



Brymec 

**Brymec Heavy Duty Steel Press
TECHNICAL MANUAL 2025**

➤ 0.1 Introducing Brymec Products

Brymec is a family business with 50 years of experience in providing quality products to the construction industry, and this means that we understand the challenges that you face and the solutions that you require

From our start in 1974 in south London, Brymec has grown to become one of the country's leading manufacturers and suppliers of quality products to the construction industry.

Our philosophy is to always provide the ultimate service and peace of mind to our customers. A key feature of our pledge to you is to ensure that we always have the best possible range of products for you to choose from.

By investing in innovation, we have been able to engineer our own range of products, all manufactured to our exacting specifications, to deliver quality solutions for the building services industry.

Each one of Brymec's products is not only manufactured to the highest quality standards, but they are also all backed up by robust quality controls, Brymec's industry-leading guarantees and all are supported by our in-house Technical Support team.

Our efficient approach of 'direct supply' enables you to buy a full range of products straight from the manufacturer, Brymec. This innovative approach simplifies your supply chain, speeds up your deliveries, provides greater support and gives you greater control.

A proven benefit to all construction projects is the unique way that Brymec ensure unbroken support to each stakeholder throughout the full project cycle. Starting during the Design phases, through Pre-Construction and the on-site construction period and on to project completion we are providing the required levels of technical expertise, knowledge and support.

This seamless journey from start to finish saves time and cost, but vitally ensures that the right input and teamwork are there to assist as valued Partners in a successful project.



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0.3 Sustainability - commitment to a sustainable future

The '2021 Global Status Report for Buildings and Construction' by the UN states that "The buildings and construction sector accounted for 36% of global energy demand and 37% of energy and energy-related carbon dioxide (CO2) emissions in 2020". Currently, data for the UK shows that the construction industry is responsible for 40% of total emissions, so we all have a major part to play in achieving the UK's goals.

Our Vision

'To be the greenest, most environmentally friendly supplier to the Building Services industry.'

Our Business

As a leading manufacturer and distributor of quality valves, tubes and fittings we are always seeking ways to improve our operations to lower our environmental impact and to better serve the industries we supply.

Our signature phrase 'Built for Tomorrow' underpins what we do as a business, whether that be through innovative products which are more environmentally friendly, or by adopting ever more efficient processes.

Certification

Working with accredited independent assessors, our UK based facilities and operations identified key areas of improvement. By enacting these recommended changes, since June 2022 Brymec has been awarded the status of 'Carbon Neutral Organisation' by Carbon Neutral Britain*.

* Certified for scope 1, 2 & 3.6 emissions



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0.4 Brymec Environmentally Friendly delivery model

Core sustainability goals

In 2021 Brymec's board set our goals to focus the activities of our sustainability agenda.

Sustainability goals set in January 2021 - Brymec operations and core product ranges					
Goal	40.1% reduction in emissions per £ million by 2030	Core product ranges from 50% recycled feedstock by 2030	50% reduction of single use plastic packaging	100% of wooden products certified as sustainable FSC Approved	30% of company vehicles to be electric by 2030

Key areas of focus

Our journey towards an ever more environmentally friendly solution continues, and our focus falls in to several key categories;

- Sustainable packaging solutions including plastic packaging.
- Development of product ranges to include sustainable materials and processes.
- UK based operations heating and energy from renewable technologies.
- New software to optimise efficiencies for onward logistics.
- Shortening of the supply chain (below);

Our environmentally friendly business model

Standard models of distribution in the UK can involve up to 6 movements of products by the time they are delivered from the manufacturing facility to the construction location. Brymec's model shortens this process to make all deliveries as efficient as possible so as to reduce emissions.

Industry leading Order Fulfillment

With over 99 % of orders being delivered fully complete with no balances, transport emissions are kept to a bare minimum by avoiding the need for follow-on deliveries to complete the order. This further drives efficiencies by reducing the need for extra packaging and on-site waste and providing huge savings in the site labour time required to handle deliveries.



➤ 1. Brymec Heavy Duty Press

➤ 1.1 System Overview

Since its development over 50 years ago by Swedish Engineer Gunnar Larsson, the use of press-fit technology has been widely adopted as a method to provide a faster and improved method for connecting pipe systems. Within modern construction, the wide use of press-fit systems has increased project safety, reduced installation times and has driven greater efficiencies and lower costs.

For many years, Brymec's highly acclaimed copper and stainless-steel Press Systems have been used for a wide range of applications including the supply water and gas. These systems have been designed using our knowledge of what Engineers, Designers and Installers require to make sure that market leading features are incorporated in our products.

The same principals have been applied to our Heavy Duty Steel Press, which has been engineered for use with Heavy Duty Steel tube - one of the most popular pipework materials.

Brymec Heavy Duty Steel Press System

Fittings are made from high grade carbon steel with an extremely tough zinc nickel alloy coating for superior corrosion resistance, and are combined with plain end, heavy duty steel tube to create a full system

Carbon steel pipework is traditionally installed using threaded or welded joints. These are no longer the quickest forms of connection, and involve several processes which are avoided when a press-fit system is used

Our system avoids the need to thread pipe, does not need cutting lubricant, jointing material or pastes, does not need welding or hot works and can be installed with ease by competent persons.

We have designed 2 valuable features into our system to provide extra confidence that each joint is properly completed. The Leak Path Feature provides visibility of leaks at low test pressures, and the Press Indicator Foil gives instant recognition of an unpressed joint.



➤ 1.2 Key Features and Benefits

The Brymec Heavy Duty Press System has several key advantages over traditional jointing methods.

Our product combines some key features to provide the safest, most reliable installation. This is coupled with best practices from throughout the design, manufacture, supply and to the completion of a project.

Joint Security

There are 2 important features that provide ultimate joint security by clearly identifying whether a joint has been pressed or not. - Leak Path Detection, and Visual Press Indicator.



Leak Path Detection

This feature allows a fitting to have a slight leak that is visible under initial pressure to clearly identify if the fitting has not been pressed.. The uniquely designed EPDM O-ring allows the medium to seep past the seal prior to being pressed. Once the joint is completed, a leak-proof seal is created.

Press-Sure Visual Indicator

A Press-Sure break-away indicator foil is fitted to each connection. Following the pressing process, this visual indicator foil will detach from the assembly giving a clear indication that the connection has been completed.



Time saving

Secure and reliable Press-fit technology connections provide a huge time saving against traditional threaded or welded methods.



Easy Installation

The installation technique is extremely reliable and straightforward and depends on simple preparation and the correct use of a powered press tool.



Fire Safety

There is no need for Hot works so permits are not required and cool down times do not have to be observed.



Clean Jointing

The dry joint method ensures that there is no need for thread cutting lubricants or pastes, resulting in quick, clean joints which are visually attractive.



Pressure Resistance

The high level of joint integrity ensures excellent performance even when used for high pressures.



