 x 2 1/2 | 15 | 51 | 7 | 125 | A | 02 109 136 |
| 4 x 2 | 15 | 63 | 27 | 250 | B | 02 109 140 |
| 4 x 3 | 15 | 63 | 12 | 331 | A | 02 109 141 |
| 5 x 4 | 15 | 76 | 15 | 460 | B | 02 329 142 |
| *6 x 4 | 12 | 93 | 27 | 972 | B | 02 109 147 |
| *8 x 6 | 12 | 110 | 23 | 1400 | B | 02 109 152 |
| **10 x 8 | 9 | 144 | 25 | 3500 | A | 02 109 151 |
| **12 x 10 | 9 | 169 | 26 | 4100 | A | 02 109 153 |

*Class D **Class C

Elbows 45° Plain

HLV

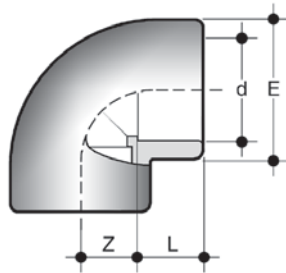


| Size | PN | L | Z | E | gms | Code |
|-------|----|-----|----|-----|-------|------------|
| 1/2 | 15 | 17 | 5 | 27 | 13 | 02 119 102 |
| 3/4 | 15 | 20 | 6 | 33 | 20 | 02 119 103 |
| 1 | 15 | 23 | 7 | 41 | 45 | 02 119 104 |
| 1 1/4 | 15 | 26 | 11 | 50 | 85 | 02 119 105 |
| 1 1/2 | 15 | 31 | 12 | 61 | 155 | 02 119 106 |
| 2 | 15 | 38 | 14 | 76 | 291 | 02 119 107 |
| 2 1/2 | 15 | 44 | 17 | 90 | 315 | 33 119 312 |
| 3 | 15 | 51 | 22 | 108 | 565 | 02 119 109 |
| 4 | 15 | 61 | 26 | 131 | 740 | 02 119 110 |
| 5 | 15 | 115 | 37 | 173 | 1660 | 33 119 316 |
| 6 | 15 | 134 | 41 | 198 | 3080 | 02 119 112 |
| 8 | 9 | 182 | 65 | 259 | 7250 | 02 119 113 |
| **10 | 9 | 206 | 66 | 307 | 9800 | 02 119 114 |
| **12 | 9 | 243 | 78 | 363 | 15500 | 02 119 115 |

** Class C

Elbows 90° Plain

GLV

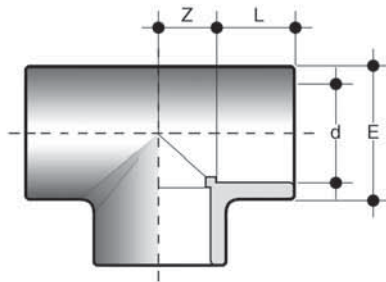


| Size | PN | L | Z | E | gms | Code |
|--------|----|-----|-----|-----|-------|------------|
| 1/2 | 15 | 17 | 11 | 27 | 15 | 02 115 102 |
| 3/4 | 15 | 20 | 14 | 33 | 30 | 02 115 103 |
| 1 | 15 | 23 | 17 | 41 | 45 | 02 115 104 |
| *1 1/4 | 12 | 27 | 22 | 54 | 110 | 02 115 105 |
| 1 1/2 | 15 | 31 | 27 | 61 | 160 | 02 115 106 |
| 2 | 15 | 38 | 34 | 76 | 340 | 02 115 107 |
| *2 1/2 | 12 | 44 | 41 | 90 | 427 | 33 115 312 |
| 3 | 15 | 51 | 48 | 108 | 768 | 02 115 109 |
| 4 | 15 | 63 | 58 | 131 | 972 | 02 115 110 |
| 5 | 15 | 153 | 76 | 173 | 2080 | 33 115 316 |
| *6 | 12 | 90 | 90 | 195 | 3480 | 02 115 112 |
| *8 | 12 | 116 | 170 | 257 | 8850 | 02 115 113 |
| **10 | 9 | 286 | 146 | 307 | 13300 | 02 115 114 |
| **12 | 9 | 340 | 175 | 365 | 20300 | 02 115 115 |

* Class D
** Class C

Tees 90° Equal plain

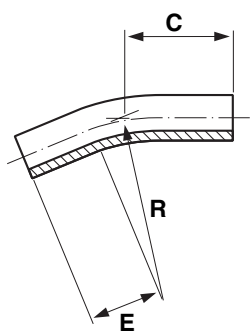
TLV



| Size | PN | L | Z | E | gms | Code |
|--------|----|-----|-----|-----|-------|------------|
| 1/2 | 15 | 17 | 11 | 27 | 26 | 02 122 102 |
| 3/4 | 15 | 20 | 14 | 33 | 30 | 02 122 103 |
| 1 | 15 | 23 | 17 | 41 | 55 | 02 122 104 |
| *1 1/4 | 12 | 26 | 22 | 50 | 90 | 02 122 105 |
| 1 1/2 | 15 | 31 | 27 | 61 | 257 | 02 122 106 |
| 2 | 15 | 38 | 34 | 76 | 495 | 02 122 107 |
| *2 1/2 | 12 | 44 | 41 | 90 | 560 | 33 122 312 |
| 3 | 15 | 51 | 48 | 108 | 570 | 02 122 109 |
| 4 | 15 | 63 | 59 | 131 | 1260 | 02 122 110 |
| 5 | 15 | 76 | 77 | 174 | 4150 | 33 122 316 |
| *6 | 12 | 90 | 90 | 195 | 4400 | 02 122 112 |
| *8 | 12 | 116 | 116 | 257 | 10500 | 02 122 113 |
| **10 | 9 | 159 | 150 | 306 | 18600 | 02 122 114 |
| **12 | 9 | 176 | 175 | 361 | 27200 | 02 122 115 |

* Class D
** Class C

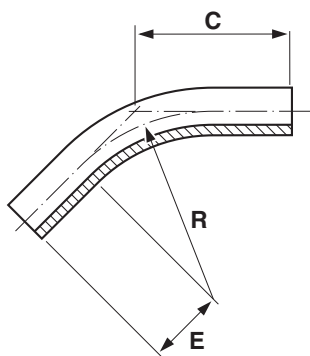
Bends 22½° Long radius



| Size | PN | C | E | R | gms | Code |
|------|----|-----|-----|-----|------|------------|
| 1 | 15 | 76 | 38 | 102 | 50 | 02 311 104 |
| 1½ | 15 | 110 | 57 | 225 | 148 | 02 311 106 |
| 2 | 15 | 113 | 73 | 270 | 285 | 02 311 107 |
| 3 | 15 | 202 | 114 | 392 | 858 | 02 311 109 |
| 4 | 15 | 262 | 152 | 518 | 1804 | 02 311 110 |
| 6 | 15 | 385 | 229 | 740 | 5993 | 02 311 112 |

Tolerance on angle ±3°

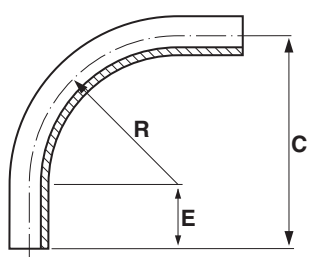
Bends 45° Long radius plain



| Size | PN | C | E | R | gms | Code |
|------|----|-----|-----|-----|------|------------|
| 1 | 15 | 75 | 37 | 102 | 77 | 02 310 104 |
| 1½ | 15 | 113 | 55 | 225 | 204 | 02 310 106 |
| 2 | 15 | 152 | 73 | 270 | 316 | 02 310 107 |
| 3 | 15 | 238 | 121 | 392 | 1080 | 02 310 109 |
| 4 | 15 | 300 | 145 | 518 | 2235 | 02 310 110 |
| 6 | 15 | 440 | 218 | 740 | 7340 | 02 310 112 |

Tolerance on angle ±3°

Bends 90° Long radius plain

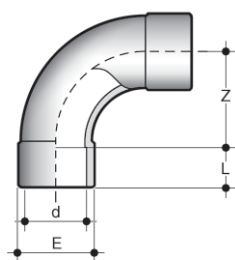


| Size | PN | C | E | R | gms | Code |
|------|----|-----|-----|-----|-------|------------|
| 3 | 15 | 403 | 98 | 392 | 1510 | 02 309 109 |
| 4 | 15 | 545 | 138 | 518 | 3350 | 02 309 110 |
| 6 | 15 | 817 | 207 | 740 | 11000 | 02 309 112 |

Tolerance on angle ±3°

Bends 90° Short radius plain

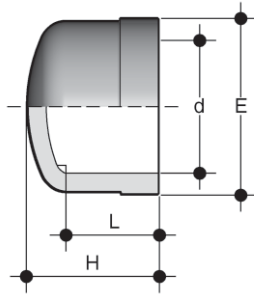
SLV



| Size | PN | E | L | Z | gms | Code |
|------|----|-----|----|-----|------|------------|
| ½ | 15 | 28 | 16 | 40 | 45 | 02 118 102 |
| ¾ | 15 | 34 | 19 | 50 | 75 | 02 118 103 |
| 1 | 15 | 41 | 22 | 64 | 120 | 02 118 104 |
| 1¼ | 15 | 51 | 26 | 80 | 205 | 02 118 105 |
| 1½ | 15 | 65 | 31 | 100 | 310 | 02 118 106 |
| 2 | 15 | 77 | 38 | 126 | 510 | 02 118 107 |
| 2½ | 15 | 94 | 44 | 150 | 1000 | 33 118 312 |
| 3 | 15 | 113 | 51 | 180 | 1765 | 02 118 109 |
| 4 | 15 | 137 | 61 | 220 | 2805 | 02 118 110 |

End caps Plain

CLV

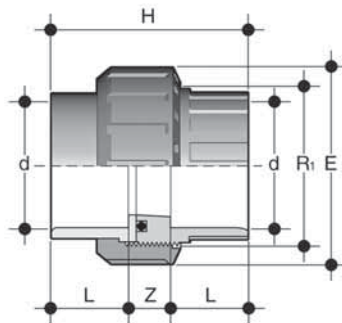


| Size | PN | L | H | E | gms | Code |
|--------|----|----|-----|-----|------|------------|
| 1/2 | 15 | 17 | 19 | 27 | 13 | 02 140 102 |
| 3/4 | 15 | 20 | 22 | 33 | 15 | 02 140 103 |
| 1 | 15 | 23 | 25 | 41 | 36 | 02 140 104 |
| *1 1/4 | 15 | 26 | 29 | 50 | 58 | 02 140 105 |
| 1 1/2 | 15 | 31 | 34 | 61 | 118 | 02 140 106 |
| 2 | 15 | 38 | 41 | 76 | 206 | 02 140 107 |
| *2 1/2 | 15 | 44 | 48 | 90 | 250 | 12 149 312 |
| 3 | 15 | 51 | 57 | 108 | 420 | 02 140 109 |
| 4 | 15 | 63 | 68 | 131 | 680 | 02 140 110 |
| 5 | 15 | 76 | 108 | 164 | 1100 | 33 140 316 |

*Class D

Socket unions plain

BLV

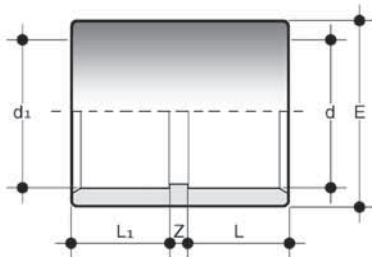


| Size | PN | E | H | L | R ₁ | Z | gms | Code |
|-------|----|-----|----|----|----------------|----|------|------------|
| 1/2 | 15 | 41 | 45 | 16 | 1" | 13 | 39 | 02 205 102 |
| 3/4 | 15 | 50 | 51 | 19 | 1 1/4" | 13 | 65 | 02 205 103 |
| 1 | 15 | 58 | 57 | 22 | 1 1/2" | 13 | 94 | 02 205 104 |
| 1 1/4 | 15 | 72 | 67 | 26 | 2" | 15 | 150 | 02 205 105 |
| 1 1/2 | 15 | 79 | 79 | 31 | 2 1/4" | 17 | 190 | 02 205 106 |
| 2 | 15 | 98 | 98 | 38 | 2 3/4" | 21 | 400 | 02 205 107 |
| 3 | 9 | 131 | 76 | 51 | 4" | 25 | 750 | 02 205 109 |
| 4 | 9 | 159 | 86 | 61 | 5" | 25 | 1300 | 02 205 110 |

EPDM seal as standard.
For FPM seal order by type 204.

Imperial/metric socket adaptors Plain

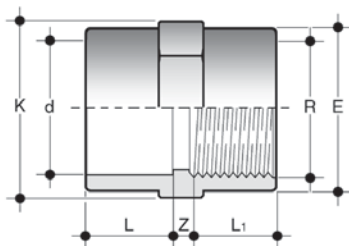
MILV



| Size | PN | L | L ₁ | E | Z | gms | Code |
|------------|----|----|----------------|-----|---|------|------------|
| 1/2 x 20 | 15 | 16 | 17 | 27 | 3 | 12 | 33 345 102 |
| 3/4 x 25 | 15 | 19 | 20 | 33 | 3 | 22 | 33 345 103 |
| 1 x 32 | 15 | 22 | 23 | 41 | 3 | 44 | 33 345 104 |
| 1 1/4 x 40 | 15 | 26 | 27 | 50 | 2 | 65 | 33 345 105 |
| 1 1/2 x 50 | 15 | 31 | 30 | 61 | 4 | 125 | 33 345 106 |
| 2 x 63 | 15 | 38 | 36 | 76 | 5 | 210 | 33 345 107 |
| 2 1/2 x 75 | 15 | 44 | 44 | 90 | 4 | 1250 | 33 345 108 |
| 3 x 90 | 15 | 51 | 51 | 108 | 6 | 438 | 33 345 109 |
| 4 x 110 | 15 | 61 | 63 | 131 | 4 | 852 | 33 345 110 |

Sockets Plain/BSP threaded

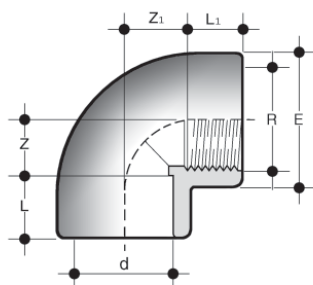
MLFV



| Size | PN | L | L ₁ | Z | E | K | gms | Code |
|-------|----|----|----------------|----|-----|-----|-----|------------|
| 1/2 | 12 | 16 | 15 | 4 | 27 | 24 | 15 | 02 101 102 |
| 3/4 | 12 | 20 | 17 | 5 | 33 | 29 | 25 | 02 101 103 |
| 1 | 12 | 23 | 20 | 5 | 41 | 35 | 45 | 02 101 104 |
| 1 1/4 | 12 | 27 | 21 | 4 | 50 | 43 | 65 | 02 101 105 |
| 1 1/2 | 12 | 30 | 21 | 8 | 61 | 50 | 100 | 02 101 106 |
| 2 | 12 | 36 | 26 | 9 | 76 | 61 | 160 | 02 101 107 |
| 2 1/2 | 12 | 44 | 31 | 18 | 90 | 76 | 260 | 33 101 108 |
| 3 | 12 | 51 | 34 | 23 | 108 | 108 | 449 | 02 101 109 |
| 4 | 12 | 61 | 39 | 10 | 129 | 129 | 555 | 02 101 110 |

Elbows 90° Plain/BSP threaded

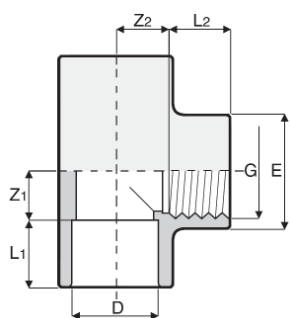
GLFV



| Size | PN | L | L ₁ | Z | Z ₁ | E | gms | Code |
|-------|----|----|----------------|----|----------------|-----|------|------------|
| 1/2 | 12 | 17 | 15 | 11 | 12 | 27 | 13 | 02 116 102 |
| 3/4 | 12 | 20 | 17 | 14 | 17 | 33 | 25 | 02 116 103 |
| 1 | 12 | 23 | 19 | 17 | 20 | 41 | 55 | 02 116 104 |
| 1 1/4 | 12 | 27 | 22 | 22 | 27 | 54 | 120 | 02 116 105 |
| 1 1/2 | 12 | 31 | 21 | 27 | 37 | 61 | 170 | 02 116 106 |
| 2 | 12 | 38 | 26 | 34 | 46 | 76 | 340 | 02 116 107 |
| 2 1/2 | 12 | 44 | 30 | 41 | 54 | 90 | 420 | 02 116 108 |
| 3 | 12 | 51 | 33 | 48 | 66 | 108 | 750 | 02 116 108 |
| 4 | 12 | 63 | 39 | 58 | 82 | 131 | 1050 | 02 116 110 |

Tee Plain/threaded branch

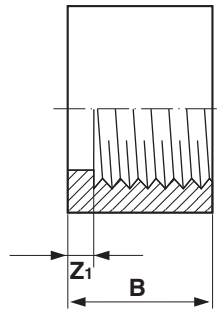
TLFV



| Size | PN | L ₁ | L ₂ | Z ₁ | Z ₂ | E | gms | Code |
|-------|----|----------------|----------------|----------------|----------------|-----|-----|------------|
| 1/2 | 12 | 16 | 15 | 11 | 12 | 28 | 49 | 02 123 102 |
| 3/4 | 12 | 19 | 16 | 14 | 16 | 34 | 55 | 02 123 103 |
| 1 | 12 | 22 | 19 | 17 | 20 | 42 | 75 | 02 123 104 |
| 1 1/4 | 12 | 26 | 21 | 21 | 25 | 51 | 125 | 02 123 105 |
| 1 1/2 | 12 | 31 | 21 | 26 | 35 | 61 | 200 | 02 123 106 |
| 2 | 12 | 38 | 25 | 33 | 45 | 75 | 380 | 02 123 107 |
| 2 1/2 | 12 | 44 | 30 | 39 | 52 | 89 | 530 | 02 123 108 |
| 3 | 12 | 51 | 33 | 47 | 64 | 106 | 845 | 02 123 109 |

Reducing bushes Plain/BSP threaded

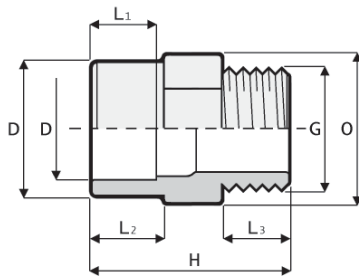
DLFV



| Size | PN | B | Z ₁ | gms | Code |
|-----------|----|----|----------------|-----|------------|
| 1/2 x 3/8 | 12 | 16 | 6 | 5 | 02 111 121 |
| 3/4 x 1/2 | 12 | 20 | 5 | 9 | 02 111 122 |
| 1 x 3/4 | 12 | 25 | 6 | 15 | 02 111 124 |

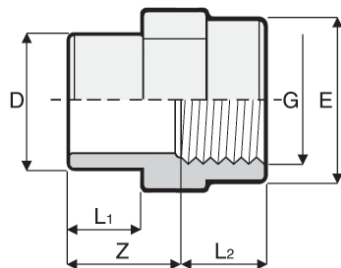
Male threaded adaptors Plain/male BSP threaded

ILFV



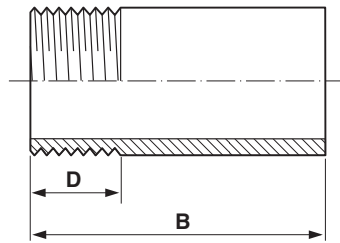
| Size | PN | L ₁ | L ₂ | L ₃ | H | O | gms | Code |
|---------------|----|----------------|----------------|----------------|----|----|-----|------------|
| 1/2 x 1/2 | 12 | 16 | 19 | 15 | 46 | 30 | 15 | 02 151 102 |
| 3/4 x 3/4 | 12 | 19 | 22 | 16 | 50 | 36 | 25 | 02 151 103 |
| 1 x 1 | 12 | 22 | 26 | 19 | 57 | 46 | 40 | 02 151 104 |
| 1 1/4 x 1 1/4 | 12 | 26 | 31 | 21 | 67 | 55 | 70 | 02 151 105 |
| 1 1/2 x 1 1/2 | 12 | 31 | 38 | 21 | 74 | 65 | 115 | 02 151 106 |
| 1 1/2 x 1 1/2 | 12 | 31 | 38 | 21 | 74 | 65 | 115 | 02 151 107 |

Female threaded adaptors Plain/female BSP threaded



| Size | PN | L | L ₁ | Z | H | K | gms | Code |
|---------------|----|----|----------------|---|----|----|-----|------------|
| 1/2 x 1/2 | 12 | 16 | 15 | 4 | 27 | 24 | 15 | 02 153 102 |
| 3/4 x 3/4 | 12 | 20 | 16 | 5 | 33 | 29 | 25 | 02 153 103 |
| 1 x 1 | 12 | 23 | 19 | 5 | 41 | 35 | 45 | 02 153 104 |
| 1 1/4 x 1 1/4 | 12 | 27 | 21 | 4 | 50 | 43 | 65 | 02 153 105 |
| 1 1/2 x 1 1/2 | 12 | 30 | 21 | 8 | 61 | 50 | 100 | 02 153 106 |
| 2 x 2 | 12 | 36 | 26 | 9 | 76 | 61 | 160 | 02 153 107 |

Barrel nipples Plain/BSP threaded

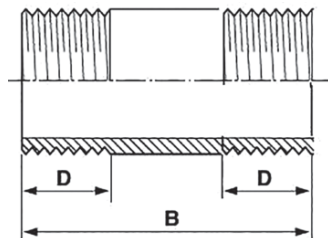


| Size | PN | B | D | gms | Code |
|-------|----|-----|----|-----|------------|
| 1/2 | 12 | 49 | 16 | 15 | 02 316 102 |
| 3/4 | 12 | 55 | 18 | 20 | 02 316 103 |
| 1 | 12 | 62 | 21 | 35 | 02 316 104 |
| 1 1/4 | 12 | 72 | 23 | 60 | 02 316 105 |
| 1 1/2 | 12 | 87 | 30 | 45 | 02 316 106 |
| 2 | 12 | 87 | 30 | 115 | 02 316 107 |
| 2 1/2 | 12 | 106 | 35 | 180 | 02 316 108 |
| 3 | 9 | 129 | 31 | 300 | 02 316 109 |
| 4 | 9 | 153 | 37 | 560 | 02 316 110 |

PVC nipples are made from Durapipe PVC-U pipes.



Threaded barrel nipple Plain/BSP threaded

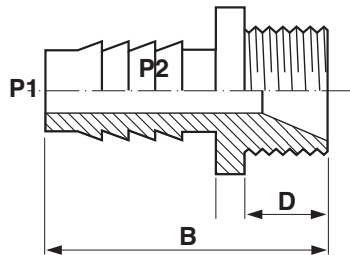


| Size | PN | B | D | gms | Code |
|-------|----|-----|----|-----|------------|
| 1/2 | 12 | 49 | 16 | 15 | 02 317 102 |
| 3/4 | 12 | 55 | 18 | 20 | 02 317 103 |
| 1 | 12 | 62 | 21 | 35 | 02 317 104 |
| 1 1/4 | 12 | 72 | 23 | 55 | 02 317 105 |
| 1 1/2 | 12 | 87 | 30 | 75 | 02 317 106 |
| 2 | 12 | 87 | 30 | 105 | 02 317 107 |
| 2 1/2 | 12 | 105 | 30 | 169 | 02 317 108 |
| 3 | 9 | 127 | 38 | 250 | 02 317 109 |
| 4 | 9 | 150 | 40 | 500 | 02 317 110 |

PVC nipples are made from Durapipe PVC-U pipes.

Hose adaptors Male BSP threaded – short pattern

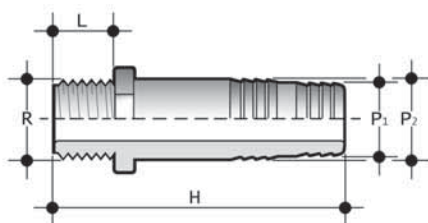
AFV



| Size R x P1 x P2 | PN | B | D | gms | Code |
|---------------------|----|----|----|-----|------------|
| 1/2 x 13 x 14 | 12 | 61 | 16 | 10 | 02 157 102 |
| 3/4 x 19 x 21 | 12 | 65 | 16 | 19 | 02 157 103 |
| 1 x 26 x 27 | 12 | 73 | 19 | 37 | 02 157 104 |

Hose adaptors Male BSP threaded – long pattern

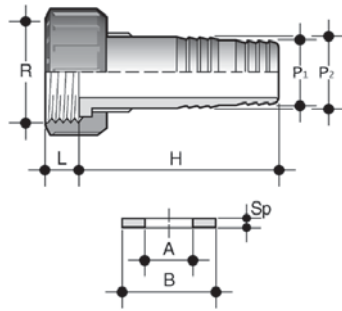
AFV



| Size R x P1 x P2 | PN | L | H | gms | Code |
|---------------------|----|----|-----|-----|------------|
| 1/4 x 12 x 14 | 16 | 11 | 56 | 7 | 02 157 600 |
| 3/8 x 16 x 18 | 16 | 11 | 58 | 14 | 02 157 602 |
| 1/2 x 20 x 22 | 16 | 15 | 66 | 19 | 02 157 605 |
| 3/4 x 25 x 27 | 16 | 16 | 81 | 30 | 02 157 608 |
| 1 x 30 x 32 | 16 | 19 | 97 | 45 | 02 157 612 |
| 1 1/4 x 40 x 42 | 16 | 21 | 104 | 85 | 02 157 616 |
| 1 1/2 x 50 x 52 | 16 | 21 | 111 | 120 | 02 157 622 |
| 2 x 60 x 64 | 16 | 26 | 123 | 180 | 02 157 630 |

Hose adaptors Female BSP threaded – loose nut with EPDM gasket

ADV

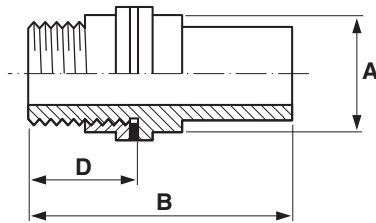


| Size R x P ₁ x P ₂ | PN | L | H | gms | Code | A | B | Sp. |
|---------------------------------------------|----|----|-----|-----|------------|----|----|-----|
| *1/2 x 12 x 14 | 16 | 14 | 56 | 15 | 02 156 601 | 11 | 18 | 2 |
| *3/4 x 16 x 18 | 16 | 12 | 60 | 24 | 02 156 603 | 17 | 24 | 2 |
| *1 x 20 x 22 | 16 | 11 | 67 | 35 | 02 156 606 | 19 | 30 | 2 |
| *1 1/4 x 25 x 27 | 16 | 14 | 81 | 55 | 02 156 609 | 24 | 39 | 2 |
| *1 1/2 x 30 x 32 | 16 | 16 | 97 | 80 | 02 156 613 | 32 | 44 | 3 |
| *2 x 40 x 42 | 16 | 18 | 104 | 140 | 02 156 616 | 42 | 55 | 3 |
| *2 1/4 x 50 x 52 | 16 | 18 | 111 | 200 | 02 156 623 | 46 | 62 | 3 |
| *2 1/2 x 60 x 64 | 16 | 19 | 123 | 290 | 02 156 312 | 50 | 61 | 2 |
| *2 3/4 x 60 x 64 | 16 | 20 | 123 | 300 | 02 156 630 | 60 | 78 | 3 |

* Thread size designation.

Tank connectors Plain/BSP threaded EPDM gasket

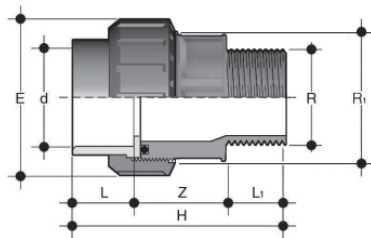
LIFV



| Size | PN | A | B | D | gms | Code |
|-------|----|-----|-----|-----|------|------------|
| 1/2 | 12 | 28 | 70 | 29 | 34 | 02 235 102 |
| 3/4 | 12 | 33 | 76 | 32 | 39 | 02 235 103 |
| 1 | 12 | 46 | 102 | 42 | 110 | 02 235 104 |
| 1 1/4 | 12 | 50 | 120 | 44 | 154 | 02 235 105 |
| 1 1/2 | 12 | 59 | 165 | 61 | 207 | 02 235 106 |
| 2 | 12 | 79 | 153 | 59 | 358 | 02 235 107 |
| 2 1/2 | 12 | 90 | 164 | 94 | 471 | 02 235 108 |
| 3 | 12 | 105 | 204 | 90 | 656 | 02 235 109 |
| 4 | 12 | 135 | 230 | 130 | 1345 | 02 235 110 |

Composite unions Plain/BSP threaded male brass

BIROV

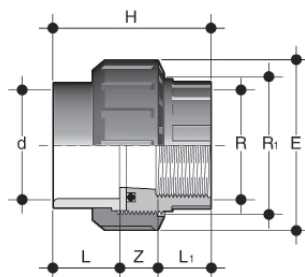


| Size | PN | L ₁ | Z | L | H | K | Code |
|-------|----|----------------|------|----|-------|----|------------|
| 1/2 | 16 | 13.5 | 35.5 | 16 | 65 | 41 | 02 217 102 |
| 3/4 | 16 | 15 | 38.5 | 19 | 72.5 | 50 | 02 217 103 |
| 1 | 16 | 17.5 | 40.5 | 22 | 80 | 58 | 02 217 104 |
| 1 1/4 | 16 | 19.5 | 45.5 | 26 | 91 | 72 | 02 217 105 |
| 1 1/2 | 16 | 19.5 | 50.5 | 31 | 101 | 79 | 02 217 106 |
| 2 | 16 | 24 | 60.5 | 38 | 122.5 | 98 | 02 217 107 |

Fitted with brass retaining nut and EPDM rubber seal.
Stainless steel options also available on request.

