

SuperFlo ABS

Specification guide



CHILLED & COLD WATER PIPEWORK

Durapipe SuperFLO ABS for low temperature fluid transportation.

Durapipe SuperFLO ABS combines corrosion resistance, toughness and economic benefits to provide tremendous advantages for low temperature fluid transportation.

SuperFLO ABS is a solvent welded, fully matched pipework system incorporating pipe, fittings and valves that is available in both imperial and metric sizes.

SuperFLO ABS provides a wide temperature range and the system remains extremely ductile even at temperatures as low as -40°C.

Furthermore, SuperFLO ABS is extremely lightweight and is much easier to handle on-site than traditional materials especially during installation which can significantly reduce both time and cost, as well as being fully WRAS approved.



Key Product Information

- Size Range: 3/8" to 8" (*Imperial*), 16mm to 315mm (*Metric*)
- Pressure Rating: (*Imperial*) Up to 4" Class E, Up to 6" Class D, Up to 8" Class C
- Pressure Rating: (*Metric*) PN10 - 16 to 250mm, PN8 - 315mm
- Temperature Rating: -40°C to +60°C

Key Product Features

- Lightweight
- Easy to install
- Wide temperature range
- Tough and durable
- Corrosion resistant

Typical Applications

- Chilled water
- Boosted cold water
- Potable water
- Low temperature cooling
- Demineralised water
- Vacuum systems
- Waste water



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What is SuperFLO ABS?

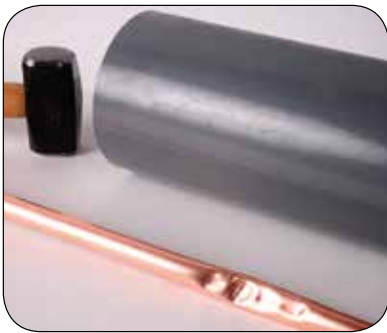
SuperFLO ABS combines numerous performance and economic benefits which make it the ideal solution when there is a requirement for a pipe system to transport low temperature fluids at pressure. SuperFLO ABS is a copolymer of Acrylonitrile Butadiene Styrene, blended, to give unrivalled properties and benefits over traditional pipework materials such as copper or steel.

Acrylonitrile imparts chemical resistance ensuring the pipework does not corrode or scale. The Butadiene content endows the material with impact strength and toughness, particularly at low temperatures, while the Styrene content contributes to lustre, hence the extremely smooth bores, and also ensures the strength of the material.



Tough and Durable

The Butadiene element of SuperFLO ABS affords exceptional resistance to accidental damage, even at sub-zero temperatures. SuperFLO ABS is therefore extremely ductile and performs at temperatures as low as minus 40°C.



Copper pipe vs ABS pipe



Copper vs ABS



Steel pipe



Plastic pipe

Corrosion and Limescale Resistant

Both limescale and corrosion can become a problematic feature of any metal-based pipework system. However, the smooth bore lining of SuperFLO ABS pipework prohibits any limescale build-up throughout the life of the system, maintaining consistent flow rates.

Furthermore, SuperFLO ABS is extremely corrosion resistant even with a range of moderate chemicals which can mean less maintenance costs and no costly system replacement.

Superior Flow

Low fluid friction allows higher flow velocities than metal pipes and also inhibits the formation of scale, with consequent savings in pump energy consumption, and reduced pressure drops.

Lightweight

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



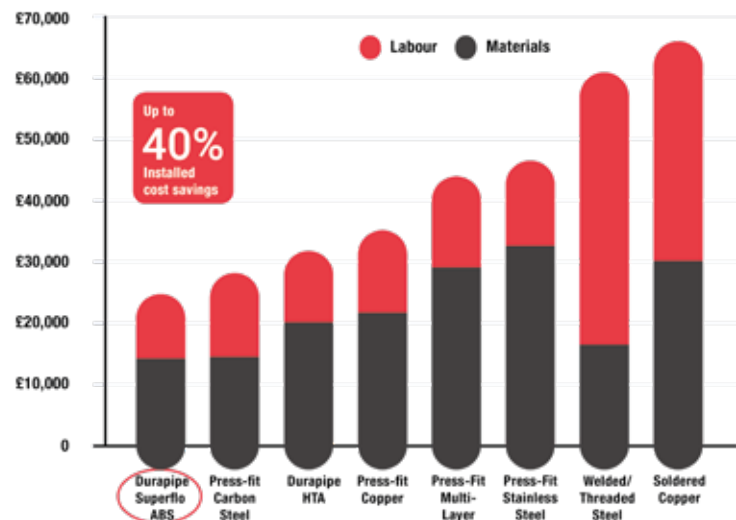
Wide Temperature Range

A major advantage of SuperFLO ABS over other plastic pipework systems is its ability to perform over a wide temperature range from -40°C to +60°C.

(Note: usual precautions must be taken to prevent contents freezing).

Reduced Installation Costs

Due to the ease of jointing & installation, the lightweight nature of SuperFLO ABS and the fact that no special tools or hot works permits are required, pipework installation time is reduced considerably.



Unrivalled Third Party Standards and Approvals

SuperFLO ABS is manufactured to the highest level and meets with the requirements of many international standards and approvals.

SuperFLO ABS has a 50 year design life with a residual safety factor of 2:1. (For full details refer to 'Design Life' section on page 74).

This unrivalled level of third party approvals offers total assurance to the designer, installer and end user that SuperFLO ABS is a consistent and reliable pipework system.

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



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.



Quality Manufacturing

Quality is central to the operation with BS EN ISO 9001 certification and within an environmental management system which operates in accordance with the requirements of ISO14001.



Global Distribution Network

SuperFLO ABS is available from an extensive international network of distributors and stockists. Please visit www.durapipe.co.uk/resources/stockists for details of your nearest stockist.



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 electricity required
- No flame or combustible gas bottles required on-site
- No site downtime due to electricity shut down
- No hot works permits or need for site segregation
- Permanent, secure jointing
- No special tools needed
- Easy transition to other systems
- Reduced installation time
- Reduced installation costs
- Light and easy to handle



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.



Abrasion Resistance

SuperFLO ABS offers good resistance to abrasion and erosion from aggressive slurries.

No Metallic Stabilisers

SuperFLO ABS 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.

Pump Efficiencies

The smooth bore of ABS pipe creates less friction than a carbon steel pipe. Less friction results in lower headloss which means a lower pump duty is required, creating energy and cost savings. The Wilo-Select software from Wilo Pumps lets the designer select the right pump for the job with all the important information at hand, eg. the product description, operating instructions and specification text. The planning software from Wilo is therefore an optimal tool for HVAC experts, system technicians and planners. Wilo Select can compare the pump duty requirement using different pipe materials (plastic & steel) and can show how a lower pump duty can be selected when using plastic pipework. As well as requiring a lower cost pump, energy cost savings of 75% are achievable by using ABS compared to steel pipework.*

**Cost savings based on a theoretical light commercial installation which requires 200m of straight 32mm pipe, 20x elbows and 2x isolation valves... and assuming a flow rate of 1.0 l/sec.*



Offsite Modular Construction

Offsite modular engineering involves the creation in factory conditions of multi-service modules, containing all the services needed for a building. The benefits of offsite modular production include:

- Cuts costs by up to 15%
- Reduces time on-site from weeks to days
- Overcomes skills shortages by using less technical trades for on-site installation
- Satisfies need for sustainable construction practices
- Reduces health & safety risks on-site
- Reduces waste & environmental impact of a project



BIM

In 2011 the UK Government published its Construction Strategy that outlined the requirement for fully collaborative 3D BIM as a mandatory public building procurement process for all buildings over £5m from 2016. The key objective is to reduce capital cost and the carbon burden from the construction and operation of the built environment by 20%. The use of BIM will provide a more efficient way of working at all stages of the project lifecycle. BIM models for our Durapipe SuperFLO range of pipe, fittings and valves (metric only) are now available to download from the Durapipe website via www.durapipe.co.uk/resources/bim



Healthy Water Systems

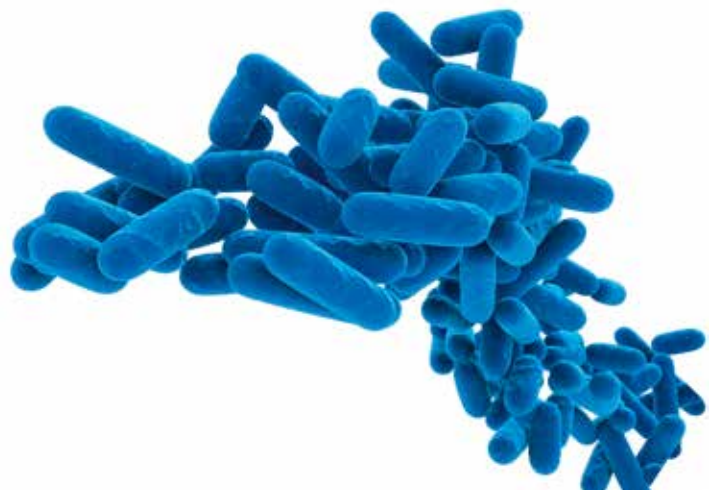
The choice of piping material has implications for water quality, in particular when it comes to fighting bacteria and biofilm in water systems.

A biofilm is an aggregate of microorganisms, and the ones that provide particular concern in building services pipework can cause legionella and pseudomonas. There is on average 300 reported cases of legionella per year in the UK.

We know that biofilm (microorganisms/bacteria) attaches itself to the rugged or jagged parts of the pipe. It thrives in dirt and will colonise where this is present, for example it likes sludge, scale and rust which form rugged or jagged surfaces.

Plastic pipework such as ABS has a smooth bore so there is nothing for biofilm to attach to which in turn limits its growth. So plastic has a clear advantage here over both new and a corroded/scaled metal pipe.

Biofilm will occur because bacteria is alive and lives in water. For the building owner/operator, it's all about monitoring and control of bacteria in their water systems, as no pipework material will completely combat the build-up of biofilm.



Schools

Edlington School, Doncaster

Application – Rainwater Harvesting

“SuperFLO offered superior performance levels for its particular application. The technical support and on-site training that was provided by Durapipe was excellent.”



**Ryan Street,
NG Bailey**

Stockbridge Village School, Liverpool

Application – Air Conditioning

“Durapipe SuperFLO eliminates the need for hot works and combined with its lightweight nature, significantly reduced labour time and cost for us.”



**Kevin Sykes,
A&B Engineering**

Healthcare

Walsall Manor Hospital

Application – Boosted Cold Water

“With such a time-critical project, it was crucial that we selected products which would aid us in completing our installations on time.”



**Steve Baguley, Hilton
Building Services**

Care Home, Milton Keynes

Application – Boosted Cold Water

“We have been impressed with the pipework’s ease of installation and quality.”



**Tim Anders,
Anders Plumbing**

BUILDING SERVICES Case Study Examples

Data Centres

Atos Origin Data Centre

Application – Boosted Cold Water

“SuperFLO ABS doesn’t require any hot works, which helps save a lot of time and reduces safety worries on site. ABS is also limescale resistant and ductile at very low temperatures, which are important factors to consider for a system that will be carrying cold water constantly.”



Andy Coles, CW Partnership

MOD Data Centre in Cyprus

Application – Boosted Cold Water

“We needed a system that could be easily and quickly installed. The low levels of preparation required with SuperFLO and its lightweight properties meant it was ideal for our needs.”



**Carl Davies,
Southern and
Redfern**

Public Buildings/Accommodation

British Museum

Application – Air Conditioning

“We used Durapipe ABS because of its long life span and cost-effectiveness in comparison to other pipework solutions.”



Ashley Pursey, Romec

Glasgow Student Accommodation

Application – Cold Water

“SuperFLO is quick & easy to install and provides exceptional long-term performance capabilities.”



**Wayne Morgan,
Valelectric**

Industrial Manual & Actuated Valves

Durapipe offer a comprehensive range of manual valves as part of the SuperFLO ABS system to provide solutions for a wide range of industrial processes and applications.

Our valve offering includes the market-leading VKD ball valve, alongside metering, butterfly, diaphragm, ball check and air release valves.

Many of our valves include innovative patented design features with the latest technological developments to provide the end user with a high-quality valve tailored to a specific application, offering a variety of solutions for isolation, regulation, pressure relief, flow direction and system protection.

In addition to our extensive range of manual valves, we also offer a wide range of actuated valve solutions, that can be either electrically or pneumatically operated.

Our dedicated valve and actuation team can offer technical advice and assemble complex valve packages.

Please contact our Valve Department on 01543 471681.



Flow Control

In addition to our manual and actuated valve range, we also offer an extensive range of technically advanced flow control equipment within our FLS range. The accuracy of flow control and measurement is crucial within industrial applications and is therefore important that adequate consideration is given to the type of flow control required. The Durapipe FLS range includes a range of Paddlewheel Flow Sensors, Variable Area Flowmeters, Flow Monitors, Magmeters and Batch Controllers, along with various installation fittings that can be used in conjunction with the Durapipe SuperFLO ABS system.



Standards & Approvals

Durapipe SuperFLO ABS is manufactured to the highest level and exceeds the requirements of many international standards and approvals.

The system is WRAS approved and is also 'Approved for use within public water supplies and by the Secretary of State'. SuperFLO ABS is listed in the 'List of Approved Products' published by the DWI. Furthermore, our products are manufactured in an environment that complies with the requirements of ISO 9001 and ISO 14001.



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Secondary Refrigeration

Recent years have seen an increase in the use of secondary refrigeration systems as a cost-effective and reliable alternative to traditional direct expansion refrigeration systems. This has been enhanced by government legislation banning the use of a number of Hydrocarbon HFC refrigerants by 2020 with GWP (Global Warming Potential) of above 2500, increasing the popularity of secondary loop refrigeration systems.

Secondary Refrigeration systems generally operate using low GWP refrigerants such as Glycol or Hycool with propylene glycol being the most popular, particularly in supermarket applications due to its non-toxic properties. Due to its corrosion resistant properties, Durapipe SuperFLO ABS is increasingly being utilised as a more effective and durable solution for secondary refrigeration systems. Its wide operational temperature range of -40°C to +60°C makes it ideal for a secondary refrigeration application, which typically operates at -15°C to -17°C.



Water and Waste Treatment

Thames Water, Hampshire

Application – Effluent Treatment

“Durapipe SuperFLO ABS was the most appropriate solution due to its lightweight material and maintenance free qualities.”

Darren Brighton,
Tuke & Bell



Wessex Water, Dorset

Application – Waste Treatment

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

Mike Back,
Damar Group



Process Industries

Wedge Group

Application – Contaminated Water

“Durapipe SuperFLO ABS was the obvious choice to carry our contaminated water, the product is reliable and hard-wearing.”

Andrew MacLean,
Newport Galvanisers



Water Purification Units

Application – Pure Water

“The pipework needs to ensure the water being carried does not become contaminated. We believe SuperFLO ABS is the best performing product on the market for our requirements.”

Derek Spriggs,
EWS



INDUSTRIAL Case Study Examples

Marine and Offshore



North Sea Oil Rig

Application – Potable Water via Reverse Osmosis

“It was imperative that the chosen pipework system could convey both seawater and potable water without compromising performance on either. I firmly believe SuperFLO ABS is the best product on the market to achieve this.”

George Haworth,
Salt Separation Services

Cruise Ship

Application – Chilled Water

“SuperFLO ABS pipework was ideal for the sophisticated requirements of this large chilled water installation.”

Dirk Rötger,
Imtech Marine



Food & Beverage



Brecks Food

Application – Chilled Water Transportation

“We have been delighted with Durapipe UK from the initial enquiry, right through to the project completion, the technical support that we received from everyone at Durapipe throughout the project was exceptional.”

Craig Dykes,
J Dykes Property Developments

Brewery, Hampshire

Application – Glycol Transportation

“SuperFLO ABS’ simple joining technique meant that labour time & cost was significantly reduced which was a major influencer for us.”

Adam Komrower,
Andwell Brewery





Sustainability

Introduction

Plastic piping systems are a sustainable and environmentally responsible choice that will serve generations to come. They are energy efficient during manufacturing and provide peak performance during service. Strong, durable, lightweight and flexible, plastic piping systems require significantly less energy to manufacture, transport and install than metal alternatives, and supply a long service life.

The cumulative energy requirements to manufacture, install and transport plastic pipework is estimated to be substantially less than most non-plastic systems.

Plastic saves energy – besides the technical advantages of plastics (eg. corrosion resistance) there are inherent benefits that contribute to energy efficiency and energy sustainability. The chain of activity outlined on the opposite page highlights where plastic has a positive impact compared to copper and steel which have a higher energy demand.



Durapipe & Aliaxis

The continuous mission of Durapipe and the Aliaxis Group is to ensure our product offering is as sustainable as possible and considers the impacts on the environment whilst maintaining the highest quality and performance.

- Comply with all relevant environmental legislation, codes of practice and standards relating to quality and the environment.
- Continually improve the company's environmental performance, minimising any pollution risk and adopting best practice.
- Increase usage of recycled materials where appropriate.
- Take positive action to reduce waste by promoting energy conservation and recycling.
- Optimising production processes.
- Consolidating transportation routes across group companies.

Durapipe Environmental Management System

Durapipe UK operates an environmental management system that has been successfully assessed against the BS EN ISO 14001 environmental management system.

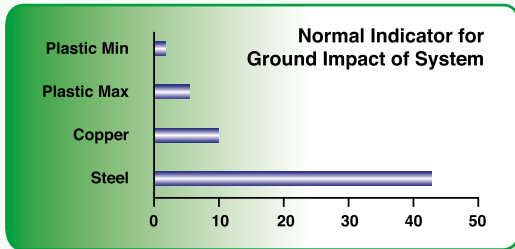




Ground Extraction of Raw Material

Plastics use only 4% of the world's oil as feedstock compared to 86% used for heating and transportation.

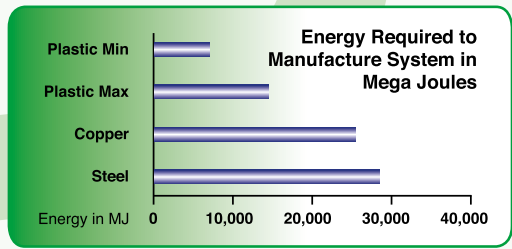
Most of this is recoverable via energy recovery, ie. plastics only 'borrow' energy during their lifetime and this can be recovered in the form of heat, which can be converted to electricity.



Manufacturing

The energy used to make thermoplastic pipe & fittings from raw material compares favourably with, for example, steel pipe manufacture because lower conversion temperatures are needed.

Scrap during the manufacturing process of plastic can also be recycled and reused, which minimises the need for any thermoplastic pipe scrap entering the waste stream, presenting an example of eco-efficiency.



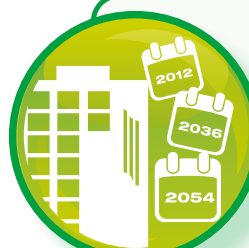
Installation

On average a plastic pipework system is approximately 1/6th of the weight of an equivalent steel system. This means plastics are easier to install on-site with little or no requirement for expensive lifting equipment.



Transportation

Thermoplastics pipe & fittings are cheaper and easier to transport because they are lighter in weight than equivalent metal pipes.



System in Service

All plastic piping materials have low thermal conductivity resulting in less heat loss through the pipe wall. This characteristic could also minimise or eliminate the need for insulation.

Furthermore, due to very smooth inner pipe walls, thermoplastic piping materials have less turbulence, lower velocities and less friction loss than other piping materials.

This means less energy is required to move fluids throughout a system and a lower pump output.

Carbon Impact - LCA

At **EVERY** stage of its lifecycle, plastic pipe systems reduce the level of energy consumption in comparison to metallic pipe systems.

On a typical commercial building project, the real impact is:

Saving 2,314kg CO₂ Equivalent v Copper

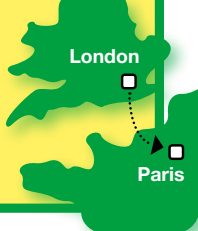
This saving is the equivalent to:

- ✈ 8,550 miles by plane or
- 🚗 94,500 miles by car; equates to:
- ✈ 9.5 return flights from London to Paris
- 🚗 105 return journey by car from London to Paris

Saving 3,606kg CO₂ Equivalent v Carbon Steel

This saving is the equivalent to:

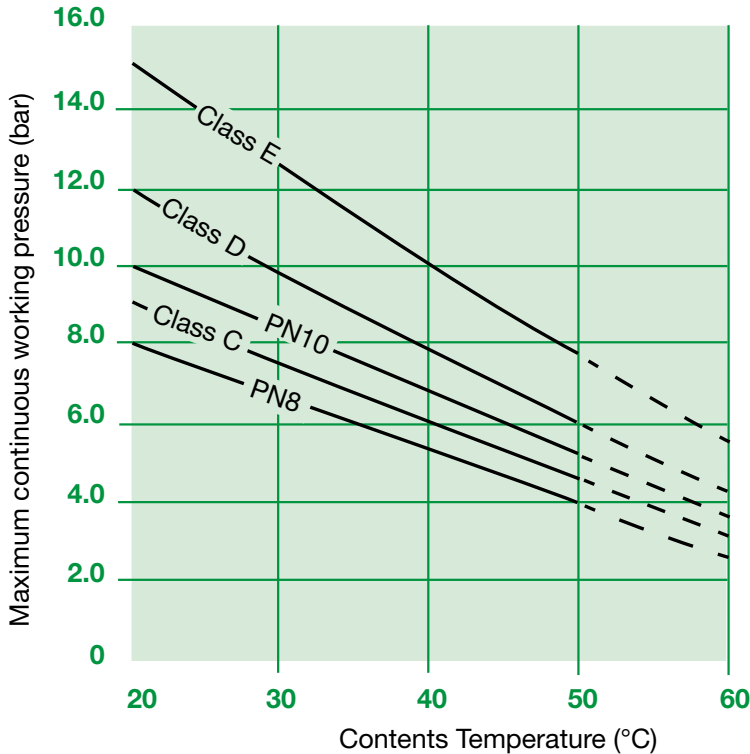
- ✈ 13,239 miles by plane or
- 🚗 147,600 miles by car; equates to:
- ✈ 14.7 return flights from London to Paris
- 🚗 164 return journeys by car from London to Paris



Technical Information

Maximum pressure/temperature relationship

When temperature of contents exceeds 20°C the working pressure of the system must be reduced accordingly (see table below).



Note: For applications above 50°C please contact our technical support team.
For applications/systems using VXE ball valves, please refer to the Durapipe Valves Technical Brochure.

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 = equivalent pipe length (metres)
F = fittings constant (see table below)
D = fitting internal diameter (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 |

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

Flow calculations

Pressure drop due to friction in pipes conveying water can be determined using the Flow Nomogram on page 13.

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 on the 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

Classes C to E in accordance with BS 5391 Part 1

| Size | OD | Class C | Class D | Class E | Class T |
|--------|-------|---------|---------|---------|---------|
| 3/8" | 17.1 | | | 13.7 | 10.1 |
| 1/2" | 21.4 | | | 17.4 | 14.2 |
| 3/4" | 26.7 | | | 21.7 | 19.5 |
| 1" | 33.6 | 29.6 | | 27.4 | 25.0 |
| 1 1/4" | 42.2 | 37.2 | | 34.4 | 31.6 |
| 1 1/2" | 48.3 | 42.7 | | 39.3 | 36.3 |
| 2" | 60.3 | 53.1 | | 49.1 | 45.9 |
| 2 1/2" | 75.2 | 65.0 | | | |
| 3" | 88.9 | 78.5 | | 72.3 | |
| 4" | 114.3 | 101.1 | | 93.1 | |
| 5" | 140.2 | 121.8 | | | |
| 6" | 168.3 | 148.5 | 142.7 | | |
| 8" | 219.1 | 193.7 | | | |

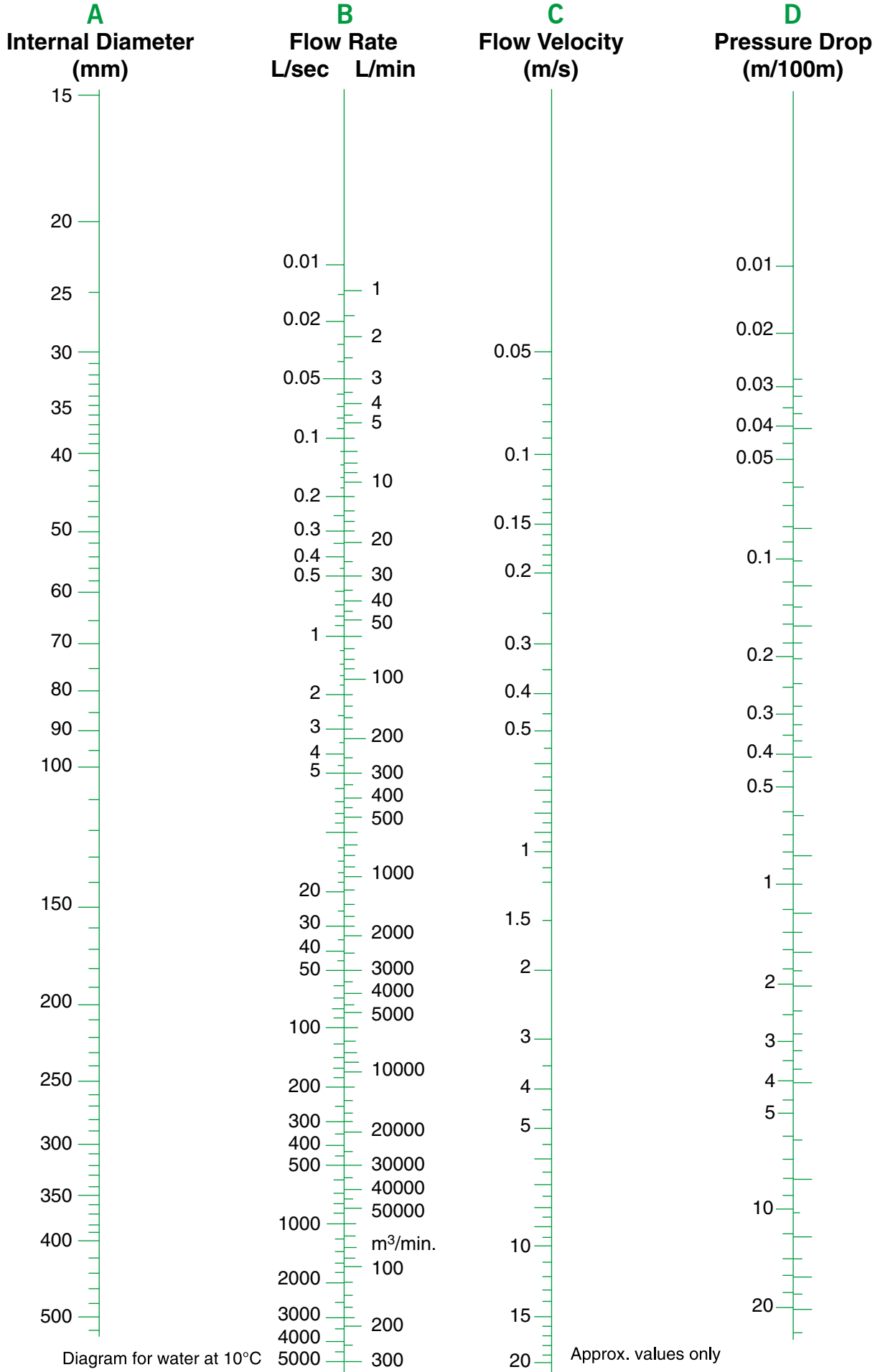
Note: Dimensions are given for guidance only, please contact our Technical Support Department for accurate information.

In accordance with ISO 161

| Size | PN10 |
|------|-------|
| 16 | 13.0 |
| 20 | 16.8 |
| 25 | 21.2 |
| 32 | 27.8 |
| 40 | 34.6 |
| 50 | 43.2 |
| 63 | 54.6 |
| 75 | 65.0 |
| 90 | 78.0 |
| 110 | 95.4 |
| 125 | 108.6 |
| 140 | 121.6 |
| 160 | 139.0 |
| 200 | 173.6 |
| 225 | 195.4 |
| 250 | 217.8 |
| 315* | 273.4 |

*315mm is PN8 rated.

Flow Nomogram



Technical & General Information

SuperFLO ABS Jointing Guide

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 SuperFLO ABS solvent cement **must** be used. The jointing procedure detailed below must be followed.

When using 'One-step' solvent cement, it is not necessary to abrade pipe or fitting (unless making a joint on to old ABS pipe).

No attempt should be made to increase the clearance between the pipes and fittings.

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. Reducing bushes should also be chamfered (unless where a moulded chamfer is included).



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.

Watch our jointing videos online at
www.durapipe.co.uk/technical-support/jointing-videos/



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 and tin of cement. 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 2 1/2" (63mm) for 0.5 litre and up to 3" (75mm) for 1 litre tins.



6. Immediately after applications of cement, push pipe fully home into the fitting. Do not twist. Hold the pipe and the fitting for times varying from a few seconds on sizes 3/8" or 16mm up to 1 minute on size 315mm. 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.



- Do not disturb a joint for least 10 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.
- 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**
- **DO NOT dilute or decant SuperFLO ABS solvent cement**
- **Follow safety instructions on Durapipe solvent cement and Eco-cleaner containers**
- **Always wear appropriate personal protective equipment**

Notes

- The integrity of SuperFLO ABS systems may be affected if SuperFLO ABS One-step solvent cement and Durapipe Eco-cleaner are not used. Durapipe UK disclaims responsibility for any SuperFLO ABS system constructed with any other cement or not fabricated in accordance with the instructions herein.
- Use the appropriate size of solvent cement tin/container and method of application for the size of pipe and fitting to be assembled.
- To achieve the correct speed of application on sizes 5"/140mm and above, cement should be applied simultaneously to pipe and fitting, by two people.

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 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 and higher 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 | Up to 2 1/2" 75mm | 3" to 4" 90mm to 125mm | 5" & 6" 140mm & 160mm | 8" 200mm & 225mm | 250mm & 315mm |
|-------------|----------------------|---------------------------|--------------------------|---------------------|------------------|
| Drying Time | 0.5 hour / bar | 1.0 hour / bar | 1.5 hours / bar | 2.0 hours / bar | 48 hours minimum |

Note - minimum drying period should never be less than 1 hour.

Drying times should be extended where ambient temperatures are below 20°C. Solvent cement joints should not be made below 0°C. For more details contact the Durapipe Technical department.

An indication of the number of joints to be made per litre of cement is as follows:

| Size mm | inch | Recommended container size | Joints per litre ABS |
|------------|-----------|-------------------------------|-------------------------|
| 16 - 32 | 3/8 - 1 | 0.5 Litre | 400 |
| 40 - 63 | 1 1/4 - 2 | 0.5 Litre | 200 |
| 75 - 110 | 2 1/2 - 4 | 0.5 Litre | 70 |
| 125 - 140 | 5 | 1 Litre | 20 |
| 160 - 225 | 6 - 8 | 1 Litre | 10 |
| 250 - 315 | - | 1 Litre | 5 |

Branch connections - reduced bore

Reduced branch connections can be made as follows:

Imperial range:

Bushed equal tees or Y-Pieces, solvent cemented saddles.

Metric range:

Bushed equal tees or Y-Pieces, reduced branch tees.

Saddles permit branch connections to be made with the main pipe in situ. The following procedure must be followed carefully:

1. After making sure that the pipe is empty, drill a hole in the pipe wall to suit the connection. The size of hole and cutter to be used for each size of saddle is indicated below:

| Pipe size (Imperial) | Hole diameter (mm) | Cutter size (Imperial) |
|----------------------|--------------------|------------------------|
| 2 | 48 | 17/8 |
| 3 | 61 | 23/8 |
| 4 | 74 | 27/8 |
| 6 | 74 | 27/8 |



2. Mark out the area covered by the saddle on the pipe.



3. Clean surfaces with Eco-cleaner.



4. Feed on to pipe two worm drive (Jubilee) clips which will clamp the saddle during fitting. These should be placed either side of the socket on the saddles. Apply cement to pipe area and saddle. **It is important to apply cement quickly.**



5. Position saddle immediately, ensuring that spigot locates in hole in pipe wall. Clamp in place using worm drive clips without delay.