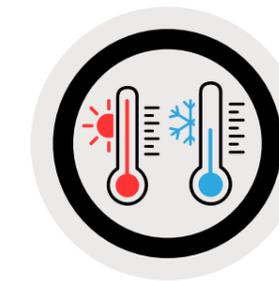
Leakproof

Once a connection has been pressed, the purpose-designed EPDM O-ring provides a secure, watertight seal.



Durability

The stability and endurance of Brymec Heavy Duty Steel Press provides an expected lifespan under normal usage and conditions of in excess of 50 years.



Wide temperature range

Heavy Duty Steel Press is not affected by low temperatures and the wide range of operating temperatures suits most building environments.



Impact resistance

Designed for performance using high strength materials, the fittings are robust and able to withstand all normal levels of impact.

➤ 1.3 Heavy Duty Press Fittings

Brymec Heavy Duty Press Fittings are manufactured to stringent quality standards.

The carefully designed fittings including couplers, bends, tees and adaptors, are comprised of 5 core elements ensuring a robust, reliable system that provides excellent results every time when used in a variety of applications.

1. **Flow-optimised fittings** are manufactured using a high-performance carbon steel, which is then protected with a zinc nickel alloy plating.
2. **Anchor Rings** formed in 420 grade stainless steel at each connection ensure maximum system capability. The special tooth profile on the Anchor Rings engage onto the pipe and ensures ultimate strength for the connection.
3. **Safeguard Rings** in chrome plated copper are located directly before the EPDM O-Rings to remove the risk of any damage to the sealing assembly during installation.
4. **EPDM O-Rings** - joint Sealing using high-performance EPDM O-Rings provides long lasting joint security as well as providing the extra safety of the Leak Path Feature.
5. **Press-Sure Indicator Foils** provide quick visual confirmation of completed joints.





➤ 1.4 Steel Tube

Selecting the correct pipework is of utmost importance to ensure compliance with current regulations and to minimise the risk of failure. Our carbon steel tubes are manufactured in accordance with the latest standards set out in EN10217-2 and EN10255 to satisfy both the Pressure Equipment Directive (PED) and the Construction Products Regulations (CPR), and are suitable for high temperature construction and industrial installations.

➤ Part 2 - Hot Form Heavy Weight - Plain End



Tube Dimensions for Heavy weight:

STOCK NO	Nominal Bore Size (Inch)	Nominal Size (mm)	Outside Diameter (mm)	Wall Thickness (mm)	Dry Weight (kg/m)	Wet Weight (kg/m)	Nominal Length (m)
28290	1/2"	15	21.3	3.2	1.4	1.6	3.2
28291	3/4"	20	26.9	3.2	1.9	2.2	3.2
28292	1"	25	33.7	4.0	2.9	3.5	3.2
28293	1 1/4"	32	42.4	4.0	3.8	4.7	3.2
28294	1 1/2"	40	48.3	4.0	4.4	5.7	3.2
28295	2"	50	60.3	4.5	6.2	8.3	3.2

Technical Specifications:

Standards - BS EN 10255 / 10217-2:2019 GH Part 2 - TC 1	
Technical Delivery Condition	Hot Finished (Full Body Normalising)
Material Grade	S195T-P235GH
Temperature Classification	High Temperature (HT) -20°C to 300°C
PED Compliance	Yes
CPR CE Compliance	Yes - Category 3 (Fuel, Air & Gas) & Category 4 (water)
UKCA Compliance	Yes
TUV Certified	Yes

Chemical Compositions and Mechanical Properties:

Our carbon steel Part 2 compliant tubes are suitable for design temperatures from - 20°C to 300°C, with guaranteed elevated temperature properties. Our tubes conform to the requirements in the below tables, and are tested and inspected to ensure compliance with both BS EN 10255 and BS EN 10217-2.

Steel Grade S195T/P235GH:

Chemical Compositions				Mechanical Properties						
Max %				Mpa		Min %			Min Joule	
C Carbon	Mn Manganese	P Phosphorus	S Sulphur	Yield (min)	Tensile (min-max)	Elongation		Impact Energy		
0.16	1.2	0.025	0.020	235	360-500	L 25	T 23	L (0°) 40	L (-10°) 28	T (0°) 27

L: Longitudinal T: Transverse

Tube Pressure ratings:

The below table details the maximum design pressures for our **Heavy weight** Part 2 compliant carbon steel tubes. All jointing and butt-welded joints must be prepared in accordance with current best practices.

	Tube Sizes inch/mm (Nb)					
	1/2	3/4	1	1 1/4	1 1/2	2
	15	20	25	32	40	50
	Pressure (bar)					
Water -20 to 100°C	100	90	85	70	60	55
Compressed Air	90	80	75	65	55	50
Steam to 220°C Max	22	22	22	21	21	19
-20 to 60°C	270	215	215	171	150	136
100°C Max	234	187	186	148	130	118
150°C Max	225	179	179	143	125	113
300°C Max	158	126	126	100	88	80

➤ 1.5 Fields of Application

Brymec Heavy Duty Press Fittings used in conjunction with suitable steel tubes are used for the conveyance of liquids up to the pressures and temperatures stated in the operating conditions.

Typical Applications include:

- Closed heating systems
- Closed cooling systems
- Sprinkler systems
- Compressed air systems - class 1 (class 2 & 3 when assembled with internal galvanised steel tube)
- Engineering and Industrial systems
- Hot Water
- Steam



➤ 2. Technical Information

➤ 2.1 Standards and Specifications

Brymec Heavy Duty Press Fittings are carefully designed and manufactured to meet the most stringent quality standards.

Technical Specification

MATERIAL	STANDARD
Body	SPHC Carbon Steel as specified in JIS G331-2010
Surface Finish	Zink nickel alloy plating
Anchor Ring	402 Grade high-strength Stainless-steel
Grip Teeth	Multiple, bi-directional
O-Ring	Ethylene Propylene Diene Monomer Rubber
O-Ring Hardness	Shore Hardness 77 +/- 5 Shore A
O-Ring Protector	Chrome coated copper

DETAILS AND PROPERTIES	VALUE	UNIT OF MEASURE
Dimension Range	½" to 2"	Inches
Maximum Operating Temperature	110	°C
Maximum Operating Pressure	16	Bar
Coefficient of Thermal Expansion	0.0122	mm/m/°C
Thermal Conductivity	50	W/m²K @20 °C
Tensile Strength	270	MPa
Elongation	27 - 31	%

2.2 Thermal Expansion

Changes in temperature cause pipework systems to expand and contract to different degrees depending on the temperature and material differences. It is of key importance that this thermal movement is considered when designing and installing pipework systems. Fixing pipework too rigidly, can restrict the natural expansion that comes from thermal fluctuations, causing mechanical stress and tension and compromise the integrity of joints.