Composite unions Plain/BSP threaded female brass

BIFOV

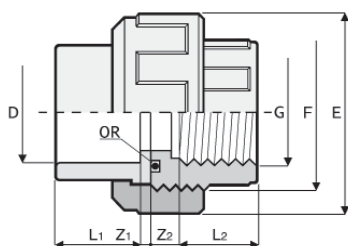


| Size | PN | L ₁ | Z | L | H | K | Code |
|-------|----|----------------|------|----|------|----|------------|
| 1/2 | 16 | 16.5 | 16 | 16 | 48.5 | 25 | 02 212 102 |
| 3/4 | 16 | 18.5 | 17 | 19 | 54.5 | 32 | 02 212 103 |
| 1 | 16 | 19.5 | 18 | 22 | 59.5 | 38 | 02 212 104 |
| 1 1/4 | 16 | 21.5 | 21 | 26 | 68.5 | 48 | 02 212 105 |
| 1 1/2 | 16 | 23 | 24.5 | 31 | 84.5 | 55 | 02 212 106 |
| 2 | 16 | 27 | 29.5 | 38 | 94.5 | 69 | 02 212 107 |

Fitted with brass retaining nut and EPDM rubber seal.
Stainless steel options also available on request.

Socket unions Plain/BSP threaded

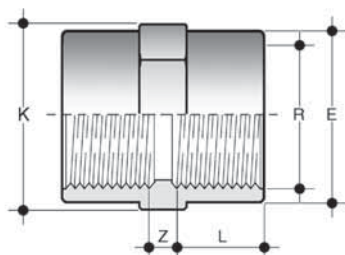
BIFV



| Size | PN | L ₁ | L ₂ | Z ₁ | Z ₂ | F | E | gms | Code |
|-------|----|----------------|----------------|----------------|----------------|-------|----|-----|------------|
| 1/2 | 12 | 16 | 15 | 3 | 11 | 1 | 42 | 42 | 02 202 102 |
| 3/4 | 12 | 19 | 16 | 3 | 13 | 1 1/4 | 52 | 70 | 02 202 103 |
| 1 | 12 | 22 | 19 | 3 | 13 | 1 1/2 | 59 | 96 | 02 202 104 |
| 1 1/4 | 12 | 26 | 21 | 3 | 17 | 2 | 72 | 155 | 02 202 105 |
| 1 1/2 | 12 | 31 | 21 | 3 | 24 | 2 1/4 | 79 | 237 | 02 202 106 |
| 2 | 12 | 38 | 25 | 3 | 30 | 2 3/4 | 96 | 405 | 02 202 107 |

Sockets BSP threaded

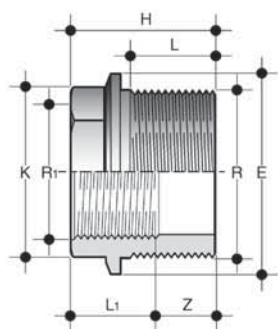
MFV



| Size | PN | L | Z | E | K | gms | Code |
|-------|----|----|----|-----|-----|-----|------------|
| 1/2 | 16 | 15 | 7 | 29 | 29 | 17 | 02 102 102 |
| 3/4 | 16 | 16 | 9 | 35 | 35 | 26 | 02 102 103 |
| 1 | 16 | 19 | 9 | 43 | 43 | 42 | 02 102 104 |
| 1 1/4 | 16 | 21 | 11 | 50 | 50 | 53 | 02 102 105 |
| 1 1/2 | 16 | 21 | 18 | 61 | 61 | 108 | 02 102 106 |
| 2 | 16 | 26 | 20 | 76 | 76 | 190 | 02 102 107 |
| 2 1/2 | 16 | 30 | 31 | 90 | 90 | 275 | 02 102 108 |
| 3 | 16 | 33 | 41 | 108 | 108 | 500 | 02 102 109 |
| 4 | 16 | 39 | 49 | 130 | 131 | 665 | 02 102 110 |

Reducing bushes BSP threaded

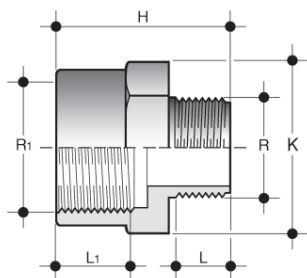
DFV



| Size | PN | L ₁ | L | H | Z | K | E | gms | Code |
|---------------|----|----------------|----|----|----|----|----|-----|------------|
| 1/2 x 3/8 | 16 | 15 | 11 | 24 | 13 | 23 | 28 | 7 | 02 113 121 |
| 3/4 x 1/2 | 16 | 16 | 15 | 27 | 12 | 28 | 34 | 9 | 02 113 122 |
| 1 x 3/4 | 16 | 19 | 16 | 31 | 14 | 35 | 40 | 17 | 02 113 124 |
| 1 1/4 x 1 | 16 | 21 | 19 | 34 | 15 | 44 | 52 | 30 | 02 113 125 |
| 1 1/2 x 1 1/4 | 16 | 21 | 21 | 35 | 14 | 51 | 58 | 30 | 02 113 127 |
| 2 x 1 1/2 | 16 | 26 | 21 | 40 | 19 | 64 | 70 | 72 | 02 113 130 |

Reducers BSP threaded, female / reduced male

IFFV



| Size | PN | L | L ₁ | H | K | gms | Code |
|---------------|----|----|----------------|-----|-----|-----|------------|
| 3/4 x 1/2 | 16 | 15 | 16 | 41 | 36 | 22 | 02 174 122 |
| 1 x 1/2 | 16 | 15 | 19 | 44 | 46 | 30 | 02 174 123 |
| 1 x 3/4 | 16 | 16 | 19 | 45 | 46 | 42 | 02 174 124 |
| 1 1/4 x 1 | 16 | 19 | 21 | 55 | 55 | 55 | 02 174 125 |
| 1 1/2 x 1 1/4 | 16 | 21 | 21 | 62 | 65 | 102 | 02 174 127 |
| 2 x 1 1/2 | 16 | 21 | 26 | 69 | 80 | 165 | 02 174 130 |
| 2 1/2 x 2 | 16 | 26 | 30 | 81 | 95 | 210 | 02 174 131 |
| 3 x 2 1/2 | 16 | 30 | 33 | 93 | 110 | 360 | 02 174 136 |
| 4 x 3 | 16 | 33 | 39 | 106 | 130 | 500 | 02 174 141 |

Reducers BSP threaded, reduced socket

RFV



Fig A

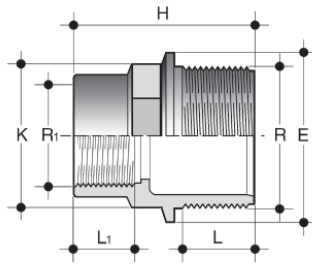
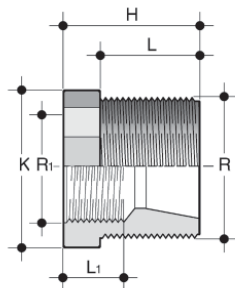


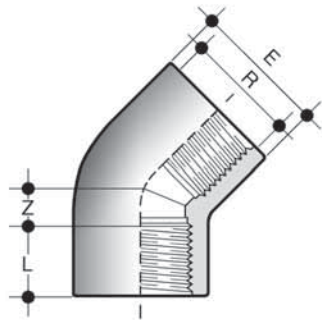
Fig B



| Size | PN | H | L ₁ | L | E | K | Fig | gms | Code |
|---------------|----|----|----------------|----|----|-----|-----|-----|------------|
| 1/2 x 3/8 | 16 | 35 | 11 | 15 | 28 | 23 | A | 10 | 02 173 121 |
| 3/4 x 3/8 | 16 | 36 | 11 | 16 | 34 | 28 | A | 12 | 02 173 164 |
| 3/4 x 1/2 | 16 | 39 | 15 | 16 | 34 | 28 | A | 15 | 02 173 122 |
| 1 x 3/8 | 16 | 41 | 11 | 19 | 40 | 35 | A | 20 | 02 173 166 |
| 1 x 1/2 | 16 | 44 | 15 | 19 | 40 | 35 | A | 24 | 02 173 123 |
| 1 x 3/4 | 16 | 46 | 16 | 19 | 40 | 35 | A | 25 | 02 173 124 |
| 1 1/4 x 1/2 | 16 | 48 | 15 | 21 | 52 | 44 | A | 37 | 02 173 116 |
| 1 1/4 x 3/4 | 16 | 49 | 16 | 21 | 52 | 44 | A | 37 | 02 173 117 |
| 1 1/4 x 1 | 16 | 52 | 19 | 21 | 52 | 44 | A | 40 | 02 173 125 |
| 1 1/2 x 1/2 | 16 | 52 | 15 | 21 | 58 | 51 | A | 46 | 02 173 118 |
| 1 1/2 x 3/4 | 16 | 50 | 16 | 21 | 58 | 51 | A | 47 | 02 173 119 |
| 1 1/2 x 1 | 16 | 55 | 19 | 21 | 58 | 51 | A | 52 | 02 173 126 |
| 1 1/2 x 1 1/4 | 16 | 57 | 21 | 21 | 58 | 51 | A | 54 | 02 173 127 |
| 2 x 3/4 | 16 | 60 | 16 | 26 | 70 | 64 | A | 80 | 02 173 120 |
| 2 x 1 | 16 | 63 | 19 | 26 | 70 | 64 | A | 80 | 02 173 128 |
| 2 x 1 1/4 | 16 | 65 | 21 | 26 | 70 | 64 | A | 85 | 02 173 129 |
| 2 x 1 1/2 | 16 | 65 | 21 | 26 | 70 | 64 | A | 102 | 02 173 130 |
| 2 1/2 x 1 1/4 | 12 | 64 | 30 | 21 | 51 | 80 | A | 15 | 02 173 167 |
| 2 1/2 x 1 1/2 | 12 | 64 | 30 | 21 | 58 | 80 | A | 25 | 02 173 168 |
| 2 1/2 x 2 | 16 | 56 | 26 | 30 | - | 80 | B | 155 | 02 173 131 |
| 3 x 1 1/2 | 12 | 68 | 33 | 21 | 58 | 95 | A | 40 | 02 173 134 |
| 3 x 2 | 16 | 66 | 26 | 33 | - | 93 | B | 185 | 02 173 135 |
| 3 x 2 1/2 | 16 | 66 | 30 | 33 | - | 93 | B | 200 | 02 173 136 |
| 4 x 2 | 12 | 79 | 39 | 26 | 72 | 120 | A | 70 | 02 173 140 |
| 4 x 2 1/2 | 12 | 83 | 39 | 30 | 89 | 120 | A | 115 | 02 173 169 |
| 4 x 3 | 16 | 79 | 33 | 39 | - | 118 | B | 500 | 02 173 141 |

Elbows 45° BSP threaded

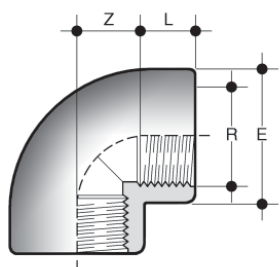
HFV



| Size | PN | L | Z | E | gms | Code |
|-------|----|----|----|-----|-----|------------|
| 1/2 | 16 | 15 | 7 | 28 | 18 | 02 120 102 |
| 3/4 | 16 | 16 | 8 | 33 | 24 | 02 120 103 |
| 1 | 16 | 19 | 11 | 41 | 45 | 02 120 104 |
| 1 1/4 | 16 | 21 | 15 | 50 | 68 | 02 120 105 |
| 1 1/2 | 16 | 2 | 21 | 64 | 154 | 02 120 106 |
| 2 | 16 | 26 | 26 | 76 | 255 | 02 120 107 |
| 2 1/2 | 16 | 30 | 31 | 90 | 345 | 02 120 108 |
| 3 | 16 | 33 | 39 | 107 | 325 | 02 120 109 |

Elbows 90° BSP threaded

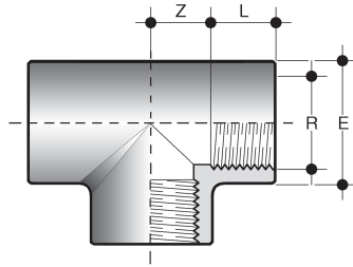
GFV



| Size | PN | L | Z | E | gms | Code |
|-------|----|----|----|-----|------|------------|
| 3/8 | 16 | 15 | 7 | 28 | 18 | 02 117 101 |
| 1/2 | 16 | 15 | 13 | 29 | 24 | 02 117 102 |
| 3/4 | 16 | 16 | 17 | 35 | 40 | 02 117 103 |
| 1 | 16 | 19 | 21 | 43 | 72 | 02 117 104 |
| 1 1/4 | 16 | 21 | 27 | 54 | 130 | 02 117 105 |
| 1 1/2 | 16 | 21 | 36 | 61 | 185 | 02 117 106 |
| 2 | 16 | 26 | 46 | 76 | 350 | 02 117 107 |
| 2 1/2 | 16 | 30 | 55 | 91 | 450 | 02 117 108 |
| 3 | 16 | 33 | 66 | 108 | 835 | 02 117 109 |
| 4 | 16 | 39 | 80 | 130 | 1135 | 02 117 110 |

Tees 90° equal BSP threaded

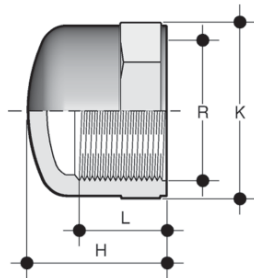
TFV



| Size | PN | L | Z | E | gms | Code |
|-------|----|----|----|-----|------|------------|
| 1/2 | 16 | 15 | 13 | 29 | 32 | 93 125 102 |
| 3/4 | 16 | 16 | 17 | 35 | 52 | 93 125 103 |
| 1 | 16 | 19 | 22 | 43 | 92 | 93 125 104 |
| 1 1/4 | 16 | 21 | 27 | 50 | 117 | 93 125 105 |
| 1 1/2 | 16 | 21 | 37 | 61 | 260 | 93 125 106 |
| 2 | 16 | 26 | 46 | 76 | 465 | 93 125 107 |
| 2 1/2 | 16 | 30 | 55 | 91 | 640 | 93 125 108 |
| 3 | 16 | 33 | 66 | 109 | 1135 | 93 125 109 |
| 4 | 16 | 39 | 83 | 133 | 1710 | 93 125 110 |

End caps BSP threaded

CFV



| Size | PN | L | H | K | gms | Code |
|-------|----|----|----|-----|-----|------------|
| 1/2 | 16 | 15 | 25 | 28 | 10 | 02 141 102 |
| 3/4 | 16 | 16 | 27 | 34 | 15 | 02 141 103 |
| 1 | 16 | 19 | 28 | 42 | 27 | 02 141 104 |
| 1 1/4 | 16 | 21 | 31 | 51 | 40 | 02 141 105 |
| 1 1/2 | 16 | 21 | 36 | 58 | 53 | 02 141 106 |
| 2 | 16 | 26 | 42 | 71 | 85 | 02 141 107 |
| 2 1/2 | 12 | 30 | 50 | 89 | 251 | 02 141 108 |
| 3 | 16 | 33 | 55 | 109 | 310 | 02 141 109 |
| 4 | 12 | 39 | 59 | 130 | 623 | 02 141 110 |

Plugs BSP threaded

PFV



Fig A

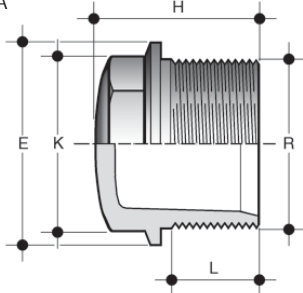
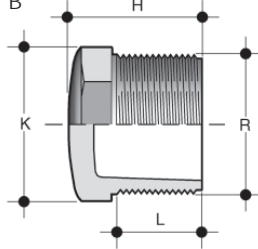


Fig B



| Size | PN | L | H | E | K | Fig | gms | Code |
|-------|----|----|----|----|-----|-----|-----|------------|
| 1/2 | 16 | 15 | 26 | 28 | 23 | A | 8 | 02 155 102 |
| 3/4 | 16 | 16 | 30 | 34 | 28 | A | 11 | 02 155 103 |
| 1 | 16 | 19 | 34 | 40 | 35 | A | 21 | 02 155 104 |
| 1 1/4 | 16 | 21 | 38 | 52 | 44 | A | 30 | 02 155 105 |
| 1 1/2 | 16 | 21 | 40 | 58 | 51 | A | 46 | 02 155 106 |
| 2 | 16 | 26 | 47 | 70 | 64 | A | 74 | 02 155 107 |
| 2 1/2 | 12 | 30 | 51 | - | 80 | B | 160 | 02 155 108 |
| 3 | 12 | 33 | 55 | - | 95 | B | 235 | 02 155 109 |
| 4 | 12 | 39 | 61 | - | 120 | B | 360 | 02 155 110 |

Hexagon nipples BSP threaded

NFV



Fig A

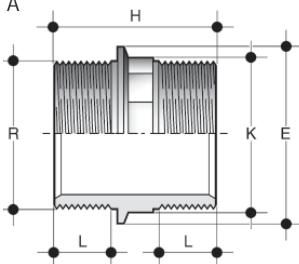
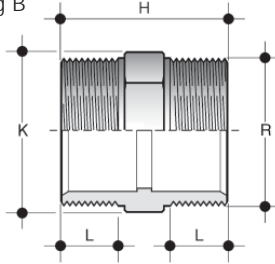


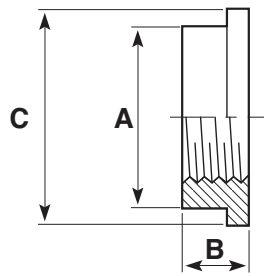
Fig B



| Size | PN | H | K | E | L | Fig | gms | Code |
|-------|----|----|-----|----|----|-----|-----|------------|
| 1/2 | 16 | 41 | 23 | 28 | 15 | A | 10 | 02 106 102 |
| 3/4 | 16 | 45 | 28 | 34 | 16 | A | 16 | 02 106 103 |
| 1 | 16 | 51 | 35 | 40 | 19 | A | 27 | 02 106 104 |
| 1 1/4 | 16 | 57 | 44 | 52 | 21 | A | 40 | 02 106 105 |
| 1 1/2 | 16 | 58 | 51 | 58 | 21 | A | 55 | 02 106 106 |
| 2 | 16 | 68 | 64 | 70 | 26 | A | 93 | 02 106 107 |
| 2 1/2 | 12 | 78 | 80 | - | 30 | B | 150 | 02 106 108 |
| 3 | 12 | 85 | 95 | - | 33 | B | 225 | 02 106 109 |
| 4 | 12 | 97 | 120 | - | 39 | B | 380 | 02 106 110 |

Back nuts BSP threaded

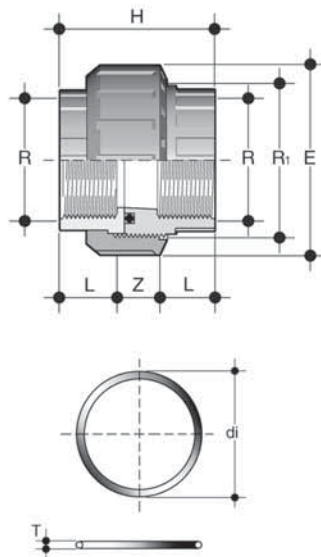
JFV



| Size | PN | A | B | C | gms | Code |
|-------|----|-----|----|-----|-----|------------|
| 1/2 | 12 | 28 | 13 | 38 | 10 | 02 159 102 |
| 3/4 | 12 | 33 | 13 | 38 | 19 | 02 159 103 |
| 1 | 12 | 45 | 16 | 54 | 24 | 02 159 104 |
| 1 1/4 | 12 | 50 | 18 | 58 | 25 | 02 159 105 |
| 1 1/2 | 12 | 60 | 19 | 69 | 39 | 02 159 106 |
| 2 | 12 | 79 | 21 | 91 | 83 | 02 159 107 |
| 2 1/2 | 12 | 94 | 22 | 106 | - | 02 159 108 |
| 3 | 12 | 110 | 26 | 125 | - | 02 159 109 |
| 4 | 12 | 138 | 29 | 151 | - | 02 159 110 |

Socket unions BSP threaded/EPDM seals

BFV

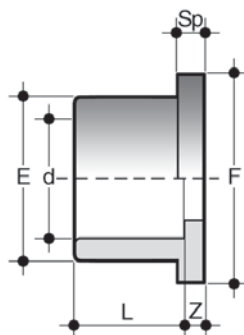


| Size | R ₁ | PN | H | L | Z | E | gms | Code |
|-------|----------------|----|----|----|----|----|-----|------------|
| 3/8 | 3/4 | 16 | 40 | 11 | 17 | 33 | 22 | 02 203 101 |
| 1/2 | 1 | 16 | 46 | 15 | 16 | 41 | 35 | 02 203 102 |
| 3/4 | 1 1/4 | 16 | 51 | 16 | 18 | 50 | 65 | 02 203 103 |
| 1 | 1 1/2 | 16 | 57 | 19 | 19 | 58 | 85 | 02 203 104 |
| 1 1/4 | 2 | 16 | 65 | 21 | 22 | 72 | 145 | 02 203 105 |
| 1 1/2 | 2 1/4 | 16 | 65 | 21 | 22 | 79 | 180 | 02 203 106 |
| 2 | 2 3/4 | 16 | 78 | 26 | 27 | 98 | 325 | 02 203 107 |

| C | O-Ring dia | T |
|------|------------|------|
| 3062 | 15.54 | 2.62 |
| 4081 | 20.22 | 3.53 |
| 4112 | 28.17 | 3.53 |
| 4131 | 32.93 | 3.53 |
| 6162 | 40.65 | 5.34 |
| 6187 | 47.00 | 5.34 |
| 6237 | 59.69 | 5.34 |

Flanges stub serrated

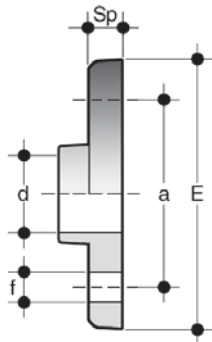
QLV



| Size | PN | L | Z | Sp | E | F | gms | Code |
|-------|----|-----|---|----|-----|-----|------|------------|
| 1/2 | 15 | 19 | 3 | 6 | 27 | 34 | 10 | 02 135 102 |
| 3/4 | 15 | 22 | 3 | 7 | 33 | 41 | 14 | 02 135 103 |
| 1 | 15 | 25 | 3 | 7 | 41 | 50 | 33 | 02 135 104 |
| 1 1/4 | 15 | 29 | 3 | 8 | 50 | 61 | 37 | 02 135 105 |
| 1 1/2 | 15 | 34 | 3 | 8 | 61 | 73 | 60 | 02 135 106 |
| 2 | 15 | 38 | 3 | 9 | 76 | 90 | 110 | 02 135 107 |
| 2 1/2 | 15 | 44 | 3 | 10 | 90 | 106 | 165 | 12 135 312 |
| 3 | 15 | 51 | 5 | 11 | 108 | 125 | 270 | 02 135 109 |
| 4 | 15 | 61 | 5 | 12 | 131 | 150 | 445 | 02 135 110 |
| 6 | 12 | 86 | 5 | 16 | 188 | 212 | 1250 | 02 135 112 |
| 8 | 9 | 115 | 9 | 20 | 250 | 270 | 2150 | 02 135 113 |
| 10 | 6 | 147 | 8 | 29 | 308 | 326 | 3450 | 02 135 114 |
| 12 | 6 | 169 | 9 | 33 | 362 | 378 | 5060 | 02 135 115 |

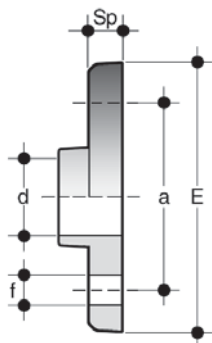
Flanges full face Plain/drilled

FLV



Drilled to BS10:1962 – Table E

| Size | PN | E | a | L | Z | No. Holes | Hole Dia.(f) | Sp | Weight gms | Code |
|-------|----|-----|-----|----|---|-----------|--------------|----|------------|------------|
| 1/2 | 15 | 95 | 67 | 17 | 4 | 4 | 14 | 11 | 100 | 02 130 102 |
| 3/4 | 15 | 105 | 73 | 19 | 4 | 4 | 14 | 12 | 140 | 02 130 103 |
| 1 | 15 | 115 | 83 | 23 | 4 | 4 | 14 | 14 | 200 | 02 130 104 |
| 1 1/4 | 15 | 125 | 88 | 27 | 5 | 4 | 14 | 15 | 265 | 02 130 105 |
| 1 1/2 | 15 | 140 | 99 | 31 | 5 | 4 | 14 | 16 | 350 | 02 130 106 |
| 2 | 15 | 165 | 115 | 38 | 6 | 4 | 18 | 18 | 500 | 02 130 107 |
| 2 1/2 | 15 | 180 | 127 | 44 | 5 | 4 | 18 | 19 | 670 | 02 130 108 |
| 3 | 15 | 200 | 146 | 51 | 8 | 4 | 18 | 21 | 860 | 02 130 109 |
| *4 | 15 | 220 | 178 | 63 | 6 | 8 | 18 | 23 | 1100 | 02 130 110 |

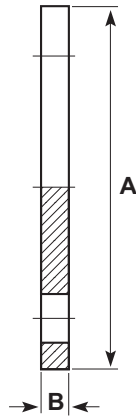


Drilled to BS4504: Table 10/3 and Table 16/3

| Size | PN | E | a | L | Z | No. Holes | Hole Dia. | Sp | Weight gms | Code |
|-------|----|-----|-----|----|---|-----------|-----------|----|------------|------------|
| 1/2 | 15 | 95 | 65 | 20 | 5 | 4 | 14 | 11 | 70 | 02 319 102 |
| 3/4 | 15 | 105 | 75 | 24 | 5 | 4 | 14 | 12 | 105 | 02 319 103 |
| 1 | 15 | 115 | 85 | 27 | 5 | 4 | 14 | 14 | 148 | 02 319 104 |
| 1 1/4 | 15 | 142 | 100 | 31 | 5 | 4 | 18 | 15 | 225 | 02 319 105 |
| 1 1/2 | 15 | 152 | 110 | 36 | 5 | 4 | 18 | 16 | 285 | 02 319 106 |
| 2 | 15 | 165 | 125 | 43 | 5 | 4 | 18 | 18 | 420 | 02 319 107 |
| 3 | 15 | 200 | 160 | 58 | 7 | 8 | 18 | 20 | 735 | 02 319 109 |
| 4 | 15 | 220 | 180 | 69 | 8 | 8 | 18 | 22 | 930 | 02 319 110 |

Galvanised Backing Rings are not required on FIP moulded full face flanges.

Flanges blanking Plain/drilled



Drilled to BS10:1962 – Table E

| Size | PN | A | B | P.C.D. | No. Holes | Hole Dia. | gms | Code |
|-------|----|-----|----|--------|-----------|-----------|------|------------|
| 1/2 | 15 | 95 | 11 | 67 | 4 | 14 | 99 | 02 313 102 |
| 3/4 | 15 | 105 | 12 | 73 | 4 | 14 | 106 | 02 313 103 |
| 1 | 15 | 115 | 14 | 83 | 4 | 14 | 206 | 02 313 104 |
| 1 1/2 | 15 | 150 | 16 | 98 | 4 | 14 | 327 | 02 313 106 |
| 2 | 15 | 165 | 13 | 115 | 4 | 18 | 300 | 02 313 107 |
| 3 | 15 | 197 | 19 | 145 | 4 | 18 | 690 | 02 313 109 |
| 4 | 15 | 214 | 19 | 178 | 8 | 18 | 950 | 02 313 110 |
| 6 | 15 | 286 | 26 | 235 | 8 | 22 | 2100 | 02 313 112 |

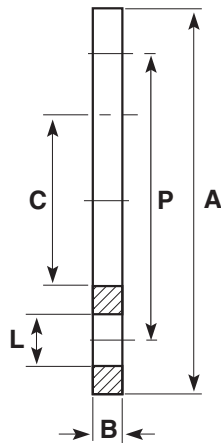
Drilled to BS4504:Table 16/3 & 10/3 (1/2" to 6")

| Size | PN | A | B | P.C.D. | No. Holes | Hole Dia. | gms | Code |
|-------|----|-----|----|--------|-----------|-----------|------|------------|
| 1/2 | 15 | 95 | 11 | 65 | 4 | 14 | 99 | 02 323 102 |
| 3/4 | 15 | 105 | 12 | 75 | 4 | 14 | 106 | 02 323 103 |
| 1 | 15 | 115 | 14 | 85 | 4 | 14 | 206 | 02 323 104 |
| 1 1/2 | 15 | 150 | 16 | 110 | 4 | 18 | 327 | 02 323 106 |
| 2 | 15 | 165 | 13 | 125 | 4 | 18 | 300 | 02 323 107 |
| 3 | 15 | 197 | 19 | 160 | 8 | 18 | 690 | 02 323 109 |
| 4 | 15 | 214 | 19 | 180 | 8 | 18 | 950 | 02 323 110 |
| 6 | 15 | 286 | 26 | 240 | 8 | 22 | 2100 | 02 323 112 |

Undrilled

| Size | PN | A | B | gms | Code |
|-------|----|-----|----|------|------------|
| 1/2 | 15 | 95 | 13 | 120 | 02 131 102 |
| 3/4 | 15 | 105 | 13 | 145 | 02 131 103 |
| 1 | 15 | 116 | 13 | 160 | 02 131 104 |
| 1 1/2 | 15 | 150 | 13 | 250 | 02 131 106 |
| 2 | 15 | 165 | 13 | 300 | 02 131 107 |
| 3 | 15 | 197 | 20 | 690 | 02 131 109 |
| 4 | 15 | 214 | 19 | 950 | 02 131 110 |
| 6 | 15 | 286 | 26 | 2100 | 02 131 112 |
| 8 | 12 | 337 | 26 | 3020 | 02 131 113 |

Backing rings Galvanised mild steel drilled



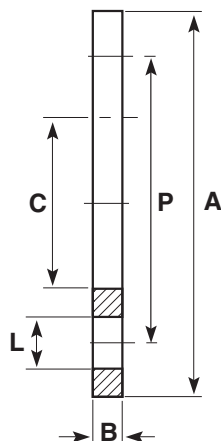
Drilled to BS10:1962 – Table E

| Size | A | B | C | P | L | No. of Holes | Bolt Size | Weight gms | Code |
|-------|-----|----|-----|-----|----|--------------|-----------|------------|------------|
| 1/2 | 96 | 6 | 29 | 68 | 16 | 4 | M12x50 | 320 | 13 416 102 |
| 3/4 | 104 | 7 | 34 | 73 | 14 | 4 | M12x50 | 340 | 13 416 103 |
| 1 | 114 | 7 | 42 | 84 | 14 | 4 | M12x50 | 430 | 13 416 104 |
| 1 1/4 | 121 | 7 | 51 | 87 | 14 | 4 | M12x50 | 430 | 13 416 105 |
| 1 1/2 | 134 | 8 | 62 | 98 | 14 | 4 | M12x50 | 520 | 13 416 106 |
| 2 | 152 | 8 | 78 | 114 | 18 | 4 | M16x65 | 900 | 13 416 107 |
| 3 | 184 | 10 | 110 | 145 | 18 | 4 | M16x70 | 1130 | 13 416 109 |
| *4 | 216 | 8 | 133 | 178 | 18 | 8 | M16x80 | 1480 | 13 416 110 |
| 6 | 279 | 10 | 196 | 235 | 22 | 8 | M20x90 | 2660 | 13 416 112 |
| 8 | 337 | 15 | 250 | 292 | 22 | 8 | M20x100 | 3100 | 13 416 113 |
| 10 | 406 | 20 | 308 | 356 | 22 | 12 | M20x130 | 7050 | 13 416 114 |

*4" BS10 Table D has 4 holes and should be ordered as 13 415 110. The bore of the 10" backing rings is machined to mate with the taper of the stub flanges.