6. Wipe off any excess cement.



7. Replace lids on containers.
8. Clean brush with Eco-cleaner.



Important:

1. See page 15 for details of drying times. Allow 24 hours before removing straps.
2. On no account should a branch tee be constructed by drilling through the wall of a pipe and/or fitting and attempting to solvent weld a smaller fitting into the hole.

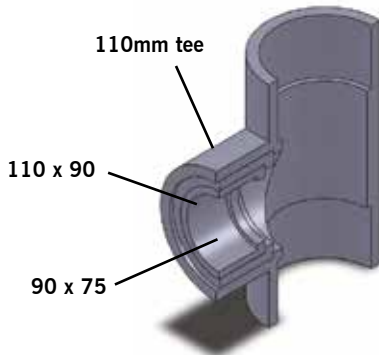
The use of bushes, reducers and threaded adaptors

Reducing bushes

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

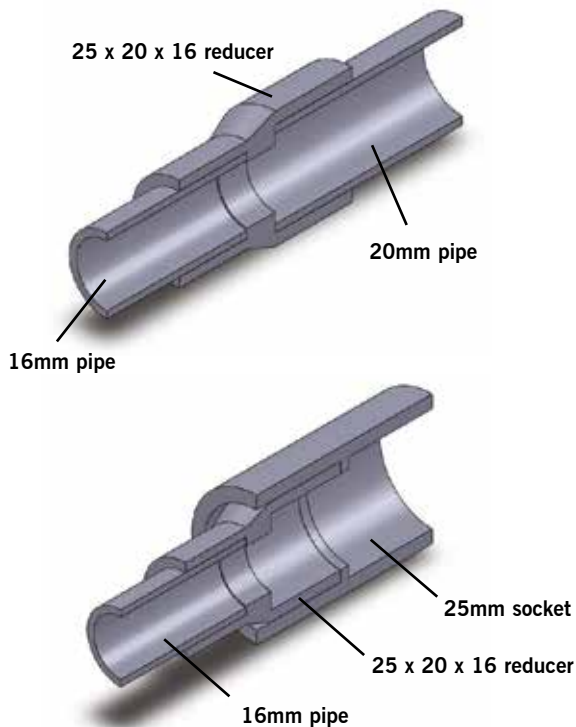
Care must be taken to properly prepare all jointing surfaces as recommended earlier, with the end of the bush being chamfered (unless a moulded chamfer is included).

Example in the use of reducing bushes



The use of reducers

All fittings have female ends, dimensionally controlled for cold fusion jointing. In addition, reducing sockets in the Metric series have controlled outside diameter at the larger end. This allows use as a male or female component, as illustrated.



Metric series threaded adaptors

Female and male threaded adaptors have controlled inside and outside diameters on the plain end. They can therefore be used as a male or female component.

SuperFLO ABS flexible hoses

SuperFLO flexible hoses have been introduced in response to customer demand and are specially designed to allow direct connection from Durapipe SuperFLO pipework to operating equipment.

If pipework is either short of a connection or at a higher or lower level to ancillary equipment, the braided flexible hoses can be solvent welded to SuperFLO pipework and then connected to operating equipment using a female threaded connection, forming a durable, leak-free fusion.

Manufactured in 300mm and 600mm lengths as standard, with additional sizes available on request, SuperFLO flexible hoses come in a choice of 20mm, 25mm and 32mm diameters. With an internal hose made from EPDM rubber, SuperFLO flexible hoses are also compliant with BSRIA Flexible Hose Standard BG4/2004.



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 onto SuperFLO ABS 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" NB. Class T pipe must be used. Pipes from SuperFLO ABS 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 or Fibre Seal be used when making plastic threaded joints/connections. Any other sealing compound must be confirmed by Durapipe UK as being suitable, as certain sealants can chemically attack ABS and must not be used.

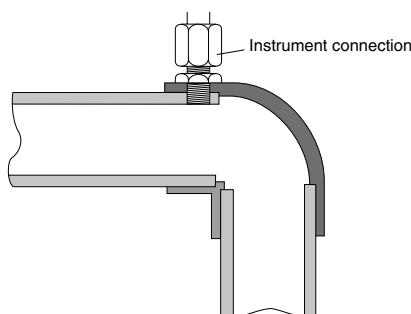


Connection to instrumentation

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 | Connection size |
|---|---|
| 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 full thread form, will be limited to Class C/PN10 pressures.



Flanged joints

Full face flanges are available from ¹/₂" to 6".

Stub flanges are available from 2" to 8" and in metric sizes from 16mm to 315mm and provide a convenient means of converting from Imperial to Metric systems in sizes 8"/200mm and above.

The correct galvanised mild steel backing ring and rubber gasket must be used with both types.

Flange bolting procedure

The following procedure is recommended for installing SuperFLO ABS 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 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 is placed under both bolt heads and nuts.
5. Tighten the nuts and bolts in a diagonally opposite sequence (see below) 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 tightness of all bolts is achieved.

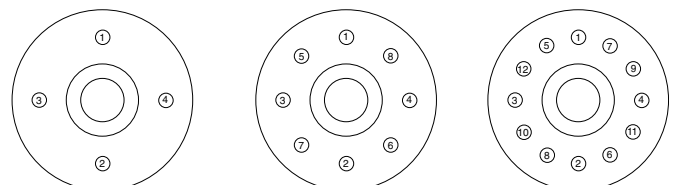
Tightening torques for flange bolts in SuperFLO ABS piping systems

Recommended Torque Values (Nm)

| Size | Torque |
|--|--------|
| 16mm - ³ / ₈ " | 15 |
| 20mm - ¹ / ₂ " | 15 |
| 25mm - ³ / ₄ " | 15 |
| 32mm - 1" | 15 |
| 40mm - 1 ¹ / ₄ " | 20 |
| 50mm - 1 ¹ / ₂ " | 30 |
| 63mm - 2" | 35 |
| 75mm - 2 ¹ / ₂ " | 40 |
| 90mm - 3" | 40 |
| 110mm - 4" | 40 |
| 125mm | 50 |
| 140mm - 5" | 50 |
| 160mm - 6" | 60 |
| 200mm | 70 |
| 225mm - 8" | 70 |
| 250mm - 10" | 80 |
| 315mm - 12" | 100 |

The tolerance on torque is +/-10%

Tightening sequence



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 below 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 (mm)
 α = coefficient of linear expansion
 ΔT = temperature difference of the pipe (°C)

The coefficient of linear expansion for SuperFLO ABS:
 10×10^{-5} per °C

Rule of thumb: ABS expands/contracts 1mm/metre/10°C temperature change:

Example:

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

Expansion:

$$\begin{aligned} L &= 30,000 \text{ mm} \\ \alpha &= 10 \times 10^{-5} \\ \Delta T &= 35 - 15 = 20^\circ\text{C} \\ \text{Expansion} &= 30,000 \times 10 \times 10^{-5} \times 20^\circ\text{C} \\ &= \underline{60\text{mm}} \end{aligned}$$

Contraction:

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

Hence the system must be designed, using expansion loops, the natural flexibility of pipe, or expansion bellows, to cater for a differential movement, with an expansion of 60mm and a contraction of 30mm.

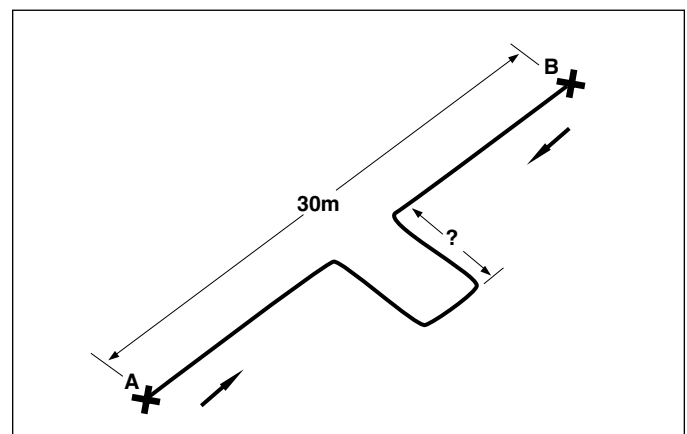
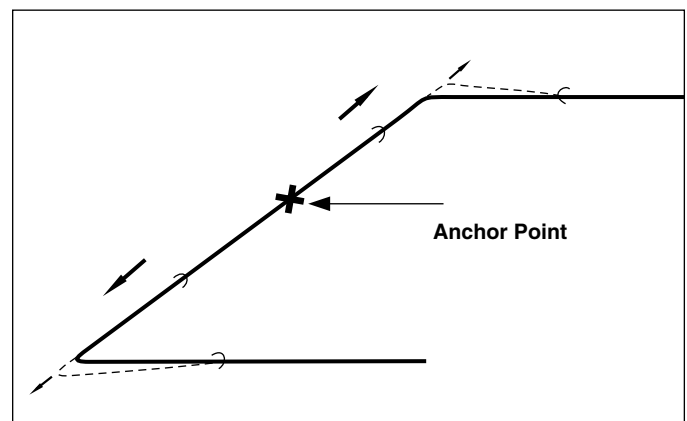
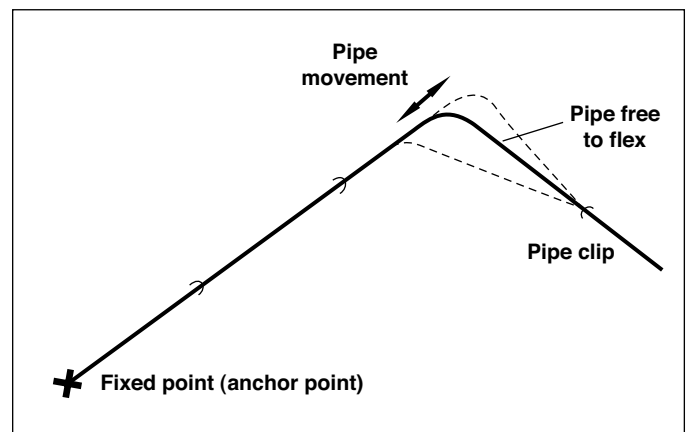
The system should be designed to cater for the greater amount of movement of either expansion or contraction.

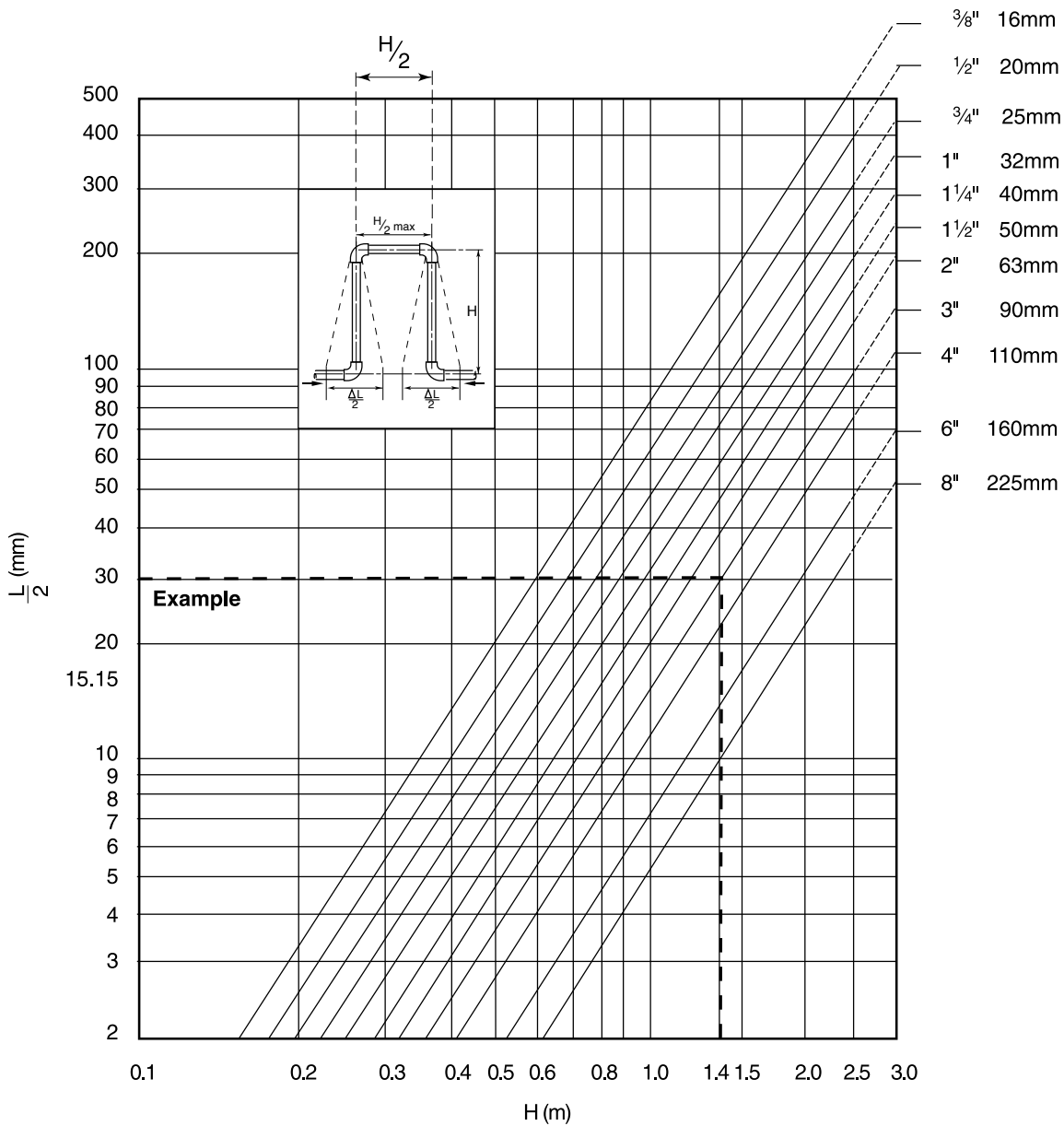
Catering for pipe movement

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:

What is the anticipated change in length of a 20 metre run of SuperFLO conveying chilled water? The system is in the UK and is expected to be ready for commissioning during July or August. The CHW flow will run at 6°C and will return at 12°C. It will be insulated after pressure testing and commissioning is completed.

Calculation:

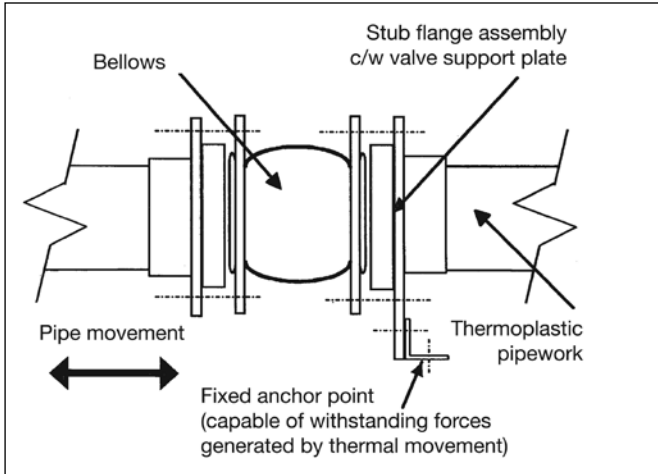
Ambient temperature indoors will probably be in the range of 20°C to 30°C. Assume pipe temperature prior to commissioning as (worse case) = 30°C. Maximum change in pipe temperature will occur in CHW flow pipe, ie. 30 - 6 = 24°C. The change in length, therefore, (using '1mm/metre/10°C') is 2.4mm/metre. The change in length of a 20 metre run will be 2.4 x 20 = 48mm.

Answer:

As the pipe cools from 30°C to 6°C it will contract by 48mm.

Expansion bellows

Bellows may also be used in place of or in conjunction with the natural flexibility of the SuperFLO ABS. These must be approved for use by the bellow manufacturers for use with thermoplastic pipework. Bellows must be installed in accordance with manufacturer's recommendations.

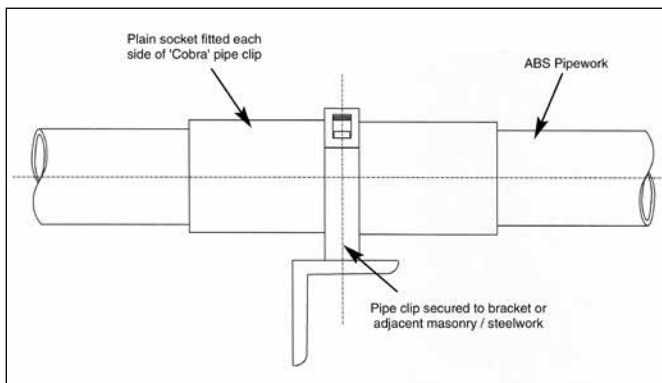


Anchor points

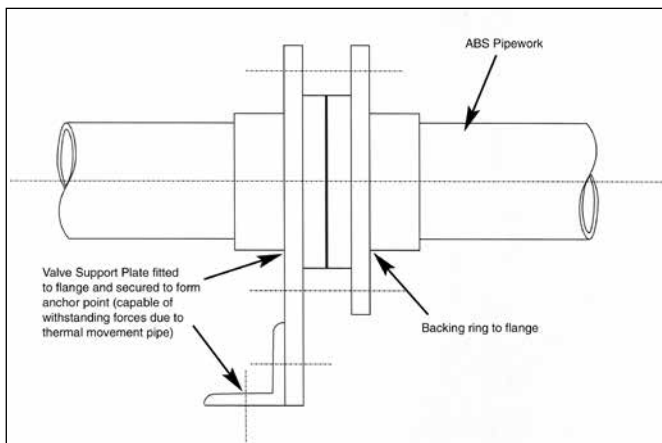
The direction of pipe movement can be controlled by the use of anchor points at strategic positions. There are a number of methods of securely anchoring plastic pipes, some of which are detailed below. However it should be noted that tight fitting pipe supports should not be used since damage to the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

Note: See above for advice on anchoring of bellows.

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 SuperFLO ABS 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 SuperFLO ABS pipes filled with water is given in the table below. This table is based on the thinnest wall pipe in each size. For sizes 1", 1 1/4", 1 1/2", 2", 3" and 4" the support distance can be increased by 10% for class E pipes. Where the contents have a specific gravity greater than 1, the distance must be decreased by dividing the recommended centre distances by the specific gravity. The details shown are for horizontal pipes. For vertical pipes, support centres may be increased by 50%.

| Size mm/imperial | Support distance (m) at 20°C | Support distance (m) at 50°C | Support distance (m) at 60°C |
|---------------------|------------------------------------|------------------------------------|------------------------------------|
| 16mm / 3/8" | 0.8 | 0.5 | 0.4 |
| 20mm / 1/2" | 0.9 | 0.6 | 0.5 |
| 25mm / 3/4" | 1.0 | 0.7 | 0.6 |
| 32mm / 1" | 1.1 | 0.8 | 0.7 |
| 40mm / 1 1/4" | 1.2 | 0.9 | 0.7 |
| 50mm / 1 1/2" | 1.3 | 1.0 | 0.7 |
| 63mm / 2" | 1.4 | 1.1 | 0.8 |
| 75mm / 2 1/2" | 1.5 | 1.2 | 0.8 |
| 90mm / 3" | 1.6 | 1.2 | 0.9 |
| 110mm / 4" | 1.8 | 1.3 | 1.0 |
| 125mm | 1.9 | 1.4 | 1.0 |
| 140mm / 5" | 2.0 | 1.5 | 1.1 |
| 160mm / 6" | 2.1 | 1.6 | 1.2 |
| 200mm | 2.2 | 1.7 | 1.3 |
| 225mm / 8" | 2.3 | 1.8 | 1.5 |
| 250mm | 2.5 | 2.0 | 1.7 |
| 315mm | 2.9 | 2.4 | 2.1 |

Support of heavy equipment

Large valves, strainers and other heavy equipment should always be independently supported to prevent undue loading onto the SuperFLO ABS 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 at all sudden 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 UK 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.)

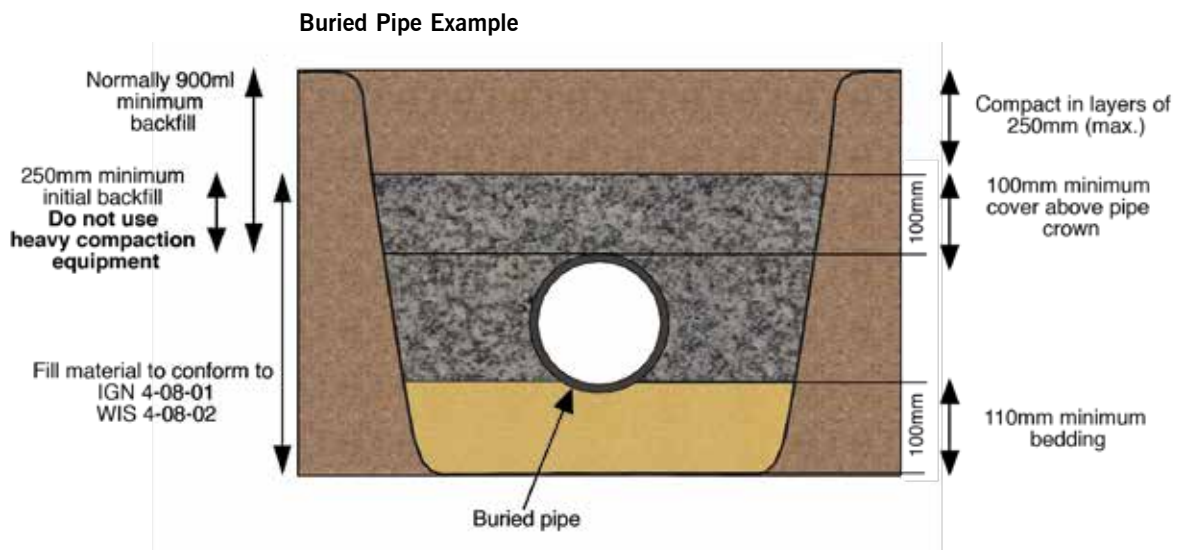
If pipes are jointed above ground, they should remain undisturbed for 2 hours before being lowered into the trench.

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.



Additional Important Information

Thermal insulation

Some insulation products can contain substances capable of having a detrimental effect on thermoplastic pipework eg. certain types of foam rubber insulations can cause pipes to fail where the SuperFLO ABS is conveying liquids at temperatures above 30°C.

Recommended insulation - a list of some of the common types of insulation materials known to be suitable with SuperFLO ABS pipework are as follows:

Fibre wool, such as 'Rockwool'

Armaflex Class 1 HT

Koolphen K Phenolic foam

Polystyrene

Note - the above list is not exhaustive – please contact our Technical Support Department if further assistance is required.

Some adhesives can also be detrimental. Do not bond insulation to SuperFLO ABS. (This comment also applies to any tapes, adhesives, or other substances used to secure the heating tape to the pipework.)

Trace 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.

Flexible hoses

Durapipe SuperFLO ABS flexible hoses are completely compatible with the full system. However other flexible hoses are known to contain plasticisers such as phthalates which can be harmful to ABS. Please contact our Technical Support Department if further advice is required.

Pipe contents identification

Do not put self-adhesive labels directly on to pipe surfaces as this may be detrimental to pipe performance. 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 SuperFLO ABS materials, and therefore confirmation of the suitability of any mastic sealant should be determined before being used in conjunction with SuperFLO ABS 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 SuperFLO ABS pipe. Please check for suitability before use. We strongly recommend the use of Durapipe Cobra clips or Durapipe rubber lined clips for pipe sizes up to and including 160mm OD / 6"NB, wherever circumstances allow.

Pneumatic testing

Pneumatic testing is not recommended because of the risk to personnel or property if, for example, a joint has been temporarily assembled without solvent cement and has then been mistakenly left in that condition. Such joints could separate suddenly and violently during the test.

Also, leak detection sprays designed to detect air leaks on steel pipework can damage thermoplastics.

Contact with synthetic oils

Some synthetic oils are unsuitable for use with thermoplastic pipe systems. The main types of synthetic oils identified as being incompatible with thermoplastic pipe systems includes Esters, Polyalkylene Glycols and Organic Phosphates.

It should be noted that some metal coil manufacturers use these oils in their manufacturing process. This is normally drained from the coil. If it is suspected that residues of oil may remain in the coil it should be filled with methylated spirits, then thoroughly flushed with water.

Freezing conditions

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

Mono-ethylene glycol can be added to the system to lower the freezing point. See opposite for advice on insulation and trace heating.

Contact with fluxes

Some fluxes can be detrimental to SuperFLO ABS. Care should be taken when soldering copper pipework directly above, or close to, SuperFLO ABS pipework.

Buried pipes

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

Thread sealants

Some thread sealants can damage SuperFLO ABS. PTFE tape or Fibre Seal should be used when making threaded connections. See page 18 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 SuperFLO ABS 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 SuperFLO ABS 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 12.

Comparison of SuperFLO ABS Imperial and Metric Sized Pipe

Tabulated below is a comparison of imperial and metric sized SuperFLO ABS pipe. 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 system Class T ABS 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 5391) | | | | | | | Metric System (ISO 15493) | |
|--------------------------------|------------------------------------|-----------------------------|---------|---------|---------|---------|----------------------------|----------------------------------|
| Size (nominal bore) (imperial) | Minimum mean outside diameter (mm) | Minimum wall thickness (mm) | | | | | Size outside diameter (mm) | Minimum wall thickness (mm) PN10 |
| | | Class B | Class C | Class D | Class E | Class T | | |
| 3/8 | 17.1 | - | - | - | 1.7 | 3.5 | 16 | 1.5 |
| 1/2 | 21.4 | - | - | - | 2.0 | 3.6 | 20 | 1.5 |
| 3/4 | 26.7 | - | - | - | 2.5 | 3.6 | 25 | 1.5 |
| 1 | 33.6 | - | 2.0 | - | 3.1 | 4.3 | 32 | 1.9 |
| 1 1/4 | 42.2 | - | 2.5 | - | 3.9 | 5.3 | 40 | 2.4 |
| 1 1/2 | 48.3 | - | 2.8 | - | 4.5 | 6.0 | 50 | 3.0 |
| 2 | 60.3 | - | 3.6 | - | 5.6 | 7.2 | 63 | 3.8 |
| 2 1/2 | 75.2 | - | 5.0 | - | - | - | 75 | 4.5 |
| 3 | 88.9 | - | 5.2 | - | 8.3 | - | 90 | 5.4 |
| 4 | 114.3 | - | 6.6 | - | 10.6 | - | 110 | 6.6 |
| - | - | - | - | - | - | - | 125 | 7.4 |
| 5 | 140.2 | - | 9.3 | - | - | - | 140 | 8.3 |
| 6 | 168.3 | - | 9.9 | 12.8 | - | - | 160 | 9.5 |
| - | - | - | - | - | - | - | 200 | 11.9 |
| 8 | 219.1 | - | 12.7 | - | - | - | 225 | 13.4 |
| - | - | - | - | - | - | - | 250 | 14.8 |
| - | - | - | - | - | - | - | 315 | 18.7* |

2 1/2" and 5" pipes are PN10 rated.

*315mm is rated at PN8.

Properties guide

| Chemical resistance and performance data | Typical applications | Unsuitable for the following uses | Sizes and jointing information |
|---|--|--|---|
| Moderately strong mineral acids Caustic and ammoniacal solutions Most inorganic salt solutions Some detergents Temperature range -40°C to +60°C | Chilled water Low temperature brine Potable water Process water | Applications over 60°C Bleaches Solvents Domestic hot water Flammable substances | Metric: 16mm to 315mm OD Imperial: 3/8" to 8" NB Jointed by solvent cement welding Threaded fittings available |

Note: Temperatures given are for guidance only, please check before specifying.
For applications above 50°C please contact our technical support team.

General Information

Handling and storage

The high impact strength of SuperFLO ABS 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 out individually in strings. (Where appropriate, protective barriers should be placed with adequate warning signs and lamps.)

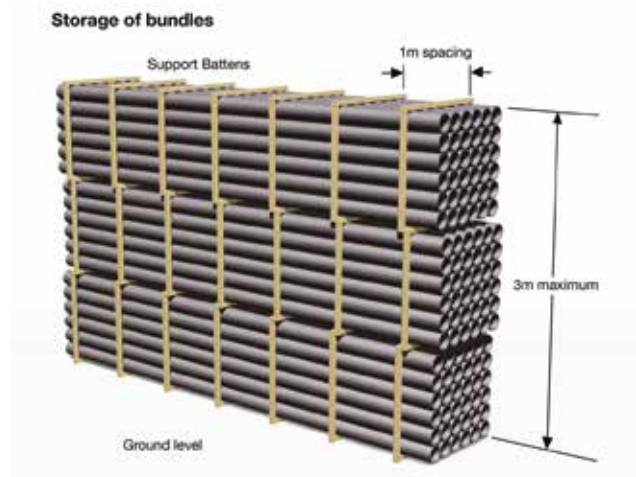


Bundles

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.



| Mechanical, Physical and Electrical Data | Test Method | Value |
|---|--|--|
| Mechanical | | |
| Tensile strength at yield (23°C) | ASTM D635 | 45MN/m ² |
| Tensile modulus of elasticity | ASTM D635 | 2200MN/m ² |
| Poissons ratio | - | 0.35 |
| Izod impact strength at 23°C (notched) | ASTM D256 (1/8") | 35kJ/m ² |
| Charpy impact strength at 23°C (notched) | - | 20kJ/m ² |
| Physical | | |
| Specific gravity | ASTM D792 | 1.04 |
| Surface roughness factor | - | 0.01mm |
| Softening point (BS2782:Part 1 Method120B:1976) | ISO R 306 (5kg) (heating rate unknown) | 99°C |
| Linear co-efficient of thermal expansion | - | 10.1 x 10 ⁻⁵ /°C |
| ISO75 HDT/Ae 1.8Mpa | ASTM D648 (unannealed, 1/4", 18.56 Kgf/cm ²) | 78°C |
| Thermal conductivity | - | 0.157W/m°C |
| Specific heat | - | 2.1kJ/kg.K |
| Self-ignition temperature | - | 540°C |
| Electrical | | |
| Dielectric constant | - | 2.9 at 10 ³ Hz 2.8 at 10 ⁶ Hz |
| Volume resistivity IEC 93 | - | >1.E ¹⁴ ohm m |

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 at www.durapipe.co.uk

Filling and flushing

When purchasing chemicals for either flushing or long-term system use, suppliers should be advised that this is for SuperFLO ABS material. Guidance on the suitability of various system flushing or filling fluids with SuperFLO ABS can be found on the Durapipe website under Technical Support.
 Flush in accordance with BSEN 806-4.

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 250mm and 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 3bar. 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 1½ 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.

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

SuperFLO ABS products are a mid-grey colour, generally in accordance with BS5252, colour ref. 18 B 21 and RAL 7001.

CAD drawings

CAD drawings of Imperial and Metric products contained in this brochure are available on our website www.durapipe.co.uk

BIM

3D BIM models for the Durapipe SuperFLO ABS can be downloaded from www.durapipe.co.uk

SuperFLO ABS dimensions and standards

Imperial

The SuperFLO ABS 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 SuperFLO ABS Metric System is manufactured generally in accordance with the relevant international standards as shown below:

ISO 15493
 KIWA 49 and 549
 DIN 8062 and 8063

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

Materials

SuperFLO ABS material is UK Water Regulations Advisory Scheme approved for cold water services and is listed in the Water Fittings and Materials Directory.

SuperFLO ABS formulation does not contain any harmful metallic stabilisers.

Gaskets and seals

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

Interchangeability

Components in the imperial and metric ranges are not interchangeable, except for 2½"/75mm and 5"/140mm.

Approvals

SuperFLO ABS Imperial series pipe is covered by Kitemark Licence No. KM07961 to BS 5391:Part 1 2006.

SuperFLO ABS Imperial series fittings are covered by Kitemark Licence No. KM07962 to BS 5392:Part 1 2006.

SuperFLO ABS Imperial series pipe and fittings are UK Water Regulations Advisory Scheme approved for cold water services.

SuperFLO ABS Metric series pipe and fittings are UK Water Regulations Advisory Scheme approved for cold water services.

SuperFLO ABS One-step solvent cement is UK Water Regulations Advisory Scheme approved.