The heat expansion co-efficient in steel pipelines can be calculated with the below formula:

$$\Delta L = L * \alpha * \Delta T$$

Whereby:

ΔL = total extension in mm.

L = length of the pipe in m.

α = Linear expansion coefficient ($\alpha = 0.012$ mm/m for steel pipelines).

ΔT = Temperature fluctuation in °K.

The following table can be used to calculate the thermal extension of carbon steel pipelines:

Change in Length ΔL (mm) for carbon steel pipelines with temperature difference Δt °C										
Pipe Length (m)	$\Delta t=10^\circ$	$\Delta t=20^\circ$	$\Delta t=30^\circ$	$\Delta t=40^\circ$	$\Delta t=50^\circ$	$\Delta t=60^\circ$	$\Delta t=70^\circ$	$\Delta t=80^\circ$	$\Delta t=90^\circ$	$\Delta t=100^\circ$
1	0.12	0.24	0.36	0.48	0.60	0.72	0.84	0.96	1.08	1.20
2	0.24	0.48	0.72	0.96	1.20	1.44	1.68	1.92	2.16	2.40
3	0.36	0.72	1.08	1.44	1.80	2.16	2.52	2.88	3.24	3.60
4	0.48	0.96	1.44	1.92	2.40	2.88	3.36	3.84	4.32	4.80
5	0.60	1.20	1.80	2.40	3.00	3.60	4.20	4.80	5.40	6.00
6	0.72	1.44	2.16	2.88	3.60	4.32	5.04	5.76	6.48	7.20
7	0.84	1.68	2.52	3.36	4.20	5.04	5.88	6.72	7.56	8.40
8	0.96	1.92	2.88	3.84	4.80	5.76	6.72	7.68	8.64	9.60
9	1.08	2.16	3.24	4.32	5.40	6.48	7.56	8.64	9.72	10.80
10	1.20	2.40	3.60	4.80	6.00	7.20	8.40	9.60	10.80	12.00
15	1.80	3.60	5.40	7.20	9.00	10.80	12.60	14.40	16.20	18.00
20	2.40	4.80	7.20	9.60	12.00	14.40	16.80	19.20	21.60	24.00

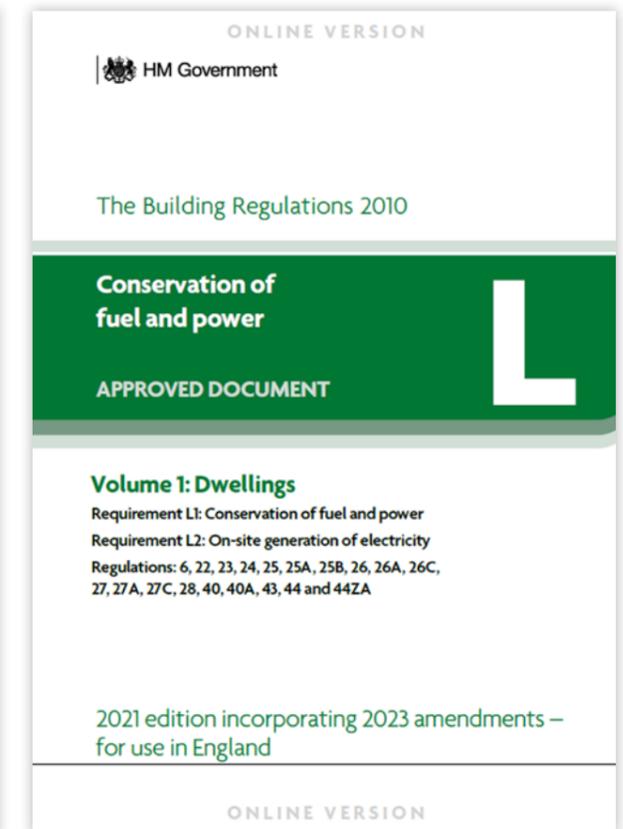
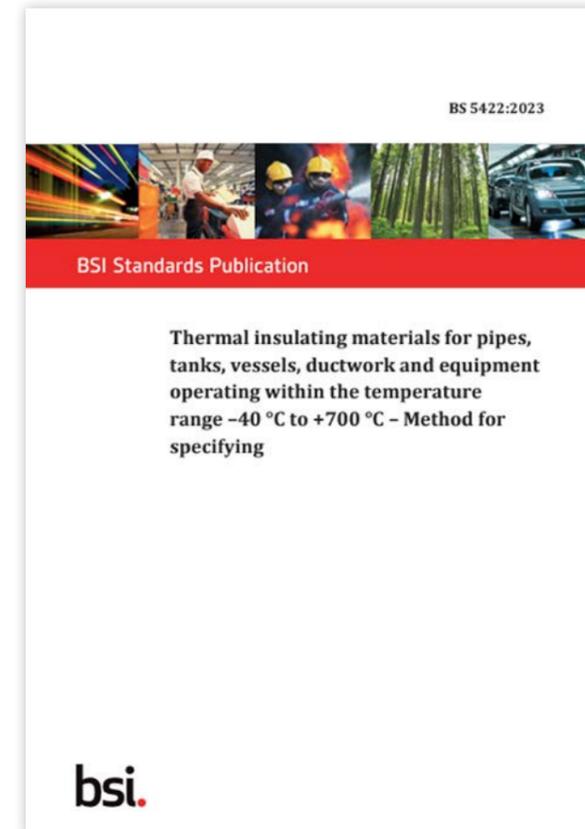
The basic principle is that there must always be adequate capacity for expansion between two fixed points.

The inherent elasticity of the pipework can often be used to compensate for expansion, however wherever there is a change in pipework direction it is necessary to arrange pipe clamps to provide sufficiently flexible pipe limbs.

2.3 Pipe Insulation

Insulation of pipelines is primarily used to reduce heat loss from DHW and LTHW systems and also to prevent unwanted heat gain that can warm cold drinking water in DCW and BCW pipes. However, insulation can also be useful, or even necessary, to avoid freezing, corrosion, condensation and sound transmission.

The insulation requirements for new and existing buildings must be detailed by the project's engineers to comply with the requirements of the Building Regulation - Part L - Conservation of fuel and power (or equivalent national standards for Scotland and Wales). Guidance for the specific required performance for each service, in each area of a construction project, is clearly stated within BS5422: 2023.



Brymec Heavy Duty Steel Press and Steel Tubes are suitable for use with virtually all insulation materials. Where required, matching Insulation blocks are available. Hardwood Wooden blocks may also be used where permitted by the standard BS5970.

➤ 2.4 Fire protection requirements

Building regulations in the United Kingdom are statutory instruments, or statutory regulations, that seek to ensure that the policies set out in the relevant legislation are carried out. Building regulation approval is required for most building work in the UK.