Continued >>

Backing rings Galvanised mild steel drilled



Drilled to DIN8063 (BS4504) PN10/PN16

| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|---------------|-----|----|-----|-----|----|-----------|------------|------------|
| 1/2" - 20mm | 95 | 6 | 28 | 65 | 14 | 4 | 330 | 13 421 306 |
| 3/4" - 25mm | 105 | 6 | 34 | 75 | 14 | 4 | 380 | 13 421 307 |
| 1" - 32mm | 115 | 6 | 42 | 85 | 14 | 4 | 440 | 13 421 308 |
| 1 1/4" - 40mm | 140 | 6 | 51 | 100 | 18 | 4 | 660 | 13 421 309 |
| 1 1/2" - 50mm | 150 | 6 | 62 | 110 | 18 | 4 | 730 | 13 421 310 |
| 2" - 63mm | 165 | 8 | 78 | 125 | 18 | 4 | 1100 | 13 421 311 |
| 2 1/2" - 75mm | 185 | 8 | 92 | 145 | 18 | 4 | 1340 | 13 421 312 |
| 3" - 90mm | 200 | 8 | 110 | 160 | 18 | 8 | 1500 | 13 421 313 |
| 4" - 110mm | 220 | 8 | 133 | 180 | 18 | 8 | 1630 | 13 421 314 |
| 125mm | 250 | 8 | 150 | 210 | 18 | 8 | 2090 | 13 421 315 |
| 5" - 140mm | 250 | 10 | 167 | 210 | 18 | 8 | 2290 | 13 421 316 |
| 6" - 160mm | 285 | 10 | 190 | 240 | 22 | 8 | 3050 | 13 421 317 |

Drilled to DIN 8063 (BS4504) PN10

| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|--------------|-----|----|-----|-----|----|-----------|------------|------------|
| 200mm* | 340 | 10 | 235 | 295 | 22 | 8 | 3200 | 13 421 318 |
| 8" - 225mm** | 340 | 12 | 250 | 295 | 22 | 8 | 3000 | 13 421 319 |
| 250mm | 395 | 20 | 274 | 350 | 22 | 12 | 9900 | 13 421 320 |
| 10" - 280mm | 395 | 16 | 303 | 355 | 26 | 12 | 9900 | 13 421 321 |
| 12" - 315mm | 445 | 20 | 355 | 400 | 22 | 12 | 9300 | 13 421 323 |

Drilled to DIN8063 (BS4504) PN16

| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|--------------|-----|----|-----|-----|----|-----------|------------|------------|
| 200mm* | 340 | 11 | 235 | 295 | 22 | 12 | 3200 | 13 420 318 |
| 8" - 225mm** | 340 | 11 | 249 | 295 | 22 | 12 | 3000 | 13 420 319 |
| 250mm | 405 | 20 | 278 | 355 | 26 | 12 | 9900 | 13 420 320 |
| 10" - 280mm | 395 | 20 | 303 | 350 | 22 | 12 | 9900 | 13 420 321 |
| 12" - 315mm | 460 | 20 | 355 | 410 | 26 | 12 | 9300 | 13 420 323 |

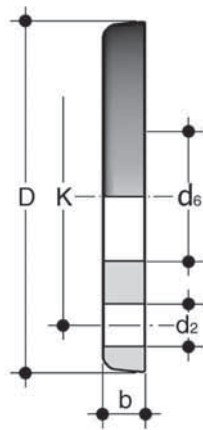
*The 200mm (NW175) stub flange supplied by Durapipe UK when used in conjunction with backing ring; code number 421 318 and 420 318 has a bolt circle diameter which matches 225mm (NW200) valves and fittings (295mm).

**Not for use with FK Butterfly valve, use 8 hole backing ring code 04 996 131.

Drilled to ANSI Class 150

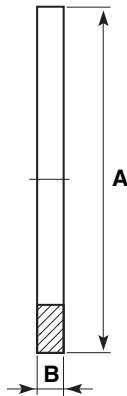
| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|---------------|-----|----|-----|-----|----|-----------|------------|------------|
| 1/2" - 20mm | 90 | 8 | 28 | 61 | 16 | 4 | 350 | 13 448 306 |
| 3/4" - 25mm | 100 | 8 | 34 | 70 | 16 | 4 | 390 | 13 448 307 |
| 1" - 32mm | 110 | 9 | 42 | 79 | 16 | 4 | 470 | 13 448 308 |
| 1 1/4" - 40mm | 118 | 8 | 51 | 90 | 16 | 4 | 590 | 13 448 309 |
| 1 1/2" - 50mm | 129 | 8 | 62 | 99 | 16 | 4 | 650 | 13 448 310 |
| 2" - 63mm | 154 | 10 | 78 | 121 | 19 | 4 | 1133 | 13 448 311 |
| 3" - 90mm | 192 | 11 | 110 | 153 | 19 | 4 | 1570 | 13 448 313 |
| 4" - 110mm | 230 | 11 | 133 | 190 | 19 | 8 | 2310 | 13 448 314 |

Backing rings Pre-drilled – Manufactured from PVC-U



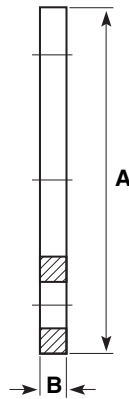
| d | PN | E | d ₁ | a | Sp | f | U | b | gms | Code |
|-----|----|-----|----------------|-----|----|----|----|---------|------|------------|
| 20 | 10 | 96 | 28 | 65 | 11 | 14 | 4 | M12x70 | 60 | 33 180 306 |
| 25 | 10 | 107 | 34 | 75 | 12 | 14 | 4 | M12x70 | 85 | 33 180 307 |
| 32 | 10 | 117 | 42 | 85 | 14 | 14 | 4 | M12x70 | 120 | 33 180 308 |
| 40 | 10 | 143 | 51 | 100 | 15 | 18 | 4 | M16x85 | 190 | 33 180 309 |
| 50 | 10 | 153 | 62 | 110 | 16 | 18 | 4 | M16x85 | 225 | 33 180 310 |
| 63 | 10 | 168 | 78 | 125 | 18 | 18 | 4 | M16x95 | 280 | 33 180 311 |
| 75 | 10 | 188 | 92 | 145 | 19 | 18 | 4 | M16x95 | 390 | 33 180 312 |
| 90 | 10 | 203 | 109 | 160 | 20 | 18 | 8 | M16x105 | 460 | 33 180 313 |
| 110 | 10 | 222 | 132 | 180 | 22 | 18 | 8 | M16x105 | 515 | 33 180 314 |
| 125 | 10 | 230 | 149 | 190 | 24 | 18 | 8 | M16x115 | 530 | 33 180 315 |
| 140 | 10 | 251 | 166 | 210 | 26 | 18 | 8 | M16x120 | 715 | 33 180 316 |
| 200 | 10 | 340 | 235 | 295 | 30 | 22 | 8 | M20x140 | 1210 | 33 180 317 |
| 225 | 10 | 340 | 252 | 295 | 30 | 22 | 8 | M20x140 | 1090 | 33 180 318 |
| 280 | 10 | 396 | 309 | 350 | 35 | 22 | 12 | M20x160 | 1880 | 33 180 320 |

Gaskets flat Stub flange EPDM



| Size | A | B | gms | Code |
|-------|-----|---|-----|------------|
| 1/2 | 32 | 2 | 2 | 02 431 102 |
| 3/4 | 39 | 2 | 3 | 02 431 103 |
| 1 | 48 | 2 | 4 | 02 431 104 |
| 1 1/2 | 71 | 2 | 5 | 02 431 106 |
| 2 | 97 | 3 | 21 | 03 431 107 |
| 2 1/2 | 106 | 3 | 22 | 13 411 312 |
| 3 | 128 | 3 | 23 | 03 431 109 |
| 4 | 160 | 4 | 36 | 03 431 110 |
| 5 | 180 | 4 | 60 | 13 411 316 |
| 6 | 214 | 4 | 74 | 03 431 112 |
| 8 | 269 | 4 | 92 | 03 431 113 |
| 10 | 327 | 4 | 186 | 03 411 114 |
| 12 | 378 | 4 | 218 | 03 411 115 |

Gaskets full face Drilled EPDM



Drilled to BS10:1962 – Table E

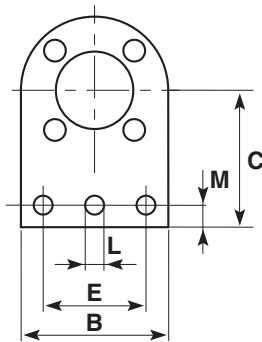
| Size | A | B | P.C.D. | No. of Holes | Hole Dia. | Weight gms | Code |
|-------|-----|---|--------|--------------|-----------|------------|------------|
| 1/2 | 95 | 3 | 67 | 4 | 14 | 31 | 03 410 102 |
| 3/4 | 112 | 3 | 73 | 4 | 14 | 37 | 03 410 103 |
| 1 | 115 | 3 | 83 | 4 | 14 | 37 | 03 410 104 |
| 1 1/4 | 121 | 3 | 87 | 4 | 14 | 41 | 03 410 105 |
| 1 1/2 | 133 | 3 | 98 | 4 | 14 | 55 | 03 410 106 |
| 2 | 153 | 3 | 115 | 4 | 18 | 56 | 03 410 107 |
| 3 | 184 | 3 | 145 | 4 | 18 | 98 | 03 410 109 |
| *4 | 216 | 3 | 178 | 8 | 18 | 112 | 03 410 110 |

*4" BS10 Table D has 4 holes and should be ordered as 03 409 110.

Drilled to BS4504 Table 10/3 and Table 16/3

| Size | A | B | P.C.D. | No. of Holes | Hole Dia. | Weight gms | Code |
|-------|-----|---|--------|--------------|-----------|------------|------------|
| 1/2 | 95 | 3 | 65 | 4 | 14 | 31 | 03 408 102 |
| 3/4 | 112 | 3 | 75 | 4 | 14 | 37 | 03 408 103 |
| 1 | 115 | 3 | 85 | 4 | 14 | 37 | 03 408 104 |
| 1 1/4 | 121 | 3 | 100 | 4 | 18 | 41 | 03 408 105 |
| 1 1/2 | 133 | 3 | 110 | 4 | 18 | 55 | 03 408 106 |
| 2 | 153 | 3 | 125 | 4 | 18 | 56 | 03 408 107 |
| 3 | 184 | 3 | 160 | 8 | 18 | 98 | 03 408 109 |
| 4 | 216 | 3 | 180 | 8 | 18 | 112 | 03 408 110 |

Valve support plates Galvanised mild steel drilled



Drilled to DIN8063 (BS4504) PN10/PN16

| No. Size | B | C | E | L | M | N | No. Holes | Weight gms | Code |
|---------------|-----|-----|-----|----|----|---|-----------|------------|------------|
| 1/2" - 20mm | 97 | 86 | 49 | 14 | 16 | 2 | 4 | 640 | 31 459 306 |
| 3/4" - 25mm | 105 | 89 | 76 | 14 | 16 | 2 | 4 | 750 | 31 459 307 |
| 1" - 32mm | 114 | 96 | 77 | 14 | 12 | 2 | 4 | 860 | 31 459 308 |
| 1 1/2" - 50mm | 150 | 125 | 100 | 14 | 22 | 2 | 4 | 1480 | 31 459 310 |
| 2" - 63mm | 160 | 134 | 100 | 14 | 24 | 2 | 4 | 2100 | 31 459 311 |
| 2 1/2" - 75mm | 185 | 144 | 125 | 14 | 22 | 2 | 4 | 2500 | 31 459 312 |
| 3" - 90mm | 203 | 150 | 127 | 14 | 23 | 2 | 8 | 2660 | 31 459 313 |
| 4" - 110mm | 214 | 160 | 150 | 14 | 22 | 3 | 8 | 2960 | 31 459 314 |

N = No. of holes in base.

For details of flange drillings see the corresponding backing ring.

Flange assemblies



PVC Full Face Flange – PN16 Drilling

| Size | Description | Code |
|-------|----------------------------|------------|
| 1/2 | PVC F/F FLG 16/3 KIT 1/2 | 02 359 102 |
| 3/4 | PVC F/F FLG 16/3 KIT 3/4 | 02 359 103 |
| 1 | PVC F/F FLG 16/3 KIT 1 | 02 359 104 |
| 1 1/4 | PVC F/F FLG 16/3 KIT 1 1/4 | 02 359 105 |
| 1 1/2 | PVC F/F FLG 16/3 KIT 1 1/2 | 02 359 106 |
| 2 | PVC F/F FLG 16/3 KIT 2 | 02 359 107 |
| 3 | PVC F/F FLG 16/3 KIT 3 | 02 359 109 |
| 4 | PVC F/F FLG 16/3 KIT 4 | 02 359 110 |

PVC Full Face Flange – Table E Drilling

| Size | Description | Code |
|-------|-----------------------------|------------|
| 1/2 | PVC F/F FLG BS10E KIT 1/2 | 02 362 102 |
| 3/4 | PVC F/F FLG BS10E KIT 3/4 | 02 362 103 |
| 1 | PVC F/F FLG BS10E KIT 1 | 02 362 104 |
| 1 1/4 | PVC F/F FLG BS10E KIT 1 1/4 | 02 362 105 |
| 1 1/2 | PVC F/F FLG BS10E KIT 1 1/2 | 02 362 106 |
| 2 | PVC F/F FLG BS10E KIT 2 | 02 362 107 |
| 3 | PVC F/F FLG BS10E KIT 3 | 02 362 109 |
| 4 | PVC F/F FLG BS10E KIT 4 | 02 362 110 |



PVC Stub Flange – PN16 Drilling

| Size | Description | Code |
|-------|------------------------|------------|
| 2 | PVC S FLG 16/3 KIT 2 | 02 364 107 |
| 2 1/2 | PVC S FLG 16/3 KIT 75 | 33 364 312 |
| 3 | PVC S FLG 16/3 KIT 3 | 02 364 109 |
| 4 | PVC S FLG 16/3 KIT 4 | 02 364 110 |
| 5 | PVC S FLG 16/3 KIT 140 | 33 364 316 |
| 6 | PVC S FLG 16/3 KIT 6 | 02 364 112 |
| 8 | PVC S FLG 16/3 KIT 8 | 02 364 113 |

PVC Stub Flange – ASA150 Drilling

| Size | Description | Code |
|------|-------------------------|------------|
| 2 | PVC S FLG ASA 150 KIT 2 | 02 366 107 |
| 3 | PVC S FLG ASA 150 KIT 3 | 02 366 109 |
| 4 | PVC S FLG ASA 150 KIT 4 | 02 366 110 |
| 6 | PVC S FLG ASA 150 KIT 6 | 02 366 112 |
| 8 | PVC S FLG ASA 150 KIT 8 | 02 366 113 |

PVC Stub Flange – Table E Drilling

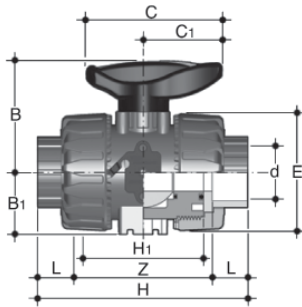
| Size | Description | Code |
|------|-----------------------|------------|
| 2 | PVC S FLG BS10E KIT 2 | 02 367 107 |
| 3 | PVC S FLG BS10E KIT 3 | 02 367 109 |
| 4 | PVC S FLG BS10E KIT 4 | 02 367 110 |
| 6 | PVC S FLG BS10E KIT 6 | 02 367 112 |
| 8 | PVC S FLG BS10E KIT 8 | 02 367 113 |

Pre-packed flange assemblies are also available and consist of a PVC flange, galvanised mild steel backing ring and gasket on one code. Ordering these products guarantees a correct fit between the components.

Valves

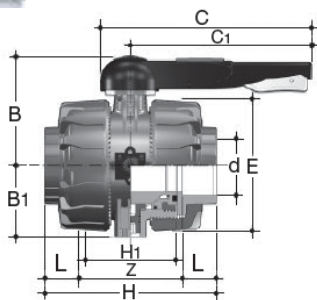
Premium Quality
Valve for Demanding
Environments

VKD Double union ball valves Manual – EPDM seals



with BS series plain female ends for solvent welding

| d | DN | PN | L | Z | H | H1 | E | B | B ₁ | C | C ₁ | gms | Code |
|-------|----|----|----|-----|-----|-----|-----|-----|----------------|-----|----------------|------|------------|
| 1/2 | 15 | 16 | 16 | 70 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 205 | HO DKE 102 |
| 3/4 | 20 | 16 | 19 | 77 | 115 | 70 | 65 | 65 | 35 | 85 | 49 | 335 | HO DKE 103 |
| 1 | 25 | 16 | 22 | 83 | 128 | 78 | 73 | 70 | 39 | 85 | 49 | 433 | HO DKE 104 |
| 1 1/4 | 32 | 16 | 26 | 94 | 146 | 88 | 86 | 83 | 46 | 108 | 64 | 703 | HO DKE 105 |
| 1 1/2 | 40 | 16 | 30 | 106 | 164 | 91 | 98 | 89 | 52 | 108 | 64 | 925 | HO DKE 106 |
| 2 | 50 | 16 | 36 | 127 | 199 | 111 | 122 | 108 | 62 | 134 | 76 | 1577 | HO DKE 107 |



| d | DN | PN | Z | L | H | H ₁ | E | B | B ₁ | C | C ₁ | gms | Code |
|-------|-----|----|-----|----|-----|----------------|-----|-----|----------------|-----|----------------|-------|------------|
| 2 1/2 | 65 | 16 | 147 | 44 | 235 | 133 | 164 | 164 | 87 | 225 | 175 | 4380 | HO DKE 312 |
| 3 | 80 | 16 | 168 | 51 | 270 | 149 | 203 | 177 | 105 | 327 | 272 | 7200 | HO DKE 109 |
| 4 | 100 | 16 | 186 | 61 | 308 | 167 | 238 | 195 | 129 | 385 | 330 | 11141 | HO DKE 110 |

Options:

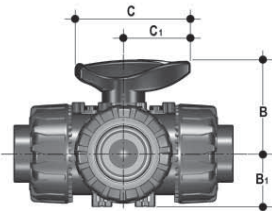
EPDM seals (threaded ends) order HO DKE B**

FPM seals (plain ends) order HO DKF ***

FPM seals (threaded ends) order HO DKF B**

Premium Quality
Valve for Demanding
Environments

TKD 3-way ball valves Plain EPDM



T-Port design

| d | DN | PN | H | H ₁ | Z | C | C ₁ | B | B ₁ | L | gms | Code |
|-------|----|----|-----|----------------|-----|-----|----------------|-----|----------------|----|------|------------|
| 1/2 | 15 | 16 | 118 | 80 | 85 | 67 | 40 | 54 | 29 | 17 | 310 | HO TTE 102 |
| 3/4 | 20 | 16 | 145 | 100 | 107 | 85 | 49 | 65 | 35 | 19 | 535 | HO TTE 103 |
| 1 | 25 | 16 | 160 | 110 | 115 | 85 | 49 | 69 | 39 | 22 | 725 | HO TTE 104 |
| 1 1/4 | 32 | 16 | 189 | 131 | 137 | 108 | 64 | 83 | 46 | 26 | 1170 | HO TTE 105 |
| 1 1/2 | 40 | 16 | 219 | 148 | 159 | 108 | 64 | 89 | 52 | 31 | 1600 | HO TTE 106 |
| 2 | 50 | 16 | 267 | 179 | 194 | 134 | 76 | 108 | 62 | 37 | 2845 | HO TTE 107 |

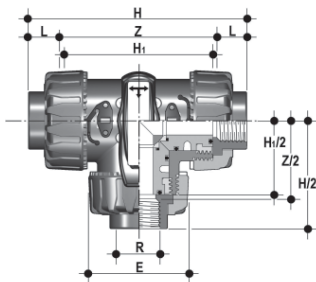
Options:

EPDM seals (threaded ends) order HO TTE B**

FPM seals (plain ends) order HO TTF ***

FPM seals (threaded ends) order HO TTF B**

Manual valves can be supplied with locking kits - further information is available from our Valve Department.



L-Port design

| d | DN | PN | H | H ₁ | Z | C | C ₁ | B | B ₁ | L | gms | Code |
|-------|----|----|-----|----------------|-----|-----|----------------|-----|----------------|----|------|------------|
| 1/2 | 15 | 16 | 118 | 80 | 85 | 67 | 40 | 54 | 29 | 17 | 310 | HO LTE 102 |
| 3/4 | 20 | 16 | 145 | 100 | 107 | 85 | 49 | 65 | 35 | 19 | 535 | HO LTE 103 |
| 1 | 25 | 16 | 160 | 110 | 115 | 85 | 49 | 69 | 39 | 22 | 725 | HO LTE 104 |
| 1 1/4 | 32 | 16 | 189 | 131 | 137 | 108 | 64 | 83 | 46 | 26 | 1170 | HO LTE 105 |
| 1 1/2 | 40 | 16 | 219 | 148 | 159 | 108 | 64 | 89 | 52 | 31 | 1600 | HO LTE 106 |
| 2 | 50 | 16 | 267 | 179 | 194 | 134 | 76 | 108 | 62 | 37 | 2845 | HO LTE 107 |

Options:

EPDM seals (threaded ends) order HO LTE B**

FPM seals (plain ends) order HO LTB ***

FDM seals (threaded ends) order HO LTF B**

VKD and TKD ball valves can be supplied electrically or pneumatically actuated.

VXE Double union ball valves Manual – EPDM seals



with BS series plain female ends for solvent welding

| d | DN | PN | L | Z | H | E | B | C | C ₁ | gms | Code |
|-------|----|----|----|-----|-----|-----|-----|-----|----------------|------|------------|
| 1/2 | 15 | 16 | 15 | 60 | 90 | 54 | 49 | 64 | 20 | 175 | HO XEE 102 |
| 3/4 | 20 | 16 | 16 | 60 | 93 | 63 | 62 | 78 | 23 | 260 | HO XEE 103 |
| 1 | 25 | 16 | 19 | 72 | 110 | 72 | 71 | 87 | 27 | 365 | HO XEE 104 |
| 1 1/4 | 32 | 16 | 21 | 84 | 127 | 85 | 82 | 102 | 30 | 565 | HO XEE 105 |
| 1 1/2 | 40 | 16 | 21 | 88 | 131 | 100 | 92 | 109 | 33 | 795 | HO XEE 106 |
| 2 | 50 | 16 | 26 | 110 | 161 | 118 | 110 | 133 | 39 | 1325 | HO XEE 107 |

| d | DN | PN | L | Z | H | E | B | C | C ₁ | gms | Code |
|-------|-----|----|----|-----|-----|-----|-----|-----|----------------|------|------------|
| 2 1/2 | 65 | 10 | 44 | 128 | 216 | 154 | 133 | 222 | - | 2600 | HO XEE 312 |
| 3 | 80 | 10 | 51 | 142 | 244 | 189 | 154 | 270 | - | 4330 | HO XEE 109 |
| 4 | 100 | 6 | 63 | 183 | 309 | 221 | 175 | 270 | - | 7450 | HO XEE 110 |

SXE Easyfit ball check valves Plain ends – EPDM seals (other options available)



| d | DN | PN | L | Z | H | E | gms | Code |
|-------|----|----|------|-----|-----|-----|------|------------|
| 1/2 | 15 | 16 | 16.5 | 49 | 82 | 54 | 148 | HO SXE 102 |
| 3/4 | 20 | 16 | 19 | 53 | 91 | 63 | 190 | HO SXE 103 |
| 1 | 25 | 16 | 22.5 | 58 | 103 | 72 | 300 | HO SXE 104 |
| 1 1/4 | 32 | 16 | 26 | 68 | 120 | 85 | 460 | HO SXE 105 |
| 1 1/2 | 40 | 16 | 30 | 79 | 139 | 100 | 675 | HO SXE 106 |
| 2 | 50 | 16 | 36 | 102 | 174 | 118 | 1080 | HO SXE 107 |

Options:

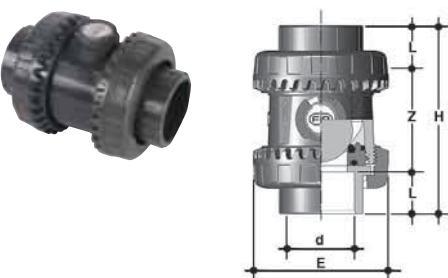
EPDM seals (threaded ends) order HO SXE B**

FPM seals (plain ends) order HO SXF ***

FPM seals (threaded ends) order HO SXF B**

| d | DN | PN | L | Z | H | E | gms | EPDM Code |
|-------|-----|----|----|-----|-----|-----|------|------------|
| 2 1/2 | 65 | 16 | 44 | 123 | 211 | 157 | 2605 | HO SXE 312 |
| 3 | 80 | 16 | 51 | 146 | 248 | 174 | 3300 | HO SXE 109 |
| 4 | 100 | 16 | 63 | 157 | 283 | 212 | 5570 | HO SXE 110 |

SXA Easyfit air release valves Plain ends – EPDM seals (other options available)



| d | DN | PN | L | Z | H | E | gms | Code |
|-------|----|----|------|----|-----|-----|------|------------|
| 1/2 | 15 | 16 | 16.5 | 50 | 82 | 54 | 148 | HO SAE 102 |
| 3/4 | 20 | 16 | 19 | 53 | 91 | 63 | 190 | HO SAE 103 |
| 1 | 25 | 16 | 22.5 | 59 | 103 | 72 | 300 | HO SAE 104 |
| 1 1/4 | 32 | 16 | 26 | 68 | 120 | 85 | 460 | HO SAE 105 |
| 1 1/2 | 40 | 16 | 30 | 77 | 139 | 100 | 675 | HO SAE 106 |
| 2 | 50 | 16 | 36 | 98 | 174 | 118 | 1080 | HO SAE 107 |

Options:

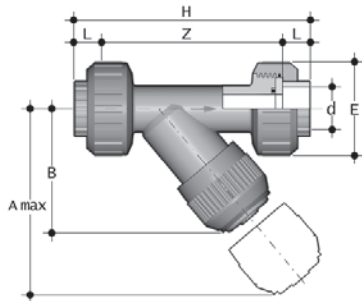
EPDM seals (threaded ends) order HO SAE B**

FPM seals (plain ends) order HO SAF ***

FPM seals (threaded ends) order HO SAF B**

Note: this valve must be installed at a minimum distance of 10 x nominal diameter (eg. 20" for size 2") from pump flange.

RV Y-Type strainers Socket union ends – EPDM seals



Grey (HO UV* ***) or Transparent (HO UT* ***)
with BS series plain female ends for solvent welding

| d | DN | PN | A | B | E | L | Z | H | K | gms | Code | |
|-----------------|----|----|----|-----|-----|-----|----|-----|-----|-----|--------|------------|
| Grey Trans. max | | | | | | | | | | | (Grey) | |
| 1/2 | 15 | 15 | 15 | 125 | 72 | 55 | 16 | 103 | 135 | - | 211 | HO UVE 102 |
| 3/4 | 20 | 15 | 15 | 145 | 84 | 66 | 19 | 120 | 158 | - | 358 | HO UVE 103 |
| 1 | 25 | 15 | 15 | 165 | 95 | 75 | 22 | 132 | 176 | - | 526 | HO UVE 104 |
| 1 1/4 | 32 | 15 | 10 | 190 | 111 | 87 | 26 | 155 | 207 | - | 733 | HO UVE 105 |
| 1 1/2 | 40 | 15 | 10 | 210 | 120 | 100 | 31 | 181 | 243 | - | 1095 | HO UVE 106 |
| 2 | 50 | 15 | 10 | 240 | 139 | 120 | 38 | 222 | 298 | - | 1843 | HO UVE 107 |

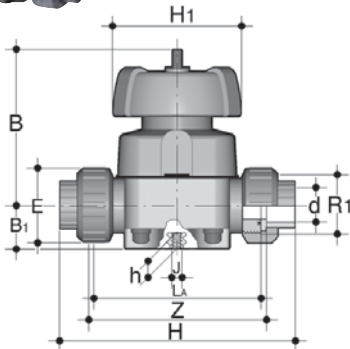
Options:

EPDM seals (threaded ends) order HO UVE B**

FPM seals (plain ends) order HO UVF ***

FPM seals (threaded ends) order HO UVF B**

VM Diaphragm valves Manual – plain union ends EPDM diaphragm



BS series plain female ends

| d | DN | PN | B | B ₁ | H | h | H ₁ | L _A | J | E | R ₁ | gms | Code |
|-------|-----|------|-----|----------------|-----|----|----------------|----------------|-----|-----|----------------|-------|------------|
| 1/2 | 15 | 10 | 95 | 20 | 146 | 12 | 90 | 108 | M6 | 41 | 1 | 830 | HO UME 102 |
| 3/4 | 20 | 10 | 95 | 20 | 152 | 12 | 90 | 108 | M6 | 50 | 1 1/4 | 860 | HO UME 103 |
| 1 | 25 | 10 | 95 | 26 | 166 | 12 | 90 | 116 | M6 | 122 | 1 1/2 | 895 | HO UME 104 |
| 1 1/4 | 32 | 10 | 126 | 36 | 192 | 16 | 115 | 134 | M8 | 140 | 2 | 1650 | HO UME 105 |
| 1 1/2 | 40 | 10 | 126 | 40 | 222 | 16 | 115 | 154 | M8 | 160 | 2 1/4 | 1730 | HO UME 106 |
| 2 | 50 | 10 | 148 | 49 | 266 | 16 | 140 | 184 | M8 | 190 | 2 3/4 | 2800 | HO UME 107 |
| 2 1/2 | 65 | 10** | 225 | 55 | 284 | 23 | 200 | - | M12 | - | - | 7000 | HO VME 412 |
| 3 | 80 | 10** | 225 | 55 | 300 | 23 | 200 | - | M12 | - | - | 7000 | HO VME 209 |
| 4 | 100 | 10** | 295 | 69 | 300 | 23 | 200 | - | M12 | - | - | 10500 | HO VME 210 |

*2 1/2", 3" & 4" are all spigot-ended products.