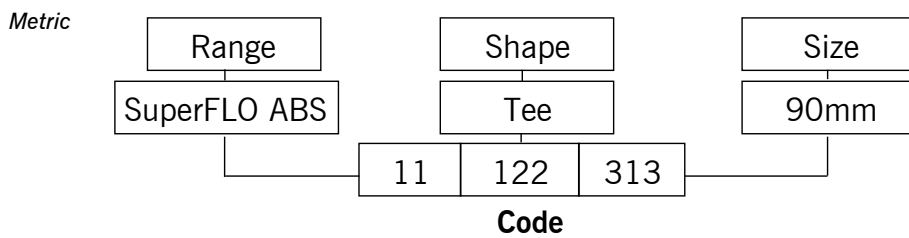
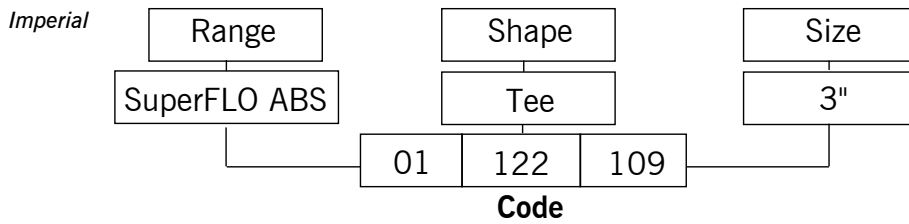
SuperFLO ABS Imperial/Metric VKD and VKR ball valves are UK Water Regulations Advisory Scheme approved.

Durapipe Metric pipework is approved for various non-essential services on board ships by:

American Bureau of Shipping
 Bureau Veritas
 Germanischer Lloyd
 Det Norske Veritas
 Lloyds register UK
 RINA (Royal Institution of Naval Architects)
 Russian Marine Register

Ordering by code

See example below of Durapipe product codes; these should be used when ordering product.



Abbreviations

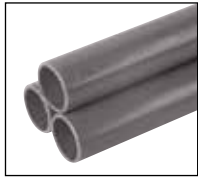
The following list of abbreviations is used in this catalogue:

- ABS - Acrylonitrile Butadiene Styrene
- BS - British Standards
- ISO - International Standards Organisation
- DIN - Deutsche Industrie Normen (German Industrial Standards)
- KIWA - Keuringsinstituut Voor Waterleidingartikelen (Netherlands)
- ANSI - American National Standards Institute
- BSP - British Standard Pipe Thread
- EPDM - Ethylene Propylene Rubber
- FPM - Fluorine Rubber (eg. Viton®)
- PTFE - Polytetraflouroethylene (eg. Teflon®)

® Dupont registered trade name.

Index to SuperFLO ABS Metric Fittings

Note: CAD drawings & BIM models available for metric system via www.durapipe.co.uk



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Sockets (plain)
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Reducing bushes
(plain)
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Reducing sockets
(plain)
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Elbows 45°
(plain)
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Elbows 90°
(plain)
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Tees 45° (plain)
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Tees 90° (equal)
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Tees 90° (swept plain)
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Tees 90° (reducing
plain)
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Bends 90°
(short radius)
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Bends 90°
(long radius)
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End caps (plain)
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Socket unions (plain)
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Imperial/metric socket
adaptors (plain)
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Male threaded adaptors
(BSP taper male thread)
page 35



Female threaded adaptors
(plain spigot/plain socket/
female BSP thread)
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Hose adaptors
(spigot end/hose tail)
page 36



Female composite
unions (plain/brass,
BSP parallel thread)
page 36



Male composite unions
(plain/brass,
BSP taper thread)
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Female composite unions
(plain/stainless steel,
BSP parallel thread)
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Male composite unions
(plain/stainless steel,
BSP parallel thread)
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Flexible hoses
(plain spigot/BSP thread)
page 38



Wall brackets
(ABS/brass body)
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Flanges stub
(plain serrated)
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Flanges blanking
page 39



Backing rings
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Flat gaskets for use with
stub flanges
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Valve support plates
(galvanised mild steel)
page 41



O-Rings
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Valves



VKD Double union ball valves (manual – EPDM seals)
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TKD 3-way ball valves (manual – EPDM seals)
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VXE Easyfit double union ball valves (manual – EPDM seals)
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VKR Metering ball valve (manual – EPDM seals)
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SX Easyfit ball check valves (EPDM seals)
 page 43



SA Easyfit air release valves (EPDM seals)
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RV Y-Type strainers (EPDM seals)
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Dialock Diaphragm valves (manual – EPDM seals)
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Pressure Loading/Relief valves (EPDM seals)
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FK Butterfly valves (glass reinforced polypropylene with ABS disc)
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Accessories



Cobra pipe clips
 page 46



Rubber lined pipe clips
 page 46



ABS One-step solvent cement
 page 46



Eco-cleaner
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Chamfering and de-burring tools
 page 47

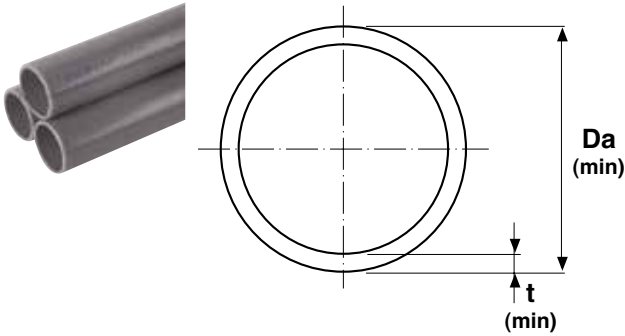


Pipe cutters
 page 47



Fibreseal
 page 47

SuperFLO ABS Pipe metric system Plain PN10

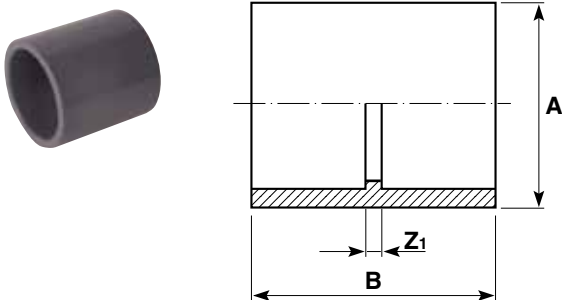


| Size | Thickness t mm | Weight kg/m | Length m | Code |
|------|----------------------|----------------|-------------|------------|
| 16 | 1.5 | 0.07 | 5 | 11 555 305 |
| 20 | 1.5 | 0.10 | 5 | 11 555 306 |
| 25 | 1.5 | 0.14 | 5 | 11 555 307 |
| 32 | 1.9 | 0.21 | 5 | 11 555 308 |
| 40 | 2.4 | 0.33 | 5 | 11 555 309 |
| 50 | 3.0 | 0.52 | 5 | 11 555 310 |
| 63 | 3.8 | 0.81 | 5 | 11 555 311 |
| 75 | 4.5 | 1.14 | 5 | 11 555 312 |
| 90 | 5.4 | 1.65 | 5 | 11 555 313 |
| 110 | 6.6 | 2.45 | 5 | 11 555 314 |
| 125 | 7.4 | 3.13 | 5 | 11 555 315 |
| 140 | 8.3 | 3.97 | 5 | 11 555 316 |
| 160 | 9.5 | 5.13 | 5 | 11 555 317 |
| 200 | 11.9 | 8.06 | 5 | 11 555 318 |
| 225 | 13.4 | 10.17 | 5 | 11 555 319 |
| 250 | 14.8 | 12.31 | 5 | 11 555 320 |
| *315 | 18.7 | 20.00 | 5 | 11 555 323 |

| | | | | |
|------|------|-------|---|------------|
| 16 | 1.5 | 0.07 | 6 | 11 551 305 |
| 20 | 1.5 | 0.10 | 6 | 11 551 306 |
| 25 | 1.5 | 0.14 | 6 | 11 551 307 |
| 32 | 1.9 | 0.21 | 6 | 11 551 308 |
| 40 | 2.4 | 0.33 | 6 | 11 551 309 |
| 50 | 3.0 | 0.52 | 6 | 11 551 310 |
| 63 | 3.8 | 0.81 | 6 | 11 551 311 |
| 75 | 4.5 | 1.14 | 6 | 11 551 312 |
| 90 | 5.4 | 1.65 | 6 | 11 551 313 |
| 110 | 6.6 | 2.45 | 6 | 11 551 314 |
| 125 | 7.4 | 3.13 | 6 | 11 551 315 |
| 140 | 8.3 | 3.97 | 6 | 11 551 316 |
| 160 | 9.5 | 5.13 | 6 | 11 551 317 |
| 200 | 11.9 | 8.06 | 6 | 11 551 318 |
| 225 | 13.4 | 10.17 | 6 | 11 551 319 |
| 250 | 14.8 | 12.31 | 6 | 11 551 320 |
| *315 | 18.7 | 20.00 | 6 | 11 551 323 |

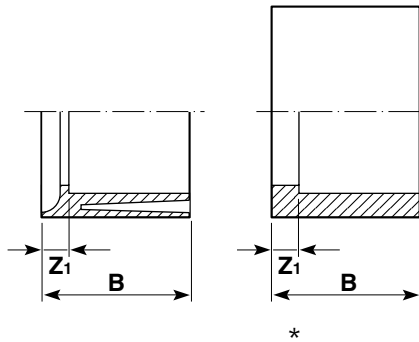
*315 is PN8 rated.

Sockets Plain



| Size | PN | A | B | Z ₁ | gms | Code |
|------|----|-----|-----|----------------|------|------------|
| 16 | 10 | 21 | 31 | 3 | 5 | 11 100 305 |
| 20 | 10 | 25 | 37 | 3 | 7 | 11 100 306 |
| 25 | 10 | 31 | 42 | 2 | 12 | 11 100 307 |
| 32 | 10 | 41 | 49 | 3 | 25 | 11 100 308 |
| 40 | 10 | 50 | 58 | 4 | 45 | 11 100 309 |
| 50 | 10 | 62 | 68 | 4 | 77 | 11 100 310 |
| 63 | 10 | 78 | 81 | 4 | 154 | 11 100 311 |
| 75 | 10 | 88 | 93 | 3 | 230 | 11 100 312 |
| 90 | 10 | 107 | 108 | 4 | 380 | 11 100 313 |
| 110 | 10 | 126 | 131 | 7 | 690 | 11 100 314 |
| 125 | 10 | 146 | 149 | 7 | 1040 | 11 100 315 |
| 140 | 10 | 171 | 163 | 7 | 1390 | 11 100 316 |
| 160 | 10 | 182 | 184 | 8 | 1660 | 11 100 317 |
| 200 | 10 | 223 | 220 | 8 | 2390 | 11 100 318 |
| 225 | 10 | 260 | 250 | 11 | 3470 | 11 100 319 |
| 250 | 10 | 286 | 272 | 10 | 5760 | 11 100 320 |
| 315 | 8 | 355 | 339 | 11 | 9780 | 11 100 323 |

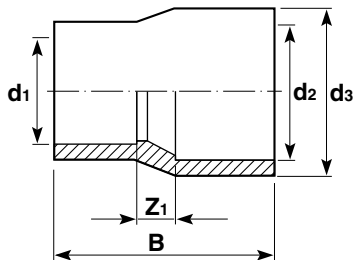
Reducing bushes Plain



| Size | PN | B | Z ₁ | gms | Code |
|------------|----|-----|----------------|------|------------|
| 20 x 16 | 10 | 17 | 3 | 2 | 11 109 412 |
| 25 x 20 | 10 | 19 | 3 | 4 | 11 109 415 |
| 32 x 16 | 10 | 23 | 9 | 5 | 11 109 417 |
| 32 x 25 | 10 | 23 | 8 | 6 | 11 109 419 |
| 40 x 32 | 10 | 28 | 6 | 13 | 11 109 423 |
| 50 x 20* | 10 | 33 | 17 | 32 | 11 109 424 |
| 50 x 25* | 10 | 33 | 13 | 29 | 11 109 425 |
| 50 x 32* | 10 | 32 | 11 | 60 | 11 109 426 |
| 50 x 40 | 10 | 32 | 5 | 40 | 11 109 427 |
| 63 x 25* | 10 | 39 | 20 | 60 | 11 109 429 |
| 63 x 32* | 10 | 39 | 16 | 60 | 11 109 430 |
| 63 x 50 | 10 | 39 | 7 | 70 | 11 109 432 |
| 75 x 63 | 10 | 46 | 7 | 80 | 11 109 438 |
| 90 x 50* | 10 | 54 | 23 | 210 | 11 109 442 |
| 90 x 63* | 10 | 54 | 15 | 224 | 11 109 443 |
| 90 x 75 | 10 | 55 | 9 | 150 | 11 109 444 |
| 110 x 63* | 10 | 64 | 25 | 252 | 11 109 449 |
| 110 x 90 | 10 | 64 | 10 | 270 | 11 109 451 |
| 125 x 110 | 10 | 72 | 9 | 280 | 11 109 459 |
| 140 x 125 | 10 | 79 | 8 | 300 | 11 109 467 |
| 160 x 90* | 10 | 89 | 35 | 320 | 11 109 473 |
| 160 x 110* | 10 | 89 | 27 | 660 | 11 109 474 |
| 160 x 140 | 10 | 89 | 10 | 700 | 11 109 476 |
| 200 x 160 | 10 | 110 | 21 | 1560 | 11 109 487 |
| 225 x 160* | 10 | 122 | 33 | 1600 | 11 109 495 |
| 225 x 200* | 10 | 122 | 13 | 1660 | 11 109 496 |
| 250 x 225* | 10 | 132 | 12 | 2230 | 11 109 499 |
| 315 x 250* | 8 | 165 | 33 | 4220 | 11 109 503 |

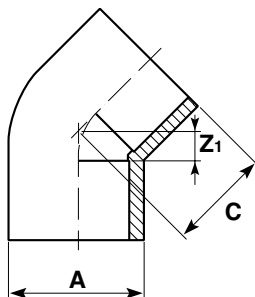
*Configuration shown in inset.

Reducing sockets Plain



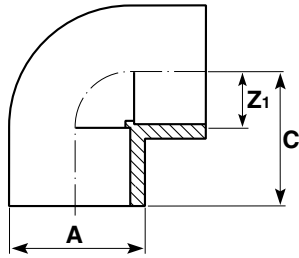
| PN | d ₃ | d ₂ | d ₁ | B | Z ₁ | gms | Code |
|----|----------------|----------------|----------------|-----|----------------|------|------------|
| 10 | 25 | 20 | 16 | 37 | 6 | 6 | 11 114 412 |
| 10 | 32 | 25 | 20 | 42 | 6 | 12 | 11 114 415 |
| 10 | 40 | 32 | 25 | 50 | 8 | 22 | 11 114 419 |
| 10 | 50 | 40 | 32 | 60 | 11 | 39 | 11 114 423 |
| 10 | 63 | 50 | 40 | 71 | 11 | 80 | 11 114 427 |
| 10 | 75 | 63 | 50 | 85 | 14 | 108 | 11 114 432 |
| 10 | 90 | 75 | 63 | 98 | 13 | 190 | 11 114 438 |
| 10 | 110 | 90 | 75 | 115 | 16 | 350 | 11 114 444 |
| 10 | 125 | 110 | 90 | 140 | 21 | 480 | 11 114 451 |
| 10 | 140 | 125 | 110 | 156 | 20 | 690 | 11 114 459 |
| 10 | 160 | 140 | 125 | 170 | 20 | 1000 | 11 114 467 |
| 10 | 200 | 160 | 140 | 193 | 23 | 2180 | 11 114 476 |
| 10 | 225 | 200 | 160 | 237 | 41 | 2530 | 11 114 487 |

Elbows 45° Plain



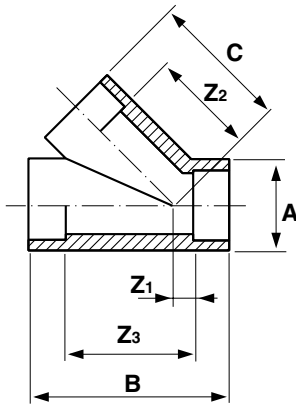
| Size | PN | A | C | Z ₁ | gms | Code |
|------|----|-----|-----|----------------|-------|------------|
| 16 | 10 | 21 | 20 | 5 | 5 | 11 119 305 |
| 20 | 10 | 25 | 22 | 5 | 7 | 11 119 306 |
| 25 | 10 | 31 | 26 | 7 | 14 | 11 119 307 |
| 32 | 10 | 40 | 31 | 8 | 27 | 11 119 308 |
| 40 | 10 | 50 | 37 | 10 | 54 | 11 119 309 |
| 50 | 10 | 62 | 45 | 13 | 100 | 11 119 310 |
| 63 | 10 | 82 | 54 | 16 | 180 | 11 119 311 |
| 75 | 10 | 90 | 63 | 17 | 300 | 11 119 312 |
| 90 | 10 | 112 | 70 | 18 | 550 | 11 119 313 |
| 110 | 10 | 137 | 90 | 27 | 950 | 11 119 314 |
| 125 | 10 | 155 | 103 | 31 | 1350 | 11 119 315 |
| 140 | 10 | 173 | 115 | 37 | 1980 | 11 119 316 |
| 160 | 10 | 190 | 125 | 35 | 2920 | 11 119 317 |
| 200 | 10 | 235 | 149 | 43 | 3460 | 11 119 318 |
| 225 | 10 | 262 | 167 | 46 | 4920 | 11 119 319 |
| 250 | 10 | 286 | 189 | 58 | 5900 | 11 119 320 |
| 315 | 8 | 359 | 230 | 66 | 11880 | 11 119 323 |

Elbows 90° Plain



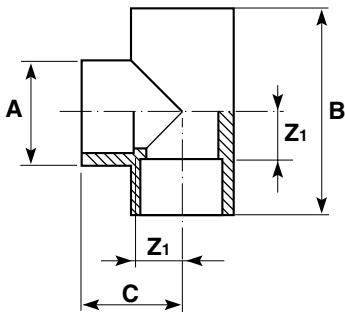
| Size | PN | A | C | Z ₁ | gms | Code |
|------|----|-----|-----|----------------|-------|------------|
| 16 | 10 | 20 | 24 | 10 | 6 | 11 115 305 |
| 20 | 10 | 25 | 28 | 11 | 10 | 11 115 306 |
| 25 | 10 | 31 | 34 | 15 | 17 | 11 115 307 |
| 32 | 10 | 40 | 41 | 18 | 35 | 11 115 308 |
| 40 | 10 | 50 | 47 | 20 | 68 | 11 115 309 |
| 50 | 10 | 62 | 59 | 26 | 129 | 11 115 310 |
| 63 | 10 | 78 | 71 | 31 | 230 | 11 115 311 |
| 75 | 10 | 90 | 83 | 38 | 385 | 11 115 312 |
| 90 | 10 | 112 | 100 | 49 | 690 | 11 115 313 |
| 110 | 10 | 136 | 125 | 63 | 1220 | 11 115 314 |
| 125 | 10 | 155 | 140 | 63 | 1720 | 11 115 315 |
| 140 | 10 | 173 | 153 | 76 | 2390 | 11 115 316 |
| 160 | 10 | 190 | 172 | 79 | 3600 | 11 115 317 |
| 200 | 10 | 235 | 207 | 110 | 4300 | 11 115 318 |
| 225 | 10 | 261 | 240 | 119 | 6550 | 11 115 319 |
| 250 | 10 | 286 | 319 | 188 | 9560 | 11 115 320 |
| 315 | 8 | 359 | 400 | 236 | 17910 | 11 115 323 |

Tees 45° Plain



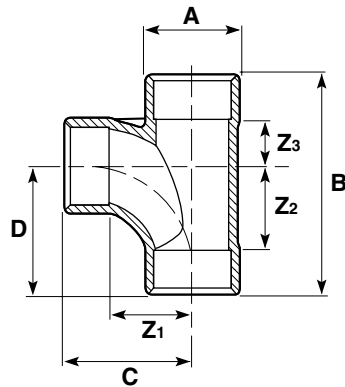
| Size | PN | A | B | C | Z ₁ | Z ₂ | Z ₃ | gms | Code |
|------|----|----|-----|-----|----------------|----------------|----------------|-----|------------|
| 20 | 10 | 28 | 68 | 43 | 6 | 26 | 34 | 30 | 11 418 306 |
| 25 | 10 | 33 | 81 | 52 | 7 | 29 | 55 | 45 | 11 418 307 |
| 32 | 10 | 41 | 98 | 65 | 9 | 42 | 52 | 80 | 11 418 308 |
| 40 | 10 | 50 | 117 | 77 | 11 | 51 | 65 | 135 | 11 418 309 |
| 50 | 10 | 60 | 140 | 95 | 12 | 63 | 78 | 195 | 11 418 310 |
| 63 | 10 | 74 | 169 | 114 | 13 | 76 | 93 | 410 | 11 418 311 |

Tees 90° Equal



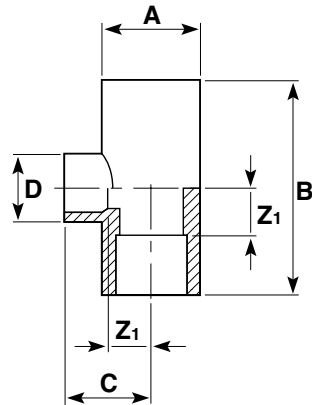
| Size | PN | A | B | C | Z ₁ | gms | Code |
|------|----|-----|-----|-----|----------------|-------|------------|
| 16 | 10 | 21 | 47 | 25 | 10 | 7 | 11 122 305 |
| 20 | 10 | 25 | 57 | 30 | 12 | 12 | 11 122 306 |
| 25 | 10 | 31 | 67 | 34 | 15 | 24 | 11 122 307 |
| 32 | 10 | 40 | 81 | 43 | 18 | 48 | 11 122 308 |
| 40 | 10 | 50 | 99 | 50 | 23 | 87 | 11 122 309 |
| 50 | 10 | 62 | 119 | 62 | 28 | 160 | 11 122 310 |
| 63 | 10 | 78 | 146 | 70 | 34 | 300 | 11 122 311 |
| 75 | 10 | 90 | 172 | 87 | 36 | 510 | 11 122 312 |
| 90 | 10 | 112 | 205 | 104 | 46 | 900 | 11 122 313 |
| 110 | 10 | 132 | 248 | 128 | 60 | 1650 | 11 122 314 |
| 125 | 10 | 154 | 276 | 143 | 67 | 2300 | 11 122 315 |
| 140 | 10 | 172 | 307 | 153 | 72 | 3200 | 11 122 316 |
| 160 | 10 | 191 | 343 | 172 | 86 | 4800 | 11 122 317 |
| 200 | 10 | 237 | 413 | 206 | 101 | 5800 | 11 122 318 |
| 225 | 10 | 262 | 482 | 240 | 120 | 7700 | 11 122 319 |
| 250 | 10 | 286 | 518 | 259 | 128 | 10160 | 11 122 320 |
| 315 | 8 | 360 | 652 | 326 | 162 | 19390 | 11 122 323 |

Tees 90° Swept plain



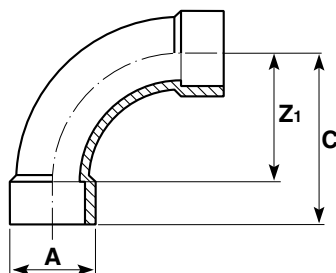
| Size | PN | A | B | C | D | Z ₁ | Z ₂ | Z ₃ | gms | Code |
|------|----|-----|-----|-----|-----|----------------|----------------|----------------|------|------------|
| 32 | 10 | 41 | 115 | 79 | 79 | 57 | 57 | 14 | 90 | 11 148 308 |
| 50 | 10 | 62 | 160 | 105 | 105 | 74 | 74 | 24 | 259 | 11 148 310 |
| 63 | 10 | 78 | 195 | 125 | 125 | 87 | 87 | 32 | 480 | 11 148 311 |
| 75 | 10 | 92 | 210 | 125 | 125 | 81 | 81 | 41 | 601 | 01 148 108 |
| 110 | 10 | 139 | 315 | 190 | 190 | 127 | 127 | 62 | 2235 | 11 148 314 |

Tees 90° Reducing plain



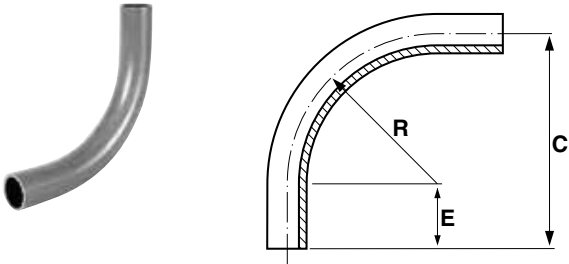
| Size | PN | A | B | C | D | Z ₁ | gms | Code |
|----------|----|-----|-----|-----|-----|----------------|------|------------|
| 25 x 20 | 10 | 31 | 67 | 31 | 25 | 14 | 22 | 11 124 415 |
| 32 x 20 | 10 | 40 | 81 | 35 | 25 | 18 | 40 | 11 124 418 |
| 32 x 25 | 10 | 40 | 81 | 37 | 31 | 18 | 41 | 11 124 419 |
| 40 x 20 | 10 | 50 | 98 | 39 | 25 | 22 | 72 | 11 124 421 |
| 40 x 25 | 10 | 50 | 98 | 41 | 31 | 22 | 72 | 11 124 422 |
| 50 x 20 | 10 | 62 | 119 | 44 | 29 | 27 | 104 | 11 124 424 |
| 50 x 25 | 10 | 62 | 119 | 46 | 31 | 27 | 140 | 11 124 425 |
| 50 x 32 | 10 | 62 | 119 | 50 | 40 | 27 | 140 | 11 124 426 |
| 63 x 25 | 10 | 78 | 146 | 53 | 31 | 34 | 250 | 11 124 429 |
| 63 x 32 | 10 | 78 | 146 | 57 | 40 | 34 | 250 | 11 124 430 |
| 75 x 32 | 10 | 91 | 168 | 62 | 41 | 40 | 391 | 11 124 435 |
| 75 x 40 | 10 | 91 | 168 | 66 | 50 | 40 | 398 | 11 124 436 |
| 75 x 50 | 10 | 91 | 168 | 71 | 61 | 40 | 406 | 11 124 437 |
| 75 x 63 | 10 | 91 | 168 | 78 | 76 | 40 | 428 | 11 124 438 |
| 90 x 40 | 10 | 109 | 198 | 74 | 50 | 48 | 642 | 11 124 441 |
| 90 x 50 | 10 | 109 | 198 | 79 | 61 | 48 | 649 | 11 124 442 |
| 90 x 63 | 10 | 109 | 198 | 86 | 76 | 48 | 664 | 11 124 443 |
| 90 x 75 | 10 | 109 | 198 | 92 | 91 | 48 | 693 | 11 124 444 |
| 110 x 50 | 10 | 133 | 244 | 92 | 61 | 61 | 1165 | 11 124 448 |
| 110 x 63 | 10 | 133 | 244 | 99 | 76 | 61 | 1173 | 11 124 449 |
| 110 x 75 | 10 | 133 | 244 | 105 | 91 | 61 | 1188 | 11 124 450 |
| 110 x 90 | 10 | 133 | 244 | 112 | 109 | 61 | 1210 | 11 124 451 |

Bends 90° Short radius



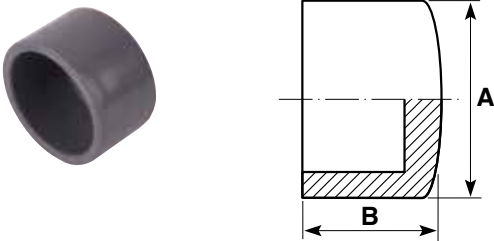
| Size | PN | A | C | Z ₁ | gms | Code |
|------|----|-----|-----|----------------|------|------------|
| 20 | 10 | 26 | 57 | 40 | 18 | 11 118 306 |
| 25 | 10 | 33 | 69 | 50 | 38 | 11 118 307 |
| 32 | 10 | 41 | 87 | 64 | 75 | 11 118 308 |
| 40 | 10 | 51 | 107 | 80 | 135 | 11 118 309 |
| 50 | 10 | 62 | 132 | 100 | 245 | 11 118 310 |
| 63 | 10 | 78 | 165 | 126 | 470 | 11 118 311 |
| 75 | 10 | 93 | 195 | 150 | 810 | 11 118 312 |
| 90 | 10 | 111 | 234 | 180 | 1350 | 11 118 313 |
| 110 | 10 | 140 | 284 | 220 | 2570 | 11 118 314 |

Bends 90° Long radius



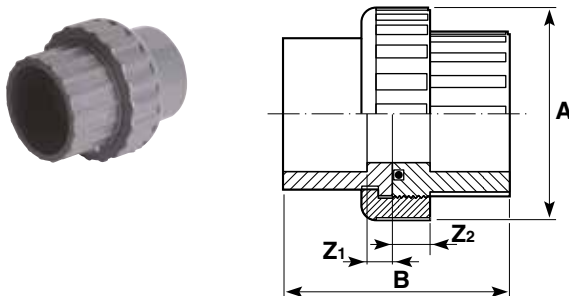
| Size | C | E | R | gms | Code |
|------|------|-----|-----|-------|------------|
| 125 | 750 | 250 | 500 | 4790 | 11 309 315 |
| 140 | 840 | 280 | 560 | 6700 | 11 309 316 |
| 160 | 960 | 320 | 640 | 10040 | 11 309 317 |
| 200 | 1200 | 400 | 800 | 19480 | 11 309 318 |
| 225 | 1350 | 450 | 900 | 27850 | 11 309 319 |

End caps Plain



| Size | PN | A | B | Weight gms | Code |
|------|----|-----|----|------------|------------|
| 16 | 10 | 21 | 16 | 3 | 11 149 305 |
| 20 | 10 | 25 | 21 | 5 | 11 149 306 |
| 25 | 10 | 31 | 24 | 8 | 11 149 307 |
| 32 | 10 | 41 | 30 | 19 | 11 149 308 |
| 40 | 10 | 50 | 35 | 30 | 11 149 309 |
| 50 | 10 | 62 | 41 | 53 | 11 149 310 |
| 63 | 10 | 78 | 50 | 106 | 11 149 311 |
| 75 | 10 | 94 | 59 | 180 | 11 149 312 |
| 90 | 10 | 112 | 70 | 300 | 11 149 313 |
| 110 | 10 | 136 | 84 | 570 | 11 149 314 |

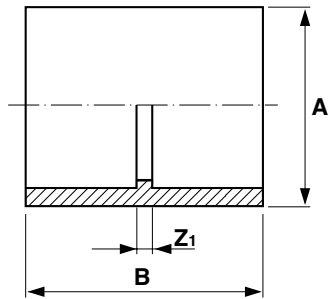
Socket unions Plain



| Size | PN | A | B | Z ₁ | Z ₂ | Weight gms | Code |
|------|----|-----|-----|----------------|----------------|------------|------------|
| 16 | 10 | 34 | 42 | 3 | 10 | 19 | 11 205 305 |
| 20 | 10 | 40 | 47 | 3 | 10 | 29 | 11 205 306 |
| 25 | 10 | 50 | 53 | 3 | 10 | 46 | 11 205 307 |
| 32 | 10 | 57 | 64 | 8 | 11 | 70 | 11 205 308 |
| 40 | 10 | 73 | 78 | 10 | 13 | 140 | 11 205 309 |
| 50 | 10 | 80 | 92 | 13 | 15 | 154 | 11 205 310 |
| 63 | 10 | 102 | 111 | 14 | 20 | 270 | 11 205 311 |
| 75 | 10 | 135 | 107 | 8 | 13 | 720 | 11 205 312 |
| 90 | 10 | 157 | 115 | 7 | 4 | 750 | 11 205 313 |
| 110 | 10 | 183 | 138 | 8 | 7 | 1115 | 11 205 314 |

EPDM seal as standard.
 For FPM seal order 11 204 3**

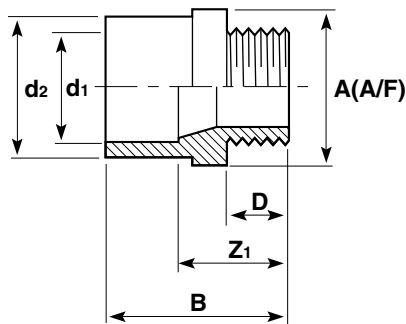
Imperial/metric socket adaptors Plain



| Size | PN | A | B | Z ₁ | Weight gms | Code |
|-------------|----|-----|-----|----------------|---------------|------------|
| *1/2 - 20 | 10 | 26 | 37 | 3 | 11 | 11 345 102 |
| *3/4 - 25 | 10 | 31 | 41 | 3 | 23 | 11 345 103 |
| *1 - 32 | 10 | 40 | 49 | 3 | 40 | 11 345 104 |
| *1 1/4 - 40 | 10 | 50 | 58 | 2 | 80 | 11 345 105 |
| *1 1/2 - 50 | 10 | 59 | 67 | 3 | 160 | 11 345 106 |
| *2 - 63 | 10 | 74 | 78 | 2 | 230 | 11 345 107 |
| *3 - 90 | 10 | 107 | 105 | 3 | 340 | 11 345 109 |
| *4 - 110 | 10 | 134 | 130 | 6 | 675 | 11 345 110 |
| *6 - 160 | 10 | 195 | 183 | 8 | 1890 | 11 345 112 |

*Sizes shown in imperial n.b. designation.