In the UK, the requirements for fire protection are detailed in the relevant government documents:

Typical Applications include:

- **England** - *Fire Safety, Approved Document B - fire safety volume 1: Dwellings, 2019 edition incorporating 2020 and 2022 amendments or Fire Safety Approved Document B - 2019 edition incorporating 2020 and 2022 amendments.*
- **Scotland** – *Building standards technical handbook June 2023: Domestic and Building standards technical handbook June 2023: non-domestic*
- **Wales** - *Welsh Building Regulations 2010, Volume 1 - Dwellings, Approved Document incorporating 2010, 2016 and 2020 amendments or Welsh Building Regulations 2010, Volume 2 - Buildings other than Dwellings, Approved Document incorporating 2010, 2013, 2016, 2017 and 2020 amendments.*

In modern buildings, there are strict regulations governing fire safety and the protection of all areas of a building.

It is sometimes necessary for pipes and other services to pass through fire-separating elements. If a fire-separating element is to be effective, every opening to allow services to pass through should be adequately protected by sealing with appropriate fire-stopping methods so that the fire resistance of the element is not impaired.

In order to guarantee preventive fire protection, the choice of the right building materials is very important. The selection of building materials is regulated and detailed in the above national standards and these standards also contain a list of technical building regulations which must be observed.

In addition to the relevant national standards, product information to the European standard **BS EN 13501-1 'Fire Classification of Construction Products and Building Elements'** and the British National standard **BS 476 'Fire tests on building materials and structures - methods of test to determine the classification of the surface spread of flame of products'** are also important information required by the projects' engineers.

With regards to the Brymec Heavy Duty Press system and the use fire stopping measures, our advice is to always follow the guidance from the project's engineers. If deemed suitable by the engineers, fire collars, fire bandages and intumescent seals available from the Brymec range of products may be used if any adhesive or methods of application do not damage or compromise the materials of the fittings or pipe system, or prevent necessary movement.

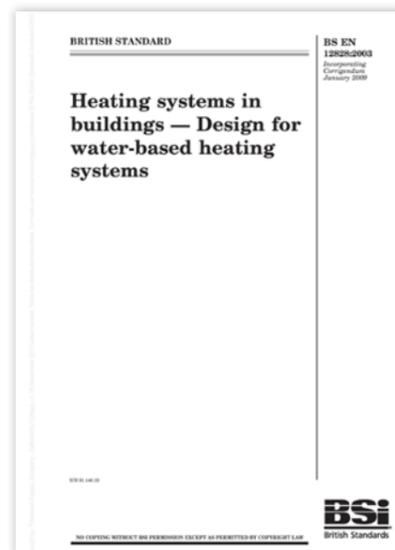
In all instances, any fire-stopping solutions used must demonstrate the ability to provide the correct fire rating by means of certificated 3rd party fire test data.

➤ 3. Design Principals

➤ 3.1 System sizing and calculations

When designing a pipe system for any application such as heating, cooling or the supply of cold water or potable water, one of the main considerations must be for the use of the correct sized pipe work. If a system is designed with pipes that are too small, it could cause issues when using a cold water system, or in the case of a heating system, the heating performance may not be adequate to suit the building. On the other hand, pipe work that is too large may cause stagnation within a system, or in the case of a heating system, may cause the loss of too much energy.

Guidance regarding the correct methods of sizing a system should be sought from a recognised standard such as BS EN806-3 or BS 8558 or BS EN 12828.



➤ 4. Installation

➤ 4.1 Installation Instructions

General information

It is important when installing the Brymec Heavy Duty Press system that each installer is familiar with the correct handling, installation and safety procedures of this product.

Standards and Regulations

Each installation must be carried out in accordance with recognised local and national standards including the Building Regulations and BS EN Standards. In addition, all installation must comply with the relevant and required accident prevention and safety regulations, including the use of appropriate PPE, and any specific site rules and guidance. Minimum PPE requirements should include suitable work gloves, safety helmet, safety footwear and Hi-Vis clothing.

Pre-installation checks

Before installation, the installer must check all components for any damage and must also read, understand and observe the relevant installation information.

Installation Connection Instructions

Installation of the Brymec Heavy Duty Press System is quick, clean and easy due to the accuracy of the products and the simplicity of the press-fit connections. The simple 9-Step Installation process below will ensure correct completion of the joints.

Pipe Surfaces

To ensure correct performance of the system it is important that the inserted portion of the pipe is suitable.

Suitable Pipe finishes

- Uncoated black finish
- Mechanically painted or coated finish
- Galvanised – if smooth and even

Surfaces to avoid

Pipe surfaces must not have the following defects:

- Rough finish
- Damage or scratches
- Uneven paint
- Dirt
- Corrosion or flaking
- Stampings or embossed figures

Corrective treatment

The above defects must be corrected before installation by employing the following methods:

- Abrasive strips and pads
- Wire brush
- Abrasive flap discs

9- STEP INSTALLATION PROCESS



Cut the suitable steel pipe to the required length using an appropriate tube cutter to ensure a clean, square cut. Suitable tools include a proprietary pipe cutter, powered saw with the correct toothed blade for the material and a hacksaw with a fine-tooth blade.

Note: It is important that the tube is cut fully through, is completely square and the end of the tube (outside) should be clean and free from any scratches, damage or deformation



Deburr the tube using an appropriate de-burring tool or file, ensure that the external and internal of the tube end is completely free from burrs, flaps of cut material, or sharp edges.

Note: To avoid damage to the EPDM O-Rings during assembly, It is very important that any sharp edges are completely removed.



Prepare the tube end if the area of the pipe to be inserted into the fitting exhibits a poor finish including corrosion, damage, pitting, flaking, scrapes or stampings. The circumference of the tube must be thoroughly prepared using an appropriate fine abrasive pad, wire brush or flap disc.



Mark the correct insertion depth clearly onto the pipe surface (or the fitting for m x f fittings) using a marker pen or similar. Mark the edge position of the fitting to enable easy visual checking that the tube has not moved prior to or during the press operation. It is critical to ensure that correct engagement has taken place.



Visually double check the fitting before inserting the tube. Check that the O-Rings are free of damage, dust, dirt or debris.

We recommend the fittings are retained in packaging up to the point of use wherever possible.



Insert the prepared tube end into the fitting and apply even pressure to fully insert the tube to the correct depth, ensuring that the fitting is kept aligned parallel with the axis of the tube throughout the operation.

Note: Care should be taken as it is important that the fitting is carefully engaged without causing damage of the O-Ring.



Select the appropriately sized pressing tool which can be either a jaw mounted on the press gun, or a loose collar or ring which will need an adaptor mounted on the gun. Open the jaw or collar and locate the pressing profile over the raised pressing surface of the fitting, which houses the O-ring and Anchor Ring.

Note: Only approved tooling may be used on Brymec Heavy Duty Press fittings. Refer to Table on page 31. All tools must be regularly lubricated and serviced in line with the manufacturer's recommended procedures. If any tooling demonstrates signs of wear or damage, DO NOT continue with the process, and refer to a recognised service center for advice.