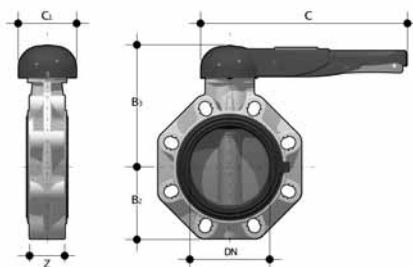
** PN6 for PTFE diaphragm.

Options:

FPM diaphragm (plain ends) order HO UMF ***

PTFE diaphragm (plain ends) order HO UMG ***

FK Butterfly valves EPDM seals



| d | DN | PN | B ₂ | B ₃ | C | C ₁ | gms | U | Code |
|-------|-----|----|----------------|----------------|-----|----------------|------|---|------------|
| 1 1/2 | 40 | 16 | 60 | 137 | 175 | 100 | 900 | 4 | HO FKE 106 |
| 2 | 50 | 16 | 70 | 143 | 175 | 100 | 1080 | 4 | HO FKE 107 |
| 2 1/2 | 65 | 10 | 80 | 164 | 272 | 110 | 1470 | 4 | HO FKE 108 |
| 3 | 80 | 10 | 93 | 178 | 272 | 110 | 1870 | 8 | HO FKE 109 |
| 4 | 100 | 10 | 107 | 192 | 272 | 110 | 2220 | 8 | HO FKE 110 |
| 5 | 125 | 10 | 120 | 212 | 330 | 110 | 3100 | 8 | HO FKE 111 |
| 6 | 150 | 10 | 134 | 225 | 330 | 110 | 3850 | 8 | HO FKE 112 |
| 8 | 200 | 10 | 161 | 272 | 420 | 122 | 6750 | 8 | HO FKE 113 |

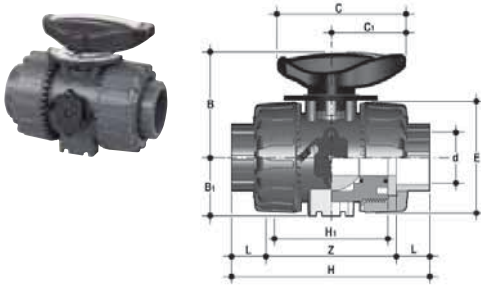
Sizes 6" to 12" are available with gearbox operation.

10" and 12" are available, these are dimensionally identical to the 250mm & 315mm products featured on Page 77. Contact 01543 272424 for more details.

Options:

FPM seals order HO FKF ***

VKR Metering ball valve



| d | DN | PN | L | Z | H | H ₁ | E | B | B ₁ | C | C ₁ | gms | Code |
|-------|----|----|------|-----|-----|----------------|-----|-----|----------------|-----|----------------|------|------------|
| 3/8 | 15 | 16 | 16.5 | 70 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 205 | HO MBE 101 |
| 1/2 | 15 | 16 | 16.5 | 70 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 205 | HO MBE 102 |
| 3/4 | 20 | 16 | 19 | 77 | 115 | 70 | 65 | 65 | 34.5 | 85 | 49 | 335 | HO MBE 103 |
| 1 | 25 | 16 | 22.5 | 83 | 128 | 78 | 73 | 70 | 39 | 85 | 49 | 433 | HO MBE 104 |
| 1 1/4 | 32 | 16 | 26 | 94 | 146 | 88 | 86 | 83 | 46 | 108 | 64 | 703 | HO MBE 105 |
| 1 1/2 | 40 | 16 | 30 | 104 | 164 | 91 | 98 | 89 | 52 | 108 | 64 | 925 | HO MBE 106 |
| 2 | 50 | 16 | 36 | 127 | 199 | 111 | 122 | 108 | 62 | 134 | 76 | 1577 | HO MBE 107 |

Options:

FPM seals (Plain ends) order HO MBF ***

Set of transparent service plugs and white PVC tag holders

For insertion in handle for (VXE) Easyfit valve customisation



| Size mm/inch | Standard pack quantity in units | Product Code |
|--------------|---------------------------------|--------------|
| 16-20 / 1/2 | 20 | LCE020 |
| 25 / 3/4 | 20 | LCE025 |
| 32 / 1 | 20 | LCE032 |
| 40 / 1 1/4 | 20 | LCE040 |
| 50 / 1 1/2 | 20 | LCE050 |
| 63 / 2 | 20 | LCE063 |

Die cut labels plus software White waterproof A4 sheets and freeware editing software to be used with inkjet printers for easyfit valve customisation.



| Size mm/inch | No. of sheets | Total labels | Product Code |
|--------------|---------------|--------------|--------------|
| 16-20 / 1/2 | 10 | 500 | LSE020 |
| 25 / 3/4 | 10 | 500 | LSE025 |
| 32 / 1 | 10 | 500 | LSE032 |
| 40 / 1 1/4 | 10 | 500 | LSE040 |
| 50 / 1 1/2 | 10 | 400 | LSE050 |
| 63 / 2 | 10 | 400 | LSE060 |

Actuated Valves and Flow Control

The valves in this catalogue are only a selection of the complete range of thermoplastic valves available.

Durapipe UK offer a comprehensive range of actuated valves with either pneumatic or electric actuators. These are assembled at our in-house actuation department and meet the demands of a wide range of applications found in industrial pipework installations.

To further complement the Durapipe UK valve offering, there is a complete range of Flow Meters, Solenoid Valves and the flow control system FLOW X3/CHEM X3.



For further information on any of these products, please do not hesitate to contact your local Area Sales Manager or our Valves and Flow Control Department on 01543 272424.

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.

HCR-36 Chemically resistant PVC cement



| Description | Code |
|-------------|------------|
| 1 litre | 03 468 396 |

Eco-cleaner



| Litres | gms | Code |
|--------|-----|------------|
| 0.5 | 500 | 03 457 395 |

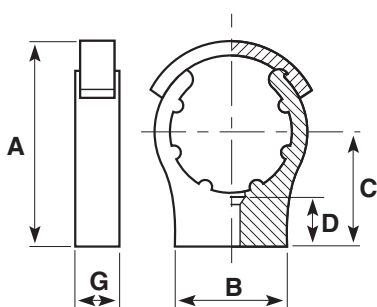
Durapipe Eco-cleaner must be used for jointing of Durapipe PVC-U pipework systems.

Cleaner for use with HCR-36 Chemically resistant PVC cement



| Description | Code |
|-------------|------------|
| 1/2 litre | 03 467 395 |

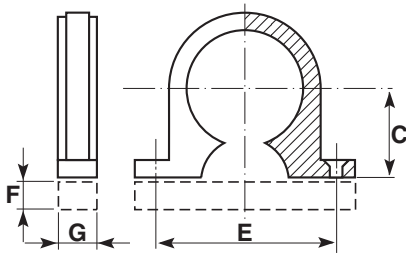
Cobra pipe clips Polypropylene



| Size | A | B | C | D | G | Bolt/Screw size | gms | Code |
|-------|-----|-----|-----|----|----|-----------------|-----|------------|
| 3/8 | - | 35 | 25 | 19 | 16 | M.4/3BA/No 8 | 7 | 13 434 305 |
| 1/2 | - | 35 | 30 | 14 | 16 | M.5/1BA/No 10 | 8 | 13 434 306 |
| 3/4 | - | 35 | 35 | 16 | 17 | M.5/1BA/No 10 | 11 | 13 434 307 |
| 1 | - | 40 | 40 | 17 | 17 | M.5/1BA/No 10 | 14 | 13 434 308 |
| 1 1/4 | 75 | 45 | 45 | 20 | 20 | M.5/1BA/No 10 | 21 | 13 434 309 |
| 1 1/2 | 85 | 50 | 50 | 22 | 21 | M.6/OBA/No 10 | 30 | 13 434 310 |
| 2 | 102 | 60 | 60 | 19 | 21 | M.6/OBA/No 10 | 42 | 13 434 311 |
| 2 1/2 | 122 | 70 | 70 | 27 | 31 | M.8 | 94 | 13 434 312 |
| 3 | 148 | 80 | 90 | 39 | 31 | M.8 | 121 | 13 434 313 |
| 4 | 171 | 90 | 96 | 36 | 35 | M.8 | 185 | 13 434 314 |
| 5 | 211 | 156 | 132 | 40 | 40 | M.8 | 252 | 13 434 316 |
| 6 | 243 | 170 | 150 | 40 | 40 | M.8 | 185 | 13 434 317 |

Clips 1 1/4" and above are fitted with a pipe retaining strap.
Bolts/screws not supplied.

Saddle clips Polypropylene



| Size | C | E | F | G | Bolt/Screw size | gms | Code |
|-------|----|-----|----|----|-----------------|-----|------------|
| 3/8 | 13 | 37 | - | 14 | M.4/3BA/No 8 | 3 | 03 455 101 |
| 1/2 | 18 | 41 | - | 14 | M.4/3BA/No 8 | 4 | 03 455 102 |
| 3/4 | 21 | 45 | - | 16 | M.5/2BA/No 10 | 6 | 03 455 103 |
| 1 | 23 | 56 | - | 16 | M.5/2BA/No 10 | 7 | 03 455 104 |
| 1 1/4 | 29 | 65 | - | 16 | M.5/2BA/No 10 | 11 | 03 455 105 |
| 1 1/2 | 34 | 67 | - | 16 | M.5/2BA/No 10 | 12 | 03 455 106 |
| 2 | 38 | 87 | - | 22 | M.6/OBA/No 12 | 25 | 03 455 107 |
| 3 | 50 | 122 | 8 | 34 | M.10/3/8UNC | 45 | 03 455 109 |
| 4 | 65 | 156 | 13 | 38 | M.10/3/8UNC | 70 | 03 455 110 |

Backing plate shown dotted supplied with 3" and 4" only. Bolts/screws not supplied. Bolt holes in 3" and 4" clips are not countersunk.

Chamfering and de-burring tools



| Description | Code |
|------------------------------------------|-------------|
| E 16-63mm pipe outer milling cutter tool | FT 55 65 12 |
| 32-160mm chamfering tool | FT 55 05 10 |

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

Pipe cutters



| Description | Code |
|-----------------------------|-------------|
| 16-63mm pipe cutter | FT 80 00 01 |
| 50-125mm pipe cutter | FT 80 00 03 |
| 16-63mm spare cutter wheel | FT 80 00 02 |
| 50-125mm spare cutter wheel | FT 80 00 04 |

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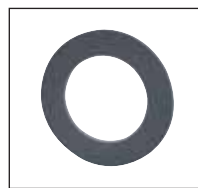
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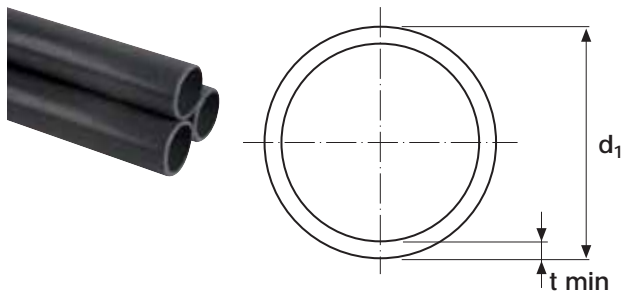
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NEW

Optima Pipe Plain



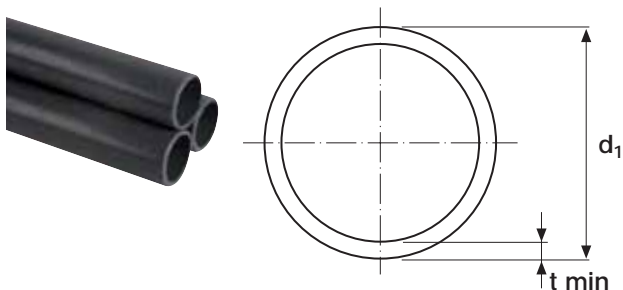
PN10

| d ₁ Size | t min | kg/m | length m | Code |
|------------------------|-------|------|----------|------------|
| 32 | 1.6 | 0.24 | 5 | 33 556 308 |
| 40 | 1.9 | 0.35 | 5 | 33 556 309 |
| 50 | 2.4 | 0.55 | 5 | 33 556 310 |
| 63 | 3.0 | 0.71 | 5 | 33 556 311 |
| 75 | 3.6 | 1.00 | 5 | 33 556 312 |
| 90 | 4.3 | 1.44 | 5 | 33 556 313 |
| 110 | 4.2 | 2.11 | 5 | 33 556 314 |
| 125 | 4.8 | 2.72 | 5 | 33 556 315 |
| 160 | 6.2 | 4.49 | 5 | 33 556 317 |

PN16

| d ₁ Size | t min | kg/m | length m | Code |
|------------------------|-------|------|----------|------------|
| 20 | 1.5 | 0.13 | 5 | 33 557 306 |
| 25 | 1.9 | 0.20 | 5 | 33 557 307 |
| 32 | 2.4 | 0.34 | 5 | 33 557 308 |
| 40 | 3.0 | 0.51 | 5 | 33 557 309 |
| 50 | 3.7 | 0.79 | 5 | 33 557 310 |
| 63 | 4.7 | 1.25 | 5 | 33 557 311 |
| 75 | 5.6 | 1.50 | 5 | 33 557 312 |
| 90 | 6.7 | 2.15 | 5 | 33 557 313 |
| 110 | 6.6 | 3.20 | 5 | 33 557 314 |

PVC-U Pipe 16 bar



PN10

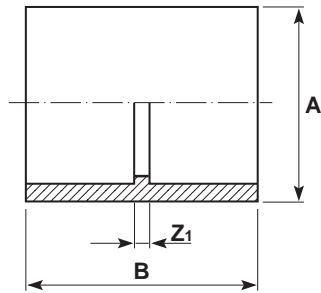
| d ₁ Size | t min | kg/m | length m | Code |
|------------------------|-------|-------|----------|------------|
| 32 | 1.6 | 0.24 | 5 | 33 555 308 |
| 40 | 1.9 | 0.35 | 5 | 33 555 309 |
| 50 | 2.4 | 0.55 | 5 | 33 555 310 |
| 63 | 3.0 | 0.71 | 5 | 33 555 311 |
| 75 | 3.6 | 1.00 | 5 | 33 555 312 |
| 90 | 4.3 | 1.44 | 5 | 33 555 313 |
| 110 | 4.2 | 2.11 | 5 | 33 555 314 |
| 125 | 4.8 | 2.72 | 5 | 33 555 315 |
| 140 | 7.3 | 4.54 | 6 | 06 512 111 |
| 160 | 6.2 | 4.49 | 5 | 33 555 317 |
| 200 | 7.7 | 6.98 | 5 | 33 555 318 |
| 250 | 9.6 | 10.87 | 5 | 33 555 320 |
| 315 | 12.1 | 17.5 | 5 | 33 555 323 |

PN16

| d ₁ Size | t min | kg/m | length m | Code |
|------------------------|-------|------|----------|------------|
| 20 | 1.5 | 0.13 | 5 | 33 560 306 |
| 25 | 1.9 | 0.20 | 5 | 33 560 307 |
| 32 | 2.4 | 0.34 | 5 | 33 560 308 |
| 40 | 3.0 | 0.51 | 5 | 33 560 309 |
| 50 | 3.7 | 0.79 | 5 | 33 560 310 |
| 63 | 4.7 | 1.25 | 5 | 33 560 311 |
| 75 | 5.6 | 1.50 | 5 | 33 560 312 |
| 90 | 6.7 | 2.15 | 5 | 33 560 313 |
| 110 | 6.6 | 3.20 | 5 | 33 560 314 |

Sockets Plain

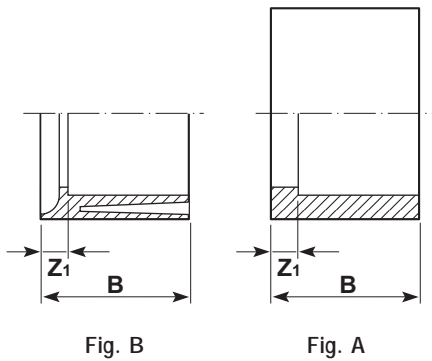
MIV



| Size | PN | A | B | Z ₁ | gms | Code |
|------|----|-----|-----|----------------|------|------------|
| 16 | 16 | 21 | 31 | 3 | 7 | 33 100 305 |
| 20 | 16 | 26 | 35 | 3 | 11 | 33 100 306 |
| 25 | 16 | 32 | 41 | 2 | 20 | 33 100 307 |
| 32 | 16 | 40 | 47 | 3 | 30 | 33 100 308 |
| 40 | 16 | 50 | 55 | 3 | 55 | 33 100 309 |
| 50 | 16 | 61 | 65 | 3 | 90 | 33 100 310 |
| 63 | 16 | 76 | 79 | 3 | 160 | 33 100 311 |
| 75 | 16 | 90 | 91 | 3 | 250 | 33 100 312 |
| 90 | 16 | 108 | 106 | 4 | 415 | 33 100 313 |
| 110 | 16 | 131 | 130 | 8 | 715 | 33 100 314 |
| 125 | 16 | 145 | 145 | 7 | 960 | 33 100 315 |
| 140 | 16 | 164 | 160 | 8 | 1240 | 33 100 316 |
| 160 | 16 | 186 | 181 | 9 | 1680 | 33 100 317 |
| 200 | 16 | 232 | 223 | 11 | 3050 | 33 100 318 |
| 225 | 16 | 260 | 249 | 11 | 4600 | 33 100 319 |
| 250 | 10 | 286 | 272 | 10 | 5760 | 33 100 320 |
| 315 | 10 | 355 | 339 | 11 | 9780 | 33 100 323 |

Reducing bushes Plain

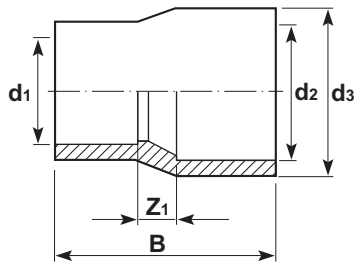
DIV



| Size | PN | B | Z ₁ | Fig | gms | Code |
|-----------|----|-----|----------------|-----|------|------------|
| 20 x 16 | 16 | 18 | 2 | A | 3 | 33 109 412 |
| 25 x 20 | 16 | 22 | 3 | A | 5 | 33 109 415 |
| 32 x 20 | 16 | 28 | 6 | A | 15 | 33 109 418 |
| 32 x 25 | 16 | 26 | 4 | A | 10 | 33 109 419 |
| 40 x 20 | 16 | 35 | 9 | B | 25 | 33 109 421 |
| 40 x 25 | 16 | 33 | 7 | B | 24 | 33 109 422 |
| 40 x 32 | 16 | 30 | 4 | A | 17 | 33 109 423 |
| 50 x 25 | 16 | 33 | 13 | B | 29 | 33 109 425 |
| 50 x 32 | 16 | 40 | 9 | B | 35 | 33 109 426 |
| 50 x 40 | 16 | 36 | 5 | A | 32 | 33 109 427 |
| 63 x 32 | 16 | 38 | 16 | B | 73 | 33 109 430 |
| 63 x 40 | 16 | 38 | 12 | B | 75 | 33 109 431 |
| 63 x 50 | 16 | 38 | 7 | A | 65 | 33 109 432 |
| 75 x 50 | 16 | 44 | 13 | B | 120 | 33 109 437 |
| 75 x 63 | 16 | 44 | 6 | A | 85 | 33 109 438 |
| 90 x 50 | 16 | 51 | 20 | B | 200 | 33 109 442 |
| 90 x 63 | 16 | 51 | 13 | B | 210 | 33 109 443 |
| 90 x 75 | 16 | 51 | 7 | A | 150 | 33 109 444 |
| 110 x 63 | 16 | 61 | 23 | B | 340 | 33 109 449 |
| 110 x 75 | 16 | 61 | 17 | B | 360 | 33 109 450 |
| 110 x 90 | 16 | 61 | 9 | A | 270 | 33 109 451 |
| 125 x 110 | 16 | 69 | 8 | A | 285 | 33 109 459 |
| 140 x 90 | 16 | 76 | 25 | B | 730 | 33 109 465 |
| 140 x 110 | 16 | 76 | 17 | A | 645 | 33 109 466 |
| 140 x 125 | 16 | 76 | 10 | A | 350 | 33 109 467 |
| 160 x 90 | 16 | 86 | 35 | B | 1040 | 33 109 473 |
| 160 x 110 | 16 | 86 | 24 | B | 945 | 33 109 474 |
| 160 x 140 | 16 | 86 | 10 | A | 565 | 33 109 476 |
| 200 x 160 | 16 | 110 | 21 | B | 109 | 33 109 487 |
| 225 x 160 | 16 | 119 | 33 | B | 1840 | 33 109 495 |
| 225 x 200 | 16 | 119 | 13 | A | 1380 | 33 109 496 |
| 250 x 160 | 10 | 132 | 45 | B | 4250 | 33 109 497 |
| 250 x 200 | 10 | 132 | 25 | A | 3820 | 33 109 498 |
| 250 x 225 | 10 | 132 | 12 | A | 2230 | 33 109 499 |
| 315 x 200 | 10 | 165 | 58 | B | 8650 | 33 109 501 |
| 315 x 225 | 10 | 165 | 45 | B | 8100 | 33 109 502 |
| 315 x 250 | 10 | 165 | 33 | B | 5080 | 33 109 503 |

Reducing sockets Plain

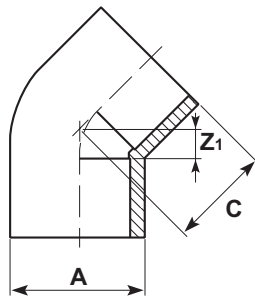
RIV



| Size d ₃ x d ₂ x d ₁ | PN | B | Z ₁ | gms | Code |
|----------------------------------------------------------|----|-----|----------------|------|------------|
| 20 x 16 | 16 | 35 | 5 | 8 | 33 114 305 |
| 25 x 20 x 16 | 16 | 39 | 9 | 9 | 33 114 412 |
| 25 x 20 x 20 | 16 | 41 | 9 | 12 | 33 114 306 |
| 32 x 25 x 20 | 16 | 46 | 11 | 16 | 33 114 415 |
| 32 x 25 x 25 | 16 | 49 | 11 | 20 | 33 114 307 |
| 40 x 32 x 20 | 16 | 52 | 14 | 23 | 33 114 418 |
| 40 x 32 x 25 | 16 | 55 | 14 | 27 | 33 114 419 |
| 40 x 32 x 32 | 16 | 58 | 14 | 34 | 33 114 308 |
| 50 x 40 x 20 | 16 | 60 | 18 | 36 | 33 114 421 |
| 50 x 40 x 25 | 16 | 63 | 18 | 40 | 33 114 422 |
| 50 x 40 x 32 | 16 | 66 | 18 | 48 | 33 114 423 |
| 50 x 40 x 40 | 16 | 70 | 18 | 55 | 33 114 309 |
| 63 x 50 x 25 | 16 | 73 | 23 | 75 | 33 114 425 |
| 63 x 50 x 32 | 16 | 76 | 23 | 80 | 33 114 426 |
| 63 x 50 x 40 | 16 | 80 | 23 | 90 | 33 114 427 |
| 63 x 50 x 50 | 16 | 85 | 23 | 110 | 33 114 310 |
| 75 x 63 x 50 | 16 | 93 | 24 | 130 | 33 114 432 |
| 75 x 63 x 63 | 16 | 100 | 24 | 175 | 33 114 311 |
| 90 x 75 x 40 | 16 | 100 | 30 | 160 | 33 114 436 |
| 90 x 75 x 50 | 16 | 105 | 30 | 185 | 33 114 437 |
| 90 x 75 x 63 | 16 | 112 | 30 | 225 | 33 114 438 |
| 90 x 75 x 75 | 16 | 118 | 30 | 255 | 33 114 312 |
| 110 x 90 x 50 | 16 | 119 | 37 | 260 | 33 114 442 |
| 110 x 90 x 63 | 16 | 126 | 37 | 300 | 33 114 443 |
| 110 x 90 x 75 | 16 | 132 | 37 | 345 | 33 114 444 |
| 110 x 90 x 90 | 16 | 139 | 37 | 400 | 33 114 313 |
| 160 x 110 | 16 | 186 | - | 1270 | 33 114 474 |

Elbows 45° Plain

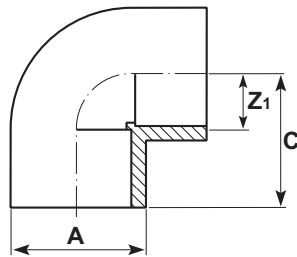
HIV



| Size | PN | A | C | Z ₁ | gms | Code |
|------|----|-----|-----|----------------|-------|------------|
| 16 | 16 | 21 | 20 | 5 | 6 | 33 119 305 |
| 20 | 16 | 28 | 22 | 6 | 20 | 33 119 306 |
| 25 | 16 | 33 | 25 | 6 | 26 | 33 119 307 |
| 32 | 16 | 41 | 30 | 8 | 45 | 33 119 308 |
| 40 | 16 | 50 | 37 | 11 | 70 | 33 119 309 |
| 50 | 16 | 61 | 42 | 12 | 120 | 33 119 310 |
| 63 | 16 | 76 | 52 | 14 | 200 | 33 119 311 |
| 75 | 16 | 90 | 61 | 17 | 320 | 33 119 312 |
| 90 | 16 | 107 | 72 | 22 | 550 | 33 119 313 |
| 110 | 16 | 130 | 87 | 26 | 915 | 33 119 314 |
| 125 | 16 | 147 | 100 | 31 | 1315 | 33 119 315 |
| 140 | 16 | 163 | 110 | 34 | 1660 | 33 119 316 |
| 160 | 16 | 192 | 124 | 38 | 3060 | 33 119 317 |
| 200 | 10 | 230 | 156 | 48 | 4500 | 33 119 318 |
| 225 | 10 | 260 | 176 | 55 | 6400 | 33 119 319 |
| 250 | 10 | 286 | 189 | 58 | 7700 | 33 119 320 |
| 280 | 10 | 320 | 208 | 62 | 10460 | 33 119 321 |
| 315 | 10 | 359 | 230 | 66 | 15500 | 33 119 323 |

Elbows 90° Plain

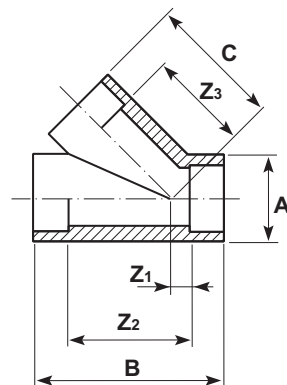
GIV



| Size | PN | A | C | Z ₁ | gms | Code |
|------|----|-----|-----|----------------|-------|------------|
| 16 | 16 | 22 | 23 | 9 | 11 | 33 115 305 |
| 20 | 16 | 26 | 28 | 12 | 15 | 33 115 306 |
| 25 | 16 | 32 | 34 | 15 | 30 | 33 115 307 |
| 32 | 16 | 40 | 41 | 19 | 50 | 33 115 308 |
| 40 | 16 | 50 | 48 | 22 | 90 | 33 115 309 |
| 50 | 16 | 61 | 59 | 28 | 160 | 33 115 310 |
| 63 | 16 | 76 | 72 | 34 | 290 | 33 115 311 |
| 75 | 16 | 91 | 85 | 41 | 450 | 33 115 312 |
| 90 | 16 | 108 | 99 | 48 | 680 | 33 115 313 |
| 110 | 16 | 130 | 122 | 61 | 1180 | 33 115 314 |
| 125 | 16 | 148 | 133 | 64 | 1650 | 33 115 315 |
| 140 | 16 | 163 | 153 | 77 | 2080 | 33 115 316 |
| 160 | 16 | 193 | 175 | 89 | 2980 | 33 115 317 |
| 200 | 16 | 229 | 206 | 100 | 5360 | 33 115 318 |
| 225 | 16 | 258 | 291 | 172 | 8700 | 33 115 319 |
| 250 | 10 | 287 | 319 | 188 | 12480 | 33 115 320 |
| 280 | 10 | 325 | 357 | 210 | 17000 | 33 115 321 |
| 315 | 10 | 359 | 400 | 236 | 23370 | 33 115 323 |

Tees 45° Plain

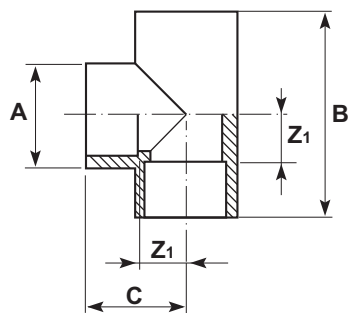
TEE



| Size | PN | A | B | C | Z ₁ | Z ₂ | Z ₃ | gms | Code |
|------|----|----|-----|-----|----------------|----------------|----------------|-----|------------|
| 20 | 16 | 28 | 68 | 45 | 7 | 36 | 29 | 40 | 33 418 306 |
| 25 | 16 | 34 | 81 | 55 | 7 | 43 | 36 | 60 | 33 418 307 |
| 32 | 16 | 41 | 97 | 66 | 9 | 53 | 44 | 105 | 33 418 308 |
| 40 | 16 | 50 | 117 | 80 | 11 | 65 | 54 | 175 | 33 418 309 |
| 50 | 16 | 60 | 139 | 96 | 12 | 77 | 65 | 255 | 33 418 310 |
| 63 | 16 | 73 | 170 | 118 | 14 | 94 | 80 | 420 | 33 418 311 |