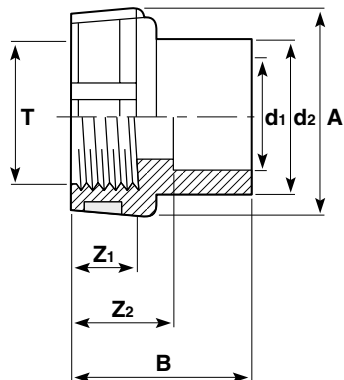
Male threaded adaptors BSP taper male thread



| Size d ₂ d ₁ | PN | T* | A | B | D | Z ₁ | Weight gms | Code |
|---------------------------------------|----|-------|----|----|----|----------------|---------------|------------|
| 16- 12- | 10 | 3/8 | 19 | 35 | 11 | 22 | 7 | 11 151 331 |
| 20- 16- | 10 | 3/8 | 24 | 38 | 12 | 24 | 7 | 11 151 332 |
| 20- 16- | 10 | 1/2 | 24 | 42 | 15 | 28 | 7 | 11 151 333 |
| 20- 16- | 10 | 3/4 | 30 | 46 | 16 | 28 | 8 | 11 151 327 |
| 25- 20- | 10 | 1/2 | 30 | 46 | 15 | 28 | 13 | 11 151 334 |
| 25- 20- | 10 | 3/4 | 30 | 48 | 16 | 31 | 14 | 11 151 335 |
| 32- 25- | 10 | 1/2 | 36 | 51 | 15 | 32 | 23 | 11 151 352 |
| 32- 25- | 10 | 3/4 | 36 | 52 | 16 | 33 | 23 | 11 151 336 |
| 32- 25- | 10 | 1 | 36 | 55 | 19 | 36 | 23 | 11 151 337 |
| 40- 32- | 10 | 1 | 46 | 58 | 20 | 36 | 36 | 11 151 338 |
| 40- 32- | 10 | 1 1/4 | 46 | 60 | 21 | 37 | 38 | 11 151 339 |
| 50- 40- | 10 | 1 1/4 | 55 | 66 | 22 | 39 | 70 | 11 151 340 |
| 50- 40- | 10 | 1 1/2 | 55 | 66 | 21 | 39 | 70 | 11 151 341 |
| 63- 50- | 10 | 1 1/2 | 72 | 73 | 22 | 41 | 115 | 11 151 342 |
| 63- 50- | 10 | 2 | 72 | 78 | 26 | 46 | 123 | 11 151 343 |
| 75- 63- | 10 | 2 | 80 | 84 | 26 | 46 | 150 | 11 151 345 |

*Thread size designation.

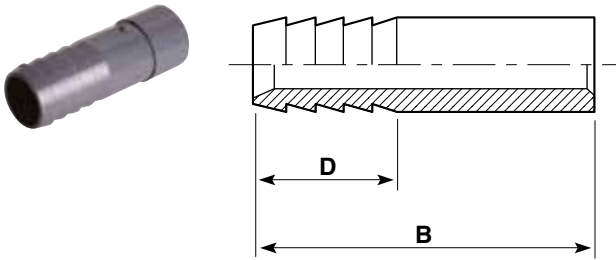
Female threaded adaptors Plain spigot/plain socket/female BSP thread



| Size d ₂ d ₁ | PN | T* | A | B | Z ₁ | Z ₂ | Weight gms | Code |
|---------------------------------------|----|-------|----|----|----------------|----------------|---------------|------------|
| 16- 12- | 10 | 3/8 | 24 | 28 | 11 | 16 | 7 | 11 153 331 |
| 20- 16- | 10 | 1/2 | 30 | 35 | 15 | 21 | 14 | 11 153 333 |
| 25- 20- | 10 | 3/4 | 38 | 39 | 16 | 22 | 21 | 11 153 335 |
| 32- 25- | 10 | 1 | 45 | 45 | 18 | 26 | 42 | 11 153 337 |
| 40- 32- | 10 | 1 1/4 | 56 | 54 | 21 | 31 | 69 | 11 153 339 |
| 50- 40- | 10 | 1 1/2 | 64 | 60 | 21 | 33 | 108 | 11 153 341 |
| 63- 50- | 10 | 2 | 78 | 72 | 25 | 41 | 169 | 11 153 343 |

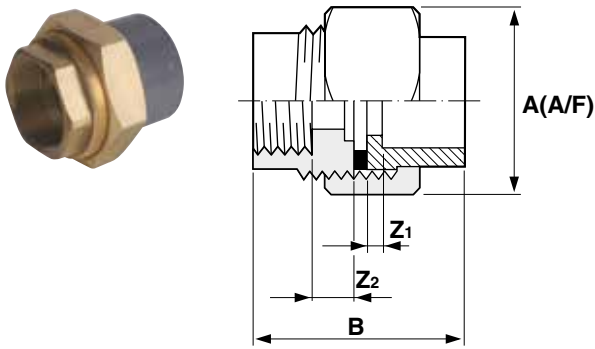
*Thread size designation.

Hose adaptors Spigot end/hose tail



| Size | PN | B | D | Weight gms | Code |
|------|----|----|----|---------------|------------|
| 16 | 10 | 60 | 25 | 8 | 11 158 305 |
| 20 | 10 | 75 | 30 | 13 | 11 158 306 |
| 25 | 10 | 80 | 35 | 20 | 11 158 307 |
| 32 | 10 | 90 | 40 | 32 | 11 158 308 |

Female composite unions Plain/brass, female BSP parallel thread



| Size | PN | A | B | Z ₁ | Z ₂ | Weight gms | Code |
|-------------|----|----|----|----------------|----------------|---------------|------------|
| 16 x 3/8* | 10 | 32 | 37 | 3 | 7 | 105 | 11 216 305 |
| 20 x 1/2* | 10 | 40 | 43 | 3 | 7 | 175 | 11 216 306 |
| 25 x 3/4* | 10 | 48 | 47 | 3 | 7 | 320 | 11 216 307 |
| 32 x 1* | 10 | 55 | 59 | 8 | 9 | 420 | 11 216 308 |
| 40 x 1 1/4* | 10 | 65 | 68 | 10 | 8 | 620 | 11 216 309 |
| 50 x 1 1/2* | 10 | 78 | 76 | 12 | 9 | 1000 | 11 216 310 |
| 63 x 2* | 10 | 88 | 89 | 12 | 11 | 1200 | 11 216 311 |

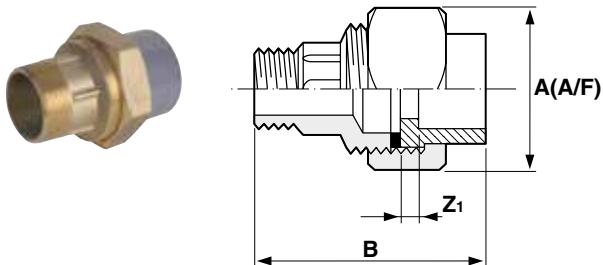
*Thread sizes designation.

Fitted with brass retaining nut and EPDM rubber seal.

Brass material to BS2872, WRAS approved.

ALL Durapipe Brass Components are manufactured using DZR Brass.

Male composite unions Plain/brass, male BSP taper thread



| Size | PN | A | B | Z ₁ | Z ₂ | Weight gms | Code |
|-------------|----|----|-----|----------------|----------------|---------------|------------|
| 16 x 3/8* | 10 | 32 | 48 | 3 | 9 | 100 | 11 217 305 |
| 20 x 1/2* | 10 | 40 | 54 | 3 | 9 | 165 | 11 217 306 |
| 25 x 3/4* | 10 | 48 | 74 | 3 | 10 | 250 | 11 217 307 |
| 32 x 1* | 10 | 55 | 86 | 8 | 11 | 310 | 11 217 308 |
| 40 x 1 1/4* | 10 | 65 | 94 | 10 | 11 | 450 | 11 217 309 |
| 50 x 1 1/2* | 10 | 78 | 108 | 12 | 12 | 800 | 11 217 310 |
| 63 x 2* | 10 | 88 | 126 | 12 | 14 | 950 | 11 217 311 |

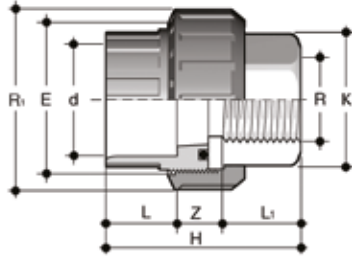
*Thread sizes designation.

Fitted with brass retaining nut and EPDM rubber seal.

Brass material to BS2872, WRAS approved.

ALL Durapipe Brass Components are manufactured using DZR Brass.

Female composite unions Plain/stainless steel, female BSP parallel thread

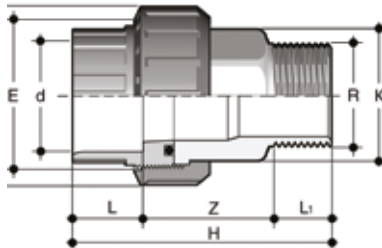


| Size | PN | E | H | K | Z | Weight gms | Code |
|----------------|----|----|------|----|------|---------------|------------|
| 16mm x 3/8"* | 10 | 33 | 45.5 | 20 | 18 | 50 | 11 218 305 |
| 20mm x 1/2"* | 10 | 41 | 48.5 | 25 | 16 | 81 | 11 218 306 |
| 25mm x 3/4"* | 10 | 50 | 54.5 | 32 | 17 | 152 | 11 218 307 |
| 32mm x 1"* | 10 | 58 | 59.5 | 38 | 18 | 170 | 11 218 308 |
| 40mm x 1 1/4"* | 10 | 72 | 68.5 | 48 | 21 | 353 | 11 218 309 |
| 50mm x 1 1/2"* | 10 | 79 | 84.5 | 55 | 30.5 | 435 | 11 218 310 |
| 63mm x 2"* | 10 | 98 | 94.5 | 69 | 29.5 | 779 | 11 218 311 |

*Thread sizes designation.

ALL Durapipe Stainless Steel Components are manufactured using 316L Grade Stainless Steel.

Male composite unions Plain/stainless steel, male BSP parallel thread



| Size | PN | E | H | K | Z | Weight gms | Code |
|--------------|----|----|-------|----|------|---------------|------------|
| 16 x 3/8"* | 10 | 33 | 58.5 | 20 | 34 | 74 | 11 219 305 |
| 20 x 1/2"* | 10 | 41 | 65 | 25 | 35.5 | 123 | 11 219 306 |
| 25 x 3/4"* | 10 | 50 | 72.5 | 32 | 38.5 | 215 | 11 219 307 |
| 32 x 1"* | 10 | 58 | 80 | 38 | 40.5 | 269 | 11 219 308 |
| 40 x 1 1/4"* | 10 | 72 | 91 | 48 | 45.5 | 516 | 11 219 309 |
| 50 x 1 1/2"* | 10 | 79 | 101 | 55 | 50.5 | 639 | 11 219 310 |
| 63 x 2"* | 10 | 98 | 122.5 | 69 | 60.5 | 1111 | 11 219 311 |

*Thread sizes designation.

ALL Durapipe Stainless Steel Components are manufactured using 316L Grade Stainless Steel.

Flexible hoses Plain spigot, BSP thread



| Size | Code |
|-----------------|----------|
| 20 x 1/2" x 300 | 11450306 |
| 25 x 3/4" x 300 | 11450307 |
| 32 x 1" x 300 | 11450308 |
| 20 x 1/2" x 600 | 11451306 |
| 25 x 3/4" x 600 | 11451307 |
| 32 x 1" x 600 | 11451308 |

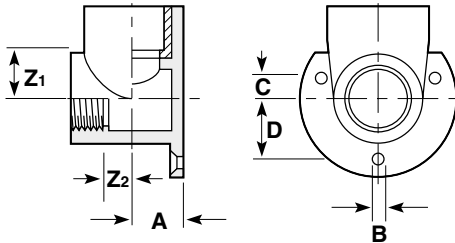
10 bar working pressure at 20 C.

Other lengths available on request.

ALL Durapipe Brass Components are manufactured using DZR Brass.

Product is approved to BSRIA BG4-2004

Wall brackets ABS/brass body

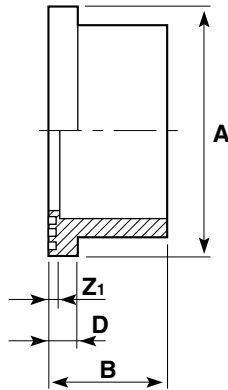


| Size | PN | A | B | C | D | Z ₁ | Z ₂ | Weight gms | Code |
|----------|----|------|-----|---|----|----------------|----------------|---------------|------------|
| 16- 3/8* | 10 | 15 | 4.5 | 6 | 19 | 17 | 9 | 180 | 31 422 326 |
| 20- 1/2* | 10 | 16.5 | 4.5 | 6 | 19 | 18 | 9 | 185 | 31 422 327 |
| 25- 1/2* | 10 | 20 | 4.5 | 5 | 24 | 19 | 11 | 215 | 31 422 328 |
| 25- 3/4* | 10 | 20 | 4.5 | 5 | 24 | 19 | 11 | 200 | 31 422 329 |

*Thread sizes designation.

ALL Durapipe Brass Components are manufactured using DZR Brass.

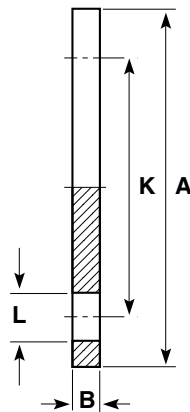
Flanges stub Plain serrated



| Size | PN | A | B | D | Z ₁ | Weight gms | Code |
|------|----|-----|-----|----|----------------|------------|------------|
| 16 | 10 | 29 | 17 | 6 | 3 | 5 | 11 135 305 |
| 20 | 10 | 34 | 20 | 6 | 3 | 8 | 11 135 306 |
| 25 | 10 | 41 | 22 | 7 | 3 | 13 | 11 135 307 |
| 32 | 10 | 50 | 26 | 7 | 3 | 19 | 11 135 308 |
| 40 | 10 | 61 | 30 | 8 | 3 | 36 | 11 135 309 |
| 50 | 10 | 73 | 35 | 8 | 3 | 60 | 11 135 310 |
| 63 | 10 | 90 | 42 | 9 | 4 | 100 | 11 135 311 |
| 75 | 10 | 106 | 49 | 10 | 4 | 150 | 11 135 312 |
| 90 | 10 | 125 | 59 | 11 | 6 | 240 | 11 135 313 |
| 110 | 10 | 149 | 68 | 12 | 6 | 370 | 11 135 314 |
| 125 | 10 | 165 | 76 | 13 | 5 | 520 | 11 135 315 |
| 140 | 10 | 180 | 83 | 14 | 7 | 680 | 11 135 316 |
| 160 | 10 | 205 | 93 | 16 | 5 | 930 | 11 135 317 |
| 200* | 10 | 252 | 114 | 17 | 6 | 1300 | 11 135 318 |
| 225 | 10 | 273 | 126 | 24 | 6 | 1470 | 11 135 319 |
| 250 | 10 | 306 | 140 | 20 | 9 | 2140 | 11 135 320 |
| 315 | 10 | 375 | 180 | 32 | 14 | 5000 | 11 135 323 |

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

Flanges blanking

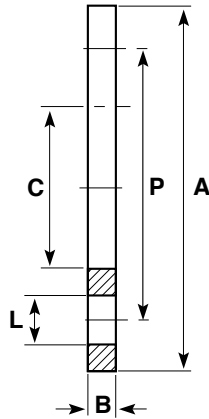


DIN 2501 16 bar/PN16

| Size | PN | A | B | K | L | No. Holes | Weight gms | Code |
|------|----|-----|----|-----|------|-----------|------------|------------|
| 32 | 10 | 116 | 13 | 85 | 14 | 4 | 139 | 11 323 308 |
| 40 | 10 | 141 | 13 | 100 | 18 | 4 | 204 | 11 323 309 |
| 50 | 10 | 153 | 13 | 110 | 18.5 | 4 | 237 | 11 323 310 |
| 63 | 10 | 166 | 19 | 124 | 18 | 4 | 447 | 11 323 311 |
| 75 | 10 | 186 | 19 | 145 | 18.5 | 4 | 568 | 11 323 312 |
| 90 | 10 | 201 | 19 | 159 | 18 | 8 | 645 | 11 323 313 |
| 110 | 10 | 221 | 26 | 180 | 18 | 8 | 715 | 11 323 314 |
| 125 | 10 | 251 | 26 | 210 | 18 | 8 | 1338 | 11 323 315 |
| 140 | 10 | 251 | 26 | 210 | 18 | 8 | 1338 | 11 323 316 |
| 160 | 10 | 286 | 27 | 240 | 23 | 8 | 1720 | 11 323 317 |

Note: Durapipe backing rings must be used in conjunction with blank flanges.

Backing rings Galvanised mild steel



Drilled to DIN 2501 (BS4504) PN10/PN16

| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|------|-----|----|-----|-----|----|-----------|------------|------------|
| 16 | 90 | 7 | 23 | 61 | 14 | 4 | 240 | 13 421 305 |
| 20 | 96 | 6 | 28 | 65 | 14 | 4 | 300 | 13 421 306 |
| 25 | 106 | 7 | 34 | 75 | 14 | 4 | 320 | 13 421 307 |
| 32 | 116 | 7 | 42 | 85 | 14 | 4 | 350 | 13 421 308 |
| 40 | 142 | 7 | 51 | 100 | 18 | 4 | 420 | 13 421 309 |
| 50 | 152 | 7 | 62 | 110 | 18 | 4 | 710 | 13 421 310 |
| 63 | 165 | 8 | 78 | 125 | 18 | 4 | 1010 | 13 421 311 |
| 75 | 186 | 9 | 92 | 145 | 18 | 4 | 1280 | 13 421 312 |
| 90 | 201 | 9 | 110 | 160 | 18 | 8 | 1380 | 13 421 313 |
| 110 | 220 | 9 | 133 | 180 | 18 | 8 | 1430 | 13 421 314 |
| 125 | 253 | 8 | 150 | 210 | 18 | 8 | 1960 | 13 421 315 |
| 140 | 251 | 11 | 167 | 210 | 18 | 8 | 2060 | 13 421 316 |
| 160 | 286 | 11 | 190 | 240 | 22 | 8 | 2700 | 13 421 317 |

Drilled to DIN 2501 (BS4504) PN10

| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|------|-----|----|-----|-----|----|-----------|------------|------------|
| 200* | 340 | 11 | 235 | 295 | 22 | 8 | 3190 | 13 421 318 |
| 225 | 340 | 11 | 249 | 295 | 22 | 8 | 3540 | 13 421 319 |
| 250 | 396 | 20 | 278 | 350 | 22 | 12 | 7330 | 13 421 320 |
| 315 | 448 | 20 | 355 | 402 | 22 | 12 | 9900 | 13 421 323 |

Drilled to DIN 2501 (BS4504) PN16

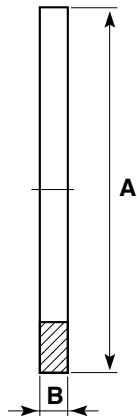
| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|------|-----|----|-----|-----|----|-----------|------------|------------|
| 200* | 340 | 11 | 235 | 295 | 22 | 12 | 3190 | 13 420 318 |
| 225 | 340 | 11 | 249 | 295 | 22 | 12 | 3540 | 13 420 319 |
| 250 | 405 | 20 | 278 | 355 | 26 | 12 | 7330 | 13 420 320 |
| 315 | 460 | 20 | 355 | 410 | 26 | 12 | 9900 | 13 420 323 |

Drilled to ANSI CLASS 150

| Size | A | B | C | P | L | No. Holes | Weight gms | Code |
|------|-----|----|-----|-----|----|-----------|------------|------------|
| 20 | 90 | 8 | 28 | 61 | 16 | 4 | 300 | 13 448 306 |
| 25 | 100 | 8 | 34 | 70 | 16 | 4 | 380 | 13 448 307 |
| 32 | 110 | 9 | 42 | 79 | 16 | 4 | 480 | 13 448 308 |
| 40 | 118 | 8 | 51 | 90 | 16 | 4 | 530 | 13 448 309 |
| 50 | 129 | 8 | 63 | 99 | 16 | 4 | 590 | 13 448 310 |
| 63 | 154 | 10 | 78 | 121 | 19 | 4 | 1050 | 13 448 311 |
| 90 | 192 | 11 | 110 | 153 | 19 | 4 | 1470 | 13 448 313 |
| 110 | 230 | 11 | 133 | 190 | 19 | 8 | 2080 | 13 448 314 |

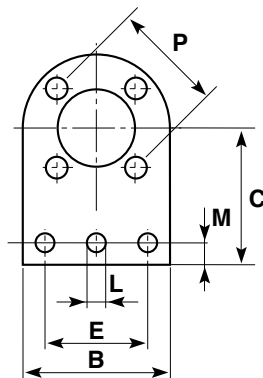
*The 200mm (NW175) stub flange supplied by Durapipe when used in conjunction with backing ring; code number 421 318 and 420 318 has a bolt circle diameter which matches 225mm (NW200) flanges (295mm PCD).

Flat gaskets for use with stub flanges



| Size | A | B | Weight gms | EPDM Code |
|------|-----|-----|------------|------------|
| 16 | 29 | 3.0 | 2 | 13 411 305 |
| 20 | 34 | 3.5 | 2 | 13 411 306 |
| 25 | 41 | 3.5 | 3 | 13 411 307 |
| 32 | 50 | 3.0 | 4 | 13 411 308 |
| 40 | 60 | 3.0 | 4 | 13 411 309 |
| 50 | 72 | 3.3 | 5 | 13 411 310 |
| 63 | 90 | 4.0 | 10 | 13 411 311 |
| 75 | 106 | 3.0 | 20 | 13 411 312 |
| 90 | 125 | 3.1 | 30 | 13 411 313 |
| 110 | 150 | 4.0 | 40 | 13 411 314 |
| 125 | 166 | 4.0 | 50 | 13 411 315 |
| 140 | 180 | 4.0 | 60 | 13 411 316 |
| 160 | 205 | 4.0 | 70 | 13 411 317 |
| 200 | 253 | 4.0 | 120 | 13 411 318 |
| 225 | 274 | 3.8 | 165 | 13 411 319 |
| 250 | 306 | 4.0 | 170 | 13 431 320 |
| 280 | 330 | 4.0 | 190 | 13 411 321 |
| 315 | 379 | 4.2 | 220 | 13 411 323 |

Valve support plates Galvanised steel

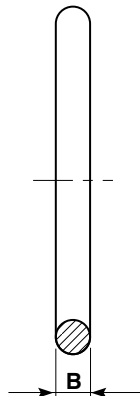


DIN 2501 16 bar/PN16

| Size | B | C | E | L | M | N | P | No. Holes | Weight gms | Code |
|------|-----|-----|-----|----|----|---|-----|-----------|------------|------------|
| 16 | 91 | 84 | 50 | 14 | 16 | 2 | 61 | 4 | 370 | 31 459 305 |
| 20 | 97 | 86 | 49 | 14 | 16 | 2 | 65 | 4 | 640 | 31 459 306 |
| 25 | 105 | 89 | 76 | 14 | 16 | 2 | 75 | 4 | 750 | 31 459 307 |
| 32 | 114 | 96 | 77 | 14 | 12 | 2 | 85 | 4 | 860 | 31 459 308 |
| 50 | 150 | 125 | 100 | 14 | 22 | 2 | 110 | 4 | 1480 | 31 459 310 |
| 63 | 160 | 134 | 100 | 14 | 24 | 2 | 125 | 4 | 2100 | 31 459 311 |
| 75 | 185 | 144 | 125 | 14 | 22 | 2 | 145 | 4 | 2500 | 31 459 312 |
| 90 | 203 | 150 | 127 | 14 | 23 | 2 | 160 | 8 | 2660 | 31 459 313 |
| 110 | 214 | 160 | 150 | 14 | 22 | 3 | 179 | 8 | 2960 | 31 459 314 |

N = No. of holes in base.

O-Rings EPDM/FPM

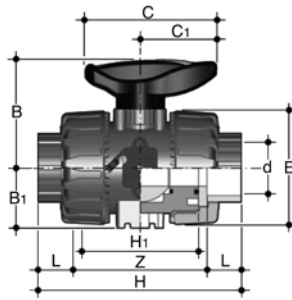


| Size | ID | B | Weight gms | EPDM Code | FPM Code |
|------|-------|------|------------|------------|------------|
| 16 | 15.54 | 2.62 | 23 | 13 209 305 | 03 211 305 |
| 20 | 20.22 | 3.53 | 39 | 13 209 306 | 03 211 306 |
| 25 | 28.17 | 3.53 | 68 | 13 209 307 | 03 211 307 |
| 32 | 32.93 | 3.53 | 94 | 13 209 308 | 03 211 308 |
| 40 | 40.65 | 5.34 | 163 | 13 209 309 | 03 211 105 |
| 50 | 47.00 | 5.34 | 190 | 13 209 310 | 03 211 106 |
| 63 | 59.69 | 5.34 | 355 | 03 306 107 | 03 211 107 |

Valves

Premium Quality
Valve for Demanding
Environments

VKD Double union ball valves Manual – EPDM seals



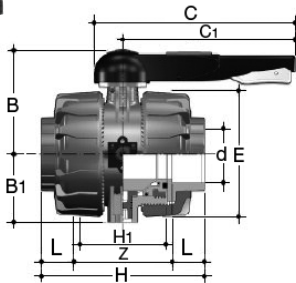
| d | DN | PN | L | Z | H | E | B | C | Weight gms | Code |
|----|----|----|----|-----|-----|-----|-----|-----|------------|------------|
| 16 | 10 | 16 | 14 | 75 | 103 | 55 | 49 | 66 | 160 | HO DKA 305 |
| 20 | 15 | 16 | 16 | 71 | 103 | 55 | 49 | 66 | 160 | HO DKA 306 |
| 25 | 20 | 16 | 19 | 77 | 115 | 66 | 59 | 75 | 265 | HO DKA 307 |
| 32 | 25 | 16 | 22 | 84 | 128 | 75 | 66 | 85 | 345 | HO DKA 308 |
| 40 | 32 | 16 | 26 | 94 | 146 | 87 | 75 | 97 | 550 | HO DKA 309 |
| 50 | 40 | 16 | 31 | 102 | 164 | 100 | 87 | 110 | 730 | HO DKA 310 |
| 63 | 50 | 16 | 38 | 123 | 199 | 122 | 101 | 134 | 1280 | HO DKA 311 |

Options:

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

For threaded versions refer to Imperial Valves section.

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



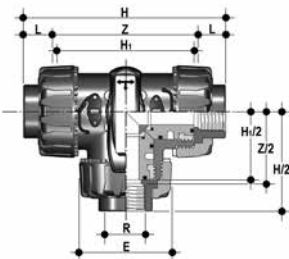
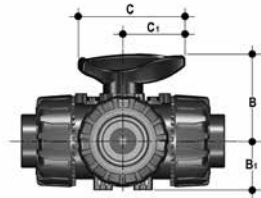
| d | DN | PN | Z | L | H | H ₁ | E | B | B ₁ | C | C ₁ | gms | Code |
|-----|-----|----|-----|----|-----|----------------|-----|-----|----------------|-----|----------------|------|------------|
| 75 | 65 | 16 | 147 | 44 | 235 | 133 | 164 | 164 | 87 | 225 | 175 | 3725 | HO DKA 312 |
| 90 | 80 | 16 | 168 | 51 | 270 | 149 | 203 | 177 | 105 | 327 | 272 | 5700 | HO DKA 313 |
| 110 | 100 | 16 | 186 | 61 | 308 | 167 | 238 | 195 | 129 | 385 | 330 | 8660 | HO DKA 314 |

Options:

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

Premium Quality
Valve for Demanding
Environments

TKD 3-way ball valves Manual – EPDM seals



T-Port configuration

| d | DN | PN | H | Z | C | C ₁ | B | B ₁ | gms | Code |
|----|----|----|-------|-------|-----|----------------|------|----------------|------|------------|
| 20 | 15 | 16 | 118 | 86 | 67 | 40 | 54 | 29 | 235 | HO TTA 306 |
| 25 | 20 | 16 | 145 | 107 | 85 | 49 | 65 | 34.5 | 415 | HO TTA 307 |
| 32 | 25 | 16 | 160 | 116 | 85 | 49 | 65.9 | 39 | 570 | HO TTA 308 |
| 40 | 32 | 16 | 188.5 | 136.5 | 108 | 64 | 82.5 | 46 | 875 | HO TTA 309 |
| 50 | 40 | 16 | 219 | 157 | 108 | 64 | 89 | 52 | 1250 | HO TTA 310 |
| 63 | 50 | 16 | 266.5 | 190.5 | 134 | 76 | 108 | 62 | 2225 | HO TTA 311 |

Options:

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

FPM seals (threaded ends) order HO TTB***

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

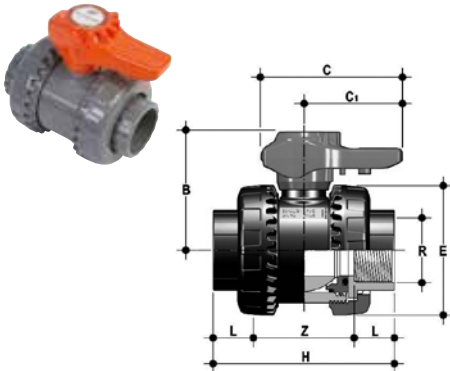
L-Port configuration

| d | DN | PN | H | Z | C | C ₁ | B | B ₁ | gms | Code |
|----|----|----|-------|-------|-----|----------------|------|----------------|------|------------|
| 20 | 15 | 16 | 118 | 86 | 67 | 40 | 54 | 29 | 235 | HO LTA 306 |
| 25 | 20 | 16 | 145 | 107 | 85 | 49 | 65 | 34.5 | 415 | HO LTA 307 |
| 32 | 25 | 16 | 160 | 116 | 85 | 49 | 65.9 | 39 | 570 | HO LTA 308 |
| 40 | 32 | 16 | 188.5 | 136.5 | 108 | 64 | 82.5 | 46 | 875 | HO LTA 309 |
| 50 | 40 | 16 | 219 | 157 | 108 | 64 | 89 | 52 | 1250 | HO LTA 310 |
| 63 | 50 | 16 | 266.5 | 190.5 | 134 | 76 | 108 | 62 | 2225 | HO LTA 311 |

Options:

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

VXE Easyfit double union ball valves Manual – EPDM seals



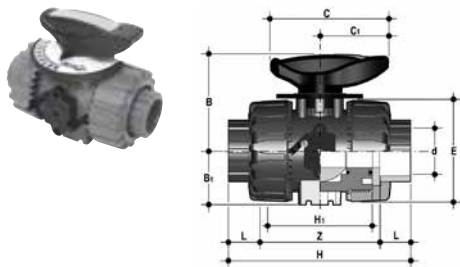
| d | DN | PN | L | Z | H | E | B | C | C ₁ | gms | Code |
|----|----|----|------|-----|-----|-----|-----|-----|----------------|------|------------|
| 16 | 10 | 16 | 14 | 54 | 82 | 54 | 49 | 64 | 20 | 175 | HO XEA 305 |
| 20 | 15 | 16 | 16.5 | 49 | 82 | 54 | 49 | 64 | 20 | 175 | HO XEA 306 |
| 25 | 20 | 16 | 19 | 53 | 91 | 63 | 62 | 78 | 23 | 252 | HO XEA 307 |
| 32 | 25 | 16 | 22.5 | 58 | 103 | 72 | 71 | 87 | 27 | 354 | HO XEA 308 |
| 40 | 32 | 16 | 26 | 68 | 120 | 85 | 82 | 102 | 30 | 548 | HO XEA 309 |
| 50 | 40 | 16 | 30 | 79 | 139 | 100 | 92 | 109 | 33 | 771 | HO XEA 310 |
| 63 | 50 | 16 | 36 | 102 | 174 | 118 | 110 | 133 | 39 | 1285 | HO XEA 311 |

Options:

FPM seals (plain ends) order HO XEB ***
For threaded versions refer to Imperial Valves section.