Check that the press jaw is set correctly around the pressing surface. Activate the press gun by holding the trigger or button constantly until the press cycle is completed, after which the piston will automatically retract. Once this is retracted the jaw can be opened and removed.

When using a collar/ring, set the collar correctly around the pressing surface. Open the adaptor on and connect this onto the bearing point of the collar. After the cycle is completed the adaptor can be opened and the collar carefully removed.

If the tool does not complete the full cycle, the fitting should be cut out and replaced with a new fitting. No fitting should be pressed more than once. Please ensure any other manufacturers' documented requirements are met for your respective tool.



Inspect the assembly after completion of the press to confirm correct completion. The pipe insertion mark should be double checked for position at the fitting edge, to ensure that full engagement has been maintained. The plastic foil indicator will have become detached, and any remains of this can be removed so the fitting is left clean and visible as a completed joint.

4.2 Pipe Supports

Pipe supports and fixing points must be planned in order to provide structural security for the installed services. The type of bracket or support used must be correctly specified in order that it can be suitable to provide adequate support for the total weight of the pipe + weight of water + weight of insulation. Bracketry should be capable of catering for the intended applied forces for the application, including for the control of thermal expansion. Guidance can be typically found in BS EN 806:4

When choosing which brackets should be applied at each area of the system, firstly refer to the project's specification for clear guidance on the requirements for application of the insulation. Brackets can come in several forms depending if they will be required to be mounted over insulating blocks, over the insulation itself, or indeed if they are to be installed directly onto the pipe.

However, whatever the style of bracket, some common rules must always apply. Brackets must never provide a route for heat losses, must always prevent the transfer of noises from the pipes to the building structure and should never be a cause of unwanted corrosion. Where thermal movement and expansion will occur between two fixed points (anchor points), the support brackets must not restrict or inhibit the movement of the pipes towards the installed method of expansion relief.

Selecting the correct bracket arrangements for your needs is an important part of ensuring the overall quality of your installation. Brymec offers a wide range of pipe brackets and associated fixings that are intended for use with our Multilayer system. Please contact enquiries@brymec.com for advice.

Pipe Clamps

A full range of pipe clamps are available for all sizes, and to suit support blocks in all common insulation thicknesses.



Unlined Pipe Clamp

Unlined clamp manufactured from Zinc plated steel, with a combination nut to suit M8 and M10 studding, hexagon / posidrive / slotted head clamp bolts and anti-loss washers to keep the clamp bolts secure. Static loads from 130Kn to 260Kn – refer to sales@brymec.com for full clamp and block information.

Nominal Pipe Size NB (")	Nominal Size	Outside Diameter (mm)	Unlined Clamp	With 15 mm	20	25	30	40	50
Product Codes									
½	15	21.3	04001	04005	04006	04008	04000	04013	04016
¾	20	26.9	04002	04006	04007	04000	04010	04013	04017
1	25	33.7	04003	04007	04000	04000	04011	04014	04017
1 ¼	32	42.4	04004	04000	04000	04010	04013	04015	04018
1 ½	40	48.3	04005	04000	04010	04011	04014	04017	04019
2	50	60.3	04006	04010	04011	04014	04015	04018	04021



Heavy Duty Unlined Pipe Clamp

Manufactured from Heavy Duty Steel with Ultraprotect coating, with M8/ M10 or M10/M12 nuts to suit sizes, and anti-loss washers to retain the bolts. Static Loads from 210Kn to 820Kn – refer to sales@brymec.com for full clamp and block information.

Nominal Pipe Size NB (")	Nominal Size	Outside Diameter (mm)	Heavy Duty Unlined	With 15 mm block	20	25	30	40	50
Product Codes									
½	15	21.3	-	04292	04943	04945	04946	04948	04997
¾	20	26.9	-	04996	04944	04945	04947	04949	04952
1	25	33.7	04940	04943	04945	04946	04948	04949	04953
1 ¼	32	42.4	04941	04945	04946	04947	04948	04997	04954
1 ½	40	48.3	04942	04946	04947	04948	04948	04952	04953
2	50	60.3	04943	04947	04948	04949	04997	04953	04955

Pipe Support Blocks

With the increase in system efficiency and greater insulation thicknesses, we provide a full range of Support Blocks in matching thicknesses in the following materials:



Mineral Wool
20 to 50mm thick



Phenolic Foam
15 to 50mm thick



Hardwood Wood Block
- FSC Approved
15 to 50mm thick

4.3 Pipe support Centres

The maximum distance between the pipe support brackets must not exceed the dimensions in the following table.

Maximum distance from Change of Direction

Heavyweight Tube – according to BS EN 10217-2

Pipe Nominal Bore Size (")	Maximum Support Centres (mm) Horizontal	Maximum Support Centres (mm) Vertical
½	1500	2500
¾	1500	2500
1	1500	2500
1 ¼	2000	3000
1 ½	2000	3000
2	2000	3000

Support at changes of direction, valves and fittings

To ensure stability and to avoid unnecessary stress on joints it is essential that there is sufficient support in close proximity to fittings, valves and changes of direction.

Supports should be positioned as close as possible to changes of direction, generally no further than 300mm, and no nearer than 100mm to any fitting.

4.4 Tools and equipment

Brymec Heavy Duty Press can be successfully installed using a Press Tool with correct size jaws and collars and which has a current in-date calibration certificate.

This method of pressing is based on a Press Tool (or gun) which can be either 220V or powered by rechargeable batteries. The kit will also have either jaws (for small sizes) and then an adaptor and collars (for larger sizes) or an adaptor and collar for all sizes from ½" to 2". The jaw/collar size must match the fitting size.



The Steel Press profile is completely different in size and profile to the common M or V profiles of metric size copper or stainless-steel systems, or the small imperial sizes of copper air conditioning fittings.

Tooling to suit sizes for ½" to 2" sizes are available from numerous hire outlets. Jaws for small sizes can be mounted directly to the press gun. Collars or rings are available for all sizes and require an adaptor which is mounted onto the press gun and will connect to the collar after the collar is placed around the press fitting.