Tees 90° Equal

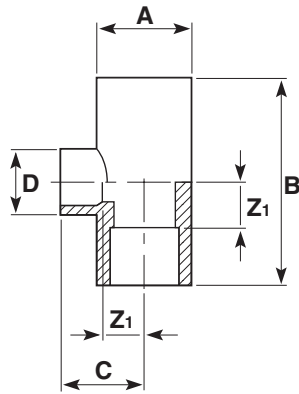
TIV



| Size | PN | A | B | C | Z ₁ | gms | Code |
|------|----|-----|-----|-----|----------------|-------|------------|
| 16 | 16 | 22 | 46 | 23 | 9 | 15 | 33 122 305 |
| 20 | 16 | 27 | 54 | 27 | 11 | 25 | 33 122 306 |
| 25 | 16 | 33 | 66 | 33 | 14 | 40 | 33 122 307 |
| 32 | 16 | 40 | 80 | 40 | 18 | 65 | 33 122 308 |
| 40 | 16 | 50 | 96 | 48 | 22 | 114 | 33 122 309 |
| 50 | 16 | 61 | 116 | 58 | 27 | 185 | 33 122 310 |
| 63 | 16 | 76 | 144 | 72 | 34 | 380 | 33 122 311 |
| 75 | 16 | 91 | 169 | 85 | 41 | 605 | 33 122 312 |
| 90 | 16 | 109 | 199 | 100 | 49 | 985 | 33 122 313 |
| 110 | 16 | 133 | 244 | 122 | 61 | 1760 | 33 122 314 |
| 125 | 16 | 151 | 266 | 133 | 64 | 2430 | 33 122 315 |
| 140 | 16 | 174 | 306 | 153 | 77 | 4150 | 33 122 316 |
| 160 | 16 | 193 | 348 | 174 | 88 | 5250 | 33 122 317 |
| 200 | 16 | 228 | 414 | 207 | 101 | 6810 | 33 122 318 |
| 225 | 16 | 258 | 466 | 233 | 114 | 12680 | 33 122 319 |
| 250 | 10 | 286 | 518 | 259 | 128 | 13250 | 33 122 320 |
| 280 | 10 | 319 | 580 | 290 | 144 | 17840 | 33 122 321 |
| 315 | 10 | 360 | 652 | 326 | 162 | 25300 | 33 122 323 |

Tees 90° Reducing plain

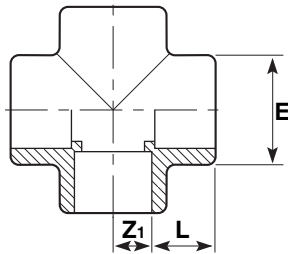
TRIV



| Size | PN | A | B | C | D | Z ₁ | gms | Code |
|--------------|----|----|-----|----|----|----------------|-----|------------|
| 25 x 25 x 20 | 16 | 33 | 66 | 30 | 28 | 14 | 37 | 33 124 415 |
| 32 x 32 x 20 | 16 | 41 | 79 | 34 | 28 | 18 | 60 | 33 124 418 |
| 32 x 32 x 25 | 16 | 41 | 79 | 37 | 34 | 18 | 65 | 33 124 419 |
| 40 x 40 x 20 | 16 | 50 | 96 | 38 | 29 | 22 | 100 | 33 124 421 |
| 40 x 40 x 25 | 16 | 50 | 96 | 41 | 34 | 22 | 100 | 33 124 422 |
| 40 x 40 x 32 | 16 | 50 | 96 | 44 | 42 | 22 | 105 | 33 124 423 |
| 50 x 50 x 20 | 16 | 61 | 116 | 43 | 30 | 27 | 160 | 33 124 424 |
| 50 x 50 x 25 | 16 | 61 | 116 | 46 | 35 | 27 | 160 | 33 124 425 |
| 50 x 50 x 32 | 16 | 61 | 116 | 49 | 42 | 27 | 165 | 33 124 426 |
| 50 x 50 x 40 | 16 | 61 | 116 | 53 | 51 | 27 | 170 | 33 124 427 |
| 63 x 63 x 25 | 16 | 76 | 143 | 53 | 36 | 34 | 290 | 33 124 429 |
| 63 x 63 x 32 | 16 | 76 | 143 | 56 | 43 | 34 | 295 | 33 124 430 |
| 63 x 63 x 40 | 16 | 76 | 143 | 60 | 52 | 34 | 300 | 33 124 431 |
| 63 x 63 x 50 | 16 | 76 | 143 | 65 | 62 | 34 | 315 | 33 124 432 |

Cross

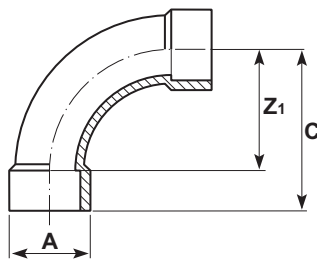
XIV



| Size | PN | E | L | Z ₁ | gms | Code |
|------|----|----|----|----------------|-----|------------|
| 25 | 16 | 35 | 19 | 14 | 60 | 33 108 307 |
| 32 | 16 | 43 | 22 | 18 | 105 | 33 108 308 |
| 40 | 16 | 52 | 26 | 23 | 75 | 33 108 309 |
| 50 | 16 | 64 | 31 | 27 | 265 | 33 108 310 |
| 63 | 16 | 79 | 38 | 34 | 505 | 33 108 311 |

Bends 90°

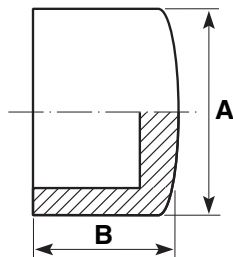
SIV



| Size | PN | A | C | Z ₁ | gms | Code |
|------|----|-----|-----|----------------|------|------------|
| 20 | 16 | 27 | 57 | 41 | 35 | 33 118 306 |
| 25 | 16 | 33 | 69 | 50 | 55 | 33 118 307 |
| 32 | 16 | 41 | 88 | 66 | 100 | 33 118 308 |
| 40 | 16 | 50 | 107 | 81 | 175 | 33 118 309 |
| 50 | 16 | 61 | 132 | 101 | 280 | 33 118 310 |
| 63 | 16 | 76 | 165 | 127 | 515 | 33 118 311 |
| 75 | 16 | 94 | 194 | 150 | 1100 | 33 118 312 |
| 90 | 16 | 112 | 229 | 178 | 1750 | 33 118 313 |
| 110 | 16 | 136 | 281 | 147 | 2280 | 33 118 314 |
| 160 | 10 | 189 | 293 | 207 | 5020 | 33 118 317 |

End caps Plain

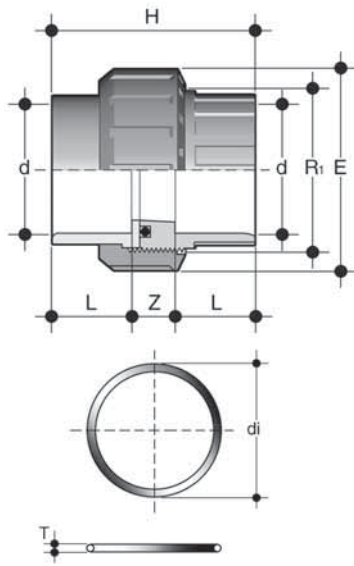
CIV



| Size | PN | A | B | gms | Code |
|------|----|-----|-----|------|------------|
| 16 | 16 | 21 | 17 | 4 | 33 140 305 |
| 20 | 16 | 28 | 23 | 9 | 33 140 306 |
| 25 | 16 | 34 | 27 | 15 | 33 140 307 |
| 32 | 16 | 41 | 31 | 25 | 33 140 308 |
| 40 | 16 | 51 | 36 | 40 | 33 140 309 |
| 50 | 16 | 62 | 43 | 60 | 33 140 310 |
| 63 | 16 | 77 | 51 | 110 | 33 140 311 |
| 75 | 16 | 91 | 59 | 190 | 33 140 312 |
| 90 | 16 | 110 | 69 | 330 | 33 140 313 |
| 110 | 16 | 133 | 85 | 575 | 33 140 314 |
| 160 | 16 | 192 | 128 | 1900 | 33 140 317 |
| 225 | 10 | 260 | 163 | 3000 | 33 140 319 |

Socket unions Plain

BIV



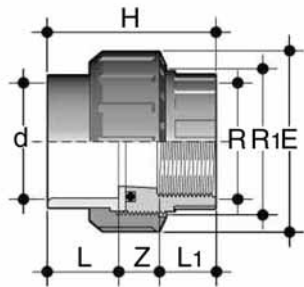
| Size | R ₁ | PN | H | L | Z | E | gms | Code |
|------|----------------|----|-----|----|----|-----|------|------------|
| 16 | 3/8 | 16 | 41 | 14 | 13 | 33 | 20 | 33 205 305 |
| 20 | 1 | 16 | 45 | 16 | 13 | 41 | 35 | 33 205 306 |
| 25 | 1 1/4 | 16 | 51 | 19 | 13 | 50 | 60 | 33 205 307 |
| 32 | 1 1/2 | 16 | 57 | 22 | 13 | 58 | 85 | 33 205 308 |
| 40 | 2 | 16 | 67 | 26 | 15 | 72 | 150 | 33 205 309 |
| 50 | 2 1/4 | 16 | 79 | 31 | 17 | 79 | 175 | 33 205 310 |
| 63 | 2 3/4 | 16 | 98 | 38 | 22 | 98 | 320 | 33 205 311 |
| 75 | 3 1/2 | 10 | 116 | 44 | 21 | 120 | 590 | 33 205 312 |
| 90 | 4 | 10 | 125 | 51 | 23 | 135 | 770 | 33 205 313 |
| 110 | 5 | 10 | 145 | 61 | 23 | 163 | 1300 | 33 205 314 |

EPDM seal as standard.
For FPM seal order by type 204.

| C | O-Ring dia | T |
|------|------------|------|
| 3062 | 15.54 | 2.62 |
| 4081 | 20.22 | 3.53 |
| 4112 | 28.17 | 3.53 |
| 4131 | 32.93 | 3.53 |
| 6162 | 40.65 | 5.34 |
| 6187 | 47.00 | 5.34 |
| 6237 | 59.69 | 5.34 |
| 6300 | 75.57 | 5.34 |
| 6362 | 91.45 | 5.34 |
| 6450 | 113.67 | 5.34 |

Socket unions Plain socket/female BSP thread

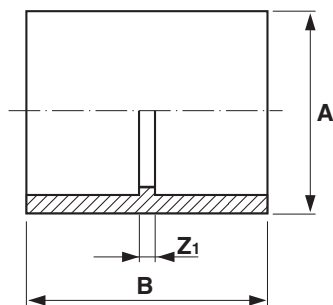
BIFV



| d x R | PN | R ₁ | L | L ₁ | H | Z | E | gms | Code |
|------------|----|----------------|----|----------------|-----|----|-----|------|------------|
| 16 x 3/8 | 16 | 3/4 | 14 | 11 | 41 | 16 | 33 | 22 | 33 202 305 |
| 20 x 1/2 | 16 | 1 | 16 | 15 | 45 | 14 | 41 | 35 | 33 202 306 |
| 25 x 3/4 | 16 | 1 1/4 | 19 | 16 | 51 | 16 | 50 | 62 | 33 202 307 |
| 32 x 1 | 16 | 1 1/2 | 22 | 19 | 57 | 16 | 58 | 85 | 33 202 308 |
| 40 x 1 1/4 | 16 | 2 | 26 | 21 | 67 | 20 | 72 | 45 | 33 202 309 |
| 50 x 1 1/2 | 16 | 2 1/4 | 31 | 21 | 72 | 20 | 79 | 180 | 33 202 310 |
| 63 x 2 | 16 | 2 3/4 | 38 | 26 | 88 | 24 | 98 | 315 | 33 202 311 |
| 75 x 2 1/2 | 10 | 3 1/2 | 44 | 30 | 108 | 34 | 123 | 643 | 33 202 312 |
| 90 x 3 | 10 | 4 | 51 | 33 | 124 | 40 | 140 | 859 | 33 202 313 |
| 110 x 4 | 10 | 5 | 61 | 39 | 138 | 38 | 165 | 1240 | 33 202 314 |

Imperial/metric socket adaptors

MILV

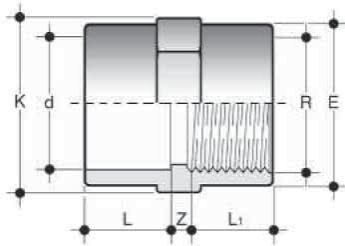


| Size | PN | A | B | Z ₁ | gms | Code |
|-------------|----|-----|-----|----------------|------|------------|
| *1/2 x 20 | 15 | 27 | 35 | 3 | 12 | 33 345 102 |
| *3/4 x 25 | 15 | 33 | 41 | 3 | 22 | 33 345 103 |
| *1 x 32 | 15 | 41 | 47 | 3 | 44 | 33 345 104 |
| *1 1/4 x 40 | 15 | 50 | 55 | 2 | 65 | 33 345 105 |
| *1 1/2 x 50 | 15 | 61 | 65 | 4 | 125 | 33 345 106 |
| *2 x 63 | 15 | 76 | 79 | 5 | 210 | 33 345 107 |
| *3 x 90 | 15 | 108 | 107 | 6 | 438 | 33 345 109 |
| *4 x 110 | 15 | 131 | 128 | 4 | 852 | 33 345 110 |
| *6 x 160 | 15 | 198 | 185 | 7 | 1700 | 33 345 112 |

*Sizes shown in inch n.b. designation.

Sockets Plain/female BSP thread

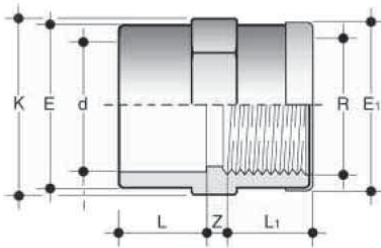
MIFV



| d x R | PN | L | L ₁ | Z | E | K | gms | Code |
|------------|----|----|----------------|----|-----|-----|-----|------------|
| 16 x 3/4 | 16 | 14 | 11 | 6 | 24 | 24 | 12 | 33 101 101 |
| 20 x 1/2 | 16 | 16 | 15 | 4 | 29 | 29 | 20 | 33 101 102 |
| 25 x 3/4 | 16 | 19 | 16 | 5 | 35 | 35 | 30 | 33 101 103 |
| 32 x 1 | 16 | 22 | 19 | 6 | 43 | 43 | 48 | 33 101 104 |
| 40 x 1 1/4 | 16 | 26 | 21 | 5 | 50 | 50 | 56 | 33 101 105 |
| 50 x 1 1/2 | 16 | 31 | 21 | 8 | 61 | 61 | 102 | 33 101 106 |
| 63 x 2 | 16 | 38 | 26 | 8 | 76 | 76 | 181 | 33 101 107 |
| 75 x 2 1/2 | 16 | 44 | 30 | 5 | 88 | 95 | 300 | 33 101 108 |
| 90 x 3 | 16 | 51 | 33 | 16 | 110 | 110 | 470 | 33 101 109 |
| 110 x 4 | 16 | 61 | 39 | 11 | 131 | 131 | 550 | 33 101 110 |

Sockets Plain/female BSP thread with metal reinforcing ring

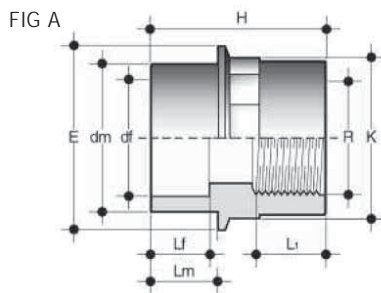
MIMV



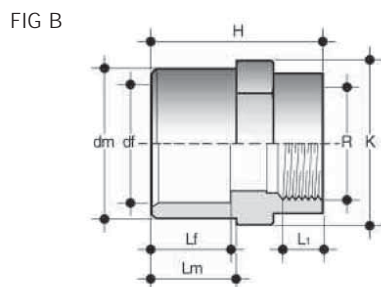
| d x R | PN | L | L ₁ | Z | E | E ₁ | K | gms | Code |
|------------|----|----|----------------|---|----|----------------|----|-----|------------|
| 16 x 3/8 | 16 | 14 | 11 | 6 | 24 | 24 | 24 | 14 | 33 103 101 |
| 20 x 1/2 | 16 | 16 | 15 | 4 | 29 | 29 | 29 | 23 | 33 103 102 |
| 25 x 3/4 | 16 | 19 | 16 | 5 | 35 | 35 | 35 | 34 | 33 103 103 |
| 32 x 1 | 16 | 22 | 19 | 6 | 43 | 43 | 43 | 53 | 33 103 104 |
| 40 x 1 1/4 | 16 | 26 | 21 | 5 | 50 | 50 | 50 | 62 | 33 103 105 |
| 50 x 1 1/2 | 16 | 31 | 21 | 8 | 61 | 61 | 61 | 110 | 33 103 106 |
| 63 x 2 | 16 | 38 | 26 | 8 | 76 | 76 | 76 | 190 | 33 103 107 |

Reducers Plain spigot/female BSP thread

DIFV

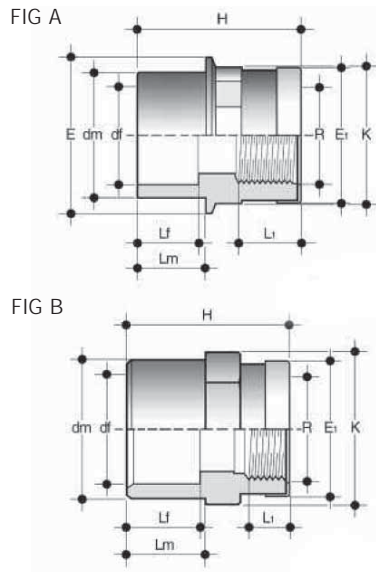


| dm x df | PN | H | Lm | Lf | L ₁ | E | K | Fig | gms | Code |
|-----------------|----|-----|----|----|----------------|----|-----|-----|-----|------------|
| 20 x 16 x 3/8 | 16 | 36 | 16 | 14 | 11 | 28 | 24 | A | 11 | 33 169 101 |
| 25 x 20 x 1/2 | 16 | 42 | 19 | 16 | 15 | 34 | 29 | A | 17 | 33 169 102 |
| 32 x 25 x 3/4 | 16 | 49 | 22 | 19 | 16 | 40 | 35 | A | 26 | 33 169 103 |
| 40 x 32 x 1 | 16 | 57 | 26 | 22 | 19 | 52 | 44 | A | 49 | 33 169 104 |
| 50 x 40 x 1 1/4 | 16 | 67 | 31 | 26 | 21 | 59 | 54 | A | 66 | 33 169 105 |
| 63 x 50 x 1 1/2 | 16 | 77 | 38 | 31 | 21 | 70 | 64 | A | 129 | 33 169 106 |
| 90 x 75 x 2 1/2 | 16 | 84 | 51 | 44 | 30 | - | 95 | B | 300 | 33 169 107 |
| 110 x 90 x 3 | 16 | 100 | 61 | 51 | 33 | - | 110 | B | 450 | 33 169 108 |



Reducers Plain spigot/female BSP thread with metal reinforcing ring

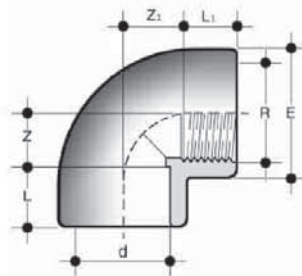
DIMV



| dm x R | PN | H | Lm | Lf | L ₁ | E | K | Fig | gms | Code |
|------------|----|----|----|----|----------------|----|-----|-----|-----|------------|
| 20 x 3/8 | 16 | 37 | 16 | 14 | 11 | 28 | 24 | A | 11 | 33 170 101 |
| 20 x 1/2 | 16 | 40 | 16 | 14 | 15 | 34 | 29 | A | 17 | 33 170 333 |
| 25 x 1/2 | 16 | 43 | 19 | 16 | 15 | 40 | 35 | A | 26 | 33 170 102 |
| 25 x 3/4 | 16 | 46 | 19 | 16 | 16 | 52 | 44 | A | 49 | 33 170 335 |
| 32 x 3/4 | 16 | 50 | 22 | 19 | 16 | 59 | 54 | A | 66 | 33 170 103 |
| 32 x 1 | 16 | 52 | 22 | 19 | 19 | 70 | 64 | A | 129 | 33 170 337 |
| 40 x 1 | 16 | 58 | 26 | 22 | 19 | 70 | 64 | A | 129 | 33 170 104 |
| 40 x 1 1/4 | 16 | 63 | 26 | 22 | 21 | - | 95 | B | 300 | 33 170 339 |
| 50 x 1 1/4 | 16 | 68 | 31 | 26 | 21 | - | 95 | B | 300 | 33 170 105 |
| 50 x 1 1/2 | 16 | 73 | 31 | 26 | 21 | - | 95 | B | 300 | 33 170 341 |
| 63 x 1 1/2 | 16 | 78 | 38 | 31 | 21 | - | 95 | B | 300 | 33 170 106 |
| 63 x 2 | 16 | 87 | 38 | 31 | 26 | 70 | 64 | A | 129 | 33 170 343 |
| 75 x 2 | 16 | 77 | 44 | 38 | 26 | - | 110 | B | 450 | 33 170 345 |

Elbows 90° Plain socket/female BSP thread

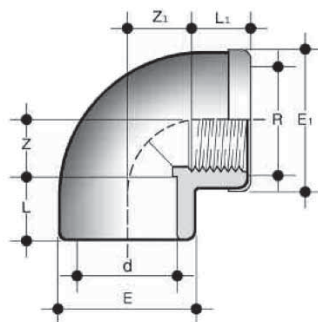
GIFV



| d x R | PN | L | L ₁ | Z | Z ₁ | E | gms | Code |
|------------|----|----|----------------|----|----------------|-----|------|------------|
| 16 x 3/8 | 16 | 14 | 11 | 10 | 13 | 24 | 16 | 33 116 101 |
| 20 x 1/2 | 16 | 16 | 15 | 12 | 13 | 29 | 24 | 33 116 102 |
| 25 x 3/4 | 16 | 19 | 16 | 14 | 17 | 35 | 40 | 33 116 103 |
| 33 x 1 | 16 | 22 | 19 | 18 | 21 | 43 | 72 | 33 116 104 |
| 40 x 1 1/4 | 16 | 26 | 21 | 23 | 27 | 54 | 125 | 33 116 105 |
| 50 x 1 1/2 | 16 | 31 | 21 | 27 | 37 | 61 | 175 | 33 116 106 |
| 63 x 2 | 16 | 38 | 26 | 33 | 46 | 76 | 320 | 33 116 107 |
| 75 x 2 1/2 | 16 | 44 | 30 | 41 | 55 | 91 | 465 | 33 116 108 |
| 90 x 3 | 16 | 51 | 33 | 48 | 66 | 108 | 795 | 33 116 109 |
| 110 x 4 | 16 | 61 | 39 | 60 | 80 | 131 | 1130 | 33 116 110 |

Elbows 90° Plain socket/female BSP thread with metal reinforcing ring

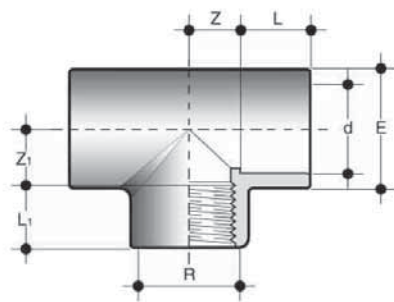
GIMV



| d x R | PN | L | L ₁ | Z | Z ₁ | E | E ₁ | gms | Code |
|------------|----|----|----------------|----|----------------|----|----------------|-----|------------|
| 16 x 3/8 | 16 | 14 | 11 | 10 | 13 | 24 | 25 | 16 | 33 178 101 |
| 20 x 1/2 | 16 | 16 | 15 | 12 | 13 | 29 | 30 | 24 | 33 178 102 |
| 25 x 3/4 | 16 | 19 | 16 | 14 | 17 | 35 | 36 | 40 | 33 178 103 |
| 32 x 1 | 16 | 22 | 19 | 18 | 21 | 43 | 44 | 72 | 33 178 104 |
| 40 x 1 1/4 | 16 | 26 | 21 | 23 | 27 | 5 | 55 | 125 | 33 178 105 |
| 50 x 1 1/2 | 16 | 31 | 21 | 27 | 37 | 61 | 62 | 175 | 33 178 106 |
| 63 x 2 | 16 | 38 | 26 | 33 | 46 | 76 | 77 | 320 | 33 178 107 |

Tees 90° Plain socket/female BSP threaded branch

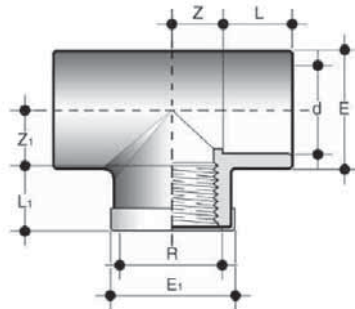
TIFV



| d x R | PN | L | L ₁ | Z | Z ₁ | E | gms | Code |
|------------|----|----|----------------|----|----------------|-----|------|------------|
| 16 x 3/8 | 16 | 14 | 11 | 9 | 11 | 24 | 20 | 33 146 602 |
| 20 x 1/2 | 16 | 16 | 15 | 12 | 13 | 29 | 32 | 33 146 605 |
| 25 x 3/4 | 16 | 19 | 16 | 15 | 17 | 35 | 52 | 33 146 608 |
| 32 x 1/2 | 16 | 22 | 15 | 18 | 18 | 41 | 92 | 33 146 610 |
| 32 x 1 | 16 | 22 | 19 | 18 | 21 | 43 | 71 | 33 146 612 |
| 40 x 1 1/4 | 16 | 26 | 21 | 22 | 27 | 50 | 110 | 33 146 616 |
| 50 x 1/2 | 16 | 31 | 15 | 27 | 28 | 61 | 160 | 33 146 618 |
| 50 x 1 1/2 | 16 | 31 | 21 | 27 | 37 | 61 | 195 | 33 146 622 |
| 63 x 1/2 | 16 | 38 | 15 | 34 | 38 | 76 | 305 | 33 146 624 |
| 63 x 2 | 16 | 38 | 26 | 34 | 46 | 76 | 405 | 33 146 629 |
| 75 x 2 1/2 | 16 | 44 | 30 | 41 | 55 | 91 | 605 | 33 146 636 |
| 90 x 3 | 16 | 51 | 33 | 49 | 66 | 109 | 1070 | 33 146 644 |
| 110 x 4 | 16 | 61 | 39 | 62 | 83 | 133 | 1690 | 33 146 652 |

Tees 90° equal Plain sockets/female BSP threaded with metal reinforcing ring

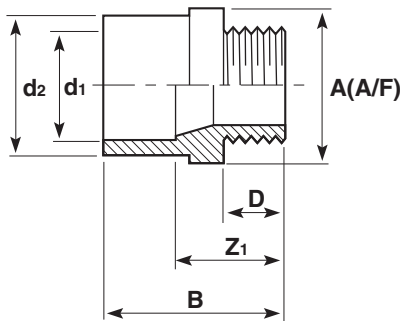
TIMV



| d x R | PN | L | L ₁ | Z | Z ₁ | E | E ₁ | gms | Code |
|------------|----|----|----------------|----|----------------|----|----------------|-----|------------|
| 16 x 3/8 | 16 | 14 | 11 | 9 | 11 | 24 | 25 | 24 | 33 123 101 |
| 20 x 1/2 | 16 | 16 | 15 | 12 | 13 | 29 | 29 | 38 | 33 123 605 |
| 25 x 3/4 | 16 | 19 | 16 | 15 | 17 | 35 | 36 | 60 | 33 123 608 |
| 32 x 1 | 16 | 22 | 19 | 18 | 21 | 43 | 44 | 105 | 33 123 612 |
| 40 x 1 1/4 | 16 | 26 | 21 | 22 | 27 | 50 | 51 | 125 | 33 123 616 |
| 50 x 1 1/2 | 16 | 31 | 21 | 27 | 37 | 61 | 62 | 210 | 33 123 622 |
| 63 x 2 | 16 | 38 | 26 | 34 | 46 | 76 | 77 | 415 | 33 123 629 |

Male threaded adaptors BSP male thread

KIFV

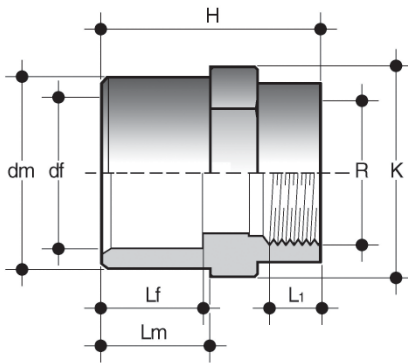


| Size d ₂ x d ₁ x T* | PN | A | B | D | Z ₁ | Weight gms | Code |
|----------------------------------------------|----|-----|--------|----|----------------|---------------|------------|
| 16 x 12 x 3/8 | 16 | 18 | 33 1/2 | 11 | 21 | 4 | 33 151 331 |
| 20 x 16 x 3/8 | 16 | 22 | 34 | 11 | 20 | 6 | 33 151 332 |
| 20 x 16 x 1/2 | 16 | 22 | 38 | 15 | 24 | 10 | 33 151 333 |
| 25 x 20 x 1/2 | 16 | 28 | 41 | 15 | 25 | 12 | 33 151 334 |
| 25 x 20 x 3/4 | 16 | 30 | 48 | 16 | 31 | 19 | 33 151 335 |
| 32 x 25 x 1/2 | 16 | 34 | 45 | 15 | 26 | 15 | 33 151 352 |
| 32 x 25 x 3/4 | 16 | 36 | 52 | 16 | 33 | 30 | 33 151 336 |
| 32 x 25 x 1 | 16 | 36 | 55 | 19 | 36 | 32 | 33 151 337 |
| 40 x 32 x 3/4 | 16 | 42 | 50 | 15 | 28 | 28 | 33 151 353 |
| 40 x 32 x 1 | 16 | 42 | 53 | 19 | 31 | 34 | 33 151 338 |
| 40 x 32 x 1 1/4 | 16 | 46 | 60 | 21 | 37 | 50 | 33 151 339 |
| 50 x 40 x 1 | 16 | 52 | 58 | 19 | 32 | 50 | 33 151 354 |
| 50 x 40 x 1 1/4 | 16 | 52 | 61 | 21 | 35 | 60 | 33 151 340 |
| 50 x 40 x 1 1/2 | 16 | 52 | 61 | 21 | 35 | 70 | 33 151 341 |
| 63 x 50 x 1 1/4 | 16 | 65 | 68 | 21 | 37 | 95 | 33 151 355 |
| 63 x 50 x 1 1/2 | 16 | 65 | 66 | 21 | 35 | 105 | 33 151 342 |
| 63 x 50 x 2 | 16 | 65 | 71 | 26 | 40 | 150 | 33 151 343 |
| 63 x 75 x 1 1/2 | 16 | 75 | 76 | 21 | 38 | 125 | 33 151 356 |
| 75 x 63 x 2 | 16 | 75 | 79 | 26 | 41 | 145 | 33 151 345 |
| 90 x 75 x 2 | 16 | 95 | 93 | 26 | 49 | 275 | 33 151 346 |
| 90 x 75 x 2 1/2 | 16 | 95 | 98 | 30 | 54 | 280 | 33 151 347 |
| 90 x 75 x 3 | 16 | 95 | 100 | 34 | 56 | 300 | 33 151 357 |
| 110 x 90 x 3 | 16 | 110 | 113 | 34 | 62 | 390 | 33 151 348 |
| 90 x 110 x 4 | 16 | 128 | 128 | 39 | 77 | 420 | 33 151 358 |
| 125 x 110 x 4 | 16 | 128 | 126 | 39 | 65 | 500 | 33 151 349 |

*Thread size designation.