VKR Metering ball valves Manual – EPDM seals

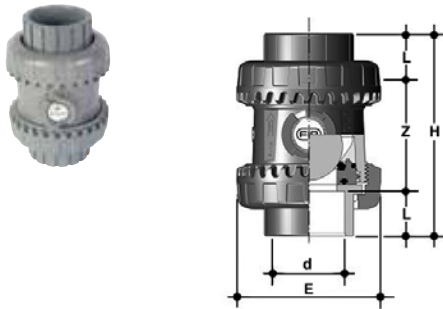


| d | DN | PN | L | Z | H | H ₁ | E | B | B ₁ | C | C ₁ | gms | Code |
|----|----|----|----|-----|-----|----------------|-----|-----|----------------|-----|----------------|------|------------|
| 16 | 10 | 16 | 16 | 71 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 215 | HO MBA 305 |
| 20 | 15 | 16 | 16 | 71 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 215 | HO MBA 306 |
| 25 | 20 | 16 | 19 | 77 | 115 | 70 | 65 | 65 | 34.5 | 85 | 49 | 330 | HO MBA 307 |
| 32 | 25 | 16 | 22 | 84 | 128 | 78 | 73 | 70 | 39 | 85 | 49 | 438 | HO MBA 308 |
| 40 | 32 | 16 | 26 | 94 | 146 | 88 | 86 | 83 | 46 | 108 | 64 | 493 | HO MBA 309 |
| 50 | 40 | 16 | 31 | 102 | 164 | 91 | 98 | 89 | 52 | 108 | 64 | 925 | HO MBA 310 |
| 63 | 50 | 16 | 38 | 123 | 199 | 111 | 122 | 108 | 62 | 134 | 76 | 1577 | HO MBA 311 |

Options:

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

SX Easyfit ball check valves EPDM seals



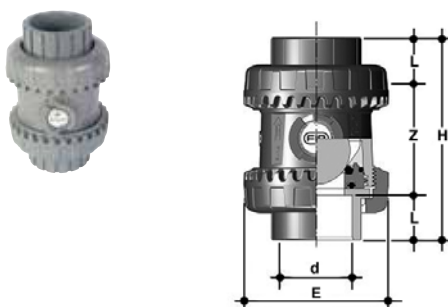
| d | DN | PN | L | Z | H | E | gms | Code |
|----|----|----|------|----|-----|-----|------|------------|
| 16 | 10 | 16 | 14 | 54 | 82 | 54 | 145 | HO SXA 305 |
| 20 | 15 | 16 | 16.5 | 50 | 82 | 54 | 148 | HO SXA 306 |
| 25 | 20 | 16 | 19 | 53 | 91 | 63 | 190 | HO SXA 307 |
| 32 | 25 | 16 | 22.5 | 59 | 103 | 72 | 300 | HO SXA 308 |
| 40 | 32 | 16 | 26 | 68 | 120 | 85 | 460 | HO SXA 309 |
| 50 | 40 | 16 | 30 | 77 | 139 | 100 | 675 | HO SXA 310 |
| 63 | 50 | 16 | 36 | 98 | 174 | 118 | 1080 | HO SXA 311 |

Options:

FPM seals (plain ends) order HO SXB***
For threaded versions refer to Imperial Valves section.

Note: this valve must be installed at a minimum distance of 10 x nominal diameter (eg. 20" for size 63mm) from pump flange.

SA Easyfit air release valves EPDM seals

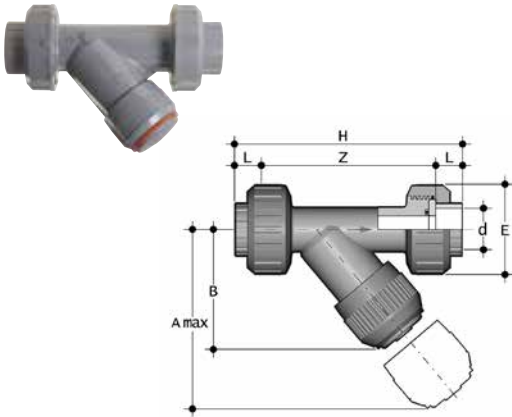


| d | DN | PN | L | Z | H | E | gms | Code |
|----|----|----|------|----|-----|-----|------|------------|
| 20 | 15 | 16 | 16.5 | 50 | 82 | 54 | 148 | HO SAA 306 |
| 25 | 20 | 16 | 19 | 53 | 91 | 63 | 190 | HO SAA 307 |
| 32 | 25 | 16 | 22.5 | 59 | 103 | 72 | 300 | HO SAA 308 |
| 40 | 32 | 16 | 26 | 68 | 120 | 85 | 460 | HO SAA 309 |
| 50 | 40 | 16 | 30 | 77 | 139 | 100 | 675 | HO SAA 310 |
| 63 | 50 | 16 | 36 | 98 | 174 | 118 | 1080 | HO SAA 311 |

Options:

FPM seals (plain ends) order HO SAB***
For threaded versions refer to Imperial Valves section.

RV Y-Type strainers Plain ends – EPDM seals



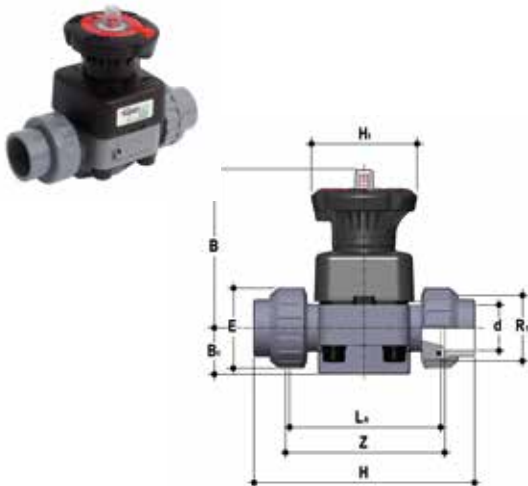
| D | DN | PN | A | B | E | L | Z | H | Fig. | gms | Code |
|----|----|----|-----|-----|-----|----|-----|-----|------|------|------------|
| 20 | 15 | 16 | 125 | 72 | 55 | 16 | 103 | 135 | A | 211 | H0 UVA 306 |
| 25 | 20 | 16 | 145 | 84 | 66 | 19 | 120 | 158 | A | 358 | H0 UVA 307 |
| 32 | 25 | 16 | 165 | 95 | 75 | 22 | 132 | 176 | A | 526 | H0 UVA 308 |
| 40 | 32 | 16 | 190 | 111 | 87 | 26 | 155 | 207 | A | 733 | H0 UVA 309 |
| 50 | 40 | 16 | 210 | 120 | 100 | 31 | 181 | 243 | A | 1095 | H0 UVA 310 |
| 63 | 50 | 10 | 240 | 139 | 120 | 38 | 222 | 298 | A | 1843 | H0 UVA 311 |

Options:

FPM seals (plain ends) order H0 UVB ***

For threaded versions refer to Imperial Valves section.

Dialock® diaphragm valves Manual – plain union ends – EPDM seals



| d | DN | PN | B | B ₁ | E | H | H ₁ | L _A | Z | gms | Code |
|----|----|----|-----|----------------|----|-----|----------------|----------------|-----|------|------------|
| 20 | 15 | 10 | 102 | 25 | 41 | 143 | 80 | 90 | 98 | 420 | H0 DVA 306 |
| 25 | 20 | 10 | 105 | 30 | 50 | 167 | 80 | 108 | 115 | 473 | H0 DVA 307 |
| 32 | 25 | 10 | 114 | 33 | 58 | 180 | 80 | 116 | 122 | 665 | H0 DVA 308 |
| 40 | 32 | 10 | 119 | 30 | 72 | 208 | 80 | 134 | 144 | 770 | H0 DVA 309 |
| 50 | 40 | 10 | 147 | 35 | 79 | 234 | 120 | 154 | 164 | 1460 | H0 DVA 310 |
| 63 | 50 | 10 | 172 | 46 | 98 | 272 | 120 | 184 | 195 | 2340 | H0 DVA 311 |

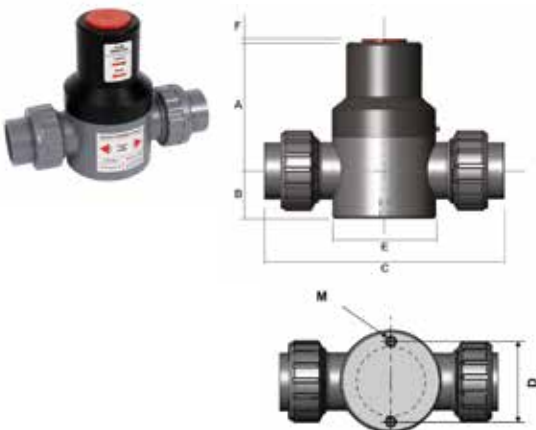
Options:

FPM diaphragm order H0 DVB***

PTFE diaphragm order H0 DVC***

Travel stop and stroke limiter options available upon request.

LR Pressure loading/relief valves EPDM seals



| Size | DN | PN | A | B | C | D | E | F | M | gms | Code |
|------|----|----|-----|----|-----|-----|-----|---|----|------|------------|
| 16 | 10 | 10 | 85 | 26 | 133 | 40 | 52 | 3 | M5 | 101 | H0 LRA 305 |
| 20 | 15 | 10 | 85 | 26 | 133 | 40 | 52 | 3 | M5 | 101 | H0 LRA 306 |
| 25 | 20 | 10 | 102 | 33 | 153 | 50 | 64 | 3 | M5 | 257 | H0 LRA 307 |
| 32 | 25 | 10 | 105 | 35 | 174 | 60 | 79 | 3 | M6 | 425 | H0 LRA 308 |
| 40 | 30 | 10 | 113 | 42 | 204 | 70 | 89 | 3 | M6 | 607 | H0 LRA 309 |
| 50 | 40 | 10 | 137 | 46 | 233 | 80 | 109 | 6 | M6 | 1005 | H0 LRA 310 |
| 63 | 50 | 10 | 153 | 57 | 291 | 100 | 126 | 6 | M6 | 1444 | H0 LRA 311 |

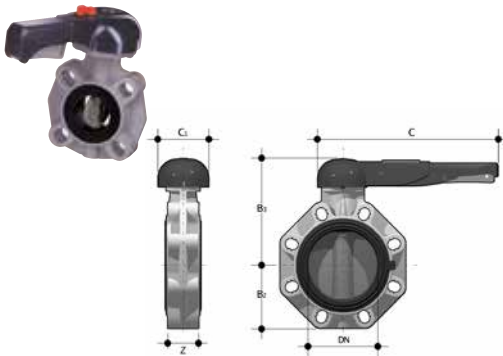
*Max (3 Bar loading) (10 Bar relief)

Options:

FPM options order H0 LRB***

PTFE options order H0 LRC***

FK Butterfly valves Glass reinforced polypropylene with ABS disc



lever operated

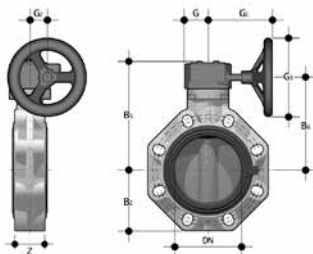
| d | DN | PN | B ₂ | B ₃ | C | C ₁ | gms | U | Z | Code |
|-----|-----|----|----------------|----------------|-----|----------------|------|---|----|------------|
| 50 | 40 | 16 | 60 | 137 | 175 | 100 | 900 | 4 | 33 | HO FKA 106 |
| 63 | 50 | 16 | 70 | 143 | 175 | 100 | 1080 | 4 | 43 | HO FKA 107 |
| 75 | 65 | 10 | 80 | 164 | 272 | 110 | 1470 | 4 | 46 | HO FKA 108 |
| 90 | 80 | 10 | 93 | 178 | 272 | 110 | 1870 | 8 | 49 | HO FKA 109 |
| 110 | 100 | 10 | 107 | 192 | 272 | 110 | 2220 | 8 | 56 | HO FKA 110 |
| 140 | 125 | 10 | 120 | 212 | 330 | 110 | 3100 | 8 | 64 | HO FKA 111 |
| 160 | 150 | 10 | 134 | 225 | 330 | 110 | 3850 | 8 | 70 | HO FKA 112 |
| 225 | 200 | 10 | 161 | 272 | 420 | 122 | 6750 | 8 | 71 | HO FKA 113 |

Options:

FPM seals order HO FKB***

U = No. of holes

with gear box



| Size | DN | PN | B ₂ | B ₃ | B ₆ | G | G ₁ | G ₂ | G ₃ | gms | U | Z | Code |
|------|-----|----|----------------|----------------|----------------|----|----------------|----------------|----------------|-------|----|-----|------------|
| 75 | 65 | 10 | 80 | 174 | 146 | 48 | 135 | 39 | 125 | 2400 | 4 | 46 | HV FKA 108 |
| 90 | 80 | 10 | 93 | 188 | 160 | 48 | 135 | 39 | 125 | 2800 | 8 | 49 | HV FKA 109 |
| 110 | 100 | 10 | 107 | 202 | 174 | 48 | 135 | 39 | 125 | 3150 | 8 | 56 | HV FKA 110 |
| 140 | 125 | 10 | 120 | 222 | 194 | 48 | 144 | 39 | 200 | 4450 | 8 | 64 | HV FKA 111 |
| 160 | 150 | 10 | 134 | 235 | 207 | 48 | 144 | 39 | 200 | 5200 | 8 | 70 | HV FKA 112 |
| 225 | 200 | 10 | 161 | 287 | 256 | 65 | 204 | 60 | 200 | 9300 | 8 | 71 | HV FKA 113 |
| 250 | 250 | 10 | 210 | 317 | 281 | 88 | 236 | 76 | 250 | 18600 | 12 | 114 | HV FKA 114 |
| 315 | 300 | 8 | 245 | 374 | 338 | 88 | 236 | 76 | 250 | 25600 | 12 | 114 | HV FKA 115 |

Options:

FPM seals order HV FKB***

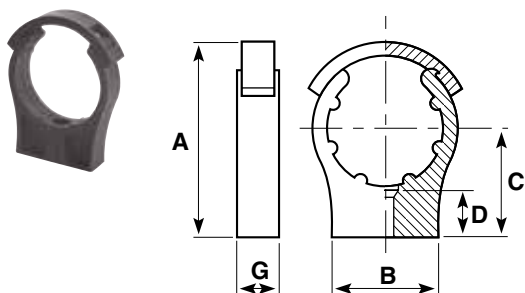
U = No. of holes

Note: Lugged versions available to special order. Please refer to our Valve Department for further details.

Our valve range can be electrically or pneumatically actuated.
For further details see page 77, or contact our Valve Department on 01543 471681.

Accessories

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 | 45 | 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 | 204 | 144 | 132 | 40 | 40 | M8 | 237 | 13 434 315 |
| 140 | 211 | 156 | 132 | 40 | 40 | M8 | 252 | 13 434 316 |
| 160 | 243 | 170 | 150 | 40 | 40 | M8 | 330 | 13 434 317 |

*Without retaining clips. Bolts/screws not supplied.

Rubber lined pipe clips



| Size mm | Thread | Code |
|---------|--------|------------|
| 16 | M10 | FT PC 1600 |
| 20 | M10 | FT PC 2000 |
| 25 | M10 | FT PC 2500 |
| 32 | M10 | FT PC 3200 |
| 40 | M10 | FT PC 4000 |
| 50 | M10 | FT PC 5000 |
| 63 | M10 | FT PC 6300 |
| 75 | M10 | FT PC 7500 |
| 90 | M10 | FT PC 9000 |
| 110 | M10 | FT PC 1100 |
| 160 | M10 | FT PC 1601 |

One-step solvent cement



| Litres | gms | Code |
|--------|------|------------|
| 0.5 | 550 | 03 461 395 |
| 1.0 | 1100 | 03 461 396 |

Only Durapipe ABS solvent cement and Durapipe Eco-cleaner should be used for jointing of Durapipe ABS pipework systems.

Eco-cleaner



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

Only Durapipe ABS solvent cement and Durapipe Eco-cleaner should be used for jointing of Durapipe ABS pipework systems.

Chamfering and de-burring tools



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

Pipe cutters



| Description | Product 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 |

Fibreseal



| Description | Product code |
|---------------------------------------|--------------|
| Sealing tape for threaded connections | 03 469 395 |

Index to SuperFLO ABS Imperial Fittings

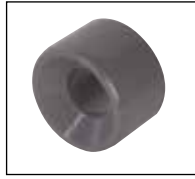
Note: Two-dimensional Auto-CAD drawings are available on www.durapipe.co.uk



Pipe (plain)
page 50



Sockets (plain)
page 51



Reducing bushes
(plain)
page 51



Reducing sockets
(plain)
page 52



Elbows 45° (plain)
page 52



Elbows 90° (plain)
page 52



Tees 45° (equal plain)
page 53



Tees 90° (equal plain)
page 53



Tees 90° (swept plain)
page 53



Tees 90° (reducing)
page 53



Bends 22½°
(long radius)
page 54



Bends 45°
(long radius)
page 54



Bends 90°
(long radius)
page 54



Bends 90°
(short radius plain)
page 54



Saddles (plain)
page 55



End caps (plain)
page 55



Socket unions (plain)
page 55



Imperial/metric socket
adaptors (plain)
page 56



Sockets
(plain female BSP thread)
page 56



Reducing bushes
(plain female BSP thread)
page 56



Elbows 90°
(plain female BSP thread)
page 57



Female adaptors
(plain spigot end/female
BSP thread) page 57



Hexagon nipples male
(plain spigot/male BSP
thread) page 57



Male threaded adaptors
(plain/male BSP taper
threaded) page 58



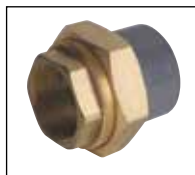
Barrel nipples
(plain/BSP taper threaded)
page 58



Hose adaptors
(BSP taper threaded/
hose tail) page 58



Tank connectors
(plain spigot/male BSP
parallel thread) page 59



Female composite unions
(plain/brass, BSP parallel
thread) page 59



Male composite unions
(plain/brass, BSP taper
thread) page 59



Female composite unions
(plain/stainless steel, BSP
parallel thread) page 60



Male composite unions
(plain/stainless steel, BSP
parallel thread) page 60



Sockets
(female BSP taper
thread) page 60



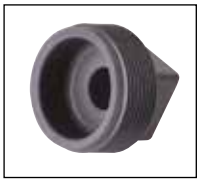
Reducing bushes
(male/female BSP
thread) page 61



Elbows 90°
(female BSP taper
thread) page 61



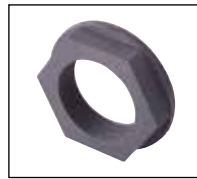
End caps
(female BSP taper
thread) page 61



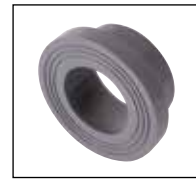
Plugs
(male BSP taper thread)
page 62



Hexagon nipples
(male BSP taper thread)
page 62



Back nuts
(female BSP taper thread)
page 62



Flanges stub
(plain/serrated)
page 62



Flanges full face
(plain/drilled)
page 63



Flanges blanking
(plain/drilled)
page 64



Backing rings
(galvanised mild steel
drilled) page 65



Gaskets flat/full face
(stub flange EPDM/
drilled EPDM) page 66



Valve support plates
(galvanised mild steel)
page 67



O-Rings
page 67

Valves



VKD Double union ball valves (manual – EPDM seals)
page 68



TKD 3-way ball valves
(manual – EPDM seals)
page 68



VXE Easyfit double union
ball valves (manual – EPDM seals) page 69



VKR Metering ball valve
(manual – EPDM seals)
page 69



SX Easyfit ball check valves
(EPDM seals)
page 69



SA Easyfit air release valves
(EPDM seals)
page 70



RV Y-Type strainers
(EPDM seals)
page 70



Dialock Diaphragm
valves (manual – EPDM
seals) page 70



Pressure Loading/Relief
valves (EPDM seals)
page 71



FK Butterfly valves (glass
reinforced polypropylene with
ABS disc and EPDM seals)
page 71

Accessories



ABS One-step solvent cement
page 72



Eco-cleaner
page 72



Cobra pipe clips
(polypropylene) page 72



Saddle clips
(polypropylene) page 72



Chamfering and
de-burring tools
page 73

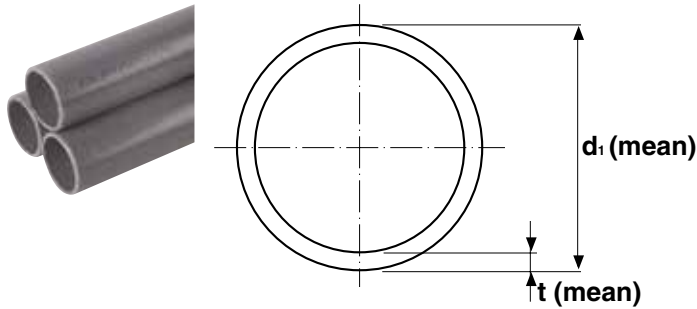


Pipe cutters
page 73



Fibreseal tape
page 73

SuperFLO ABS Pipe imperial system Plain



Pipe - ABS Class C (9 bar)

| Size | Mean OD d ₁ | Thickness t (mm) | Length (m) | Weight kg/m | Code |
|-------------------------------|---------------------------|------------------------|---------------|----------------|------------|
| 1 | 33.6 | 2.0 | 6 | 0.21 | 01 511 104 |
| 1 ¹ / ₄ | 42.2 | 2.5 | 6 | 0.32 | 01 511 105 |
| 1 ¹ / ₂ | 48.3 | 2.8 | 6 | 0.42 | 01 511 106 |
| 2 | 60.3 | 3.6 | 6 | 0.67 | 01 511 107 |
| 2 ¹ / ₂ | 75.2 | 5.0 | 6 | 1.14 | 11 551 312 |
| 3 | 88.9 | 5.2 | 6 | 1.40 | 01 511 109 |
| 4 | 114.3 | 6.6 | 6 | 2.32 | 01 511 110 |
| 5 | 140.2 | 9.3 | 6 | 3.97 | 11 551 316 |
| 6 | 168.3 | 9.9 | 6 | 5.12 | 01 511 112 |
| 8 | 219.1 | 12.7 | 6 | 8.57 | 01 511 113 |

*Note: 2¹/₂" & 5" pipes dimensionally compatible with 75mm and 140mm PN10 Metric series and are manufactured in accordance with the general requirements of DIN 8061/8062.

Pipe - ABS Class D (12 bar)

| Size | Mean OD d ₁ | Thickness t (mm) | Length (m) | Weight kg/m | Code |
|------|---------------------------|------------------------|---------------|----------------|------------|
| 6 | 168.3 | 12.8 | 6 | 6.50 | 01 512 112 |

Pipe - ABS Class E (15 bar)

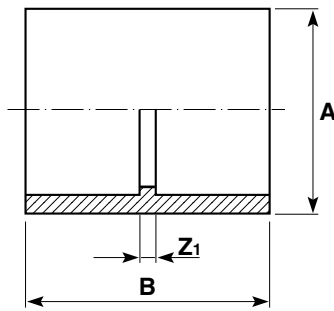
| Size | Mean OD d ₁ | Thickness t (mm) | Length (m) | Weight kg/m | Code |
|-------------------------------|---------------------------|------------------------|---------------|----------------|------------|
| ³ / ₈ | 17.1 | 1.7 | 6 | 0.09 | 01 513 101 |
| ¹ / ₂ | 21.4 | 2.0 | 6 | 0.13 | 01 513 102 |
| ³ / ₄ | 26.7 | 2.5 | 6 | 0.20 | 01 513 103 |
| 1 | 33.6 | 3.1 | 6 | 0.31 | 01 513 104 |
| 1 ¹ / ₄ | 42.2 | 3.9 | 6 | 0.49 | 01 513 105 |
| 1 ¹ / ₂ | 48.3 | 4.5 | 6 | 0.64 | 01 513 106 |
| 2 | 60.3 | 5.6 | 6 | 1.00 | 01 513 107 |
| 3 | 88.9 | 8.3 | 6 | 2.16 | 01 513 109 |
| 4 | 114.3 | 10.6 | 6 | 3.59 | 01 513 110 |

Pipe - ABS Class T (for threading)

(12 bar after threading)

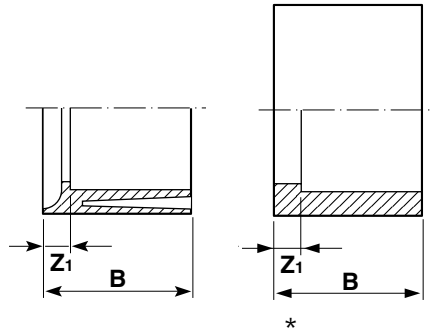
| Size | Mean OD d ₁ | Thickness t (mm) | Length (m) | Weight kg/m | Code |
|-------------------------------|---------------------------|------------------------|---------------|----------------|------------|
| ³ / ₈ | 17.1 | 3.5 | 6 | 0.16 | 01 514 101 |
| ¹ / ₂ | 21.4 | 3.6 | 6 | 0.22 | 01 514 102 |
| ³ / ₄ | 26.7 | 3.6 | 6 | 0.28 | 01 514 103 |
| 1 | 33.6 | 4.3 | 6 | 0.43 | 01 514 104 |
| 1 ¹ / ₄ | 42.2 | 5.3 | 6 | 0.65 | 01 514 105 |
| 1 ¹ / ₂ | 48.3 | 6.0 | 6 | 0.85 | 01 514 106 |
| 2 | 60.3 | 7.2 | 6 | 1.28 | 01 514 107 |

Sockets Plain



| Size | PN | A | B | Z ₁ | gms | Code |
|-------|----|-----|-----|----------------|------|------------|
| 3/8 | 15 | 21 | 32 | 2 | 4 | 01 100 101 |
| 1/2 | 15 | 26 | 38 | 2 | 6 | 01 100 102 |
| 3/4 | 15 | 32 | 43 | 3 | 12 | 01 100 103 |
| 1 | 15 | 41 | 50 | 3 | 24 | 01 100 104 |
| 1 1/4 | 15 | 52 | 60 | 4 | 41 | 01 100 105 |
| 1 1/2 | 15 | 60 | 66 | 2 | 62 | 01 100 106 |
| 2 | 15 | 74 | 78 | 4 | 114 | 01 100 107 |
| 2 1/2 | 9 | 88 | 94 | 4 | 230 | 11 100 312 |
| 3 | 15 | 108 | 104 | 4 | 355 | 01 100 109 |
| 4 | 15 | 136 | 135 | 5 | 595 | 01 100 110 |
| 5 | 9 | 171 | 163 | 7 | 1390 | 11 100 316 |
| 6 | 12 | 201 | 191 | 9 | 2269 | 01 100 112 |
| 8 | 9 | 257 | 249 | 11 | 3668 | 01 100 113 |

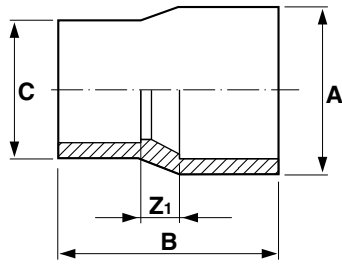
Reducing bushes Plain



| Size | PN | B | Z ₁ | gms | Code |
|---------------|----|-----|----------------|------|------------|
| 1/2 x 3/8 | 15 | 17 | 2 | 7 | 01 109 121 |
| 3/4 x 1/2 | 15 | 20 | 3 | 8 | 01 109 122 |
| 1 x 1/2 | 15 | 23 | 6 | 23 | 01 109 123 |
| 1 x 3/4 | 15 | 24 | 4 | 15 | 01 109 124 |
| *1 1/4 x 1/2 | 15 | 28 | 12 | 21 | 01 109 116 |
| *1 1/4 x 3/4 | 15 | 28 | 8 | 24 | 01 109 117 |
| 1 1/4 x 1 | 15 | 28 | 5 | 20 | 01 109 125 |
| *1 1/2 x 1/2 | 15 | 30 | 13 | 26 | 01 109 118 |
| *1 1/2 x 3/4 | 15 | 30 | 10 | 37 | 01 109 119 |
| *1 1/2 x 1 | 15 | 30 | 7 | 40 | 01 109 126 |
| 1 1/2 x 1 1/4 | 15 | 31 | 4 | 19 | 01 109 127 |
| *2 x 3/4 | 15 | 38 | 15 | 45 | 01 109 120 |
| *2 x 1 | 15 | 38 | 15 | 45 | 01 109 128 |
| *2 x 1 1/4 | 15 | 38 | 11 | 57 | 01 109 129 |
| 2 x 1 1/2 | 15 | 37 | 7 | 42 | 01 109 130 |
| 2 1/2 x 2 | 15 | 44 | 8 | 75 | 01 109 131 |
| *3 x 1 1/2 | 15 | 51 | 21 | 130 | 01 109 134 |
| *3 x 2 | 15 | 51 | 15 | 178 | 01 109 135 |
| 3 x 2 1/2 | 15 | 50 | 6 | 126 | 01 109 136 |
| *4 x 3 | 15 | 65 | 12 | 277 | 01 109 141 |
| 5 x 4 | 15 | 78 | 15 | 413 | 01 329 142 |
| *6 x 4 | 12 | 93 | 27 | 666 | 01 109 147 |
| 6 x 5 | 15 | 90 | 13 | 641 | 01 329 148 |
| *8 x 6 | 9 | 110 | 23 | 1185 | 01 109 152 |

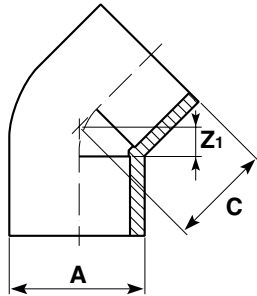
*Relief configuration (see drawing insert).