Tool Compatibility Chart

Approved Size	Press Tools for Brymec	Heavy Duty Steel Press	Press Jaws of collars / adaptor
½" to 2"	Novopress	ACO201 – 14.4V ACO202 – 18V ACO202/203XL – 18V	Novopress / VSH jaws ½"-1" Collars for 1 ¼" to 2" / ZB203
	Ridgid	RP10-S – 18V RP10-B – 12V RP330C/330B RP340C/340B	Viega jaws ½" to 1" Viega collars ½", ¾" Viega collars ½" to 1" Viega collars 1 ¼" to 2" / Z2
	Milwaukee	M18 – 18V	Milwaukee M18 Jaws ½" to 1" Milwaukee M18 Collars 1 ¼" to 2" / ZB203
	Viega	PT3-EH – 230V PT3-AH – 12V Pressgun 4E – 230V Pressgun 4B – 18V Pressgun 5	Viega Jaws ½" – 1" Viega slings ½", ¾" Adaptor Z1 Viega slings 1 ¼" to 2" / Z2 Viega slings 1 ¼" to 2" / Z2

➤ 5. Pressure testing and Commissioning

➤ 5.1 Pressure and leak testing heating systems

The heating system installer should perform a leak test on the installation before closing in the pipes with walls, ceilings, floors or screeds. As a rule, tap water can be used for the leak test as long as the water quality meets the requirements as detailed by DWI.

- The heating system must be filled slowly and should be completely purged of any air.
- If there is a risk of freezing, suitable measures must be taken to prevent damage (e.g. use of antifreeze or temperature control of the building). Once frost protection is no longer required, any antifreeze must be removed by draining and flushing the system with at least three water changes.
- Once filled and pressurised, a period should be allowed to permit the temperature compensation between the ambient temperature and the temperature of the filling water. Once this balancing period has finished, if necessary, restore the test pressure.
- Only pressure gauges which are accurate enough to determine a pressure change of 0.1 bar should be used.
- The pipe system and water heating system must be tested at a pressure corresponding to the set pressure of the safety valve. Alternatively, 1.3 times the designed operating pressure can be used as the pressure for the test in accordance with BS EN 14336:2009
- The test pressure must be maintained for two hours and may not drop. No leaks must occur during that time.

The leak test must be documented by the test engineer in a 'pressure test report' and this document should make a record of the equipment used, the duration of the test and the tightness of the system.

➤ 5.2 Commissioning and Handover

Documentation and Approval

Record Results: Document all test results, including any issues found and corrective actions taken.

Final Inspection

Conduct a final inspection with a building control officer or relevant authority to verify compliance with standards

➤ 5.3 O&M information

On completion of the construction project, design and construction teams are typically contracted to deliver a structured information handover package to support a client's asset operations and maintenance.

When they are handed the keys at the end of a construction project, what a facilities manager (FM) will be typically given is an information package, be it electronic or physical, filled with information and data. That information should contain explanations on building maintenance, equipment warranties, security operating instructions and asset lists among other things. This information may be in all kinds of formats, including paper and digital media like CDs and memory sticks.

The plumbing system, including the heating system, will be no different to the rest of the building and these detailed records should contain manufacturer details, system information, operating information, commissioning results and expected design performance.

- Construction with description of use and concept of the heating system
- Leak test and flushing results for all systems
- Commissioning processes and information
- Protocol for regulating the hot water system
- Test results for the cold and hot water installation
- Inspection and maintenance plan
- Manufacturer's documents, assembly and operating documents
- System design and floor plans of the building with schematic diagrams
- If applicable, information on water treatment systems
- Maintenance plan

➤ 5.4 Chemical treatment for heating systems

As with all materials found within a heating, cold water or chilled water installation, the Brymec Heavy Duty Steel Press-fit system should be protected from damage due to internal corrosion.

Whether the system is a small domestic installation, or a large complex system to supply a large apartment building, there are a number of treatments that should be used to ensure a long trouble-free life for the entire system. Products such as inhibitors, cleaning products and water balancing additives are amongst some of the common treatments.

Standard water treatments should have no detrimental effect on the materials of the Brymec Heavy Duty Steel Press-fit system.

Brymec offer a range of suitable cleaning and treatment chemicals which can be used to protect the Brymec products. However, if third party treatments are to be used as part of a larger system treatment, we recommend getting written confirmation from the engineer undertaking the treatment for the suitability of the product to be used in combination with the materials of our Brymec Heavy Duty Steel Press-fit product.



➤ 6. Transport, Site Handling and Storage

➤ 6.1 Transport, Handling and Storage

In order for the Brymec Heavy Duty Press system to provide years of trouble-free service, care must be taken when transporting, handling and storing all of the products within the system. Please see guidance below:

Transport

Fittings Heavy Duty Press Fittings will be packed suitably for shipping to site. They should never be placed below tube or other heavy items, and stacked within the limits of the packaging cartons. In the event of fittings being removed from their packaging please ensure that they are kept in a clean, dry and oil free area before use to prevent deformation.

Tube When tube is delivered in conjunction with the fittings, please ensure that they are stacked straight, level and interlocking to prevent deformation and damage to ends.

Site Handling

Fittings Keep fittings in the packaging if possible until reaching the area of installation. Avoid contact with surfaces or liquids which could damage or spoil the surface of the fittings. It is critical to avoid damage or ingress of oil or dirt onto the EPDM O-Rings

Tubes Avoid dragging tubes on the ground or against objects, such as concrete or steel items, which may cause damage. Please ensure that the pipe ends are kept clean and are not damaged.

Storage

Fittings Keep fittings in the transportation packaging and store with care in a clean, dry location.

Tubes Ensure that tubes are stacked straight, level and interlocking to prevent deformation on flat, smooth surfaces in the dry.

Fittings Storage The same criteria used for pipes also applies to fittings; they should be stored with care and protected from sunlight.

➤ 7. Technical Support

➤ 7.1 Technical Support

We recognise the importance of having top quality support from the manufacturer throughout every phase of the construction process.

At Brymec, our whole team are committed to providing easy access to design support and technical advice right the way from pre-construction to post-contract.

Key areas of support;

➤ Specification

- o Technical submittal documentation
- o Advice on products and applications
- o Tender documentation
- o Budgetary quotations