Female threaded adaptors BSP female thread reinforced

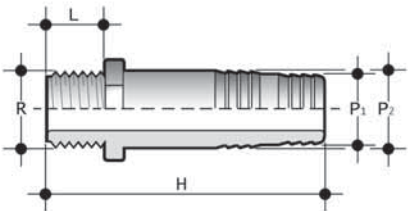
DIMV



| Size d2 x d1 x Tx | PN | H | L _m | L _f | L ₁ | K | gms | Code |
|----------------------|----|-----|----------------|----------------|----------------|-----|-----|------------|
| 20 x 16 x 1/2 | 16 | 39 | 16 | 14 | 15 | 30 | 18 | 33 153 333 |
| 25 x 20 x 3/4 | 16 | 45 | 16 | 16 | 16.3 | 36 | 28 | 33 153 335 |
| 32 x 25 x 1 | 16 | 51 | 22 | 19 | 19.1 | 46 | 49 | 33 153 337 |
| 40 x 32 x 1 1/4 | 16 | 62 | 26 | 22 | 21.4 | 54 | 74 | 33 153 339 |
| 50 x 40 x 1 1/2 | 16 | 77 | 31 | 26 | 21.4 | 65 | 127 | 33 153 341 |
| 63 x 50 x 2 | 16 | 86 | 38 | 31 | 25.7 | 80 | 190 | 33 153 343 |
| 75 x 63 x 2 1/2 | 16 | 99 | 44 | 38 | 30.2 | 95 | 280 | 33 153 108 |
| 90 x 75 x 3 | 16 | 114 | 51 | 44 | 33.3 | 110 | 470 | 33 153 109 |
| 110 x 90 x 4 | 16 | 134 | 61 | 51 | 39.3 | 130 | 670 | 33 153 110 |

Hose adaptors BSP male thread

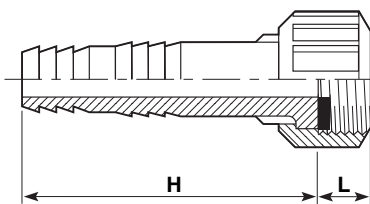
AFV



| Size R x P ₁ x P ₂ | PN | L | H | gms | Code |
|---------------------------------------------|----|----|-----|-----|------------|
| 1/4 x 12 x 14 | 16 | 11 | 56 | 7 | 02 157 600 |
| 3/8 x 16 x 18 | 16 | 11 | 58 | 14 | 02 157 602 |
| 1/2 x 20 x 22 | 16 | 15 | 66 | 19 | 02 157 605 |
| 3/4 x 25 x 27 | 16 | 16 | 81 | 30 | 02 157 608 |
| 1 x 30 x 32 | 16 | 19 | 97 | 45 | 02 157 612 |
| 1 1/4 x 40 x 42 | 16 | 21 | 104 | 85 | 02 157 616 |
| 1 1/2 x 50 x 52 | 16 | 21 | 111 | 120 | 02 157 623 |
| 2 x 60 x 64 | 16 | 26 | 123 | 180 | 02 157 630 |

Hose adaptors BSP female thread – loose nut with EPDM gasket

ADV

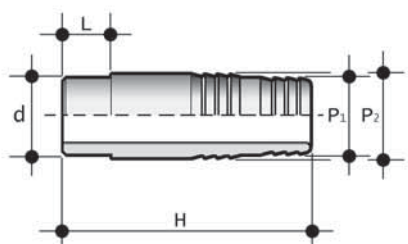


| Size | PN | L | H | gms | Code |
|------------------|----|----|-----|-----|------------|
| *1/2 x 12 x 14 | 16 | 14 | 56 | 15 | 02 156 601 |
| *3/4 x 16 x 18 | 16 | 12 | 60 | 24 | 02 156 603 |
| *1 x 20 x 22 | 16 | 11 | 67 | 35 | 02 156 606 |
| *1 1/4 x 25 x 27 | 16 | 14 | 81 | 55 | 02 156 609 |
| *1 1/2 x 30 x 32 | 16 | 16 | 97 | 80 | 02 156 613 |
| *2 x 40 x 42 | 16 | 18 | 104 | 140 | 02 156 616 |
| *2 1/4 x 50 x 52 | 16 | 18 | 111 | 200 | 02 156 623 |
| *2 1/2 x 60 x 64 | 16 | 19 | 123 | 290 | 02 156 312 |
| *2 3/4 x 60 x 64 | 16 | 20 | 123 | 300 | 02 156 630 |

*Thread size designation.

Hose adaptors Spigot end

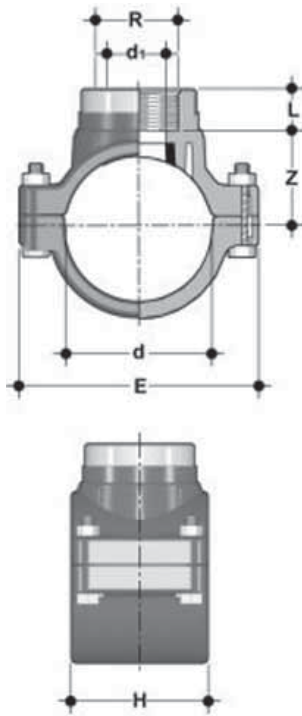
AIV



| Size d x P ₂ x P ₁ | PN | L | H | gms | Code |
|---------------------------------------------|----|----|-----|-----|------------|
| 12 x 14 x 12 | 16 | 12 | 56 | 6 | 33 158 304 |
| 16 x 18 x 16 | 16 | 14 | 60 | 12 | 33 158 305 |
| 20 x 22 x 20 | 16 | 16 | 67 | 17 | 33 158 306 |
| 25 x 27 x 25 | 16 | 19 | 81 | 26 | 33 158 307 |
| 32 x 32 x 30 | 16 | 22 | 97 | 40 | 33 158 308 |
| 40 x 42 x 40 | 16 | 26 | 104 | 78 | 33 158 309 |
| 50 x 52 x 50 | 16 | 31 | 111 | 113 | 33 158 310 |
| 63 x 64 x 60 | 16 | 38 | 123 | 170 | 33 158 311 |

Saddle clamps BSP female threaded branch with metal reinforcing ring

UIFV

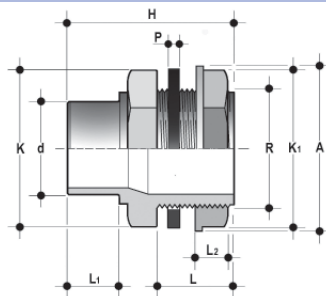


| d (mm) x R (inch) | PN | d ₁ | L | E | H | Z | Weight gms | Code |
|----------------------|----|----------------|----|-----|-----|-----|---------------|------------|
| 32 x 1/2 | 16 | 18 | 18 | 82 | 68 | 28 | 228 | 33 436 201 |
| 32 x 3/4 | 16 | 22 | 19 | 82 | 68 | 28 | 242 | 33 436 202 |
| 40 x 3/4 | 16 | 22 | 19 | 94 | 78 | 33 | 339 | 33 436 204 |
| 40 x 1 | 16 | 25 | 22 | 94 | 78 | 33 | 348 | 33 436 205 |
| 50 x 1/2 | 16 | 18 | 18 | 104 | 80 | 38 | 328 | 33 436 206 |
| 50 x 3/4 | 16 | 22 | 19 | 104 | 80 | 38 | 342 | 33 436 207 |
| 50 x 1 | 16 | 28 | 22 | 104 | 80 | 38 | 379 | 33 436 208 |
| 63 x 1/2 | 16 | 18 | 18 | 116 | 105 | 48 | 562 | 33 436 209 |
| 63 x 3/4 | 16 | 22 | 19 | 116 | 105 | 48 | 571 | 33 436 210 |
| 63 x 1 | 16 | 28 | 22 | 116 | 105 | 48 | 582 | 33 436 211 |
| 63 x 1 1/2 | 16 | 30 | 25 | 116 | 105 | 48 | 615 | 33 436 212 |
| 75 x 3/4 | 16 | 22 | 19 | 134 | 105 | 54 | 683 | 33 436 213 |
| 75 x 1 | 16 | 30 | 22 | 134 | 105 | 54 | 692 | 33 436 214 |
| 90 x 3/4 | 16 | 22 | 19 | 152 | 105 | 61 | 764 | 33 436 216 |
| 90 x 1 | 16 | 28 | 22 | 152 | 105 | 61 | 778 | 33 436 217 |
| 90 x 1 1/2 | 16 | 40 | 25 | 152 | 105 | 61 | 805 | 33 436 219 |
| 90 x 2 | 16 | 40 | 30 | 152 | 105 | 61 | 877 | 33 436 220 |
| 110 x 3/4 | 16 | 22 | 19 | 176 | 105 | 72 | 982 | 33 436 221 |
| 110 x 1 | 16 | 28 | 22 | 176 | 105 | 72 | 993 | 33 436 222 |
| 110 x 1 1/2 | 16 | 40 | 25 | 176 | 105 | 72 | 1017 | 33 436 224 |
| 110 x 2 | 16 | 40 | 30 | 176 | 105 | 72 | 1081 | 33 436 225 |
| 125 x 1 | 16 | 25 | 22 | 190 | 112 | 80 | 1260 | 33 436 226 |
| 125 x 1 1/2 | 16 | 40 | 25 | 190 | 112 | 80 | 1319 | 33 436 228 |
| 125 x 2 | 16 | 50 | 30 | 190 | 112 | 80 | 1412 | 33 436 229 |
| 140 x 1 | 16 | 25 | 22 | 214 | 114 | 87 | 1471 | 33 436 230 |
| 140 x 1 1/2 | 16 | 40 | 25 | 214 | 114 | 87 | 1526 | 33 436 232 |
| 140 x 2 | 16 | 50 | 30 | 214 | 114 | 87 | 1607 | 33 436 233 |
| 160 x 1 | 16 | 28 | 22 | 238 | 120 | 98 | 1453 | 33 436 234 |
| 160 x 1 1/2 | 16 | 40 | 25 | 238 | 120 | 98 | 1481 | 33 436 236 |
| 160 x 2 | 16 | 50 | 30 | 238 | 120 | 98 | 1523 | 33 436 237 |
| 200 x 2 | 16 | 52 | 30 | 300 | 133 | 118 | 2119 | 33 436 238 |
| 225 x 1 1/2 | 16 | 40 | 25 | 333 | 125 | 132 | 2610 | 33 436 239 |
| 225 x 2 | 16 | 50 | 30 | 333 | 125 | 132 | 2650 | 33 436 240 |
| 225 x 3 | 16 | 74 | 36 | 333 | 125 | 132 | 2735 | 33 436 241 |

Note: Saddle clamps are fitted with NBR gaskets so are only suitable for water applications. For more information contact our technical support team.

Tank connectors

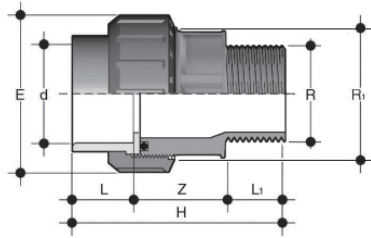
LIFV



| Size | PN | A | H | L | L ₁ | L ₂ | K | K ₁ | P | gms | Code |
|------------|----|----|----|----|----------------|----------------|----|----------------|---|-----|------------|
| 25 x 1 | 16 | 58 | 60 | 26 | 19 | 16 | 46 | 46 | 2 | 58 | 33 235 307 |
| 32 x 1 1/4 | 16 | 62 | 66 | 28 | 22 | 18 | 55 | 50 | 2 | 90 | 33 235 308 |

Male composite unions PVC-U/Brass, BSP taper male thread

BIROV

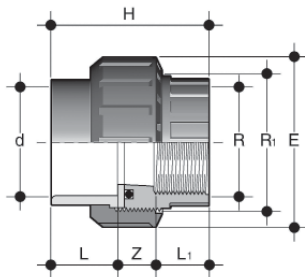


| Size | PN | L ₁ | Z | L | H | K | Code |
|------|----|----------------|------|----|-------|----|------------|
| 16 | 16 | 10.5 | 34 | 14 | 58.5 | 33 | 33 217 305 |
| 20 | 16 | 13.5 | 35.5 | 16 | 65 | 41 | 33 217 306 |
| 25 | 16 | 15 | 38.5 | 19 | 72.5 | 50 | 33 217 307 |
| 32 | 16 | 17.5 | 40.5 | 22 | 80 | 58 | 33 217 308 |
| 40 | 16 | 19.5 | 45.5 | 26 | 91 | 72 | 33 217 309 |
| 50 | 16 | 19.5 | 50.5 | 31 | 101 | 79 | 33 217 310 |
| 63 | 16 | 24 | 60.5 | 38 | 122.5 | 98 | 33 217 311 |

Fitted with brass retaining nut and EPDM rubber seal.
Stainless steel options also available on request.

Female composite unions PVC-U/Brass, BSP parallel female thread

BIFOV

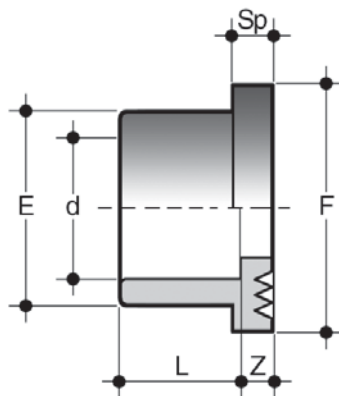


| Size | PN | L ₁ | Z | L | H | K | Code |
|------|----|----------------|------|----|------|----|------------|
| 16 | 16 | 13.5 | 14 | 14 | 42.5 | 20 | 33 216 305 |
| 20 | 16 | 16.5 | 16 | 16 | 48.5 | 25 | 33 216 306 |
| 25 | 16 | 18.5 | 17 | 19 | 54.5 | 32 | 33 216 307 |
| 32 | 16 | 19.5 | 18 | 22 | 59.5 | 38 | 33 216 308 |
| 40 | 16 | 21.5 | 21 | 26 | 68.5 | 48 | 33 216 309 |
| 50 | 16 | 23 | 24.5 | 31 | 84.5 | 55 | 33 216 310 |
| 63 | 16 | 27 | 29.5 | 38 | 94.5 | 69 | 33 216 311 |

Fitted with brass retaining nut and EPDM rubber seal.
Stainless steel options also available on request.

Flanges stub serrated

QRV



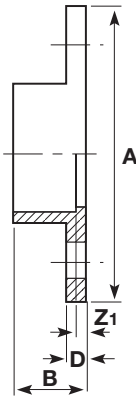
| d | PN | L | Z | Sp | E | F | gms | Code |
|-----|----|-----|------|----|-----|-----|------|------------|
| *20 | 16 | 19 | 3 | 7 | 33 | 41 | 16 | 33 135 306 |
| *25 | 16 | 22 | 3 | 7 | 41 | 50 | 25 | 33 135 307 |
| *32 | 16 | 26 | 3 | 8 | 50 | 61 | 40 | 33 135 308 |
| 40 | 16 | 26 | 3 | 8 | 50 | 61 | 40 | 33 135 309 |
| 50 | 16 | 31 | 3 | 8 | 61 | 73 | 62 | 33 135 310 |
| 63 | 16 | 38 | 3 | 9 | 76 | 90 | 105 | 33 135 311 |
| 75 | 16 | 44 | 3 | 10 | 90 | 105 | 160 | 33 135 312 |
| 90 | 16 | 51 | 5 | 10 | 108 | 125 | 275 | 33 135 313 |
| 110 | 16 | 61 | 4 | 12 | 131 | 150 | 445 | 33 135 314 |
| 125 | 16 | 69 | 5 | 13 | 147 | 168 | 750 | 33 135 315 |
| 140 | 16 | 76 | 5 | 14 | 165 | 188 | 790 | 33 135 316 |
| 160 | 16 | 86 | 4.5 | 16 | 188 | 212 | 1140 | 33 135 317 |
| 200 | 16 | 106 | 5.5 | 18 | 230 | 254 | 1840 | 33 135 318 |
| 225 | 16 | 109 | 5.5 | 25 | 245 | 273 | 1750 | 33 135 319 |
| 250 | 16 | 131 | 8.5 | 20 | 270 | 306 | 2140 | 33 135 320 |
| 280 | 10 | 147 | 14.5 | 32 | 307 | 327 | 3650 | 33 135 321 |
| 315 | 10 | 165 | 16 | 32 | 346 | 377 | 4950 | 33 135 323 |

*Flat Faced

**The 200mm (NW175) stub flange supplied by Durapipe UK when used in conjunction with backing ring; code number 421 318 and 420 318 has a bolt circle diameter which matches 225mm (NW200) valves and fittings (295mm)*

Flanges full face Plain/drilled

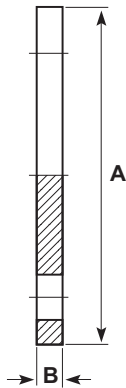
FDV



Drilled to DIN2501 (BS4504) PN10

| Size | PN | A | B | D | Z ₁ | gms | Code |
|------|----|-----|----|----|----------------|-----|------------|
| 32 | 10 | 115 | 27 | 14 | 5 | 150 | 33 319 308 |
| 40 | 10 | 140 | 31 | 15 | 5 | 230 | 33 319 309 |
| 50 | 10 | 150 | 36 | 16 | 5 | 280 | 33 319 310 |
| 63 | 10 | 163 | 43 | 18 | 5 | 390 | 33 319 311 |
| 75 | 10 | 185 | 49 | 19 | 5 | 525 | 33 319 312 |
| 90 | 10 | 200 | 58 | 20 | 7 | 710 | 33 319 313 |
| 110 | 10 | 220 | 69 | 22 | 8 | 955 | 33 319 314 |

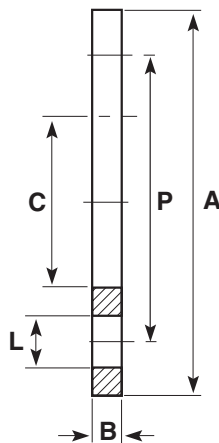
Flanges blanking Plain/drilled



Drilled to BS4504:Table 16/3 & 10/3 (20 to 160mm)

| Size | PN | A | B | P.C.D. | No. Holes | Hole Dia. | gms | Code |
|------|----|-----|----|--------|-----------|-----------|------|------------|
| 20 | 15 | 95 | 11 | 65 | 4 | 14 | 99 | 02 323 102 |
| 25 | 15 | 105 | 12 | 75 | 4 | 14 | 106 | 02 323 103 |
| 32 | 15 | 115 | 14 | 85 | 4 | 14 | 206 | 02 323 104 |
| 40 | 15 | 150 | 16 | 110 | 4 | 18 | 327 | 02 323 106 |
| 63 | 15 | 165 | 13 | 125 | 4 | 18 | 300 | 02 323 107 |
| 90 | 15 | 197 | 19 | 160 | 8 | 18 | 690 | 02 323 109 |
| 110 | 15 | 214 | 19 | 180 | 8 | 18 | 950 | 02 323 110 |
| 160 | 15 | 286 | 26 | 240 | 8 | 22 | 2100 | 02 323 112 |

Backing rings Galvanised mild steel



Drilled to DIN8063 (BS4504) PN10/PN16

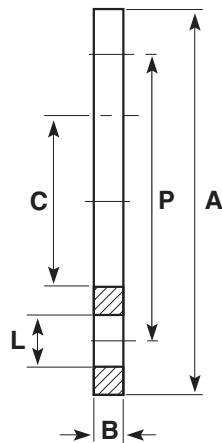
| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|---------------|-----|----|-----|-----|----|-----------|------------|------------|
| 1/2" - 20mm | 95 | 6 | 28 | 65 | 14 | 4 | 330 | 13 421 306 |
| 3/4" - 25mm | 105 | 6 | 34 | 75 | 14 | 4 | 380 | 13 421 307 |
| 1" - 32mm | 115 | 6 | 42 | 85 | 14 | 4 | 440 | 13 421 308 |
| 1 1/4" - 40mm | 140 | 6 | 51 | 100 | 18 | 4 | 660 | 13 421 309 |
| 1 1/2" - 50mm | 150 | 6 | 62 | 110 | 18 | 4 | 730 | 13 421 310 |
| 2" - 63mm | 165 | 8 | 78 | 125 | 18 | 4 | 1100 | 13 421 311 |
| 2 1/2" - 75mm | 185 | 8 | 92 | 145 | 18 | 4 | 1340 | 13 421 312 |
| 3" - 90mm | 200 | 8 | 110 | 160 | 18 | 8 | 1500 | 13 421 313 |
| 4" - 110mm | 220 | 8 | 133 | 180 | 18 | 8 | 1630 | 13 421 314 |
| 125mm | 250 | 8 | 150 | 210 | 18 | 8 | 2090 | 13 421 315 |
| 5" - 140mm | 250 | 10 | 167 | 210 | 18 | 8 | 2290 | 13 421 316 |
| 6" - 160mm | 285 | 10 | 190 | 240 | 22 | 8 | 3050 | 13 421 317 |

Drilled to DIN8063 (BS4504) PN10

| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|--------------|-----|----|-----|-----|----|-----------|------------|------------|
| 200mm* | 340 | 10 | 235 | 295 | 22 | 8 | 3200 | 13 421 318 |
| 8" - 225mm** | 340 | 12 | 250 | 295 | 22 | 8 | 3000 | 13 421 319 |
| 250mm | 395 | 20 | 274 | 350 | 22 | 12 | 9900 | 13 421 320 |
| 10" - 280mm | 395 | 16 | 303 | 350 | 22 | 12 | 9900 | 13 421 321 |
| 12" - 315mm | 445 | 20 | 355 | 400 | 22 | 12 | 9300 | 13 421 323 |

Continued >>

Backing rings Galvanised mild steel



Drilled to DIN8063 (BS4504) PN16

| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|--------------|-----|----|-----|-----|----|-----------|------------|------------|
| 200mm* | 340 | 11 | 235 | 295 | 22 | 12 | 3200 | 13 420 318 |
| 8" - 225mm** | 340 | 11 | 249 | 295 | 22 | 12 | 3000 | 13 420 319 |
| 250mm | 405 | 20 | 278 | 355 | 26 | 12 | 9900 | 13 420 320 |
| 10" - 280mm | 395 | 20 | 303 | 355 | 26 | 12 | 9900 | 13 420 321 |
| 12" - 315mm | 460 | 20 | 355 | 410 | 26 | 12 | 9300 | 13 420 323 |

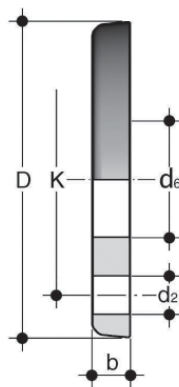
† Not for use with FK Butterfly valve, use 8 hole backing ring code 04 996 131.

Drilled to ANSI Class 150

| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|---------------|-----|----|-----|-----|----|-----------|------------|------------|
| 1/2" - 20mm | 90 | 8 | 28 | 61 | 16 | 4 | 350 | 13 448 306 |
| 3/4" - 25mm | 100 | 8 | 34 | 70 | 16 | 4 | 390 | 13 448 307 |
| 1" - 32mm | 110 | 9 | 42 | 79 | 16 | 4 | 470 | 13 448 308 |
| 1 1/4" - 40mm | 118 | 8 | 51 | 90 | 16 | 4 | 590 | 13 448 309 |
| 1 1/2" - 50mm | 129 | 8 | 62 | 99 | 16 | 4 | 650 | 13 448 310 |
| 2" - 63mm | 154 | 10 | 78 | 121 | 19 | 4 | 1133 | 13 448 311 |
| 3" - 90mm | 192 | 11 | 110 | 153 | 19 | 4 | 1570 | 13 448 313 |
| 4" - 110mm | 230 | 11 | 133 | 190 | 19 | 8 | 2310 | 13 448 314 |

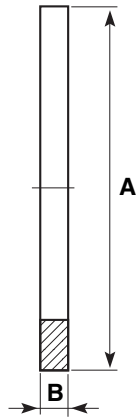
*The 200mm (NW175) stub flange supplied by Durapipe UK when used in conjunction with backing ring; code number 421 318 and 420 318 has a bolt circle diameter which matches 225mm (NW200) valves and fittings (295mm).

Backing rings Pre-drilled – Manufactured in PVC-U



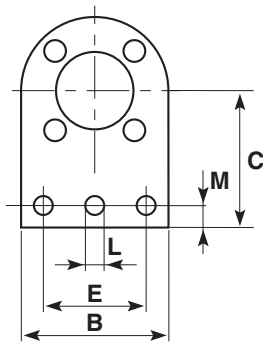
| Size | PN | E | d ₁ | a | Sp | f | u | b | gms | Code |
|------|----|-----|----------------|-----|----|----|----|---------|------|------------|
| 25 | 10 | 107 | 34 | 75 | 12 | 14 | 4 | M12x70 | 85 | 33 180 307 |
| 32 | 10 | 117 | 42 | 85 | 14 | 14 | 4 | M12x70 | 120 | 33 180 308 |
| 40 | 10 | 143 | 51 | 100 | 15 | 14 | 4 | M16x85 | 190 | 33 180 309 |
| 50 | 10 | 153 | 62 | 110 | 16 | 18 | 4 | M16x85 | 225 | 33 180 310 |
| 63 | 10 | 168 | 78 | 125 | 18 | 18 | 4 | M16x95 | 280 | 33 180 311 |
| 75 | 10 | 188 | 92 | 145 | 19 | 18 | 8 | M16x95 | 390 | 33 180 312 |
| 90 | 10 | 203 | 109 | 160 | 20 | 18 | 8 | M16x105 | 460 | 33 180 313 |
| 110 | 10 | 222 | 132 | 180 | 22 | 18 | 8 | M16x105 | 515 | 33 180 314 |
| 125 | 10 | 230 | 149 | 190 | 24 | 18 | 8 | M16x115 | 530 | 33 180 315 |
| 140 | 10 | 251 | 166 | 210 | 26 | 18 | 8 | M16x120 | 715 | 33 180 316 |
| 160 | 10 | 290 | 189 | 240 | 29 | 22 | 8 | M20x135 | 915 | 33 180 317 |
| 200 | 10 | 340 | 235 | 295 | 30 | 22 | 8 | M20x140 | 1210 | 33 180 318 |
| 225 | 10 | 340 | 252 | 295 | 30 | 22 | 8 | M20x140 | 1090 | 33 180 319 |
| 250 | 10 | 396 | 278 | 350 | 34 | 22 | 12 | M20x150 | 1790 | 33 180 320 |
| 280 | 10 | 396 | 309 | 350 | 35 | 22 | 12 | M20x160 | 1880 | 33 180 321 |
| 315 | 10 | 465 | 349 | 400 | 40 | 22 | 12 | M20x180 | 3050 | 33 180 322 |

Gaskets flat Stub flange



| Size | A | B | Weight gms | EPDM Code |
|------|-----|---|------------|------------|
| 20 | 34 | 4 | 2 | 13 411 306 |
| 25 | 41 | 4 | 3 | 13 411 307 |
| 32 | 50 | 3 | 4 | 13 411 308 |
| 40 | 60 | 3 | 4 | 13 411 309 |
| 50 | 72 | 3 | 5 | 13 411 310 |
| 63 | 90 | 4 | 10 | 13 411 311 |
| 75 | 106 | 3 | 20 | 13 411 312 |
| 90 | 125 | 3 | 30 | 13 411 313 |
| 110 | 150 | 4 | 40 | 13 411 314 |
| 125 | 166 | 4 | 50 | 13 411 315 |
| 140 | 180 | 4 | 60 | 13 411 316 |
| 160 | 205 | 4 | 70 | 13 411 317 |
| 200 | 253 | 4 | 120 | 13 411 318 |
| 225 | 274 | 4 | 165 | 13 411 319 |
| 250 | 306 | 4 | 170 | 13 431 320 |
| 280 | 330 | 4 | 195 | 13 411 321 |
| 315 | 379 | 4 | 250 | 13 411 323 |

Valve support plates Galvanised mild steel



Drilled to DIN8063 (BS4504) PN10/PN16

| No. Size | B | C | E | L | M | N | No. Holes | Weight gms | Code |
|---------------|-----|-----|-----|----|----|---|-----------|------------|------------|
| 1/2" - 20mm | 97 | 86 | 49 | 14 | 16 | 2 | 4 | 640 | 31 459 306 |
| 3/4" - 25mm | 105 | 89 | 76 | 14 | 16 | 2 | 4 | 750 | 31 459 307 |
| 1" - 32mm | 114 | 96 | 77 | 14 | 12 | 2 | 4 | 860 | 31 459 308 |
| 1 1/2" - 50mm | 150 | 125 | 100 | 14 | 22 | 2 | 4 | 1480 | 31 459 310 |
| 2" - 63mm | 160 | 134 | 100 | 14 | 24 | 2 | 4 | 2100 | 31 459 311 |
| 2 1/2" - 75mm | 185 | 144 | 125 | 14 | 22 | 2 | 4 | 2500 | 31 459 312 |
| 3" - 90mm | 203 | 150 | 127 | 14 | 23 | 2 | 8 | 2660 | 31 459 313 |
| 4" - 110mm | 214 | 160 | 150 | 14 | 22 | 3 | 8 | 2960 | 31 459 314 |

N = No. of holes in base.