Reducing sockets Plain



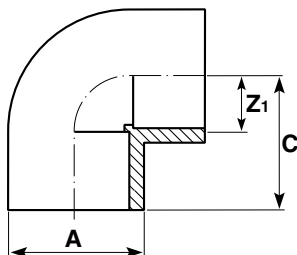
| Size | PN | A | B | C | Z ₁ | gms | Code |
|---------------|----|-----|-----|-----|----------------|------|------------|
| 3/4 x 1/2 | 15 | 32 | 44 | 26 | 7 | 11 | 01 114 122 |
| 1 x 3/4 | 15 | 41 | 53 | 33 | 9 | 19 | 01 114 124 |
| 1 1/4 x 1 | 15 | 52 | 63 | 41 | 10 | 39 | 01 114 125 |
| 1 1/2 x 1 1/4 | 15 | 59 | 68 | 51 | 8 | 58 | 01 114 127 |
| 2 x 1 1/2 | 15 | 74 | 82 | 59 | 12 | 100 | 01 114 130 |
| 3 x 2 | 15 | 108 | 114 | 75 | 26 | 320 | 01 114 135 |
| 4 x 3 | 15 | 136 | 136 | 108 | 20 | 558 | 01 114 141 |
| 6 x 4 | 12 | 205 | 213 | 140 | 55 | 1975 | 01 114 147 |
| 8 x 6 | 9 | 256 | 263 | 198 | 50 | 3410 | 01 114 152 |

Elbows 45° Plain



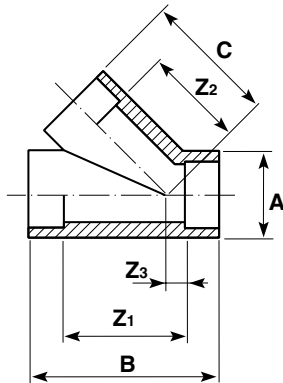
| Size | PN | A | C | Z ₁ | gms | Code |
|-------|----|-----|-----|----------------|------|------------|
| 3/8 | 15 | 21 | 20 | 6 | 8 | 01 119 101 |
| 1/2 | 15 | 27 | 26 | 8 | 9 | 01 119 102 |
| 3/4 | 15 | 33 | 27 | 12 | 15 | 01 119 103 |
| 1 | 15 | 41 | 37 | 13 | 25 | 01 119 104 |
| 1 1/4 | 15 | 52 | 44 | 15 | 59 | 01 119 105 |
| 1 1/2 | 15 | 60 | 50 | 18 | 86 | 01 119 106 |
| 2 | 15 | 82 | 66 | 27 | 160 | 01 119 107 |
| 2 1/2 | 10 | 90 | 63 | 17 | 300 | 11 119 312 |
| 3 | 15 | 112 | 94 | 40 | 750 | 01 119 109 |
| 4 | 15 | 139 | 115 | 50 | 1300 | 01 119 110 |
| 5 | 10 | 173 | 115 | 37 | 1980 | 11 119 316 |
| 6 | 12 | 198 | 134 | 41 | 2390 | 01 119 112 |
| 8 | 9 | 259 | 182 | 65 | 5620 | 01 119 113 |

Elbows 90° Plain



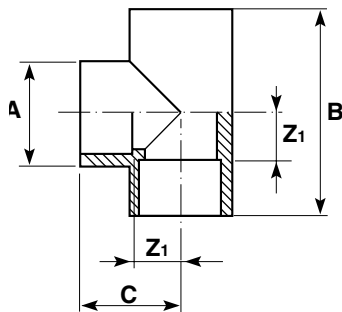
| Size | PN | A | C | Z ₁ | gms | Code |
|-------|----|-----|-----|----------------|------|------------|
| 3/8 | 15 | 21 | 24 | 9 | 6 | 01 115 101 |
| 1/2 | 15 | 26 | 29 | 12 | 11 | 01 115 102 |
| 3/4 | 15 | 32 | 34 | 14 | 19 | 01 115 103 |
| 1 | 15 | 41 | 41 | 17 | 35 | 01 115 104 |
| 1 1/4 | 15 | 52 | 49 | 21 | 70 | 01 115 105 |
| 1 1/2 | 15 | 60 | 56 | 26 | 101 | 01 115 106 |
| 2 | 15 | 74 | 68 | 31 | 191 | 01 115 107 |
| 2 1/2 | 10 | 90 | 83 | 38 | 385 | 11 115 312 |
| 3 | 15 | 111 | 104 | 52 | 720 | 01 115 109 |
| 4 | 15 | 141 | 130 | 65 | 1505 | 01 115 110 |
| 5 | 10 | 173 | 153 | 76 | 2390 | 11 115 316 |
| 6 | 12 | 203 | 175 | 85 | 4075 | 01 115 112 |
| 8 | 9 | 256 | 251 | 112 | 6900 | 01 115 113 |

Tees 45° Plain



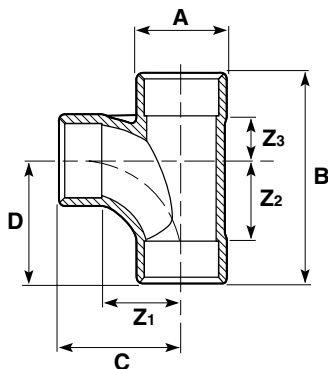
| Size | PN | A | B | C | Z ₁ | Z ₂ | Z ₃ | gms | Code |
|-------|----|----|-----|-----|----------------|----------------|----------------|-----|------------|
| 1/2 | 9 | 28 | 68 | 44 | 34 | 27 | 7 | 30 | 01 128 102 |
| 3/4 | 9 | 33 | 81 | 52 | 41 | 32 | 8 | 45 | 01 128 103 |
| 1 | 9 | 41 | 97 | 63 | 49 | 39 | 9 | 80 | 01 128 104 |
| 1 1/4 | 9 | 50 | 117 | 80 | 61 | 52 | 10 | 194 | 01 128 105 |
| 1 1/2 | 9 | 60 | 140 | 97 | 80 | 67 | 12 | 298 | 01 128 106 |
| 2 | 9 | 74 | 170 | 113 | 90 | 73 | 15 | 546 | 01 128 107 |

Tees 90° Equal plain



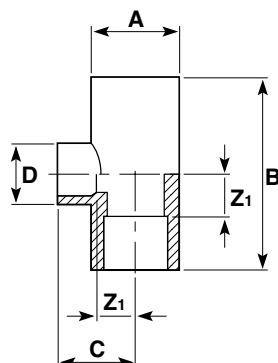
| Size | PN | A | B | C | Z ₁ | gms | Code |
|-------|----|-----|-----|-----|----------------|------|------------|
| 3/8 | 15 | 21 | 49 | 25 | 10 | 7 | 01 122 101 |
| 1/2 | 15 | 26 | 58 | 29 | 11 | 13 | 01 122 102 |
| 3/4 | 15 | 32 | 69 | 34 | 15 | 23 | 01 122 103 |
| 1 | 15 | 41 | 83 | 42 | 19 | 43 | 01 122 104 |
| 1 1/4 | 15 | 52 | 101 | 50 | 23 | 92 | 01 122 105 |
| 1 1/2 | 15 | 59 | 113 | 53 | 25 | 133 | 01 122 106 |
| 2 | 15 | 74 | 137 | 70 | 31 | 249 | 01 122 107 |
| 2 1/2 | 10 | 90 | 172 | 87 | 36 | 510 | 11 122 312 |
| 3 | 15 | 113 | 204 | 105 | 44 | 926 | 01 122 109 |
| 4 | 15 | 143 | 244 | 121 | 54 | 1960 | 01 122 110 |
| 5 | 10 | 172 | 307 | 153 | 72 | 3200 | 11 122 316 |
| 6 | 12 | 205 | 355 | 175 | 88 | 4449 | 01 122 112 |
| 8 | 9 | 257 | 468 | 240 | 100 | 9600 | 01 122 113 |

Tees 90° Swept plain



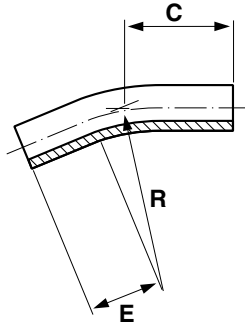
| Size | PN | A | B | C | D | Z ₁ | Z ₂ | Z ₃ | gms | Code |
|-------|----|-----|-----|-----|-----|----------------|----------------|----------------|------|------------|
| 1 | 9 | 41 | 115 | 79 | 79 | 57 | 57 | 14 | 85 | 01 148 104 |
| 1 1/2 | 9 | 62 | 160 | 105 | 105 | 74 | 74 | 24 | 285 | 01 148 106 |
| 2 | 9 | 78 | 195 | 125 | 125 | 87 | 87 | 32 | 515 | 01 148 107 |
| 2 1/2 | 9 | 92 | 210 | 125 | 125 | 81 | 81 | 41 | 601 | 01 148 108 |
| 4 | 9 | 139 | 315 | 190 | 190 | 127 | 127 | 62 | 2080 | 01 148 110 |

Tees 90° Reducing



| Size | PN | A | B | C | D | Z ₁ | gms | Code |
|-----------|----|----|----|----|----|----------------|-----|------------|
| 3/4 x 1/2 | 15 | 32 | 64 | 32 | 26 | 17 | 22 | 01 124 122 |
| 1 x 1/2 | 15 | 40 | 70 | 36 | 26 | 17 | 40 | 01 124 123 |
| 1 x 3/4 | 15 | 40 | 76 | 38 | 32 | 20 | 41 | 01 124 124 |

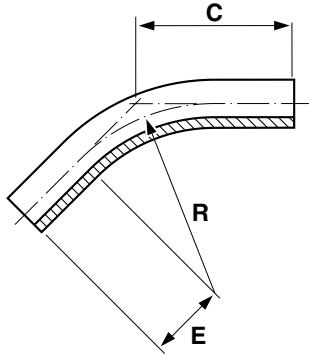
Bends 22½° Long radius



| Size | PN | C | E | R | gms | Code |
|------|----|-----|-----|-----|------|------------|
| 1 | 15 | 76 | 38 | 102 | 46 | 01 311 104 |
| 1½ | 15 | 110 | 57 | 152 | 143 | 01 311 106 |
| 2 | 15 | 113 | 73 | 203 | 274 | 01 311 107 |
| 2½ | 10 | 172 | 112 | 300 | 319 | 11 311 312 |
| 3 | 15 | 202 | 114 | 305 | 857 | 01 311 109 |
| 4 | 15 | 262 | 152 | 407 | 1886 | 01 311 110 |
| 5 | 10 | 322 | 210 | 560 | 2513 | 11 311 316 |
| 6 | 12 | 385 | 229 | 610 | 5154 | 01 311 112 |
| 8 | 9 | 503 | 305 | 812 | 8962 | 01 311 113 |

Tolerance on angle 3

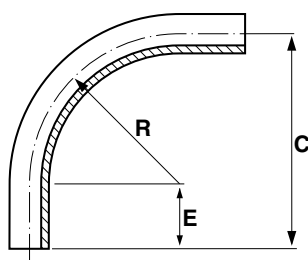
Bends 45° Long radius



| Size | PN | C | E | R | gms | Code |
|------|----|-----|-----|-----|-------|------------|
| 1 | 15 | 75 | 37 | 102 | 51 | 01 310 104 |
| 1½ | 15 | 113 | 55 | 152 | 156 | 01 310 106 |
| 2 | 15 | 152 | 73 | 203 | 322 | 01 310 107 |
| 2½ | 10 | 300 | 113 | 300 | 429 | 11 310 312 |
| 3 | 15 | 238 | 121 | 305 | 1100 | 01 310 109 |
| 4 | 15 | 300 | 145 | 407 | 2290 | 01 310 110 |
| 5 | 10 | 512 | 280 | 560 | 5315 | 11 310 316 |
| 6 | 12 | 440 | 218 | 610 | 6290 | 01 310 112 |
| 8 | 9 | 592 | 280 | 812 | 11440 | 01 310 113 |

Tolerance on angle 3

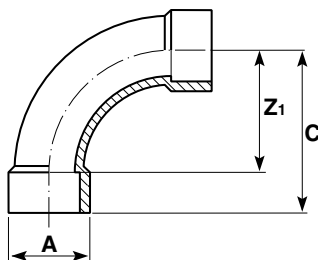
Bends 90° Long radius



| Size | PN | C | E | R | gms | Code |
|------|----|------|-----|-----|-------|------------|
| 3 | 15 | 403 | 98 | 305 | 1535 | 01 309 109 |
| 4 | 15 | 545 | 138 | 407 | 3440 | 01 309 110 |
| 5 | 10 | 840 | 280 | 560 | 6696 | 11 309 316 |
| 6 | 12 | 817 | 207 | 610 | 9430 | 01 309 112 |
| 8 | 9 | 1174 | 362 | 812 | 19070 | 01 309 113 |

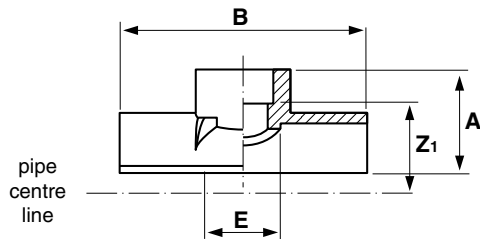
Tolerance on angle 3

Bends 90° Short radius plain



| Size | PN | A | C | Z ₁ | gms | Code |
|------|----|-----|-----|----------------|------|------------|
| ½ | 15 | 26 | 56 | 43 | 20 | 01 118 102 |
| ¾ | 15 | 33 | 65 | 45 | 45 | 01 118 103 |
| 1 | 15 | 40 | 85 | 63 | 65 | 01 118 104 |
| 1¼ | 15 | 51 | 108 | 81 | 130 | 01 118 105 |
| 1½ | 15 | 62 | 134 | 102 | 290 | 01 118 106 |
| 2 | 15 | 73 | 165 | 126 | 560 | 01 118 107 |
| 2½ | 10 | 93 | 195 | 150 | 810 | 11 118 312 |
| 3 | 15 | 111 | 226 | 172 | 1445 | 01 118 109 |
| 4 | 15 | 140 | 280 | 216 | 2400 | 01 118 110 |

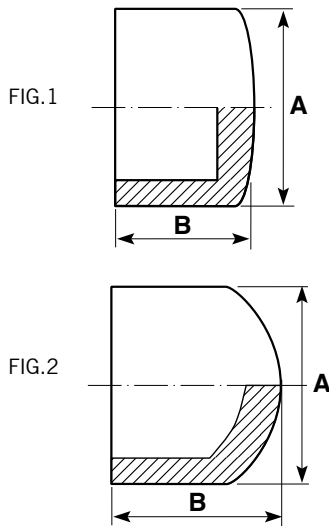
Saddles Plain



| Size | PN | A | B | E | Z ₁ | gms | Code |
|-----------------------------------|----|----|-----|----|----------------|-----|------------|
| 2 x 1 ¹ / ₄ | 15 | 60 | 136 | 48 | 33 | 90 | 01 126 129 |
| 3 x 1 ¹ / ₂ | 15 | 76 | 140 | 60 | 46 | 158 | 01 126 134 |
| 4 x 2 | 15 | 95 | 140 | 74 | 58 | 230 | 01 126 140 |
| 6 x 2 | 15 | 71 | 154 | 73 | 86 | 225 | 01 126 146 |

Two saddles can be mounted diametrically opposite.

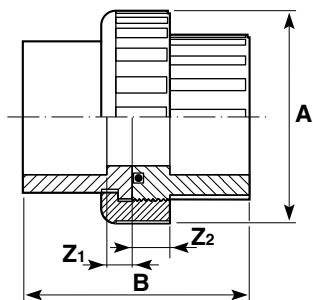
End caps Plain



| Size | PN | A | B | gms | Fig | Code |
|--------------------------------|----|-----|-----|-----|-----|------------|
| 3/8 | 15 | 21 | 17 | 3 | 1 | 01 140 101 |
| 1/2 | 15 | 26 | 22 | 5 | 1 | 01 140 102 |
| 3/4 | 15 | 32 | 25 | 9 | 1 | 01 140 103 |
| 1 | 15 | 40 | 30 | 20 | 1 | 01 140 104 |
| 1 ¹ / ₄ | 15 | 52 | 51 | 33 | 2 | 01 140 105 |
| 1 ¹ / ₂ | 15 | 59 | 39 | 48 | 1 | 01 140 106 |
| 2 | 15 | 74 | 70 | 90 | 2 | 01 140 107 |
| *2 ¹ / ₂ | 10 | 94 | 59 | 180 | 1 | 11 149 312 |
| 3 | 15 | 109 | 97 | 268 | 2 | 01 140 109 |
| 4 | 15 | 136 | 120 | 465 | 2 | 01 140 110 |

*2¹/₂ is rated at PN10.

Socket unions Plain

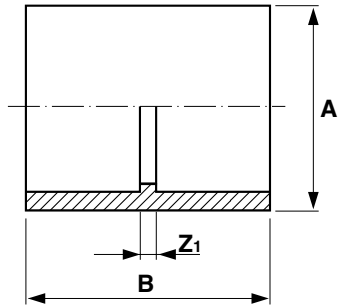


| Size | PN | A | B | Z ₁ | Z ₂ | gms | Code |
|--------------------------------|----|-----|-----|----------------|----------------|------|------------|
| 3/8 | 15 | 39 | 44 | 5 | 10 | 25 | 01 205 101 |
| 1/2 | 15 | 43 | 49 | 5 | 10 | 36 | 01 205 102 |
| 3/4 | 15 | 51 | 55 | 5 | 10 | 51 | 01 205 103 |
| 1 | 15 | 64 | 65 | 7 | 12 | 86 | 01 205 104 |
| 1 ¹ / ₄ | 15 | 72 | 77 | 10 | 14 | 122 | 01 205 105 |
| 1 ¹ / ₂ | 15 | 79 | 92 | 13 | 16 | 160 | 01 205 106 |
| 2 | 15 | 102 | 112 | 15 | 19 | 297 | 01 205 107 |
| *2 ¹ / ₂ | 10 | 135 | 107 | 8 | 13 | 610 | 11 205 312 |
| 3 | 9 | 155 | 113 | 6 | 4 | 750 | 01 205 109 |
| 4 | 9 | 180 | 138 | 7 | 6 | 1155 | 01 205 110 |

EPDM seal as standard.

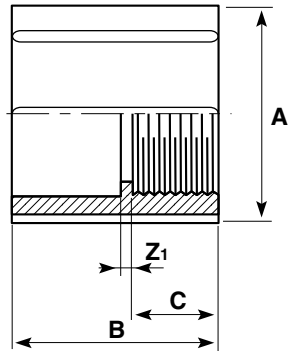
For FPM seal order 01 204 1**

Imperial/metric socket adaptors Plain



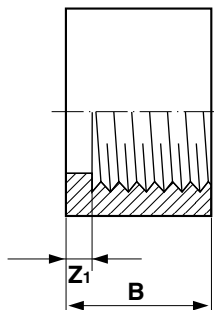
| Size | PN | A | B | Z ₁ | gms | Code |
|------------|----|-----|-----|----------------|------|------------|
| 1/2 x 20 | 10 | 26 | 37 | 3 | 7 | 11 345 102 |
| 3/4 x 25 | 10 | 31 | 41 | 3 | 12 | 11 345 103 |
| 1 x 32 | 10 | 40 | 49 | 3 | 25 | 11 345 104 |
| 1 1/4 x 40 | 10 | 50 | 58 | 2 | 45 | 11 345 105 |
| 1 1/2 x 50 | 10 | 59 | 67 | 3 | 62 | 11 345 106 |
| 2 x 63 | 10 | 74 | 78 | 2 | 114 | 11 345 107 |
| 3 x 90 | 10 | 107 | 105 | 3 | 355 | 11 345 109 |
| 4 x 110 | 10 | 134 | 130 | 6 | 690 | 11 345 110 |
| 6 x 160 | 10 | 195 | 183 | 8 | 1660 | 11 345 112 |

Sockets Plain female BSP thread



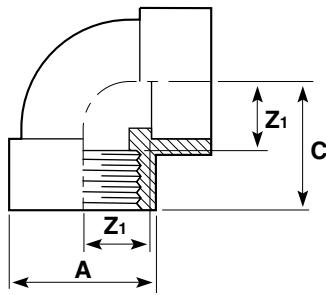
| Size | PN | A | B | C | Z ₁ | gms | Code |
|-------|----|-----|-----|----|----------------|-----|------------|
| 1/2 | 12 | 27 | 38 | 17 | 4 | 8 | 01 101 102 |
| 3/4 | 12 | 33 | 44 | 20 | 2 | 14 | 01 101 103 |
| 1 | 12 | 42 | 51 | 23 | 5 | 30 | 01 101 104 |
| 1 1/4 | 12 | 52 | 55 | 22 | 4 | 46 | 01 101 105 |
| 1 1/2 | 12 | 60 | 61 | 26 | 2 | 65 | 01 101 106 |
| 2 | 12 | 75 | 70 | 29 | 2 | 114 | 01 101 107 |
| 3 | 12 | 110 | 107 | 52 | 3 | 378 | 01 101 109 |

Reducing bushes Plain female BSP thread



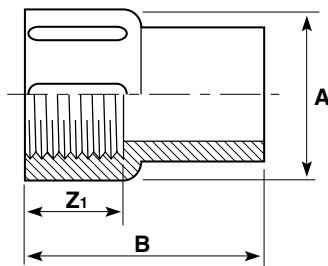
| Size | PN | B | Z ₁ | gms | Code |
|-----------|----|----|----------------|-----|------------|
| 1/2 x 3/8 | 12 | 17 | 6 | 4 | 01 111 121 |
| 3/8 x 1/2 | 12 | 20 | 5 | 7 | 01 111 122 |
| 1 x 3/4 | 12 | 23 | 6 | 12 | 01 111 124 |

Elbows 90° Plain female BSP thread



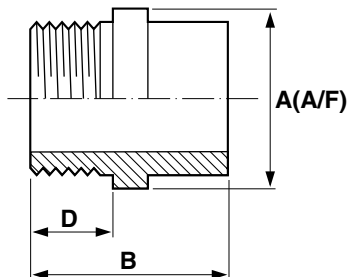
| Size | PN | A | C | Z ₁ | gms | Code |
|-------|----|----|----|----------------|-----|------------|
| 1/2 | 12 | 26 | 34 | 17 | 26 | 01 116 102 |
| 3/4 | 12 | 32 | 36 | 20 | 34 | 01 116 103 |
| 1 | 12 | 40 | 41 | 23 | 63 | 01 116 104 |
| 1 1/2 | 12 | 62 | 57 | 30 | 136 | 01 116 106 |
| 2 | 12 | 75 | 66 | 35 | 203 | 01 116 107 |

Female threaded adaptors Plain spigot end/female BSP thread



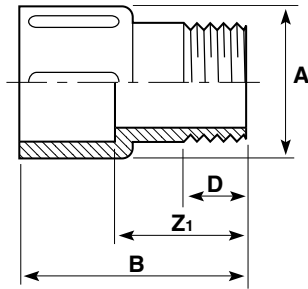
| Size | PN | A | B | Z ₁ | gms | Code |
|-------|----|----|----|----------------|-----|------------|
| 1/2 | 12 | 27 | 38 | 16 | 8 | 01 153 102 |
| 3/4 | 12 | 36 | 44 | 18 | 14 | 01 153 103 |
| 1 | 12 | 43 | 50 | 21 | 24 | 01 153 104 |
| 1 1/4 | 12 | 55 | 60 | 22 | 49 | 01 153 105 |
| 1 1/2 | 12 | 63 | 66 | 25 | 68 | 01 153 106 |
| 2 | 12 | 78 | 78 | 29 | 129 | 01 153 107 |

Hexagon nipples Plain spigot/male BSP thread

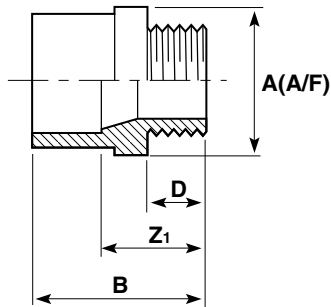


| Size | PN | A | B | D | gms | Code |
|-------|----|----|----|----|-----|------------|
| 3/8 | 12 | 24 | 36 | 11 | 7 | 01 107 101 |
| 1/2 | 12 | 30 | 42 | 15 | 12 | 01 107 102 |
| 3/4 | 12 | 36 | 48 | 16 | 30 | 01 107 103 |
| 1 | 12 | 46 | 56 | 20 | 40 | 01 107 104 |
| 1 1/4 | 12 | 46 | 60 | 21 | 50 | 01 107 105 |
| 1 1/2 | 12 | 55 | 63 | 22 | 58 | 01 107 106 |
| 2 | 12 | 72 | 74 | 26 | 91 | 01 107 107 |

Male threaded adaptors Plain/male BSP taper threaded

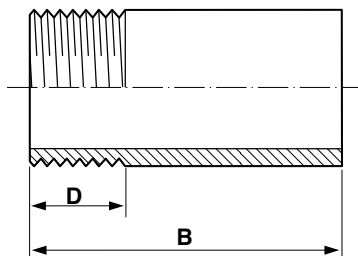


| Size | PN | A | B | D | Z ₁ | gms | Code |
|------|----|----|----|----|----------------|-----|------------|
| 3/8 | 12 | 22 | 35 | 10 | 20 | 5 | 01 151 101 |
| 1/2 | 12 | 27 | 45 | 12 | 28 | 9 | 01 151 102 |
| 3/4 | 12 | 35 | 48 | 14 | 28 | 14 | 01 151 103 |



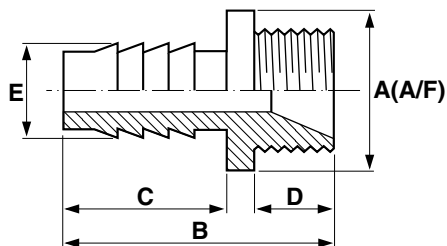
| Size | PN | A | B | D | Z ₁ | gms | Code |
|-------|----|----|----|----|----------------|-----|------------|
| 1 | 12 | 46 | 58 | 19 | 35 | 36 | 01 151 104 |
| 1 1/4 | 12 | 56 | 66 | 22 | 38 | 70 | 01 151 105 |
| 1 1/2 | 12 | 72 | 75 | 22 | 43 | 115 | 01 151 106 |
| 2 | 12 | 80 | 85 | 26 | 46 | 150 | 01 151 107 |

Barrel nipples Plain/BSP taper threaded



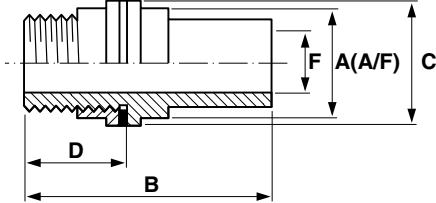
| Size | PN | B | D | gms | Code |
|-------|----|-----|----|-----|------------|
| 1/2 | 12 | 49 | 16 | 10 | 01 316 102 |
| 3/4 | 12 | 55 | 18 | 15 | 01 316 103 |
| 1 | 12 | 62 | 21 | 25 | 01 316 104 |
| 1 1/4 | 12 | 72 | 23 | 45 | 01 316 105 |
| 1 1/2 | 12 | 87 | 30 | 70 | 01 316 106 |
| 2 | 12 | 87 | 30 | 115 | 01 316 107 |
| 3 | 12 | 128 | 30 | 252 | 01 316 109 |
| 4 | 12 | 153 | 36 | 525 | 01 316 110 |

Hose adaptors BSP taper threaded/hose tail



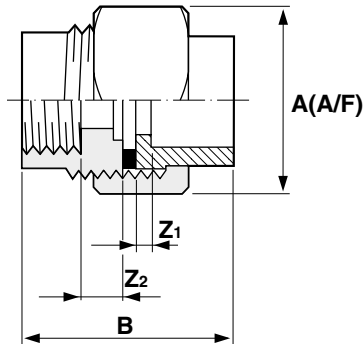
| Size | PN | A | B | C | D | E | gms | Code |
|------|----|----|----|----|----|----|-----|------------|
| 1/2 | 12 | 26 | 60 | 41 | 13 | 14 | 8 | 01 157 102 |
| 3/4 | 12 | 28 | 66 | 41 | 16 | 20 | 15 | 01 157 103 |
| 1 | 12 | 40 | 73 | 46 | 19 | 27 | 28 | 01 157 104 |

Tank connectors Plain spigot/male BSP parallel thread



| Size | A | B | C | D | F | gms | Code |
|--------|----|-----|----|----|----|-----|------------|
| 1/2" | 28 | 70 | 38 | 28 | 15 | 26 | 01 235 102 |
| 3/4" | 33 | 77 | 38 | 38 | 21 | 30 | 01 235 103 |
| 1" | 45 | 101 | 46 | 55 | 25 | 80 | 01 235 104 |
| 1 1/4" | 50 | 120 | 50 | 70 | 32 | 120 | 01 235 105 |
| 1 1/2" | 60 | 127 | 60 | 73 | 37 | 170 | 01 235 106 |
| 2" | 79 | 152 | 79 | 85 | 46 | 325 | 01 235 107 |

Composite unions Plain/brass, female BSP parallel thread



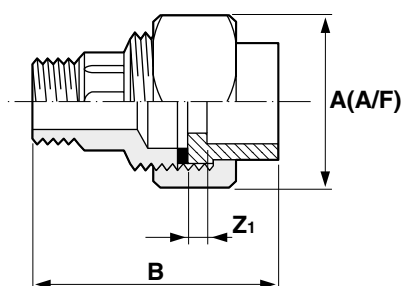
| Size | PN | A | B | Z ₁ | Z ₂ | gms | Code |
|-------|----|----|----|----------------|----------------|-----|------------|
| 1/2 | 15 | 40 | 42 | 3 | 7 | 165 | 01 212 102 |
| 3/4 | 15 | 48 | 49 | 3 | 9 | 290 | 01 212 103 |
| 1 | 15 | 55 | 59 | 11 | 12 | 310 | 01 212 104 |
| 1 1/4 | 15 | 65 | 68 | 9 | 10 | 450 | 01 212 105 |
| 1 1/2 | 15 | 79 | 75 | 12 | 14 | 800 | 01 212 106 |
| 2 | 15 | 88 | 90 | 14 | 14 | 950 | 01 212 107 |

Fitted with brass retaining nut.

Brass material to BS2872, WRAS approved.

ALL Durapipe Brass Components are manufactured using DZR Brass.

Composite unions Plain/brass, male BSP taper thread



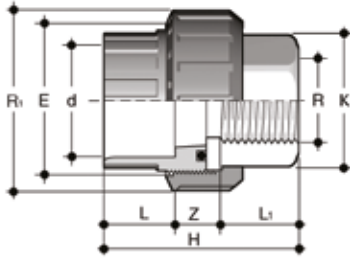
| Size | PN | A | B | Z ₁ | gms | Code |
|-------|----|----|-----|----------------|------|------------|
| 1/2 | 15 | 40 | 54 | 3 | 175 | 01 217 102 |
| 3/4 | 15 | 48 | 74 | 3 | 320 | 01 217 103 |
| 1 | 15 | 55 | 86 | 8 | 420 | 01 217 104 |
| 1 1/4 | 15 | 65 | 94 | 10 | 620 | 01 217 105 |
| 1 1/2 | 15 | 78 | 108 | 13 | 1000 | 01 217 106 |
| 2 | 15 | 88 | 129 | 15 | 1200 | 01 217 107 |

Fitted with brass retaining nut.

Brass material to BS2872, WRAS approved.

ALL Durapipe Brass Components are manufactured using DZR Brass.

Composite unions Plain/stainless steel, female BSP parallel thread

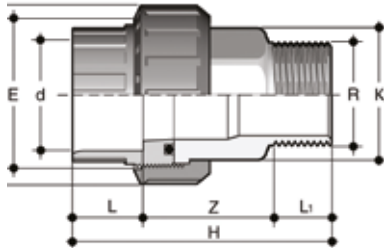


| Size | PN | E | H | K | Z | gms | Code |
|--------|----|----|------|----|------|-----|------------|
| 1/2* | 15 | 41 | 48.5 | 25 | 16 | 81 | 01 219 102 |
| 3/4* | 15 | 50 | 54.5 | 32 | 17 | 152 | 01 219 103 |
| 1* | 15 | 58 | 59.5 | 38 | 18 | 170 | 01 219 104 |
| 1 1/4* | 15 | 72 | 68.5 | 48 | 21 | 353 | 01 219 105 |
| 1 1/2* | 15 | 79 | 84.5 | 55 | 30.5 | 435 | 01 219 106 |
| 2* | 15 | 98 | 94.5 | 69 | 29.5 | 779 | 01 219 107 |

*Thread sizes designation.

ALL Durapipe Stainless Steel Components are manufactured using 316L Grade Stainless Steel.

Composite unions Plain/stainless steel, male BSP parallel thread

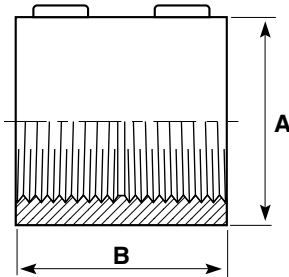


| Size | PN | E | H | K | Z | gms | Code |
|--------|----|----|-------|----|------|------|------------|
| 1/2* | 15 | 41 | 65 | 25 | 35.5 | 123 | 01 218 102 |
| 3/4* | 15 | 50 | 72.5 | 32 | 38.5 | 215 | 01 218 103 |
| 1* | 15 | 58 | 80 | 38 | 40.5 | 269 | 01 218 104 |
| 1 1/4* | 15 | 72 | 91 | 48 | 45.5 | 516 | 01 218 105 |
| 1 1/2* | 15 | 79 | 101 | 55 | 50.5 | 639 | 01 218 106 |
| 2* | 15 | 98 | 122.5 | 69 | 60.5 | 1111 | 01 218 107 |

*Thread sizes designation.