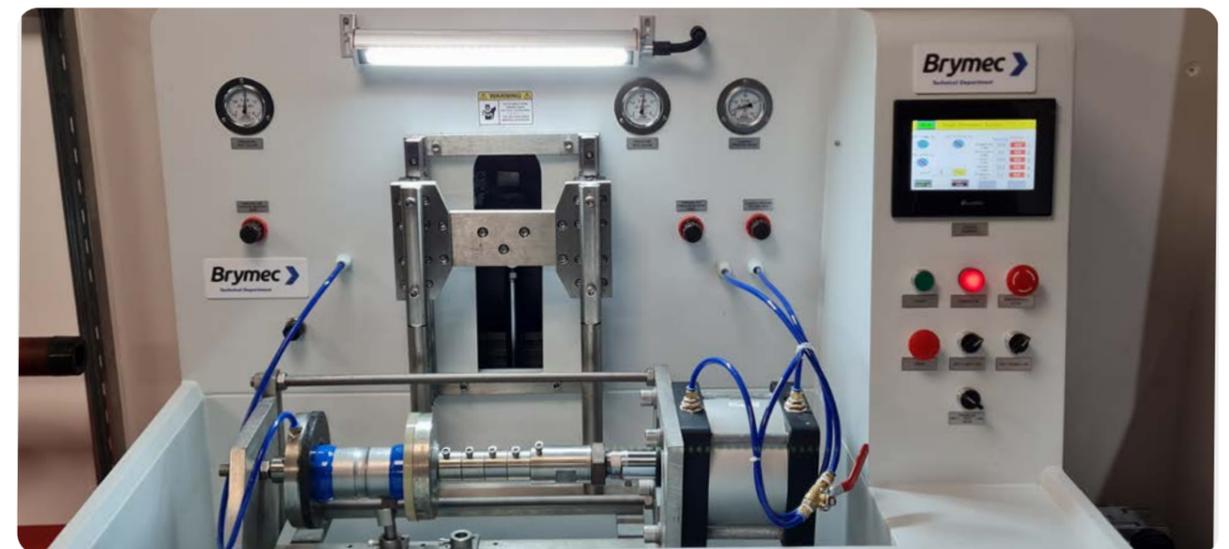
➤ Construction

- o Free, certificated installation training
- o Site visits
- o Observation reports
- o Product verification and testing

➤ Post contract

- o O&M manuals
- o Warranty and after-care support

Whatever your needs, we have a dedicated Technical Support Team which has sophisticated equipment and facilities to support you whenever you need.



➤ 8. Quality, Testing and Approvals

➤ 8.1 Quality, Testing & Approvals

Brymec have our own extensive quality control and quality assurance processes which enable us to guarantee the specification, quality and reliability of the Brymec Heavy Steel Press System.

Every component has undergone rigorous testing and checking in line with the demands of the manufacturing standard and also our ISO 9001 Quality Management System.

In addition to the independent assessment of our QMS and operating procedures, we also undertake independent verification and reporting of our Environmental Management System to the international ISO 14001 standard. Operational efficiency, quality and ongoing compliance are an unseen yet vital element of our commitment to build for the future.

Brymec are also a verified Premier Constructionline Materials Supplier. This is important for the many prestigious major public and private projects where we are partnering with leading Designers and Contractors.

Certifications



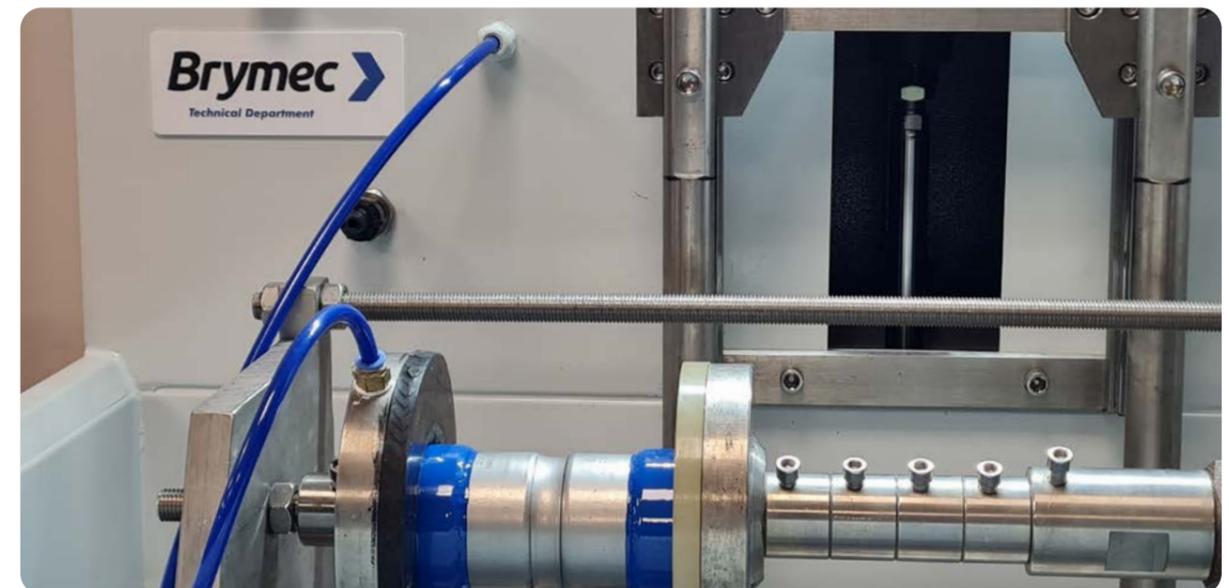
Cert. 288342018



Cert. 459902024



Cert. 1313072



➤ 9. Warranty

➤ 9. Warranty

Key areas of support;

There is a huge emphasis on the quality of Brymec manufactured products.

We ensure that the highest quality of product design, materials and performance is incorporated into our products to meet the required quality standards. All products undergo stringent testing in compliance with our ISO 9001:2015 Quality Management System.

Due to the proven quality and integrity of our products we provide the warranty durations below:

Brymec Heavy Duty Steel Press Fittings **20 year warranty**

Steel Tube supplied with system **3 year warranty**

These durations are a maximum warranty against faults caused by defective manufacturing in Brymec Heavy Duty Press Fittings or steel tube supplied with the system.

For the warranty to apply

1. Installation Brymec Heavy Duty Press Products and ancillary items must be installed in accordance with the Brymec installation guidelines and application guidance. All testing and commissioning details and confirmations must be retained.

2. Training Each individual installing the Brymec Heavy Duty Press System should be suitably trained and competent.

3. Tooling Any tooling used should be approved for use with this material and used in accordance with the manufacturer's instructions and Brymec Installation instructions.

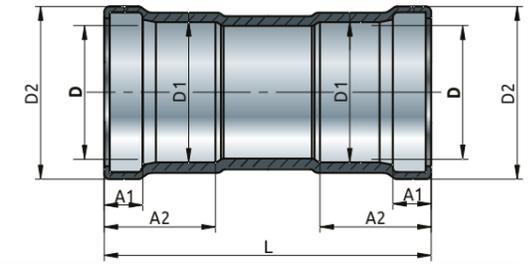
4. Environment Brymec Heavy Duty Press Products must be installed in a suitable environment and be used for the correct application and within the allowable operating conditions.