For details of flange drillings see the corresponding backing ring.

Flange assemblies



PVC Stub Flange – PN16 Drilling

| Size | Description | Code |
|------|------------------------|------------|
| 20 | PVC S FLG 16/3 KIT 20 | 33 364 306 |
| 25 | PVC S FLG 16/3 KIT 25 | 33 364 307 |
| 32 | PVC S FLG 16/3 KIT 32 | 33 364 308 |
| 40 | PVC S FLG 16/3 KIT 40 | 33 364 309 |
| 50 | PVC S FLG 16/3 KIT 50 | 33 364 310 |
| 63 | PVC S FLG 16/3 KIT 63 | 33 364 311 |
| 75 | PVC S FLG 16/3 KIT 75 | 33 364 312 |
| 90 | PVC S FLG 16/3 KIT 90 | 33 364 313 |
| 110 | PVC S FLG 16/3 KIT 110 | 33 364 314 |
| 125 | PVC S FLG 16/3 KIT 125 | 33 364 315 |
| 140 | PVC S FLG 16/3 KIT 140 | 33 364 316 |
| 160 | PVC S FLG 16/3 KIT 160 | 33 364 317 |
| 200 | PVC S FLG 16/3 KIT 200 | 33 364 318 |
| 225 | PVC S FLG 16/3 KIT 225 | 33 364 319 |
| 250 | PVC S FLG 16/3 KIT 250 | 33 364 320 |
| 315 | PVC S FLG 16/3 KIT 315 | 33 364 323 |

PVC Stub Flange – PN10 Drilling

| Size | Description | Code |
|------|------------------------|------------|
| 200 | PVC S FLG 10/3 KIT 200 | 33 365 318 |
| 225 | PVC S FLG 10/3 KIT 225 | 33 365 319 |
| 250 | PVC S FLG 10/3 KIT 250 | 33 365 320 |
| 315 | PVC S FLG 10/3 KIT 315 | 33 365 323 |

PVC Stub Flange – PN16 ASA 150 Drilling

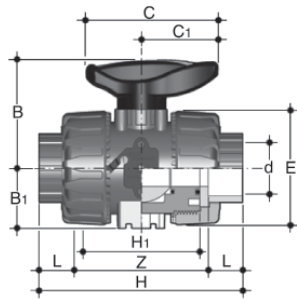
| Size | Description | Code |
|------|---------------------------|------------|
| 20 | PVC S FLG ASA 150 KIT 20 | 33 366 306 |
| 25 | PVC S FLG ASA 150 KIT 25 | 33 366 307 |
| 32 | PVC S FLG ASA 150 KIT 32 | 33 366 308 |
| 40 | PVC S FLG ASA 150 KIT 40 | 33 366 309 |
| 50 | PVC S FLG ASA 150 KIT 50 | 33 366 310 |
| 63 | PVC S FLG ASA 150 KIT 63 | 33 366 311 |
| 75 | PVC S FLG ASA 150 KIT 75 | 33 366 312 |
| 90 | PVC S FLG ASA 150 KIT 90 | 33 366 313 |
| 110 | PVC S FLG ASA 150 KIT 110 | 33 366 314 |
| 125 | PVC S FLG ASA 150 KIT 125 | 33 366 315 |
| 140 | PVC S FLG ASA 150 KIT 140 | 33 366 316 |
| 160 | PVC S FLG ASA 150 KIT 160 | 33 366 317 |
| 200 | PVC S FLG ASA 150 KIT 200 | 33 366 318 |
| 225 | PVC S FLG ASA 150 KIT 225 | 33 366 319 |

Pre-packed flange assemblies are also available and consist of a PVC flange, galvanised mild steel backing ring and gasket on one code. Ordering these products guarantees a correct fit between the components.

Valves

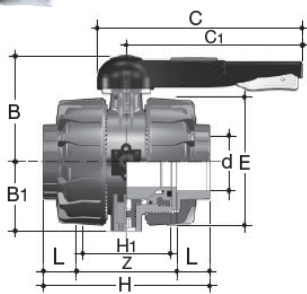
Premium Quality
Valve for Demanding
Environments

VKD Double union ball valves Manual – EPDM seals



with metric series plain female ends for solvent welding

| d | DN | PN | L | Z | H | H ₁ | E | B | B ₁ | C | C ₁ | gms | Code |
|----|----|----|----|-----|-----|----------------|-----|-----|----------------|-----|----------------|------|------------|
| 16 | 10 | 16 | 14 | 75 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 195 | HO DKE 305 |
| 20 | 15 | 16 | 16 | 71 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 205 | HO DKE 306 |
| 25 | 20 | 16 | 19 | 77 | 115 | 70 | 65 | 65 | 35 | 85 | 49 | 315 | HO DKE 307 |
| 32 | 25 | 16 | 22 | 84 | 128 | 78 | 73 | 70 | 39 | 85 | 49 | 435 | HO DKE 308 |
| 40 | 32 | 16 | 26 | 94 | 146 | 88 | 86 | 83 | 46 | 108 | 64 | 655 | HO DKE 309 |
| 50 | 40 | 16 | 31 | 102 | 164 | 91 | 98 | 89 | 52 | 108 | 64 | 880 | HO DKE 310 |
| 63 | 50 | 16 | 38 | 123 | 199 | 111 | 122 | 108 | 62 | 134 | 76 | 1560 | HO DKE 311 |



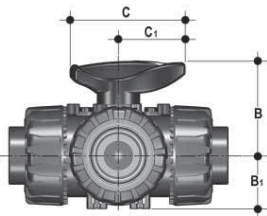
| d | DN | PN | Z | L | H | H ₁ | E | B | B ₁ | C | C ₁ | gms | Code |
|-----|-----|----|-----|----|-----|----------------|-----|-----|----------------|-----|----------------|-------|------------|
| 75 | 65 | 16 | 147 | 44 | 235 | 133 | 164 | 164 | 87 | 225 | 175 | 4380 | HO DKE 312 |
| 90 | 80 | 16 | 168 | 51 | 270 | 149 | 203 | 177 | 105 | 327 | 272 | 7260 | HO DKE 313 |
| 110 | 100 | 16 | 182 | 61 | 308 | 167 | 238 | 195 | 129 | 385 | 330 | 11300 | HO DKE 314 |

Options:

FPM seals (plain ends) order HO DKF ***

Premium Quality
Valve for Demanding
Environments

TKD 3-way ball valves Plain EPDM T-Port



T-Port design

| d | DN | PN | H | H ₁ | Z | C | C ₁ | B | B ₁ | L | gms | Code |
|----|----|----|-----|----------------|-----|-----|----------------|-----|----------------|----|------|------------|
| 20 | 15 | 16 | 144 | 80 | 86 | 67 | 40 | 54 | 35 | 16 | 305 | HO TTE 306 |
| 25 | 20 | 16 | 145 | 100 | 107 | 85 | 49 | 65 | 35 | 19 | 535 | HO TTE 307 |
| 32 | 25 | 16 | 160 | 110 | 116 | 85 | 49 | 70 | 39 | 22 | 725 | HO TTE 308 |
| 40 | 32 | 16 | 189 | 131 | 137 | 108 | 64 | 83 | 46 | 26 | 1170 | HO TTE 309 |
| 50 | 40 | 16 | 219 | 148 | 157 | 108 | 64 | 89 | 52 | 31 | 1600 | HO TTE 310 |
| 63 | 50 | 16 | 267 | 179 | 191 | 134 | 76 | 108 | 62 | 38 | 2845 | HO TTE 311 |

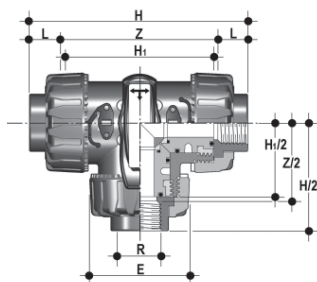
Options:

EPDM seals (threaded ends) order HO TTE B**

FPM seals (plain ends) order HO TTF ***

FPM seals (threaded ends) order HO TTF B**

Manual valves can be supplied with locking kits - further information is available from our Valve Department.



L-Port design

| d | DN | PN | H | H ₁ | Z | C | C ₁ | B | B ₁ | L | gms | Code |
|----|----|----|-----|----------------|-----|-----|----------------|-----|----------------|----|------|------------|
| 20 | 15 | 16 | 144 | 80 | 86 | 67 | 40 | 54 | 35 | 16 | 305 | HO LTE 306 |
| 25 | 20 | 16 | 145 | 100 | 107 | 85 | 49 | 65 | 35 | 19 | 535 | HO LTE 307 |
| 32 | 25 | 16 | 160 | 110 | 116 | 85 | 49 | 66 | 39 | 22 | 725 | HO LTE 308 |
| 40 | 32 | 16 | 189 | 131 | 137 | 108 | 64 | 83 | 46 | 26 | 1170 | HO LTE 309 |
| 50 | 40 | 16 | 219 | 148 | 157 | 108 | 64 | 89 | 52 | 31 | 1600 | HO LTE 310 |
| 63 | 50 | 16 | 267 | 179 | 191 | 134 | 76 | 108 | 62 | 38 | 2845 | HO LTE 311 |

Options:

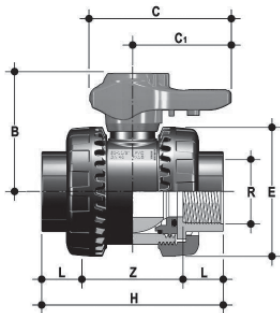
EPDM seals (threaded ends) order HO LTE B**

FPM seals (plain ends) order HO LTB ***

FDM seals (threaded ends) order HO LTF B**

VKD and TKD ball valves can be supplied electrically or pneumatically actuated.

VXE Easyfit ball valves Manual – EPDM seals



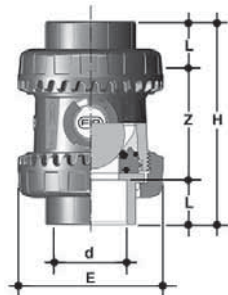
with metric series plain female ends for solvent welding

| d | DN | PN | L | Z | H | E | B | C | C1 | gms | Code |
|----|----|----|----|----|-----|-----|-----|-----|----|------|------------|
| 16 | 10 | 16 | 14 | 54 | 82 | 54 | 49 | 64 | 20 | 180 | HO XEE 305 |
| 20 | 15 | 16 | 16 | 50 | 82 | 54 | 49 | 64 | 20 | 175 | HO XEE 306 |
| 25 | 20 | 16 | 19 | 53 | 91 | 63 | 62 | 78 | 23 | 260 | HO XEE 307 |
| 32 | 25 | 16 | 22 | 59 | 103 | 72 | 71 | 87 | 27 | 365 | HO XEE 308 |
| 40 | 32 | 16 | 26 | 68 | 120 | 85 | 82 | 102 | 30 | 565 | HO XEE 309 |
| 50 | 40 | 16 | 31 | 77 | 139 | 100 | 92 | 109 | 33 | 795 | HO XEE 310 |
| 63 | 50 | 16 | 38 | 98 | 174 | 118 | 110 | 133 | 39 | 1325 | HO XEE 311 |



| d | DN | PN | L | Z | H | E | B | C | C1 | gms | Code |
|-----|-----|----|----|-----|-----|-----|-------|-----|-----|------|------------|
| 75 | 65 | 16 | 44 | 123 | 211 | 157 | 142 | 214 | 115 | 2750 | HO XEE 312 |
| 90 | 80 | 16 | 51 | 146 | 248 | 174 | 151 | 239 | 125 | 3432 | HO XEE 313 |
| 110 | 100 | 16 | 63 | 161 | 283 | 212 | 174.5 | 270 | 145 | 5814 | HO XEE 314 |

SXE Easyfit ball check valves Plain ends – EPDM seals

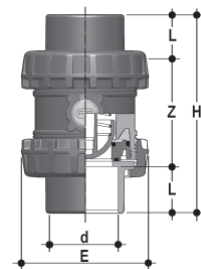


with metric series plain female ends for solvent welding

| d | L | Z | C | E | gms | Code |
|----|----|----|-----|-----|-----|------------|
| 20 | 17 | 48 | 82 | 50 | 96 | HO SXE 306 |
| 25 | 19 | 55 | 93 | 59 | 99 | HO SXE 307 |
| 32 | 22 | 62 | 106 | 68 | 145 | HO SXE 308 |
| 40 | 26 | 75 | 127 | 80 | 234 | HO SXE 309 |
| 50 | 31 | 84 | 146 | 96 | 357 | HO SXE 310 |
| 63 | 38 | 99 | 175 | 116 | 937 | HO SXE 311 |

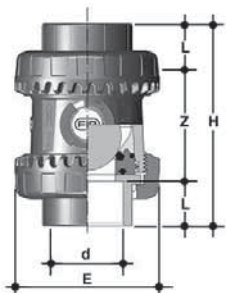
Options:

FPM seals (plain ends) order HO SXF ***



| d | DN | PN | L | Z | H | E | gms | EPDM Code |
|-----|-----|----|----|-----|-----|-----|------|------------|
| 75 | 65 | 16 | 44 | 123 | 211 | 157 | 2605 | HO SXE 312 |
| 90 | 80 | 16 | 51 | 146 | 248 | 174 | 3300 | HO SXE 313 |
| 110 | 100 | 16 | 63 | 157 | 283 | 212 | 5570 | HO SXE 314 |

SXA Easyfit air release valves Plain ends – EPDM seals



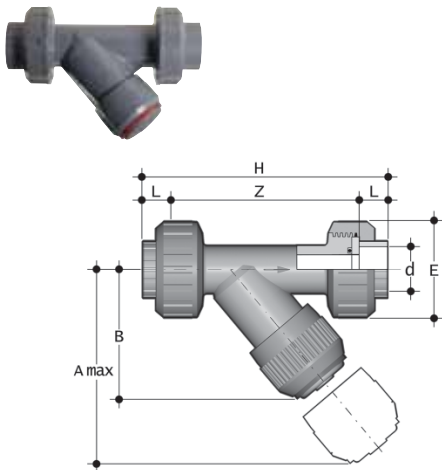
with metric series plain male end for solvent welding

| d | DN | PN | L | Z | H | E | gms | Code |
|----|----|----|----|----|-----|-----|-----|------------|
| 20 | 15 | 16 | 16 | 50 | 82 | 54 | 133 | HO SAE 306 |
| 25 | 20 | 16 | 19 | 53 | 91 | 63 | 171 | HO SAE 307 |
| 32 | 25 | 16 | 22 | 59 | 103 | 72 | 270 | HO SAE 308 |
| 40 | 32 | 16 | 26 | 68 | 120 | 85 | 414 | HO SAE 309 |
| 50 | 40 | 16 | 31 | 77 | 139 | 100 | 608 | HO SAE 310 |
| 63 | 50 | 16 | 38 | 98 | 174 | 118 | 972 | HO SAE 311 |

Options:

FPM seals (plain ends) order HO SAF ***

RV Y-Type strainers Socket union ends – EPDM seals

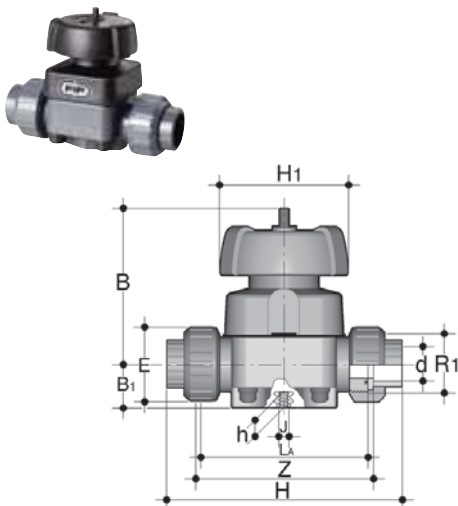


| d | DN | PN | A | B | E | L | Z | H | K | Fig. | gms | Code | |
|-----------------|----|----|----|-----|-----|-----|----|-----|-----|------|-----|------|------------|
| Grey Trans. max | | | | | | | | | | | | | |
| 20 | 15 | 16 | 16 | 125 | 72 | 55 | 16 | 103 | 135 | - | A | 203 | HO UVE 306 |
| 25 | 20 | 16 | 16 | 145 | 84 | 66 | 19 | 120 | 158 | - | A | 358 | HO UVE 307 |
| 32 | 25 | 16 | 16 | 165 | 95 | 75 | 22 | 132 | 176 | - | A | 526 | HO UVE 308 |
| 40 | 32 | 16 | 10 | 190 | 111 | 87 | 26 | 155 | 207 | - | A | 733 | HO UVE 309 |
| 50 | 40 | 16 | 10 | 210 | 120 | 100 | 31 | 181 | 243 | - | A | 1095 | HO UVE 310 |
| 63 | 50 | 16 | 10 | 240 | 139 | 120 | 38 | 222 | 298 | - | A | 1843 | HO UVE 311 |

Grey (HO UV* ***) or Transparent (HO UT* ***)
with unionised metric series plain female ends for solvent welding

Options:
FPM seals (plain ends) order HO UVF ***

VM Diaphragm valves Manual – plain union ends EPDM



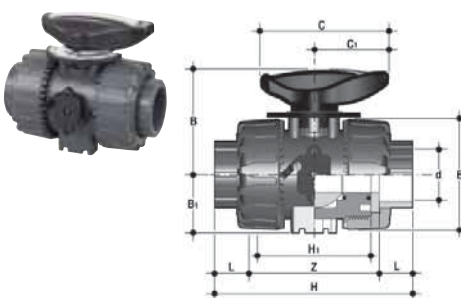
| d | DN | PN | B | B ₁ | H | h | H ₁ | I | J | L | gms | Code |
|------|-----|------|-----|----------------|-----|----|----------------|-----|-----|----|-------|------------|
| 20 | 15 | 10 | 95 | 26 | 147 | 12 | 90 | 25 | M6 | 16 | 830 | HO UME 406 |
| 25 | 20 | 10 | 95 | 26 | 154 | 12 | 90 | 25 | M6 | 19 | 860 | HO UME 407 |
| 32 | 25 | 10 | 95 | 26 | 168 | 12 | 90 | 25 | M6 | 23 | 895 | HO UME 408 |
| 40 | 32 | 10 | 126 | 40 | 192 | 18 | 115 | 45 | M8 | 27 | 1650 | HO UME 409 |
| 50 | 40 | 10 | 126 | 40 | 222 | 18 | 115 | 45 | M8 | 32 | 1730 | HO UME 410 |
| 63 | 50 | 10 | 148 | 40 | 266 | 18 | 140 | 45 | M8 | 39 | 2800 | HO UME 411 |
| 75* | 65 | 10** | 225 | 55 | 284 | 23 | 215 | 100 | M12 | 44 | 7000 | HO VME 412 |
| 90* | 80 | 10** | 225 | 55 | 300 | 23 | 215 | 100 | M12 | 51 | 7000 | HO VME 413 |
| 110* | 100 | 10** | 295 | 69 | 350 | 23 | 250 | 120 | M12 | - | 10500 | HO VME 414 |

with metric series plain female ends for solvent welding

*75mm, 90mm & 110mm product is spigot ended.
** PN6 for PTFE version.

Options:
FPM diaphragm (plain ends) order HO UMF ***
PTFE diaphragm (plain ends) order HO UMG ***

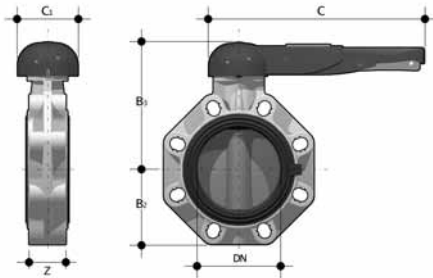
VKR Metering ball valve



| d | DN | PN | L | Z | H | H ₁ | E | B | B ₁ | C | C ₁ | gms | Code |
|----|----|----|----|-----|-----|----------------|-----|-----|----------------|-----|----------------|------|------------|
| 16 | 15 | 16 | 16 | 71 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 215 | HO MBE 305 |
| 20 | 15 | 16 | 16 | 71 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 215 | HO MBE 306 |
| 25 | 20 | 16 | 19 | 77 | 115 | 70 | 65 | 65 | 34.5 | 85 | 49 | 330 | HO MBE 307 |
| 32 | 25 | 16 | 22 | 84 | 128 | 78 | 73 | 70 | 39 | 85 | 49 | 438 | HO MBE 308 |
| 40 | 32 | 16 | 26 | 94 | 146 | 88 | 86 | 83 | 46 | 108 | 64 | 493 | HO MBE 309 |
| 50 | 40 | 16 | 31 | 102 | 164 | 91 | 98 | 89 | 52 | 108 | 64 | 925 | HO MBE 310 |
| 63 | 50 | 16 | 38 | 123 | 199 | 111 | 122 | 108 | 62 | 134 | 76 | 1577 | HO MBE 311 |

Options:
FPM seals (plain ends) order HO MBF ***

FK Butterfly valves Manual – EPDM seals

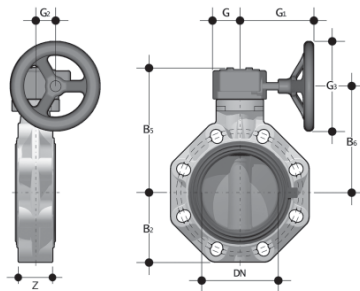


lever operated

| d | DN | PN | B ₂ | B ₃ | C | C ₁ | gms | U | Code |
|-----|-----|----|----------------|----------------|-----|----------------|------|---|------------|
| 50 | 40 | 16 | 60 | 137 | 175 | 100 | 900 | 4 | HO FKE 106 |
| 63 | 50 | 16 | 70 | 143 | 175 | 100 | 1080 | 4 | HO FKE 107 |
| 75 | 65 | 10 | 80 | 164 | 272 | 110 | 1470 | 4 | HO FKE 108 |
| 90 | 80 | 10 | 93 | 178 | 272 | 110 | 1870 | 8 | HO FKE 109 |
| 110 | 100 | 10 | 107 | 192 | 272 | 110 | 2220 | 8 | HO FKE 110 |
| 140 | 125 | 10 | 120 | 212 | 330 | 110 | 3100 | 8 | HO FKE 111 |
| 160 | 150 | 10 | 134 | 225 | 330 | 110 | 3850 | 8 | HO FKE 112 |
| 225 | 200 | 10 | 161 | 272 | 420 | 122 | 6750 | 8 | HO FKE 113 |

Options:

FPM seals order HO FKF ***



with gearbox

| d | DN | PN | B ₂ | B ₅ | B ₆ | G | G ₁ | G ₂ | G ₃ | gms | U | Code |
|-----|-----|----|----------------|----------------|----------------|----|----------------|----------------|----------------|-------|----|------------|
| 250 | 250 | 10 | 210 | 317 | 281 | 88 | 236 | 76 | 250 | 18600 | 12 | HO FKE 114 |
| 315 | 300 | 8 | 245 | 374 | 338 | 88 | 236 | 76 | 250 | 25600 | 12 | HO FKE 115 |

250 & 315mm FK Butterfly valves come with gearbox as standard.

Sizes 160mm to 225mm are available with gearbox operation on request.

Product is supplied with DIN 8063 PN10 drillings but ANSI drillings are available on request.

Set of transparent service plugs & white PVC tag holders

For insertion in handle for (VXE) Easyfit valve customisation



| Size mm/inch | Standard pack quantity in units | Product Code |
|--------------|---------------------------------|--------------|
| 16-20 / 1/2 | 20 | LCE020 |
| 25 / 3/4 | 20 | LCE025 |
| 32 / 1 | 20 | LCE032 |
| 40 / 1 1/4 | 20 | LCE040 |
| 50 / 1 1/2 | 20 | LCE050 |
| 63 / 2 | 20 | LCE063 |

Die cut labels plus software White waterproof A4 sheets and freeware editing software to be used with inkjet printers for easyfit valve customisation.



| Size mm/inch | No. of sheets | Total labels | Product Code |
|--------------|---------------|--------------|--------------|
| 16-20 / 1/2 | 10 | 500 | LSE020 |
| 25 / 3/4 | 10 | 500 | LSE025 |
| 32 / 1 | 10 | 500 | LSE032 |
| 40 / 1 1/4 | 10 | 500 | LSE040 |
| 50 / 1 1/2 | 10 | 400 | LSE050 |
| 63 / 2 | 10 | 400 | LSE060 |

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.

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.

HCR-36 Chemically resistant PVC cement



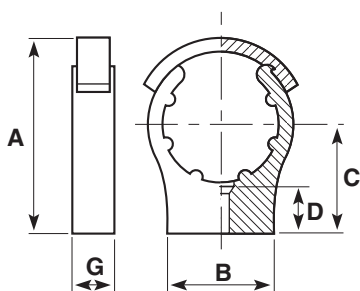
| Description | Code |
|-------------|------------|
| 1 litre | 03 468 396 |

Cleaner for use with HCR-36 Chemically resistant PVC cement



| Description | Code |
|-------------|------------|
| 1/2 litre | 03 467 395 |

Cobra pipe clips



| Size | A | B | C | D | G | Bolt/Screw | gms | Code |
|------|-----|-----|-----|----|----|--------------|-----|------------|
| *12 | - | 24 | 25 | 15 | 16 | M4/3BA/No 8 | 5 | 13 434 304 |
| *16 | - | 35 | 25 | 17 | 16 | M4/3BA/No 8 | 7 | 13 434 305 |
| *20 | - | 35 | 30 | 14 | 16 | M5/1BA/No 10 | 8 | 13 434 306 |
| *25 | - | 35 | 35 | 16 | 17 | M5/1BA/No 10 | 11 | 13 434 307 |
| 32 | 65 | 45 | 40 | 17 | 17 | M5/1BA/No 10 | 14 | 13 434 308 |
| 40 | 75 | 65 | 45 | 20 | 20 | M5/1BA/No 10 | 21 | 13 434 309 |
| 50 | 85 | 50 | 50 | 22 | 21 | M6/0BA/No 10 | 30 | 13 434 310 |
| 63 | 102 | 60 | 60 | 19 | 21 | M6/0BA/No 10 | 42 | 13 434 311 |
| 75 | 122 | 70 | 70 | 27 | 31 | M8 | 94 | 13 434 312 |
| 90 | 148 | 80 | 90 | 39 | 31 | M8 | 121 | 13 434 313 |
| 110 | 171 | 90 | 96 | 36 | 35 | M8 | 184 | 13 434 314 |
| 125 | 185 | 161 | 96 | 9 | 17 | M8 | 237 | 13 424 315 |
| 140 | 188 | 176 | 112 | 13 | 19 | M8 | 252 | 13 424 316 |
| 160 | 238 | 219 | 150 | 10 | 40 | M8 | 330 | 13 424 317 |

*Clips 32mm and above are fitted with a pipe retaining strap. Bolts/screws not supplied. When using 32mm clip on 1" pipe strap is not needed.

Chamfering and de-burring tools



| Description | Code |
|------------------------------------------|-------------|
| E 16-63mm pipe outer milling cutter tool | FT 55 65 12 |
| 32-160mm chamfering tool | FT 55 05 10 |

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

Pipe cutters

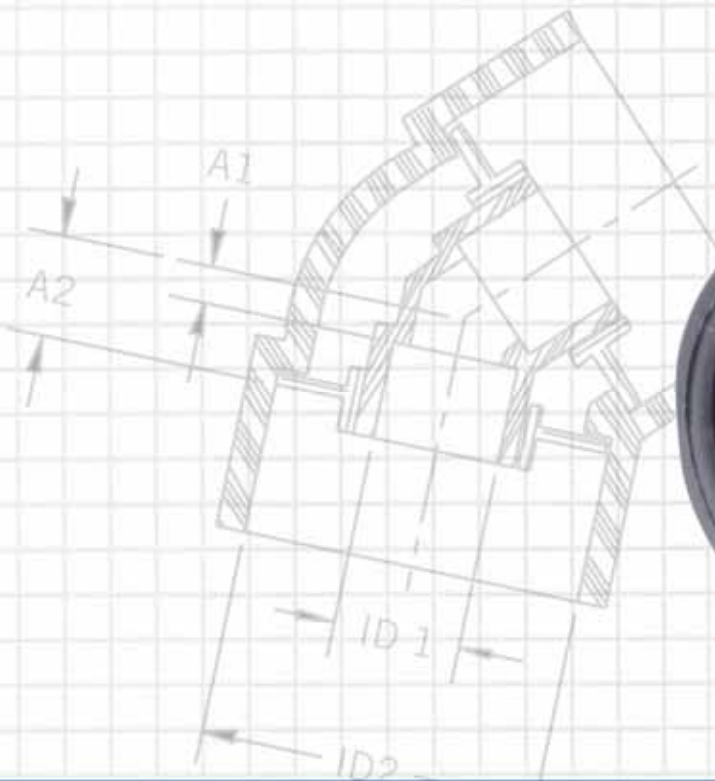


| Description | Code |
|-----------------------------|-------------|
| 16-63mm pipe cutter | FT 80 00 01 |
| 50-125mm pipe cutter | FT 80 00 03 |
| 16-63mm spare cutter wheel | FT 80 00 02 |
| 50-125mm spare cutter wheel | FT 80 00 04 |



Pipes, Fittings & Valves

Imperial PVC-U # PVC-U system



Guardian Dual
Contained Pipework

Technical Data

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

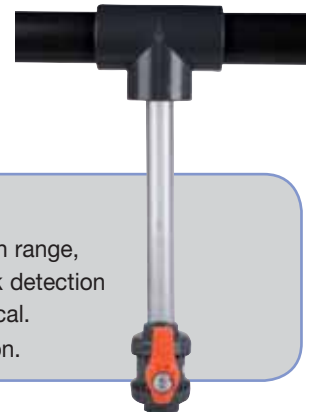
Material Selection

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.