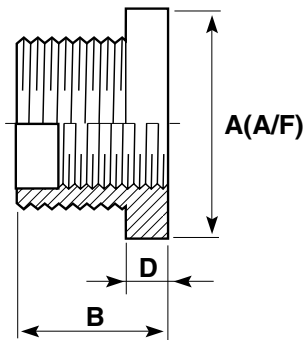
ALL Durapipe Stainless Steel Components are manufactured using 316L Grade Stainless Steel.

Sockets Female BSP taper thread



| Size | PN | A | B | gms | Code |
|-------|----|-----|-----|-----|------------|
| 1/2 | 12 | 26 | 38 | 12 | 01 102 102 |
| 3/4 | 12 | 33 | 43 | 22 | 01 102 103 |
| 1 | 12 | 41 | 51 | 34 | 01 102 104 |
| 1 1/4 | 12 | 51 | 54 | 60 | 01 102 105 |
| 1 1/2 | 12 | 62 | 63 | 87 | 01 102 106 |
| 2 | 12 | 75 | 72 | 132 | 01 102 107 |
| 3 | 12 | 110 | 107 | 437 | 01 102 109 |

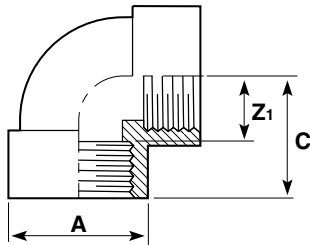
Reducing bushes Male/female BSP thread



| Size | PN | A | B | D | gms | Code |
|-----------|----|----|----|----|-----|------------|
| 1/2 x 3/8 | 12 | 24 | 25 | 10 | 5 | 01 113 121 |
| 3/4 x 1/2 | 12 | 30 | 27 | 11 | 10 | 01 113 122 |
| 1 x 3/4 | 12 | 36 | 31 | 12 | 13 | 01 113 124 |

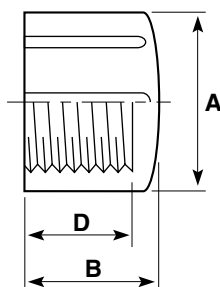
Male thread taper.
Female thread parallel.

Elbows 90° Female BSP taper thread



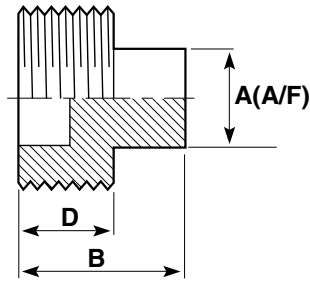
| Size | PN | A | C | Z ₁ | gms | Code |
|-------|----|----|----|----------------|-----|------------|
| 1/2 | 12 | 26 | 29 | 17 | 27 | 01 117 102 |
| 3/4 | 12 | 32 | 33 | 19 | 39 | 01 117 103 |
| 1 | 12 | 41 | 41 | 23 | 65 | 01 117 104 |
| 1 1/2 | 12 | 63 | 57 | 30 | 141 | 01 117 106 |
| 2 | 12 | 75 | 67 | 35 | 212 | 01 117 107 |

End caps Female BSP taper thread



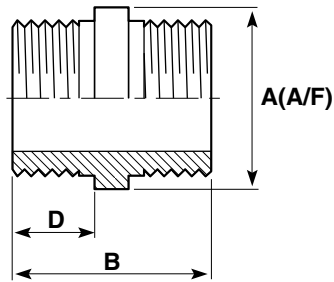
| Size | PN | A | B | D | gms | Code |
|-------|----|-----|----|----|-----|------------|
| 3/8 | 12 | 26 | 20 | 16 | 5 | 01 141 101 |
| 1/2 | 12 | 27 | 20 | 16 | 6 | 01 141 102 |
| 3/4 | 12 | 36 | 23 | 17 | 10 | 01 141 103 |
| 1 | 12 | 44 | 28 | 21 | 18 | 01 141 104 |
| 1 1/4 | 12 | 55 | 31 | 22 | 33 | 01 141 105 |
| 1 1/2 | 12 | 63 | 35 | 25 | 50 | 01 141 106 |
| 2 | 12 | 78 | 40 | 28 | 90 | 01 141 107 |
| 3 | 12 | 111 | 65 | 53 | 262 | 01 141 109 |

Plugs Male BSP taper thread



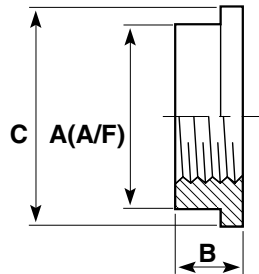
| Size | PN | A | B | D | gms | Code |
|-------|----|----|----|----|-----|------------|
| 3/8 | 12 | 11 | 19 | 10 | 3 | 01 155 101 |
| 1/2 | 12 | 13 | 23 | 14 | 5 | 01 155 102 |
| 3/4 | 12 | 14 | 28 | 15 | 8 | 01 155 103 |
| 1 | 12 | 17 | 30 | 17 | 12 | 01 155 104 |
| 1 1/4 | 12 | 22 | 35 | 22 | 30 | 01 155 105 |
| 1 1/2 | 12 | 27 | 38 | 22 | 36 | 01 155 106 |
| 2 | 12 | 37 | 45 | 26 | 50 | 01 155 107 |

Hexagon nipples Male BSP taper thread



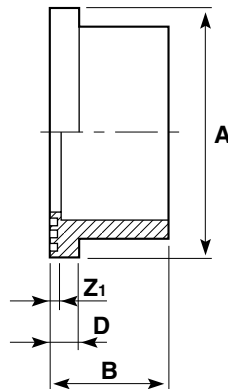
| Size | PN | A | B | D | gms | Code |
|-------|----|----|----|----|-----|------------|
| 3/8 | 12 | 24 | 38 | 14 | 6 | 01 106 101 |
| 1/2 | 12 | 30 | 46 | 18 | 12 | 01 106 102 |
| 3/4 | 12 | 36 | 50 | 19 | 30 | 01 106 103 |
| 1 | 12 | 46 | 59 | 13 | 40 | 01 106 104 |
| 1 1/4 | 12 | 46 | 67 | 27 | 55 | 01 106 105 |
| 1 1/2 | 12 | 55 | 73 | 29 | 75 | 01 106 106 |
| 2 | 12 | 72 | 81 | 33 | 125 | 01 106 107 |

Back nuts Female BSP taper thread



| Size | PN | A | B | C | gms | Code |
|-------|----|----|----|----|-----|------------|
| 3/8 | 12 | 25 | 11 | 29 | 5 | 01 159 101 |
| 1/2 | 12 | 28 | 13 | 38 | 8 | 01 159 102 |
| 3/4 | 12 | 33 | 13 | 38 | 15 | 01 159 103 |
| 1 | 12 | 45 | 16 | 54 | 18 | 01 159 104 |
| 1 1/4 | 12 | 50 | 18 | 58 | 19 | 01 159 105 |
| 1 1/2 | 12 | 60 | 19 | 69 | 31 | 01 159 106 |
| 2 | 12 | 79 | 21 | 91 | 65 | 01 159 107 |

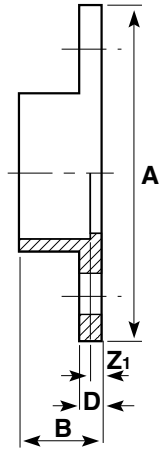
Flanges stub Plain/serrated



| Size | PN | A | B | D | Z ₁ | gms | Code |
|-------|----|-----|-----|----|----------------|------|------------|
| 2 | 15 | 96 | 40 | 14 | 3 | 90 | 01 135 107 |
| 2 1/2 | 10 | 106 | 49 | 10 | 4 | 150 | 11 135 312 |
| 3 | 15 | 127 | 57 | 18 | 6 | 200 | 01 135 109 |
| 4 | 15 | 159 | 69 | 20 | 6 | 350 | 01 135 110 |
| 5 | 15 | 180 | 83 | 14 | 7 | 680 | 11 135 316 |
| 6 | 12 | 213 | 104 | 24 | 11 | 805 | 01 135 112 |
| 8 | 9 | 269 | 132 | 26 | 14 | 2075 | 01 135 113 |

All Durapipe flanges are designed for use with Durapipe backing rings. Guarantees are null and void if used with incorrect backing ring.

Flanges full face Plain/drilled



BS10 Table D/E

| Size | A | B | D | Z ₁ | P.C.D. | No. of Holes | Hole Diameter | gms | Code |
|-------|-----|----|----|----------------|--------|--------------|---------------|------|------------|
| 1/2 | 96 | 21 | 10 | 4 | 67 | 4 | 14 | 68 | 01 130 102 |
| 3/4 | 105 | 24 | 10 | 4 | 73 | 4 | 14 | 78 | 01 130 103 |
| 1 | 115 | 27 | 10 | 4 | 83 | 4 | 14 | 107 | 01 130 104 |
| 1 1/4 | 140 | 33 | 10 | 5 | 87 | 4 | 14 | 122 | 01 130 105 |
| 1 1/2 | 150 | 37 | 10 | 5 | 98 | 4 | 14 | 154 | 01 130 106 |
| 2 | 166 | 45 | 10 | 6 | 115 | 4 | 18 | 223 | 01 130 107 |
| 3 | 199 | 60 | 11 | 8 | 145 | 4 | 18 | 398 | 01 130 109 |
| *4 | 220 | 72 | 14 | 6 | 178 | 8 | 18 | 638 | 01 130 110 |
| 6 | 284 | 98 | 22 | 8 | 235 | 8 | 22 | 1340 | 01 130 112 |

*4† BS10 Table D has 4 holes and should be ordered as 01 317 110.

BS4504 Table 16/3-10/3

| Size | A | B | D | Z ₁ | P.C.D. | No. of Holes | Hole Diameter | gms | Code |
|-------|-----|----|----|----------------|--------|--------------|---------------|------|------------|
| 1/2 | 96 | 21 | 10 | 4 | 65 | 4 | 14 | 68 | 01 319 102 |
| 3/4 | 105 | 24 | 10 | 4 | 75 | 4 | 14 | 78 | 01 319 103 |
| 1 | 115 | 27 | 10 | 4 | 85 | 4 | 14 | 107 | 01 319 104 |
| 1 1/4 | 140 | 33 | 10 | 5 | 100 | 4 | 18 | 122 | 01 319 105 |
| 1 1/2 | 150 | 37 | 10 | 5 | 110 | 4 | 18 | 154 | 01 319 106 |
| 2 | 166 | 45 | 10 | 6 | 125 | 4 | 18 | 223 | 01 319 107 |
| 3 | 199 | 60 | 11 | 8 | 160 | 8 | 18 | 398 | 01 319 109 |
| 4 | 220 | 72 | 14 | 6 | 180 | 8 | 18 | 638 | 01 319 110 |
| 6 | 284 | 98 | 22 | 8 | 240 | 8 | 22 | 1340 | 01 319 112 |

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| Size | A | B | D | Z ₁ | P.C.D. | No. of Holes | Hole Diameter | gms | Code |
|-------|-----|----|----|----------------|--------|--------------|---------------|------|------------|
| 1/2 | 96 | 21 | 10 | 4 | 60 | 4 | 14 | 68 | 01 322 102 |
| 3/4 | 105 | 24 | 10 | 4 | 70 | 4 | 14 | 78 | 01 322 103 |
| 1 | 115 | 27 | 10 | 4 | 80 | 4 | 14 | 107 | 01 322 104 |
| 1 1/2 | 150 | 37 | 10 | 5 | 98 | 4 | 14 | 154 | 01 130 106 |
| 2 | 166 | 45 | 10 | 6 | 121 | 4 | 18 | 223 | 01 322 107 |
| 3 | 199 | 60 | 11 | 8 | 152 | 4 | 18 | 398 | 01 322 109 |
| 4 | 220 | 72 | 14 | 6 | 190 | 8 | 18 | 638 | 01 322 110 |
| 6 | 284 | 98 | 22 | 8 | 241 | 8 | 22 | 1340 | 01 322 112 |

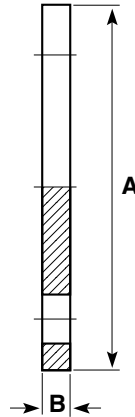
Undrilled

| Size | PN | A | B | D | Z ₁ | gms | Code |
|-------|----|-----|----|----|----------------|------|------------|
| 1/2 | 15 | 96 | 21 | 10 | 4 | 75 | 01 129 102 |
| 3/4 | 15 | 105 | 24 | 10 | 4 | 85 | 01 129 103 |
| 1 | 15 | 115 | 27 | 10 | 4 | 111 | 01 129 104 |
| 1 1/4 | 15 | 140 | 32 | 10 | 4 | 130 | 01 129 105 |
| 1 1/2 | 15 | 150 | 36 | 10 | 5 | 160 | 01 129 106 |
| 2 | 15 | 165 | 45 | 11 | 6 | 233 | 01 129 107 |
| 3 | 15 | 199 | 60 | 11 | 8 | 414 | 01 129 109 |
| 4 | 15 | 220 | 73 | 14 | 6 | 657 | 01 129 110 |
| 6 | 12 | 284 | 99 | 22 | 8 | 1417 | 01 129 112 |

Note: Durapipe backing rings must be used in conjunction with full face flanges.

All Durapipe flanges are designed for use with Durapipe backing rings. Guarantees are null and void if used with incorrect backing ring.

Flanges blanking Plain/drilled



BS10 Table D/E

| Size | A | B | P.C.D. | No. of Holes | Hole Diameter | gms | Code |
|------|-----|----|--------|--------------|---------------|------|------------|
| 2 | 165 | 13 | 115 | 4 | 18 | 235 | 01 313 107 |
| 3 | 197 | 19 | 145 | 4 | 18 | 520 | 01 313 109 |
| *4 | 214 | 19 | 178 | 8 | 18 | 720 | 01 313 110 |
| 6 | 286 | 26 | 235 | 8 | 22 | 1575 | 01 313 112 |
| 8 | 337 | 26 | 292 | 8 | 22 | 2300 | 01 313 113 |

*4† BS10 Table D has 4 holes and should be ordered as 01 326 110.

BS4504 Table 16/3 (1/2" to 8") 10/3 (1/2" to 6")

| Size | A | B | P.C.D. | No. of Holes | Hole Diameter | gms | Code |
|------------------|-----|----|--------|--------------|---------------|------|------------|
| 2 | 165 | 13 | 125 | 4 | 18 | 235 | 01 323 107 |
| 2 ^{1/2} | 186 | 19 | 145 | 4 | 18 | 568 | 11 323 312 |
| 3 | 197 | 19 | 160 | 8 | 18 | 520 | 01 323 109 |
| 4 | 214 | 19 | 180 | 8 | 18 | 720 | 01 323 110 |
| 5 | 251 | 26 | 210 | 8 | 18 | 1338 | 11 323 316 |
| 6 | 286 | 26 | 240 | 8 | 22 | 1575 | 01 323 112 |
| 8 | 337 | 26 | 295 | 12 | 22 | 2300 | 01 323 113 |

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| Size | A | B | P.C.D. | No. of Holes | Hole Diameter | gms | Code |
|------|-----|----|--------|--------------|---------------|------|------------|
| 2 | 165 | 13 | 121 | 4 | 18 | 235 | 01 325 107 |
| 3 | 197 | 19 | 152 | 4 | 18 | 520 | 01 325 109 |
| 4 | 214 | 19 | 190 | 8 | 18 | 720 | 01 325 110 |
| 6 | 286 | 26 | 241 | 8 | 22 | 1575 | 01 325 112 |
| 8 | 337 | 26 | 298 | 8 | 22 | 2300 | 01 325 113 |

Undrilled

| Size | PN | A | B | gms | Code |
|------------------|----|-----|----|------|------------|
| 1 | 15 | 116 | 13 | 140 | 01 131 104 |
| 1 ^{1/2} | 15 | 150 | 13 | 185 | 01 131 106 |
| 2 | 15 | 166 | 13 | 235 | 01 131 107 |
| 3 | 15 | 197 | 19 | 520 | 01 131 109 |
| 4 | 15 | 214 | 19 | 720 | 01 131 110 |
| 6 | 12 | 286 | 26 | 1575 | 01 131 112 |
| 8 | 9 | 337 | 26 | 2300 | 01 131 113 |

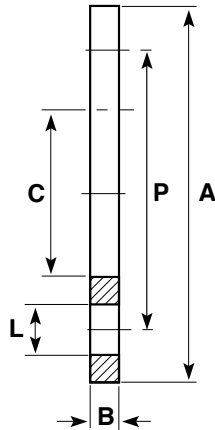
Note: Durapipe backing rings must be used in conjunction with blank flanges.

**DURAPIPE UK MANUFACTURE FULLY MATCHED PIPEWORK SYSTEMS.
AS A RESULT WE DO NOT RECOMMEND THE USE OF NON-DURAPIPE PRODUCTS
INCLUDING BACKING RINGS, GASKETS, SOLVENT CEMENT AND CLEANER.**

INSIST ON DURAPIPE.

All Durapipe flanges are designed for use with Durapipe backing rings. Guarantees are null and void if used with incorrect backing ring.

Backing rings Galvanised mild steel drilled



BS10 Table D/E

| Size | A | B | C | P | No. of Holes | Hole Dia. | Bolt Size | Weight gms | Code |
|-------|-----|----|-----|-----|--------------|-----------|-----------|------------|------------|
| 1/2 | 95 | 6 | 35 | 67 | 4 | 14 | M12x50 | 270 | 03 416 102 |
| 3/4 | 103 | 7 | 45 | 73 | 4 | 14 | M12x50 | 300 | 03 416 103 |
| 1 | 114 | 6 | 49 | 83 | 4 | 14 | M12x50 | 380 | 03 416 104 |
| 1 1/4 | 120 | 7 | 60 | 87 | 4 | 14 | M12x50 | 380 | 03 416 105 |
| 1 1/2 | 135 | 7 | 68 | 98 | 4 | 14 | M12x50 | 480 | 03 416 106 |
| 2 | 151 | 8 | 78 | 115 | 4 | 18 | M16x65 | 880 | 03 416 107 |
| 3 | 187 | 9 | 110 | 145 | 4 | 18 | M16x70 | 1040 | 03 416 109 |
| *4 | 216 | 9 | 140 | 178 | 8 | 18 | M16x80 | 1330 | 03 416 110 |
| 6 | 282 | 11 | 195 | 235 | 8 | 22 | M20x90 | 2340 | 03 416 112 |
| 8 | 337 | 10 | 255 | 292 | 8 | 22 | M20x100 | 2870 | 03 416 113 |

*4† BS10 Table D has 4 holes and should be ordered as 03 415 110.

BS4504 Table 16/3 (1/2" to 12") 10/3 (1/2" to 6")

| Size | A | B | C | P | No. of Holes | Hole Dia. | Bolt Size | Weight gms | Code |
|-------|-----|----|-----|-----|--------------|-----------|-----------|------------|------------|
| 1/2 | 95 | 6 | 35 | 65 | 4 | 14 | M12x50 | 310 | 03 421 102 |
| 3/4 | 106 | 6 | 45 | 75 | 4 | 14 | M12x50 | 330 | 03 421 103 |
| 1 | 114 | 6 | 49 | 85 | 4 | 14 | M12x50 | 390 | 03 421 104 |
| 1 1/4 | 141 | 6 | 60 | 100 | 4 | 18 | M16x50 | 580 | 03 421 105 |
| 1 1/2 | 150 | 6 | 68 | 110 | 4 | 18 | M16x50 | 880 | 03 421 106 |
| 2 | 165 | 8 | 78 | 125 | 4 | 18 | M16x65 | 1020 | 03 421 107 |
| 2 1/2 | 186 | 9 | 92 | 145 | 4 | 18 | M16x65 | 1280 | 13 421 312 |
| 3 | 200 | 8 | 110 | 160 | 8 | 18 | M16x70 | 1310 | 03 421 109 |
| 4 | 221 | 8 | 140 | 180 | 8 | 18 | M16x80 | 1370 | 03 421 110 |
| 5 | 251 | 11 | 167 | 210 | 8 | 18 | M16x90 | 2060 | 13 421 316 |
| 6 | 286 | 11 | 195 | 240 | 8 | 22 | M20x90 | 2460 | 03 421 112 |
| 8 | 339 | 11 | 255 | 295 | 12 | 22 | M20x100 | 2780 | 03 421 113 |

BS4504 Table 10/3 (8")

| Size | A | B | C | P | No. of Holes | Hole Dia. | Bolt Size | Weight gms | Code |
|------|-----|----|-----|-----|--------------|-----------|-----------|------------|------------|
| 8 | 339 | 11 | 255 | 295 | 8 | 22 | M20x100 | 2870 | 03 404 113 |

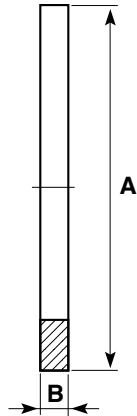
Note: The 8" backing ring drilled 10/3 is intended for use in conjunction with the 8" FK Butterfly valve, as the PN10 drilling has 8 holes as apposed to the 12 holes on the PN16 drilling.

ANSI Class 150

| Size | A | B | C | P | No. of Holes | Hole Dia. | Bolt Size | Weight gms | Code |
|-------|-----|----|-----|-----|--------------|-----------|-----------|------------|------------|
| 1/2 | 89 | 6 | 35 | 60 | 4 | 14 | M12x50 | 240 | 03 425 102 |
| 3/4 | 98 | 6 | 45 | 70 | 4 | 14 | M12x50 | 270 | 03 425 103 |
| 1 | 108 | 6 | 49 | 80 | 4 | 14 | M12x50 | 330 | 03 425 104 |
| 1 1/2 | 128 | 6 | 68 | 98 | 4 | 14 | M12x50 | 420 | 03 425 106 |
| 2 | 153 | 8 | 78 | 121 | 4 | 18 | M16x65 | 790 | 03 425 107 |
| 3 | 191 | 8 | 110 | 152 | 4 | 18 | M16x65 | 1200 | 03 425 109 |
| 4 | 230 | 9 | 140 | 190 | 8 | 18 | M16x70 | 1580 | 03 425 110 |
| 6 | 280 | 11 | 195 | 241 | 8 | 22 | M20x90 | 2230 | 03 425 112 |
| 8 | 340 | 12 | 255 | 298 | 8 | 22 | M20x100 | 3060 | 03 425 113 |

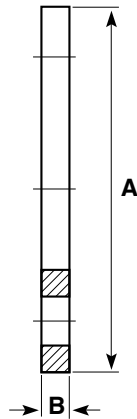
*Bolt lengths shown are for flange/flange assemblies only.

Gaskets flat Stub flange EPDM



| Size | A | B | gms | Code |
|-------------------------------|-----|-----|-----|------------|
| 2 | 97 | 3.0 | 21 | 03 431 107 |
| 2 ¹ / ₂ | 106 | 3.0 | 22 | 13 411 312 |
| 3 | 128 | 3.0 | 23 | 03 431 109 |
| 4 | 160 | 3.9 | 36 | 03 431 110 |
| 5 | 180 | 4.0 | 60 | 13 411 316 |
| 6 | 214 | 3.9 | 74 | 03 431 112 |
| 8 | 269 | 4.0 | 92 | 03 431 113 |

Gaskets full face Drilled EPDM



BS10 Table D/E

| Size | A | B | P.C.D. | No. of Holes | Hole Diameter | gms | Code |
|-------------------------------|-----|-----|--------|--------------|---------------|-----|------------|
| 1/2 | 95 | 3.0 | 67 | 4 | 14 | 31 | 03 410 102 |
| 3/4 | 112 | 3.0 | 73 | 4 | 14 | 37 | 03 410 103 |
| 1 | 115 | 3.0 | 83 | 4 | 14 | 37 | 03 410 104 |
| 1 ¹ / ₄ | 121 | 3.0 | 87 | 4 | 14 | 41 | 03 410 105 |
| 1 ¹ / ₂ | 133 | 3.0 | 98 | 4 | 14 | 55 | 03 410 106 |
| 2 | 153 | 3.0 | 115 | 4 | 18 | 56 | 03 410 107 |
| 3 | 184 | 3.0 | 145 | 4 | 18 | 98 | 03 410 109 |
| *4 | 216 | 3.2 | 178 | 8 | 18 | 112 | 03 410 110 |
| 6 | 250 | 3.1 | 235 | 8 | 22 | 160 | 03 410 112 |

*4† BS10 Table D has 4 holes and should be ordered as 03 409 11

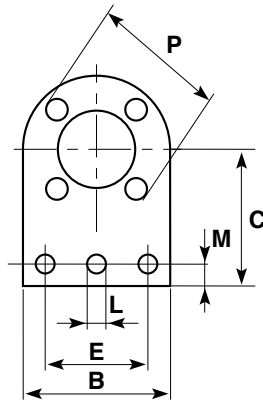
BS4504 Table 16/3-10/3

| Size | A | B | P.C.D. | No. of Holes | Hole Diameter | gms | Code |
|-------------------------------|-----|-----|--------|--------------|---------------|-----|------------|
| 1/2 | 95 | 3.0 | 65 | 4 | 14 | 31 | 03 408 102 |
| 3/4 | 112 | 3.0 | 75 | 4 | 14 | 37 | 03 408 103 |
| 1 | 115 | 3.0 | 85 | 4 | 14 | 37 | 03 408 104 |
| 1 ¹ / ₄ | 121 | 3.0 | 100 | 4 | 18 | 41 | 03 408 105 |
| 1 ¹ / ₂ | 133 | 3.0 | 110 | 4 | 18 | 55 | 03 408 106 |
| 2 | 153 | 3.0 | 125 | 4 | 18 | 56 | 03 408 107 |
| 3 | 184 | 3.0 | 160 | 8 | 18 | 98 | 03 408 109 |
| 4 | 216 | 3.2 | 180 | 8 | 18 | 112 | 03 408 110 |
| 6 | 280 | 3.1 | 240 | 8 | 22 | 160 | 03 408 112 |

ANSI Class 150

| Size | A | B | P.C.D. | No. of Holes | Hole Diameter | gms | Code |
|-------------------------------|-----|-----|--------|--------------|---------------|-----|------------|
| 1/2 | 95 | 3.0 | 60 | 4 | 14 | 31 | 03 426 102 |
| 3/4 | 112 | 3.0 | 70 | 4 | 14 | 37 | 03 426 103 |
| 1 | 115 | 3.0 | 80 | 4 | 14 | 37 | 03 426 104 |
| 1 ¹ / ₂ | 133 | 3.0 | 98 | 4 | 14 | 55 | 03 426 106 |
| 2 | 153 | 3.0 | 121 | 4 | 18 | 56 | 03 426 107 |
| 3 | 184 | 3.0 | 152 | 4 | 18 | 98 | 03 426 109 |
| 4 | 216 | 3.2 | 190 | 8 | 18 | 112 | 03 426 110 |
| 6 | 280 | 3.1 | 241 | 8 | 22 | 160 | 03 426 112 |

Valve support plates Galvanised mild steel

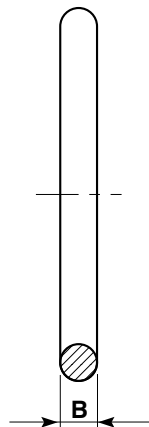


BS4504 Table 16/3 (1/2" to 8") **10/3** (1/2" to 6")

| Size | B | C | E | L | M | N | P | Weight gms | Code |
|-------|-----|-----|-----|----|----|---|-----|---------------|------------|
| 1/2 | 95 | 86 | 50 | 14 | 16 | 2 | 65 | 370 | 03 458 102 |
| 3/4 | 106 | 89 | 75 | 14 | 16 | 2 | 75 | 450 | 03 458 103 |
| 1 | 143 | 99 | 75 | 14 | 16 | 2 | 85 | 560 | 03 458 104 |
| 1 1/4 | 152 | 105 | 75 | 14 | 16 | 2 | 100 | 950 | 03 458 105 |
| 1 1/2 | 151 | 105 | 74 | 14 | 16 | 2 | 110 | 1150 | 03 458 106 |
| 2 | 166 | 127 | 101 | 14 | 17 | 2 | 125 | 1380 | 03 458 107 |
| 2 1/2 | 185 | 144 | 125 | 14 | 22 | 2 | 145 | 2500 | 31 459 312 |
| 3 | 201 | 143 | 127 | 14 | 22 | 2 | 160 | 1650 | 03 458 109 |
| 4 | 222 | 161 | 151 | 14 | 24 | 3 | 180 | 2550 | 03 458 110 |
| 6 | 286 | 217 | 228 | 14 | 33 | 3 | 240 | 4100 | 03 458 112 |
| 8 | 340 | 242 | 280 | 14 | 31 | 3 | 295 | 6250 | 03 458 113 |

N = No. of holes in base.

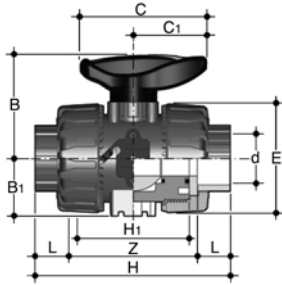
O-Rings



| Size | B | gms | EPDM Code | FPM Code |
|-------|-----|-----|--------------|-------------|
| 3/8 | 3.5 | 0.5 | 03 209 101 | 03 211 101 |
| 1/2 | 3.5 | 1 | 03 209 102 | 03 211 102 |
| 3/4 | 3.5 | 2 | 03 209 103 | 03 211 103 |
| 1 | 3.5 | 3 | 03 209 104 | 03 211 104 |
| 1 1/4 | 5.2 | 5 | 13 209 309 | 03 211 105 |
| 1 1/2 | 5.2 | 6 | 13 209 310 | 03 211 106 |
| 2 | 5.3 | 7 | 03 306 107 | 03 211 107 |

Valves

VKD Double union ball valves Manual – EPDM seals



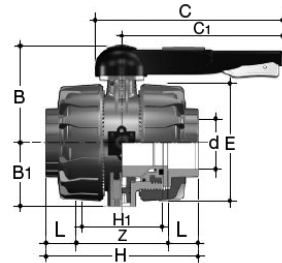
| d | DN | PN | L | Z | H | E | B | C | gms | Code |
|-------|----|----|------|-----|-----|-----|-----|-----|------|------------|
| 3/8 | 10 | 16 | 14.5 | 74 | 103 | 55 | 49 | 66 | 160 | HO DKA 101 |
| 1/2 | 15 | 16 | 16.5 | 70 | 103 | 55 | 49 | 66 | 160 | HO DKA 102 |
| 3/4 | 20 | 16 | 19 | 77 | 115 | 66 | 59 | 75 | 265 | HO DKA 103 |
| 1 | 25 | 16 | 22.5 | 83 | 128 | 75 | 66 | 85 | 345 | HO DKA 104 |
| 1 1/4 | 32 | 16 | 26 | 94 | 146 | 87 | 75 | 97 | 550 | HO DKA 105 |
| 1 1/2 | 40 | 16 | 30 | 104 | 164 | 100 | 87 | 110 | 730 | HO DKA 106 |
| 2 | 50 | 16 | 36 | 127 | 199 | 122 | 101 | 134 | 1280 | HO DKA 107 |

Options:

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

FPM seals (threaded ends) order HO DKB***

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

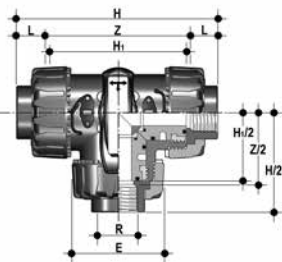
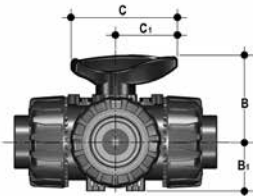


| d | DN | PN | Z | L | H | H ₁ | E | B | B ₁ | C | C ₁ | gms | Code |
|-------|-----|----|-----|----|-----|----------------|-----|-----|----------------|-----|----------------|------|------------|
| 2 1/2 | 65 | 16 | 147 | 44 | 235 | 133 | 164 | 164 | 87 | 225 | 175 | 3725 | HO DKA 312 |
| 3 | 80 | 16 | 168 | 51 | 270 | 149 | 203 | 177 | 105 | 327 | 272 | 5700 | HO DKA 109 |
| 4 | 100 | 16 | 186 | 61 | 308 | 167 | 238 | 195 | 129 | 385 | 330 | 8660 | HO DKA 110 |

Options:

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

TKD 3-way ball valves Manual – EPDM seals



T-Port design

| d | DN | PN | H | Z | C | C ₁ | B | B ₁ | gms | Code |
|-------|----|----|-------|-----|-----|----------------|------|----------------|------|------------|
| 1/2 | 15 | 16 | 125 | 95 | 67 | 40 | 54 | 29 | 235 | HO TTA 102 |
| 3/4 | 20 | 16 | 146 | 114 | 85 | 49 | 65 | 34.5 | 415 | HO TTA 103 |
| 1 | 25 | 16 | 166 | 129 | 85 | 49 | 65.9 | 39 | 570 | HO TTA 104 |
| 1 1/4 | 32 | 16 | 195.5 | 151 | 108 | 64 | 82.5 | 46 | 895 | HO TTA 105 |
| 1 1/2 | 40 | 16 | 211 | 166 | 108 | 64 | 89 | 52 | 1250 | HO TTA 106 |
| 2 | 50 | 16 | 253.5 | 199 | 134 | 76 | 108 | 62 | 2225 | HO TTA 107 |

Options:

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

FPM seals (threaded ends) order HO TTB***

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

L-Port design

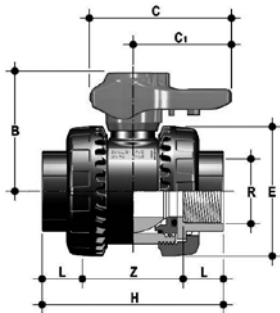
| d | DN | PN | H | Z | C | C ₁ | B | B ₁ | gms | Code |
|-------|----|----|-------|-----|-----|----------------|------|----------------|------|------------|
| 1/2 | 15 | 16 | 125 | 95 | 67 | 40 | 54 | 29 | 235 | HO LTA 102 |
| 3/4 | 20 | 16 | 146 | 114 | 85 | 49 | 65 | 34.5 | 415 | HO LTA 103 |
| 1 | 25 | 16 | 166 | 129 | 85 | 49 | 65.9 | 39 | 570 | HO LTA 104 |
| 1 1/4 | 32 | 16 | 195.5 | 151 | 108 | 64 | 82.5 | 46 | 895 | HO LTA 105 |
| 1 1/2 | 40 | 16 | 211 | 166 | 108 | 64 | 89 | 52 | 1250 | HO LTA 106 |
| 2 | 50 | 16 | 253.5 | 199 | 134 | 76 | 108 | 62 | 2225 | HO LTA 107 |

Options:

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

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

VXE Easyfit double union ball valves Manual – EPDM seals



| d | DN | PN | L | Z | H | E | B | C | C ₁ | gms | Code |
|-------|----|----|------|-----|-----|-----|-----|-----|----------------|------|------------|
| 1/2 | 15 | 16 | 16.5 | 49 | 82 | 54 | 49 | 64 | 20 | 170 | HO XEA 102 |
| 3/4 | 20 | 16 | 19 | 53 | 91 | 63 | 62 | 78 | 23 | 252 | HO XEA 103 |
| 1 | 25 | 16 | 22.5 | 58 | 103 | 72 | 71 | 87 | 27 | 354 | HO XEA 104 |
| 1 1/4 | 32 | 16 | 26 | 68 | 120 | 85 | 82 | 102 | 30 | 548 | HO XEA 105 |
| 1 1/2 | 40 | 16 | 30 | 79 | 139 | 100 | 92 | 109 | 33 | 771 | HO XEA 106 |
| 2 | 50 | 16 | 36 | 102 | 174 | 118 | 110 | 133 | 39 | 1285 | HO XEA 107 |

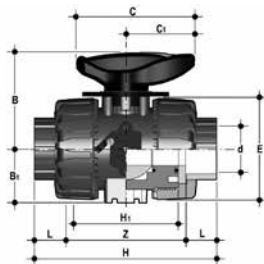
Options:

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

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



VKR Metering ball valves Manual – EPDM seals



| d | DN | PN | L | Z | H | H ₁ | E | B | B ₁ | C | C ₁ | gms | Code |
|-------|----|----|------|-----|-----|----------------|-----|-----|----------------|-----|----------------|------|------------|
| 3/8 | 10 | 16 | 16.5 | 70 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 205 | HO MBA 101 |
| 1/2 | 10 | 16 | 16.5 | 70 | 103 | 65 | 54 | 54 | 29 | 67 | 40 | 205 | HO MBA 102 |
| 3/4 | 20 | 16 | 19 | 77 | 115 | 70 | 65 | 65 | 34.5 | 85 | 49 | 335 | HO MBA 103 |
| 1 | 25 | 16 | 22.5 | 83 | 128 | 78 | 73 | 70 | 39 | 85 | 49 | 433 | HO MBA 104 |
| 1 1/4 | 32 | 16 | 26 | 94 | 146 | 88 | 86 | 83 | 46 | 108 | 64 | 703 | HO MBA 105 |
| 1 1/2 | 40 | 16 | 30 | 104 | 164 | 91 | 98 | 89 | 52 | 108 | 64 | 925 | HO MBA 106 |
| 2 | 50 | 16 | 36 | 127 | 199 | 111 | 122 | 108 | 62 | 134 | 76 | 1577 | HO MBA 107 |

Options:

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

SX 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 | 50 | 82 | 54 | 133 | HO SXA 102 |
| 3/4 | 20 | 16 | 19 | 53 | 91 | 63 | 171 | HO SXA 103 |
| 1 | 25 | 16 | 22.5 | 59 | 103 | 72 | 270 | HO SXA 104 |
| 1 1/4 | 32 | 16 | 26 | 68 | 120 | 85 | 414 | HO SXA 105 |
| 1 1/2 | 40 | 16 | 30 | 77 | 139 | 100 | 608 | HO SXA 106 |
| 2 | 50 | 16 | 36 | 98 | 174 | 118 | 972 | HO SXA 107 |

Options:

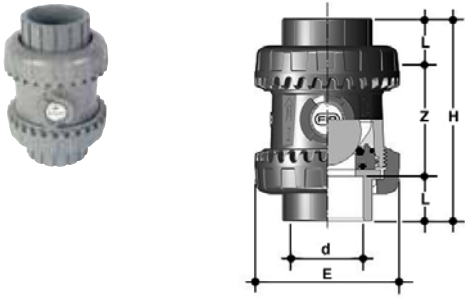
EPDM seals (threaded ends) order HO SXA B**

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

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

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

SA 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 | 133 | H0 SAA 102 |
| 3/4 | 20 | 16 | 19 | 53 | 91 | 63 | 171 | H0 SAA 103 |
| 1 | 25 | 16 | 22.5 | 59 | 103 | 72 | 270 | H0 SAA 104 |
| 1 1/4 | 32 | 16 | 26 | 68 | 120 | 85 | 414 | H0 SAA 105 |
| 1 1/2 | 40 | 16 | 30 | 77 | 139 | 100 | 608 | H0 SAA 106 |
| 2 | 50 | 16 | 36 | 98 | 174 | 118 | 972 | H0 SAA 107 |

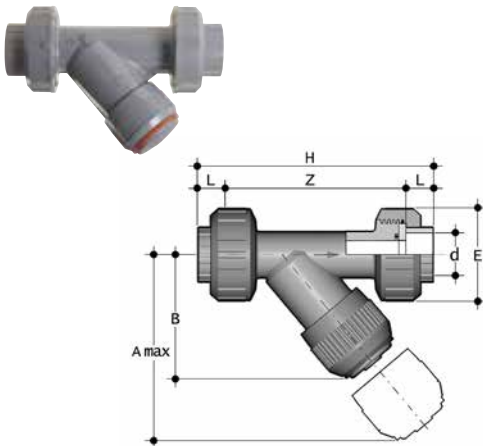
Options:

EPDM seals (threaded ends) order H0 SAA B**

FPM seals (plain ends) order H0 SAB***

FPM seals (threaded ends) order H0 SAB B**

RV Y-Type strainers Plain ends – EPDM seals



| d | DN | PN | Grey | | E | L | Z | H | Fig. | gms | Code |
|-------|----|----|------|-----|-----|----|-----|-----|------|------|------------|
| | | | A | B | | | | | | | |
| 1/2 | 15 | 15 | 125 | 72 | 55 | 16 | 103 | 135 | A | 211 | H0 UVA 102 |
| 3/4 | 20 | 15 | 145 | 84 | 66 | 19 | 120 | 158 | A | 358 | H0 UVA 103 |
| 1 | 25 | 15 | 165 | 95 | 75 | 22 | 132 | 176 | A | 526 | H0 UVA 104 |
| 1 1/4 | 32 | 15 | 190 | 111 | 87 | 26 | 155 | 207 | A | 733 | H0 UVA 105 |
| 1 1/2 | 40 | 15 | 210 | 120 | 100 | 31 | 181 | 243 | A | 1095 | H0 UVA 106 |
| 2 | 50 | 9 | 240 | 139 | 120 | 38 | 222 | 298 | A | 1843 | H0 UVA 107 |

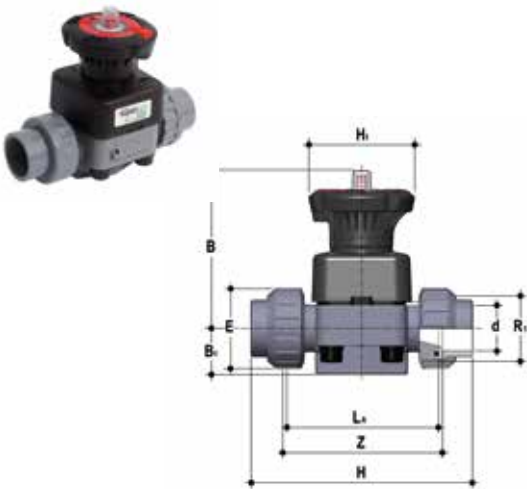
Options:

EPDM seals (threaded ends) order H0 RVA B**

FPM seals (plain ends) order H0 RVB***

FPM seals (threaded ends) order H0 RVB B**

Dialock® diaphragm valves Manual – plain union ends – EPDM seals



| d | DN | PN | B | B ₁ | E | H | H ₁ | L _A | Z | gms | Code |
|-------|----|----|-----|----------------|----|-----|----------------|----------------|-----|------|------------|
| 1/2 | 15 | 10 | 102 | 25 | 41 | 143 | 80 | 90 | 98 | 420 | H0 DVA 102 |
| 3/4 | 20 | 10 | 105 | 30 | 50 | 167 | 80 | 108 | 115 | 473 | H0 DVA 103 |
| 1 | 25 | 10 | 114 | 33 | 58 | 180 | 80 | 116 | 122 | 665 | H0 DVA 104 |
| 1 1/4 | 32 | 10 | 119 | 30 | 72 | 208 | 80 | 134 | 144 | 770 | H0 DVA 105 |
| 1 1/2 | 40 | 10 | 147 | 35 | 79 | 234 | 120 | 154 | 164 | 1460 | H0 DVA 106 |
| 2 | 50 | 10 | 172 | 46 | 98 | 272 | 120 | 184 | 195 | 2340 | H0 DVA 107 |

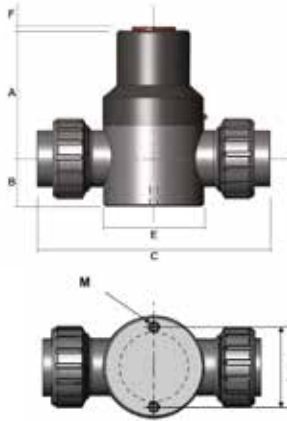
Options:

FPM diaphragm order H0 DVB***

PTFE diaphragm order H0 DVC***

Travel stop and stroke limiter options available upon request.

Pressure loading/relief valves EPDM seals



| Size | DN | PN | A | B | C | D | E | F | M | gms | Code |
|-------|----|----|-----|----|-----|-----|-----|---|----|------|------------|
| 1/2 | 10 | 10 | 85 | 26 | 133 | 40 | 52 | 3 | M5 | 101 | HO LRA 102 |
| 3/4 | 15 | 10 | 85 | 26 | 133 | 40 | 52 | 3 | M5 | 101 | HO LRA 103 |
| 1 | 20 | 10 | 102 | 33 | 153 | 50 | 64 | 3 | M5 | 257 | HO LRA 104 |
| 1 1/4 | 25 | 10 | 105 | 35 | 174 | 60 | 79 | 3 | M6 | 425 | HO LRA 105 |
| 1 1/2 | 30 | 10 | 113 | 42 | 204 | 70 | 89 | 3 | M6 | 607 | HO LRA 106 |
| 2 | 50 | 10 | 153 | 57 | 291 | 100 | 126 | 6 | M6 | 1444 | HO LRA 107 |

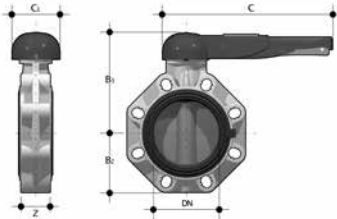
*Max (3 Bar loading) (10 Bar relief)

Options:

FPM options order HO LRB***

PTFE options order HO LRC***

FK Butterfly valves Glass reinforced polypropylene with ABS disc and EPDM seals



lever operated

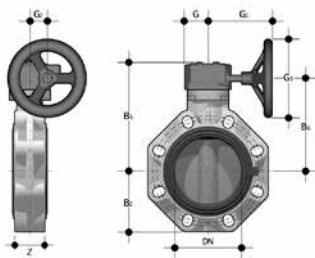
| Size | DN | PN | B ₂ | B ₃ | C | C ₁ | Z | gms | U | Code |
|-------|-----|----|----------------|----------------|-----|----------------|----|------|---|------------|
| 1 1/2 | 40 | 15 | 60 | 137 | 175 | 100 | 33 | 900 | 4 | HO FKA 106 |
| 2 | 50 | 15 | 70 | 143 | 175 | 100 | 43 | 1080 | 4 | HO FKA 107 |
| 2 1/2 | 65 | 9 | 80 | 164 | 272 | 110 | 46 | 1470 | 4 | HO FKA 108 |
| 3 | 80 | 9 | 93 | 178 | 272 | 110 | 49 | 1870 | 8 | HO FKA 109 |
| 4 | 100 | 9 | 107 | 192 | 272 | 110 | 56 | 2220 | 8 | HO FKA 110 |
| 5 | 125 | 9 | 120 | 212 | 330 | 110 | 64 | 3100 | 8 | HO FKA 111 |
| 6 | 150 | 9 | 134 | 225 | 330 | 110 | 70 | 3850 | 8 | HO FKA 112 |
| 8 | 200 | 9 | 161 | 272 | 420 | 122 | 71 | 6750 | 8 | HO FKA 113 |

Options:

FPM seals order HO FKB***

U = No. of holes

with gear box



| Size | DN | PN | B ₂ | B ₅ | B ₆ | G | G ₁ | G ₂ | G ₃ | Z | gms | U | Code |
|-------|-----|----|----------------|----------------|----------------|----|----------------|----------------|----------------|-----|-------|----|------------|
| 2 1/2 | 65 | 9 | 80 | 174 | 146 | 48 | 135 | 39 | 125 | 46 | 2400 | 4 | HV FKA 108 |
| 3 | 80 | 9 | 93 | 188 | 160 | 48 | 135 | 39 | 125 | 49 | 2800 | 8 | HV FKA 109 |
| 4 | 100 | 9 | 107 | 202 | 174 | 48 | 135 | 39 | 125 | 56 | 3150 | 8 | HV FKA 110 |
| 5 | 125 | 9 | 120 | 222 | 194 | 48 | 144 | 39 | 200 | 64 | 4450 | 8 | HV FKA 111 |
| 6 | 150 | 9 | 134 | 235 | 207 | 48 | 144 | 39 | 200 | 70 | 5200 | 8 | HV FKA 112 |
| 8 | 200 | 9 | 161 | 287 | 256 | 65 | 204 | 60 | 200 | 71 | 9300 | 8 | HV FKA 113 |
| 10 | 250 | 10 | 210 | 317 | 281 | 88 | 236 | 76 | 250 | 114 | 18600 | 12 | HV FKA 114 |
| 12 | 300 | 8 | 245 | 374 | 338 | 88 | 236 | 76 | 250 | 114 | 25600 | 12 | HV FKA 115 |

Options:

FPM seals order HV FKB***

U = No. of holes

Note: Lugged versions available to special order. Please refer to our Valve Department for further details.

Our valve range can be electrically or pneumatically actuated.
For further details contact our Valve Department on 01543 471681.

Accessories

One-step solvent cement



| Litres | gms | Code |
|--------|------|------------|
| 0.5 | 550 | 03 461 395 |
| 1.0 | 1100 | 03 461 396 |

Only Durapipe ABS solvent cement and Durapipe Eco-cleaner should be used for jointing of Durapipe ABS pipework systems.

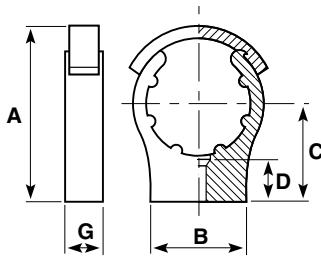
Eco-cleaner



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

Only Durapipe ABS solvent cement and Durapipe Eco-cleaner should be used for jointing of Durapipe ABS pipework systems.

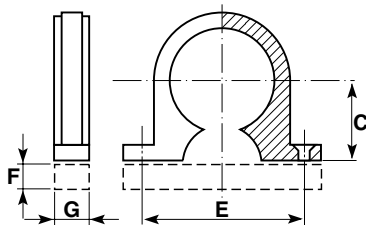
Cobra pipe clips Polypropylene



| Size | A | B | C | D | G | Bolt/Screw size | gms | Code |
|----------------|-----|-----|-----|----|----|-----------------|-----|------------|
| $\frac{3}{8}$ | – | 35 | 25 | 19 | 16 | M.4/3BA/No 8 | 7 | 13 434 305 |
| $\frac{1}{2}$ | – | 35 | 30 | 14 | 16 | M.5/1BA/No 10 | 8 | 13 434 306 |
| $\frac{3}{4}$ | – | 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 |
| $1\frac{1}{4}$ | 75 | 45 | 45 | 20 | 20 | M.5/1BA/No 10 | 21 | 13 434 309 |
| $1\frac{1}{2}$ | 85 | 50 | 50 | 22 | 21 | M.6/0BA/No 10 | 30 | 13 434 310 |
| 2 | 102 | 60 | 60 | 19 | 21 | M.6/0BA/No 10 | 42 | 13 434 311 |
| $2\frac{1}{2}$ | 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 | 330 | 13 434 317 |

Clips of size $1\frac{1}{4}$ " and above are fitted with retaining strap.
Bolts/screws not supplied.

Saddle clips Polypropylene



| Size | C | E | F | G | Bolt/Screw size | gms | Code |
|----------------|----|-----|----|----|-----------------|-----|------------|
| $\frac{3}{8}$ | 13 | 37 | – | 14 | M.4/3BA/No 8 | 3 | 03 455 101 |
| $\frac{1}{2}$ | 18 | 41 | – | 14 | M.4/3BA/No 8 | 4 | 03 455 102 |
| $\frac{3}{4}$ | 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 |
| $1\frac{1}{4}$ | 29 | 65 | – | 16 | M.5/2BA/No 10 | 11 | 03 455 105 |
| $1\frac{1}{2}$ | 34 | 67 | – | 16 | M.5/2BA/No 10 | 12 | 03 455 106 |
| 2 | 38 | 87 | – | 22 | M.6/0BA/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 | Product code |
|---|--------------|
| 3/8" to 2" pipe inner and outer milling cutter tool | FT 55 65 12 |
| 3/4" to 6" chamfering tool | FT 55 05 10 |

Pipe cutters



| Description | Product code |
|---------------------------------|--------------|
| 3/8" to 2" pipe cutter | FT 80 00 01 |
| 1 1/2" to 4" pipe cutter | FT 80 00 03 |
| 3/8" to 2" spare cutter wheel | FT 80 00 02 |
| 1 1/2" to 4" spare cutter wheel | FT 80 00 04 |

Fibreseal tape



| Description | Product code |
|---------------------------------------|--------------|
| Sealing tape for threaded connections | 03 469 395 |

Product Specification

METRIC RANGE

DURAPIPE SuperFLO ABS PIPES

KIWA 49, ISO 161/1, and ISO DIS 15493 (where applicable). Pressure rating PN10 at 20°C up to 250 mm. PN8 at 20°C for 315 mm.

DURAPIPE SuperFLO ABS FITTINGS

KIWA 549, ISO 727 and ISO DIS 15493 (where applicable). Pressure rating PN10 at 20°C up to 250 mm. PN8 at 20°C for 315 mm.

MATCHED SYSTEM

The ABS products shall be from a single manufacturer to ensure complete integrity, quality and compatibility between pipes, fittings and valves. Manufacturer's 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.

The manufacturer shall offer ABS solvent cements and cleaners, specially formulated to minimise any adverse effects on the environment during installation of the ABS system.

THIRD PARTY APPROVALS

The manufacturer shall have the following Third Party Approvals:

WRAS Water Regulations Advisory Scheme

1505040 - Durapipe SuperFLO ABS Metric Pipe and Fittings
 1509035 - Durapipe SuperFLO ABS VKD and VKR Ball Valves

APPROVAL FOR USE IN CONTACT WITH DRINKING WATER

All ABS 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.

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

Durapipe SuperFLO ABS is also approved for use within public water supplies and by the secretary of state. Durapipe SuperFLO ABS is listed in the "List of Approved Products" published by the DWI.

MARINE APPROVALS

American Bureau of Shipping
 Bureau Veritas
 Germanischer Lloyd
 Det Norske Veritas
 Lloyds register UK
 RINA (Royal Institution of Naval Architects)
 Russian Marine register

DESIGN LIFE

Pipes and fittings shall be designed to operate continuously for 50 years at their maximum rated pressure at a working temperature of 20°C. Valves are designed to operate continuously for 25 years at a working temperature of 20°C.

Process Control Testing must be carried out during manufacture and documented on each and every production batch.

Fittings and Pipes will be subjected to a pressure test of 3.2 x maximum recommended working pressure for 1 hour at 20°C during 1st and 2nd hours of production, then every 6 hours for fittings and 8 hours for pipes.

Pipes are in addition to be impact tested after conditioning at 0°C for 1 hour.

Fittings are in addition to be subject to stress relief testing at 150°C.

Pipes and fittings shall undergo dimensional, marking, and visual inspection at the frequency outlined above.

CHEMICAL SUITABILITY

The manufacturer shall publish detailed chemical resistance data to enable the suitability of the ABS 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 ABS 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 manufacturer's 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.

DURAPIPE SuperFLO ABS 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 BS 5392 Part 1 1976, and DIN 3230 Part 3 Leak Rate One (Water and Air).

The following testing will have been successfully completed:

Drop Tight and Bubble Tight test
 Hydrostatic Shell Test 1.5 x maximum working pressure
 Seat Test 1.1 x maximum working pressure

PRESSURE RATING

16mm to 63mm - PN 16 at 20°C (VKD series), PN10 (VXE series)
 75mm to 110mm - PN16 at 20°C (VKD series)

SEATS AND SEALS

Seats: PTFE material fitted with O-Ring compensators
 Seals: Standard size O-Ring type for ease of replacement
 Available in EPDM or FPM materials

END CONNECTIONS

Plain socket ends or BSP threaded

ACTUATION

Options: Electric or Pneumatic

DURAPIPE SuperFLO ABS DIAPHRAGM VALVES

Equipped with a maintenance free hand wheel for operation, complete with a built in locking mechanism and optical positioning indicator as standard. 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 will have been hydrostatically pressure tested to the requirements of BS 5392 Part 1 1976, BS 5156, 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

These may be plain, spigot ends or flanged

ACTUATION

Options: Pneumatic

DURAPIPE SuperFLO ABS BALL CHECK VALVES

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

PRESSURE RATING

20mm to 63mm - PN10 at 20°C

SEALS

Available in either EPDM or FPM

DURAPIPE SuperFLO ABS BUTTERFLY VALVES

Reinforced Polypropylene body, fully lined, with ABS 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 250mm - PN9 at 20°C
 315mm - PN 8 at 20°C

PRIMARY LINER

Available in EPDM, FPM, or NBR

ACTUATION

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

IMPERIAL RANGE

DURAPIPE SuperFLO ABS PIPES

In accordance with the dimensional and testing requirements of BS 5391 Third Party Approved with British Standard Kitemark Licence (where applicable).

DURAPIPE SuperFLO ABS FITTINGS

In accordance with the dimensional and testing requirements of BS 5392 Third Party Approved with British Standard Kitemark Licence (where applicable).

MATCHED SYSTEM

The ABS products (see below) shall be from a single manufacturer to ensure complete integrity, quality and compatibility between pipes, fittings and valves. Manufacturer's 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.

The manufacturer shall offer ABS solvent cements and cleaners, specially formulated to minimise any adverse effects on the environment during installation of the ABS system.

THIRD PARTY APPROVALS

The manufacturer shall have the following Third Party Approvals:

British Standard Kitemark Licence

KM07961 for Durapipe Inch pipes to BS 5391
KM07962 for Durapipe Inch fittings to BS 5392

WRAS Water Regulations Advisory Scheme

1212103 - Durapipe SuperFLO ABS Imperial Pipe and Fittings
1509035 - Durapipe SuperFLO ABS VKD and VKR Ball Valves

Department of the Environment

M & E 100 Standard Specification for Air Conditioning

MARINE APPROVALS

American Bureau of Shipping

APPROVAL FOR USE IN CONTACT WITH DRINKING WATER

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

DESIGN LIFE

Pipes, fittings and valves shall be designed to operate continuously for 50 years at their maximum rated pressure at a working temperature of 20°C.

Process Control Testing must be carried out during manufacture and documented on each and every production batch.

Fittings and Pipes will be subjected to a pressure test of 3.2 x maximum recommended working pressure for 1 hour at 20°C during 1st and 2nd hours of production, then every 6 hours for fittings, and 8 hours for pipes.

Pipes are in addition to be impact tested after conditioning at 0°C for 1 hour.

Fittings are in addition to be subject to stress relief testing at 150°C.

Pipes and fittings shall undergo dimensional, marking and visual inspection at the frequency outlined above.

CHEMICAL SUITABILITY

The manufacturer shall publish detailed chemical resistance data to enable the suitability of the ABS 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 service advisory service for assessing the suitability of its ABS 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 manufacturer's 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.

DURAPIPE SuperFLO ABS 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 BS 5392 Part 1 1976, and DIN 3230 Part 3 Leak Rate One (Water and Air).

The following testing will have been successfully conducted:

Drop Tight and Bubble Tight test.

Hydrostatic Shell Test 1.5 x Maximum Working Pressure.

Seat Test 1.1 x Maximum Working Pressure.

PRESSURE RATING

Up to size 2" - PN15 (Class E) at 20°C (VKD series), PN10 (VXE series)

2 1/2" to 4" - PN15 at 20°C (VKD series)

SEATS AND SEALS

Seats: PTFE material fitted with O-Ring compensators

Seals: Standard size O-Ring type for ease of replacement

Available in EPDM or FPM materials

END CONNECTIONS

Plain socket ends, or BSP threaded

ACTUATION

Options: Electric or pneumatic

DURAPIPE SuperFLO ABS DIAPHRAGM VALVES

Equipped with a maintenance free hand wheel for operation, complete with a built in locking mechanism and optical positioning indicator as standard. 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 will have been hydrostatically pressure tested to the requirements of BS 5392 Part 1 1976, BS 5156, ISO 7508 and DIN 3230 Part 3 Leak Rate One.

PRESSURE RATING

1/2" to 4" - PN9 at 20°C

DIAPHRAGM TYPE

Choice of EPDM, FPM or PTFE will be available

END CONNECTION

These may be plain, spigot ends or flanged

ACTUATION

Options: Pneumatic

DURAPIPE SuperFLO ABS BALL CHECK VALVES

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

PRESSURE RATING

1/2" to 2" - PN10 at 20°C

SEALS

Available in either EPDM or FPM

DURAPIPE SuperFLO ABS BUTTERFLY VALVES

Reinforced Polypropylene body, fully lined, with ABS 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 10" - PN9 at 20°C

12" - PN8 at 20°C

PRIMARY LINER

Available in EPDM, FPM, or NBR

ACTUATION

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



Company History

In 2014, we celebrated our 60th anniversary. This landmark event allowed us to proudly reflect on our rich history of innovation and high-quality manufacturing of plastic pipework systems.

During this period of time, our business has visibly changed and evolved dramatically from the company that was originally started in West Drayton, primarily to manufacture low density polyethylene pipe back in 1954.

Product innovation and development within plastic pipework has remained at the core of our operation over the last 60 years, with our customers being the mainstay of our business and its progression from the outset.

A brief history of Durapipe follows:

- 1954 Durapipe and Fittings Ltd is formed in West Drayton and moves into the emerging thermoplastic industry
- 1960 Featured in Financial Times for supplying pipework to South Africa for construction of gold mines
- 1961 Founder member of plastics pipe society
- 1962 1st UK pipe manufacturer to exhibit at New York plastics exposition show
- 1971 Durapipe re-locates to Cannock, Staffs and begins manufacturing from the current site
- 1974 Air-line Xtra brand is launched for compressed air due to lack of steel pipes during the 3-day working week
- 1981 Glynwed purchases Durapipe and other international companies and Glynwed International is named
- 1987 FIP is acquired by Glynwed & FIP valves are added to the range
- 1993 Durapipe Petrol-line (PLX) is launched
- 1993 Durapipe piping is supplied to provide continual spray to the Mary Rose restoration project
- 1996 Vulcathene is combined into Durapipe S&LP
- 2001 Etex (later becoming Aliaxis) purchases Glynwed Pipesystems (Durapipe)
- 2006 New VKD range of ball valves are launched
- 2007 Durapipe SuperFLO is supplied for air conditioning at British Museum in London
- 2008 Durapipe PLX is supplied as part of the construction of the Beijing Olympics
- 2010 Durapipe Guardian dual contained PVC-U pipework is launched
- 2013 Durapipe launches HTA system for hot & cold water
- 2015 Durapipe launches range of clear PVC pipe



Actuated Valves

In addition to our extensive range of manual valves we also offer a wide range of actuated valve solutions, that can be either electrically or pneumatically operated.

Actuated Valves

Actuated valves provide the user with the ability to operate a process or a series of actions remotely, removing the need for manual operation; the user can manage a network of valves via various methods of electronic signal controls

At Durapipe, we offer an extensive range of actuated valve solutions in a selection of sizes, combining our leading manual valve offering with electric or pneumatic powered actuators suitable for a wide range of processes and applications.

Electric and Pneumatic actuation can both prove advantageous to the user depending on the application and the availability of a reliable power source or compressed air at the point of use.



At Durapipe UK, our dedicated Valve & Actuation Team can offer technical advice and assemble complex valve packages, which can usually be delivered to site within 48 hours. For further information please contact 01543 471681.

Actuated Valve Options

- VKD DualBlock® Ball Valve
- TKD DualBlock® 3 Way Ball Valve
- VKR Metering Ball Valve
- FK Butterfly Valve
- Dialock Diaphragm Valve
- CM Compact Diaphragm Valve



Actuator Options

Electric Actuation

- 100 to 240vAC
- 24vAC/DC

Options

- Standard(On/Off)
- Fail Safe Open
- Fail Safe Closed
- 4 to 20mA Positioning

Pneumatic Actuation

- Compressed Air

Options

- Fail Safe Open
- Fail Safe Closed
- Double Acting
- Positioning Options

Durapipe UK Pipework Systems



Air-Line Xtra

- High performance thermoplastic pipework system for compressed air applications
- Offering an ideal solution ensuring that compressed air is kept clean and uncontaminated for use in various industries



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



Friaphon

- Sound attenuated drainage system
- Superb sound insulation with no lagging required
- Ideal for hospitals, hotels, office suites and apartments



Guardian

- Specialist dual contained pipework
- Patented Centra-Lok™ system
- Visual or automated leak detection system available



HTA

- Pipe system for hot & cold water
- Limescale & corrosion resistant
- Installed cost savings vs traditional materials



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



Valves & Flow Control

- Actuated valves and FLS flow control solutions
- Offering a fully matched system
- Lightweight and easy to install



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. 'MTO' 'Call-Off' orders must be taken within 12 months of the original order date.
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 – ie: 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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