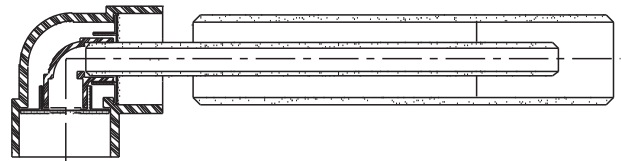


2. Clean surfaces thoroughly with Durapipe Eco-cleaner using lint free cloth/paper towel.



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 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.

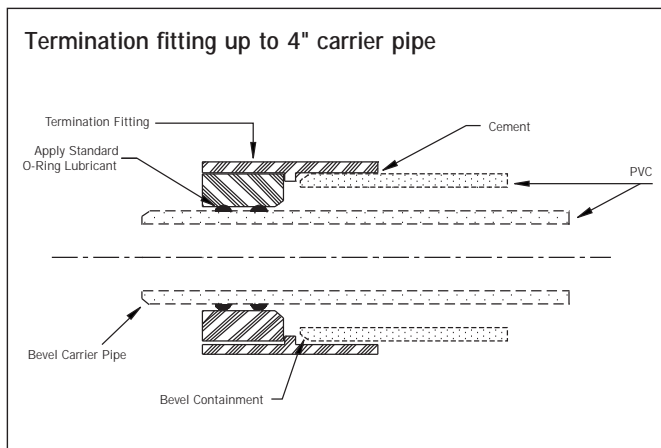
Depending upon the chemical being used HCR cement may be required. Please refer to Page 18.

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)

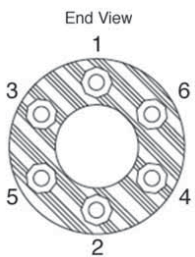
Do not apply Eco-cleaner or solvent cement to O-Rings.



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.



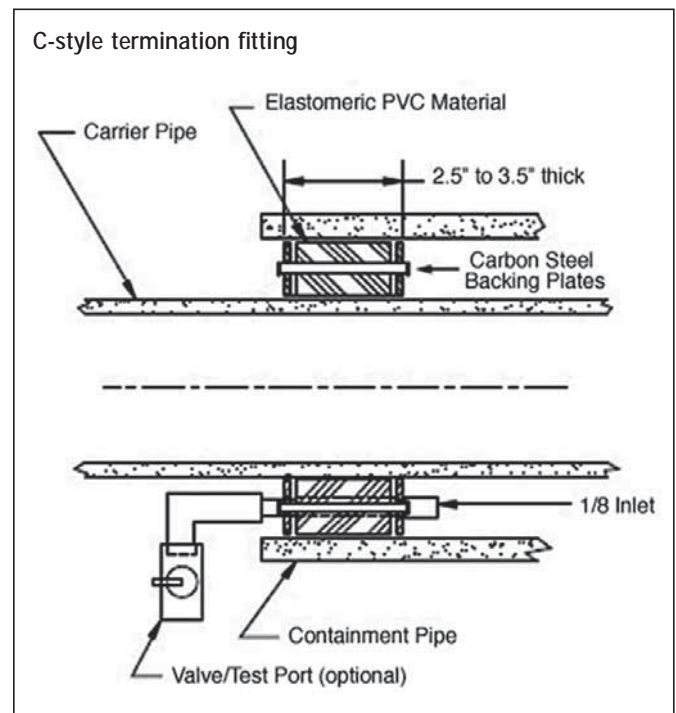
| Pipe Size | No. of Bolts | Bolts Size | Max Torque (Nm) |
|-----------|--------------|------------|-----------------|
| 1 x 3 | 3 | 1/4 NC | 10.85 |
| 1 x 4 | 4 | 1/4 NC | 10.85 |
| 1 1/2 x 4 | 4 | 1/4 NC | 10.85 |
| 2 x 4 | 4 | 1/4 NC | 10.85 |
| 3 x 6 | 6 | 1/4 NC | 10.85 |
| 4 x 8 | 6 | 5/16 NC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

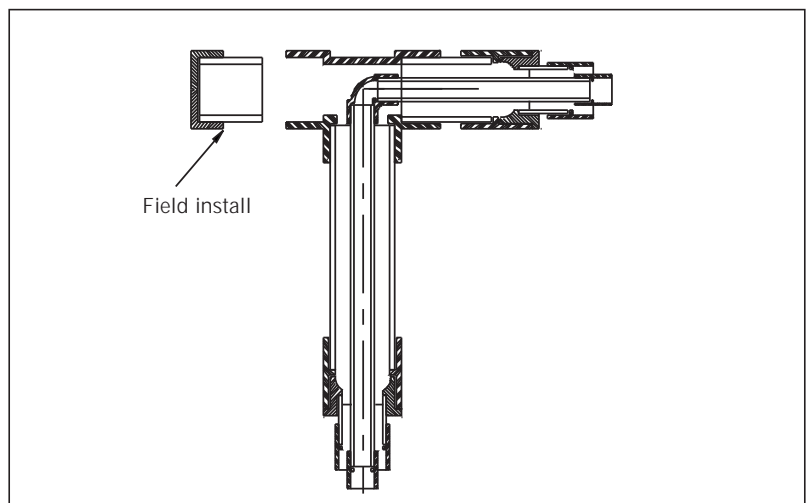
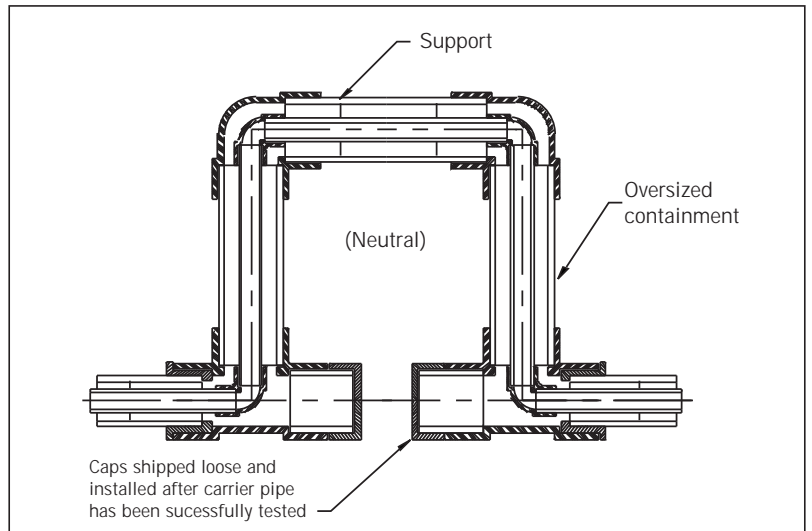
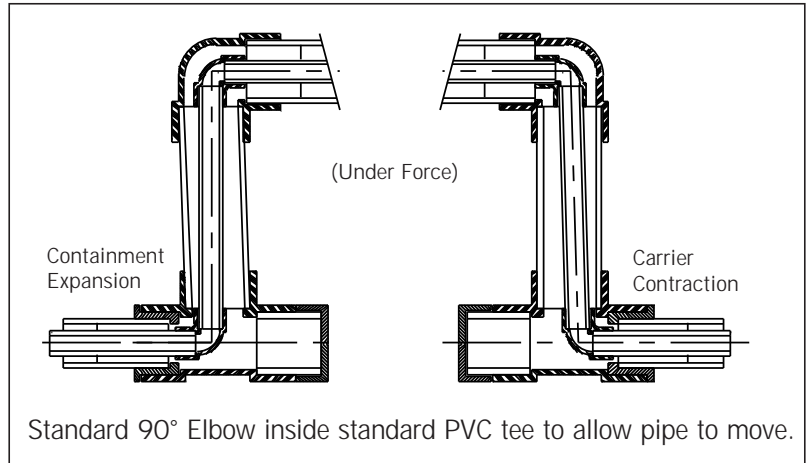
Expansion Loop and Elbows

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:

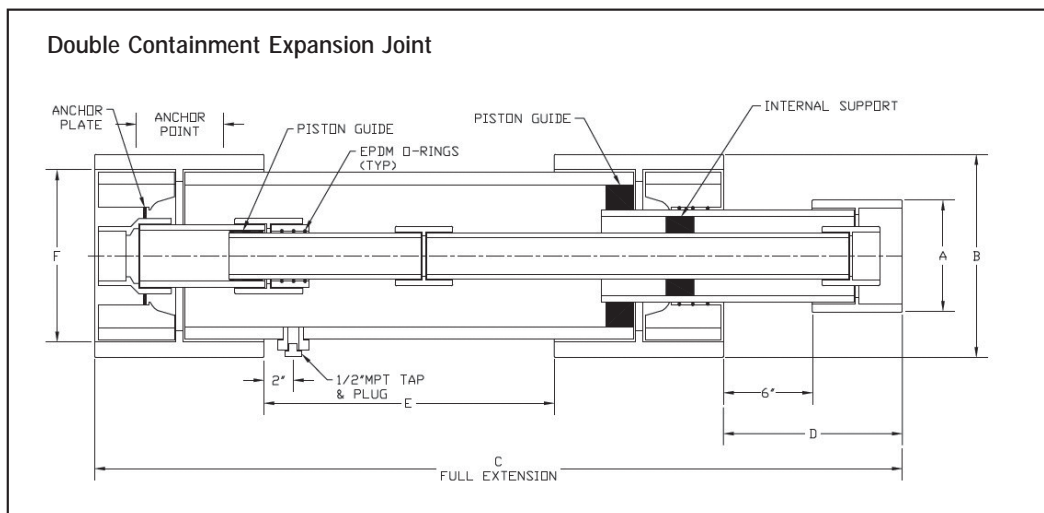
- 150mm of travel for both carrier and containment pipe
- Triple O-ring design for a reliable water tight seal
- Independent movement for both carrier and containment pipe
- Tap and plug on containment for drainage
- Piston guides to ensure smooth motion without buckling
- Pressure rated design up to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

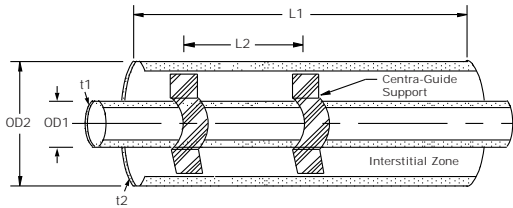


| Carrier/ Containment | A | B | C | D | E | Code |
|-------------------------|--------|--------|--------|--------|--------|------------|
| 1" # 3" | 106.68 | 134.62 | 889.41 | 259.08 | 383.54 | 08 TED 104 |
| 2" # 4" | 134.62 | 193.04 | 939.80 | 312.42 | 469.90 | 08 TED 107 |
| 3" # 6" | 198.12 | 218.44 | 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

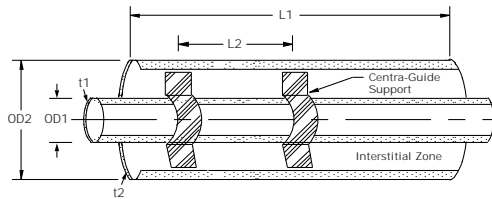
PVC Dual Contained pipe



| 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

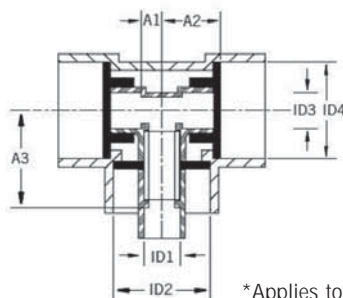
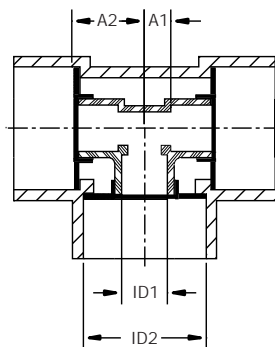


| Carrier/ Containment | Class | L ₁ m | L ₂ m | OD1 mm | t ₁ mm | OD2 mm | t ₂ | Code |
|----------------------|-------|------------------|------------------|--------|-------------------|--------|----------------|------------|
| 1/2" #2" | E/C | 6 | 1.2 | 21.2 | 1.9 | 60.3 | 5.19 | 08 514 102 |
| 3/4" #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

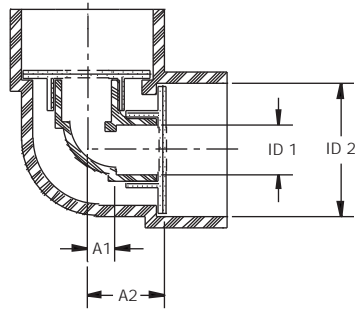


*Applies to 6" #10" & 8" #12"

| 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 |

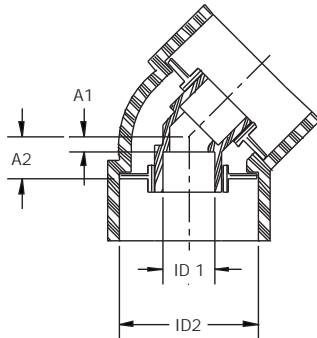
CAUTION: Do not use or test the products in this manual with compressed air or other gases.

Centra-Lok™ 90° Elbows Plain



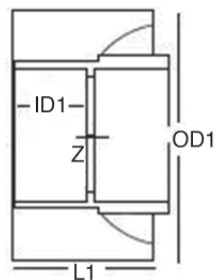
| Carrier/ Containment | A1 | A2 | ID1 | ID2 | Code |
|-------------------------|-------|-------|-------|-------|------------|
| 1/2" #2" | 12.7 | 35.1 | 21.3 | 60.5 | 08 115 102 |
| 3/4" #3" | 17.3 | 49.8 | 26.7 | 88.9 | 08 115 103 |
| 1" #3" | 19.1 | 49.8 | 33.5 | 88.9 | 08 115 104 |
| 1 1/2" #4" | 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



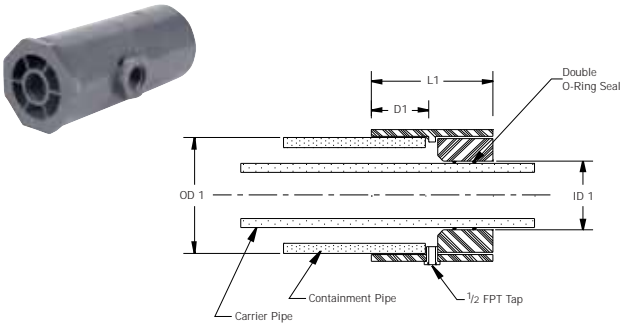
| Carrier/ Containment | A1 | A2 | ID1 | ID2 | Code |
|-------------------------|------|-------|-------|-------|------------|
| 1/2" #2" | 6.4 | 22.1 | 21.3 | 60.5 | 08 119 102 |
| 3/4" #3" | 8.6 | 25.4 | 26.7 | 88.9 | 08 119 103 |
| 1" #3" | 9.7 | 25.4 | 33.5 | 88.9 | 08 119 104 |
| 1 1/2" #4" | 12.7 | 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



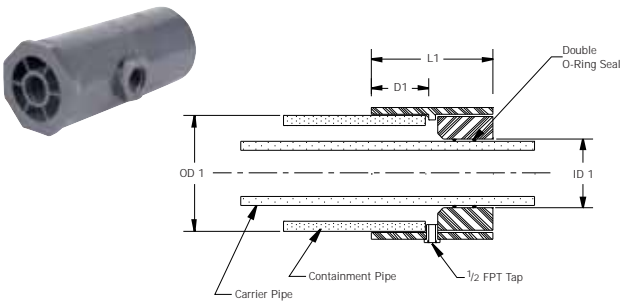
| Carrier/ Containment | ID1 | OD1 | L1 | Z | Code |
|-------------------------|-----|-----|-----|----|------------|
| 1/2" #2" | 25 | 36 | 135 | 11 | 08 496 102 |
| 3/4" #3" | 29 | 44 | 140 | 15 | 08 496 103 |
| 1" #3" | 36 | 60 | 140 | 24 | 08 496 104 |
| 1 1/2" #4" | 49 | 78 | 196 | 29 | 08 496 106 |
| 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



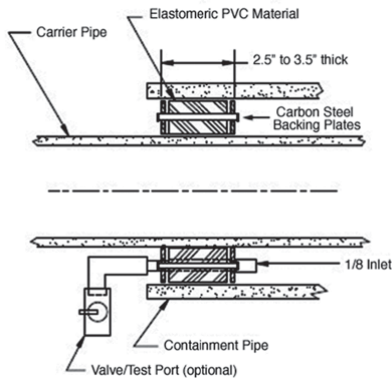
| Carrier/Containment | L1 | D1 | ID1 | OD1 | Code |
|---------------------|-------|-------|-------|-------|------------|
| 1/2" #2" | 61.2 | 38.1 | 21.3 | 60.5 | 08 143 102 |
| 3/4" #3" | 100.8 | 47.8 | 26.7 | 88.9 | 08 143 103 |
| 1" #3" | 100.8 | 47.8 | 33.5 | 88.9 | 08 143 104 |
| 1 1/2" #4" | 119.1 | 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



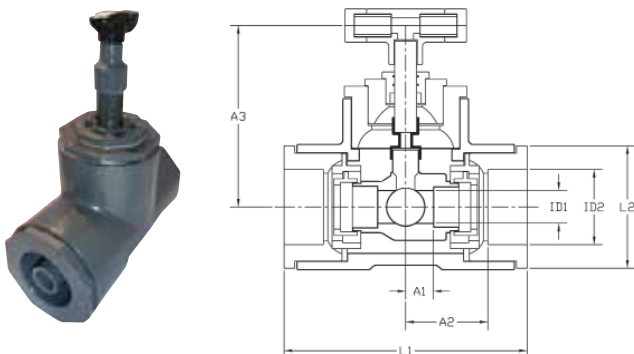
| Carrier/Containment | L1 | D1 | ID1 | OD1 | Code |
|---------------------|-------|-------|-------|-------|------------|
| 1/2" #2" | 61.2 | 38.1 | 21.3 | 60.5 | 08 144 102 |
| 3/4" #3" | 100.8 | 47.8 | 26.7 | 88.9 | 08 144 103 |
| 1" #3" | 100.8 | 47.8 | 33.5 | 88.9 | 08 144 104 |
| 1 1/2" #4" | 119.1 | 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 |

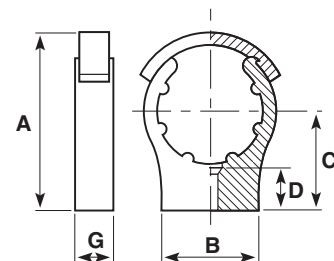
Eco-cleaner



| 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/OBA/ 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 |

Durapipe UK Pipework Systems



ABS

- Ideal for chilled, potable and waste water
- Tough, durable, lightweight and fully approved
- Suitable for use from -40°C to +70°C
- Fully matched system of pipes, fittings and valves



Air-Line Xtra

- High performance thermoplastic pipework system for compressed air



Corzan

- Solvent weld thermoplastic pipe system for aggressive substances
- Designed specifically for use in highly corrosive conditions at temperatures up to 95°C
- Valves range available



Valves & Flow Control

- Manual and actuated flow control solutions
- For use with all Durapipe systems
- Lightweight and easy to install



PLX

- Purpose designed for safe fuel transfer
- Suitable for pressure and vacuum applications
- Resists fuel permeation



Polypropylene

- Conveys chemicals at temperatures up to 100°C
- Excellent resistance to a wide range of substances
- Available in larger diameters up to 500mm
- Full range of valves



PVC-U

- Versatile, multi-purpose solvent weld pipework system with an extensive range of valves and fittings
- The established system for process and industrial handling of chemicals and water up to 60°C
- Guardian dual contained PVC-U pipework system



Vulcathene

- Safe chemical drainage
- Two easy jointing methods - Mechanical or Enfusion
- Ideal for schools, universities and colleges, hospitals and clinics, pharmaceutical and research organisations

DURAPIPE UK CONDITIONS OF SALE

1. **DEFINITIONS:**
‘Seller’ shall mean Glynwed Pipe Systems Limited, registered in England under number 1698059. ‘Buyer’ shall mean any company, organisation or individual to whom a quotation is offered, or whose order is accepted by the Seller.
2. **CONDITIONS:**
All offers, quotations, estimates, acceptances and contracts are subject to these Conditions of Business and any terms or conditions which any other person shall seek to impose or make part of any contract shall, so far as is inconsistent with these Conditions of Business, not apply unless expressly agreed by the Seller in writing. The headings in these conditions are for convenience only and shall not affect their interpretation.
3. **QUOTATIONS AND PRICE VARIATION:**
 - a) Any quotation given by the Seller is an invitation to the Buyer to make an offer only and no order of the Buyer placed with the Seller in pursuance of a quotation or otherwise shall be binding on the Seller unless and until it is accepted in writing by the Seller.
 - b) Unless stated otherwise, all quotations and published price lists are ex works, exclusive of VAT and shall remain valid for 30 days or such a period as may be quoted but nevertheless the Seller may amend or withdraw any quotation by written or oral notice. Quotations may be varied if the Buyer makes variations in his specifications.
 - c) Certain products are denoted ‘MTO’ in the Seller’s published price lists. These products are Made to Order Goods and the Seller manufactures or procures these goods on a bespoke basis only. Where a Buyer has made an offer for ‘MTO’ products that the Seller has accepted in writing the Buyer forfeits their right to cancel their offer unless the Seller confirms in writing that it will accept cancellation by the Buyer. Where the Seller does not provide written confirmation of the Buyer’s cancellation the Buyer remains liable for the full contractual value of all ‘MTO’ products.
4. **STATEMENTS OR REPRESENTATIONS TO THE BUYER:**
If any statement or representation has been made to the Buyer upon which the Buyer relies other than in the documents enclosed with the Seller’s quotation, the Buyer must set out that statement or representation in a document to be attached to or endorsed on the order in which case the Seller may submit a new quotation.
5. **DELIVERY - TIME:**
 - a) Any period for delivery given at any time and in any manner by the Seller is an estimate only and is not binding on the Seller. Delivery periods are normally calculated from the later of:
 - i) acceptance of order; or
 - ii) where applicable, the receipt by the Seller of a detailed specification or drawings.
 - b) Time shall not be deemed to be of the essence of the contract. Failure by the Seller to meet any quoted delivery period for any part or the whole of the order shall not entitle the Buyer to rescind the contract or to claim damages of any nature.
 - c) The Seller will endeavour to comply with reasonable requests by the Buyer for postponement of delivery but shall be under no obligation to do so. Where delivery is postponed otherwise than due to default by the Seller the Buyer shall pay all costs and expenses including a reasonable charge for storage and transportation occasioned thereby and an extra charge for split delivery if applicable.
 - d) The Buyer will receive delivery of any consignment between the hours of 8.00am and 4.00pm Monday to Friday inclusive, unless otherwise agreed in writing. Cost incurred by the Seller arising from the Buyer’s refusal to accept consignments within the agreed hours shall be borne by the Buyer.
6. **DELIVERY AND RISK:**
 - a) Except where stated to the contrary in the contract, delivery shall be made as follows:
 - i) where the Buyer provides the transport, delivery shall be made ex the Seller’s works;
 - ii) where the Seller provides the transport, delivery shall be made to the premises of the Buyer, or the premises of the Buyer’s customer or works site if the Buyer has requested delivery to be so made but where the Buyer has made such a request the Seller will make a first delivery to the Buyer’s customer or works site as so much of the goods as is available for that delivery but subsequent deliveries will be made to the premises of the Buyer.
 - b) The Seller may at its discretion make partial delivery of orders and invoice the same.
 - c) Risk in the goods shall pass on delivery.
 - d) Where goods are sent FOB the Seller’s responsibility shall cease when the goods are placed on board ship or aircraft without the need for the Seller to give notice to the Buyer and the provisions of Section 32(3) of the Sale of Goods Act 1979 shall not apply.
7. **OWNERSHIP OF GOODS:**
 - a) The goods shall remain the sole and absolute property of the Seller as legal and equitable owner until such time as the Buyer shall have paid to the Seller the contract price together with the full price of any other goods the subject of any contract between the Seller and the Buyer.
 - b) The Buyer acknowledges that until such time as the property in the goods passes to the Buyer he is in possession of the goods as a bailee and fiduciary agent for the Seller and the Purchaser shall store the goods in such a manner that they are clearly identifiable as the property of the Seller.
 - c) Until payment due under all contracts between the Buyer and the Seller had been made in full, in the event of sale of the goods by the Buyer:
 - i) the Seller shall be entitled to trace all proceeds of sale received by the Buyer through any bank or other account maintained by the Buyer; and
 - ii) the Buyer shall if requested by the Seller in writing to so assign its rights to recover the selling price of the goods from the third parties concerned. Such monies to be held separately by the Buyer as agent on behalf of the Seller.
 - d) The Seller may for the purpose of recovery of its goods enter upon any premises where they are stored or where they are reasonably thought to be stored and may repossess the same.
8. **TERMS OF PAYMENT:**
In the event of default in payment according to the agreed payment terms between the Seller and the Buyer – i.e. by the end of the month following the month of despatch of the goods the Seller shall be entitled without prejudice to any other right or remedy to suspend all further deliveries and to charge interest on any amount outstanding at the rate of 2% per month until payment in full is made (a part of a month being treated as a full month for the purpose of calculating interest).
9. **SHORTAGES AND DEFECTS APPARENT ON DELIVERY:**
 - a) It shall be the responsibility of the Buyer to inspect or arrange for an inspection of the goods on delivery whether the goods are delivered to the Buyer’s premises or to the premises of the Buyer’s customer or to a works site. If no such inspection is made the Buyer shall be deemed to have accepted the goods.
 - b) The Buyer shall have no claim for shortages or defects apparent on inspection unless:
 - i) a written complaint is made to the Seller within three days of receipt of the goods specifying the shortage or defect; and
 - ii) the Seller is within seven days of receipt of the complaint given an opportunity to inspect the goods and investigate the complaint before any use is made of the goods.
 - c) If a complaint is not made to the Seller as herein provided then in respect of such shortages or defects the goods shall be deemed to be in all respects in accordance with the contract and the Buyer shall be bound to pay for the same accordingly.
10. **CLAIMS FOR DEFECTS NOT APPARENT ON INSPECTION:**
 - a) The Buyer shall have no claim for defects not apparent on inspection unless the Seller is notified of defective workmanship or materials within twelve months from delivery of the goods. Provided that the goods have been installed and applied in accordance with any relevant recommendations made by the Seller, the Seller will at its option replace the goods or refund the net invoiced price in respect of the goods which have been shown to be defective. If the Seller does so supply substitute goods the Buyer shall be bound to accept such substituted goods in full satisfaction of the obligations of the Seller under the contract.
 - b) The Buyer shall in any event have no claim or set-off in respect of defects unless a written complaint is sent to the Seller as soon as the defect is noticed and no use is made of the goods thereafter or alteration made thereto by the Buyer before the Seller is given an opportunity to inspect the goods.
 - c) The Buyer is responsible for ensuring that the goods are fit for any particular purpose, and no warranty or condition of fitness for any particular purpose is to be implied into the contract.
11. **LIABILITY:**
Save as stated in Conditions 9 and 10 (and save in respect of death or personal injury resulting from the negligence of the Seller its servants or agents) the Seller shall not be liable for any claim or claims for direct or indirect consequential or incidental injury loss or damage made by the Buyer against the Seller whether in contract or in tort (including negligence on the part of the Seller its servants or agents) arising out of or in connection with any defect in the goods or their fitness or otherwise for any particular purpose or any act omission neglect or default of the Seller its servants or agents in the performance of the contract.
12. **FORCE MAJEURE:**
Notwithstanding anything herein contained neither the Buyer nor the Seller is to be held liable for any delay or failure to carry out the contract due wholly or in part to an act of God action by any Government whether British or foreign civil war strikes and/or lockouts wheresoever occurring fire trade disputes floods or unfavourable weather or any material becoming unavailable or irreplaceable (whether at all or at commercially acceptable prices) or any other circumstances beyond the control of the Seller.
13. **SUB-CONTRACTING:**
The Seller reserves the right to sub-contract the fulfilment of any order or any part thereof.
14. **INSOLVENCY AND BREACH OF CONTRACT:**
In the event that:
 - a) the Buyer commits any breach of the contract and fails to remedy such breach (if capable of remedy) within a period of thirty days from receipt of a notice in writing from the Seller requesting such remedy; or
 - b) any distress or execution is levied upon any of the goods or property of the Buyer; or
 - c) the Buyer offers to make any arrangements with or for the benefit of its creditors or (if an individual) becomes subject to a petition for a bankruptcy order or (being a limited company) has a receiver appointed of the whole or any part of its undertaking property or assets; or
 - d) an order is made or a resolution is passed or analogous proceedings are taken for the winding up of the Buyer (save for the purpose of reconstruction or amalgamation with insolvency and previously approved in writing by the Seller) the Seller shall thereupon be entitled without prejudice to its other rights hereunder forthwith to suspend all further deliveries until the default has been made good or to determine the contract and any unfulfilled part thereof or at the Seller’s option to make partial deliveries. Notwithstanding any such termination the Buyer shall pay to the Seller at the contract rate for all the goods delivered up to and including the date of termination.
15. **INDUSTRIAL PROPERTY RIGHTS:**
If goods supplied by the Seller to the Buyer’s design or specifications infringe or are alleged to infringe any patent or registered design right or copyright the Buyer will indemnify the Seller against all damages, costs and expenses incurred by the Seller as a result of the infringement or allegation. The Buyer will give the Seller all possible help in meeting any infringement claim brought against the Seller.
16. **BUYER’S ERROR IN ORDERING:**
In the event the Buyer orders incorrectly the Seller will be under no obligation to the Buyer to rectify or assist in rectifying the error.
17. **LAW AND JURISDICTION:**
The contract shall be subject in all respects to English Law and to the jurisdiction of the English Courts.

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