To view the full warranty terms and conditions visit brymec.com/warranty



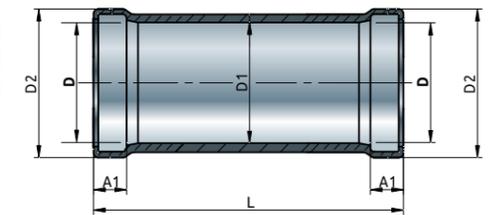


Coupler



STOCK No.	D (") Nominal Size	L (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.
28508	1/2	68.6	22.0	31.8	14.1	26.5
28509	3/4	74.7	27.6	37.8	14.1	29.0
28510	1	83.6	34.4	45.1	14.1	34.0
28511	1 1/4	110.2	43.1	55.9	18.1	45.0
28612	1 1/2	117.6	49.4	61.8	18.1	47.0
28613	2	120.7	61.4	73.6	18.1	50.0

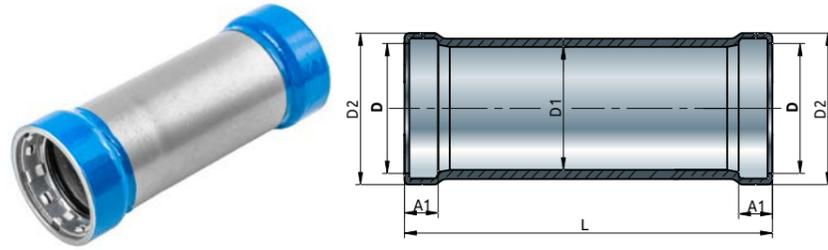
Slip Coupler



STOCK No.	D (") Nominal Size	L (mm) Nominal	D1 (mm) min.	D1 (mm) min.	A1 (mm) min.
28517	1/2	68.8	22.0	31.8	14.1
28518	3/4	74.7	27.6	37.8	14.1
28519	1	83.6	34.4	45.1	14.1
28520	1 1/4	110.2	43.1	55.9	18.1
28521	1 1/2	117.6	49.4	61.8	18.1
28522	2	120.4	61.4	73.6	18.1

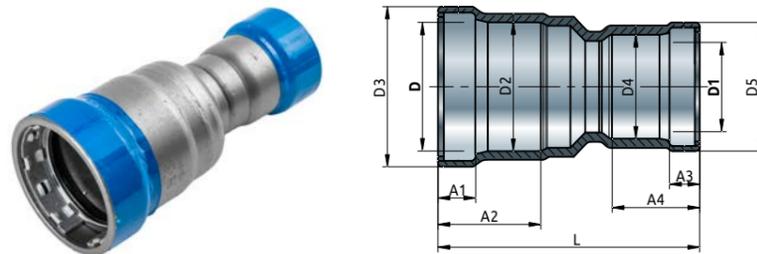
10. Product Range

Extended Slip Coupler



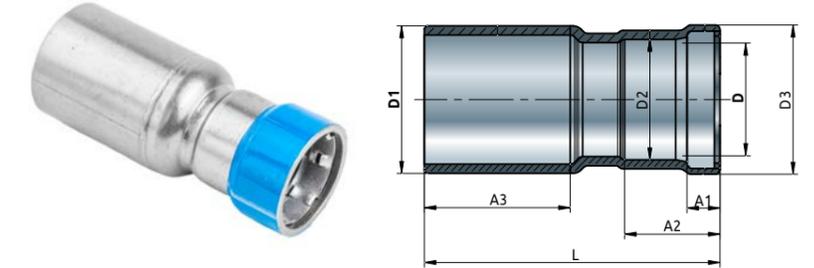
STOCK No.	D (") Nominal Size	L (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.
28599	1/2	97.0	22.0	22.0	14.1
28600	3/4	101.6	27.6	27.6	14.1
28601	1	111.3	34.4	34.4	14.1
28602	1 1/4	135.4	43.1	43.1	18.1
28603	1 1/2	138.2	49.4	49.4	18.1
28604	2	143.0	61.4	61.4	18.1

Reducing Coupler



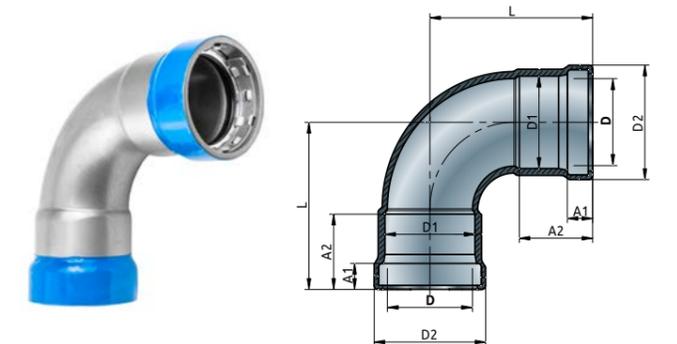
STOCK No.	D (") Nominal Size	D1 (") Nominal Size	L (mm) Nominal	D2 (mm) min.	D3 (mm) min.	D4 (mm) min.	D5 (mm) min.	A1 (mm) min.	A2 (mm) min.	A3 (mm) min.	A4 (mm) min.
28563	3/4	1/2	87.1	27.6	37.8	22.0	31.8	14.1	29.0	14.1	26.5
28565	1	1/2	96.3	34.4	45.1	22.0	31.8	14.1	34.0	14.1	26.5
28564	1	3/4	95.0	34.4	45.1	27.6	37.8	18.1	34.0	14.1	29.0
28566	1 1/4	1	111.5	43.1	55.9	34.4	45.1	18.1	45.0	14.1	34.0
28569	1 1/2	1 1/4	124.5	49.4	61.8	43.1	55.9	18.1	47.0	18.1	45.0
28574	2	1 1/4	133.9	61.4	73.6	43.1	55.9	18.1	50.0	18.1	45.0
28573	2	1 1/2	133.6	61.4	73.6	49.4	61.8	18.1	50.0	18.1	47.0

Fitting Reducer



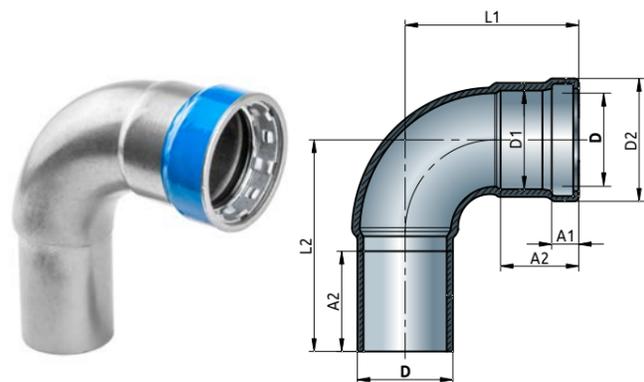
STOCK No.	D (") Nominal Size	D1 (") Nominal Size	L	D2 (mm) min.	D3 (mm) min.	A1 (mm) min.	A2 (mm) min.	A3 (mm) min.
28526	3/4	1/2	72.4	22.0	31.8	14.1	26.5	29.0
28528	1	1/2	81.5	22.0	31.8	14.1	26.5	34.0
28527	1	3/4	82.3	27.6	37.8	14.1	29.0	34.0
28529	1 1/4	1	104.9	34.4	45.1	14.1	34.0	45.0
28532	1 1/2	1 1/4	114.0	43.1	55.9	18.1	45.0	47.0
28538	2	1 1/4	112.7	43.1	55.9	18.1	45.0	50.0
28537	2	1 1/2	112.7	49.4	61.8	18.1	47.0	50.0

90° Bend F x F



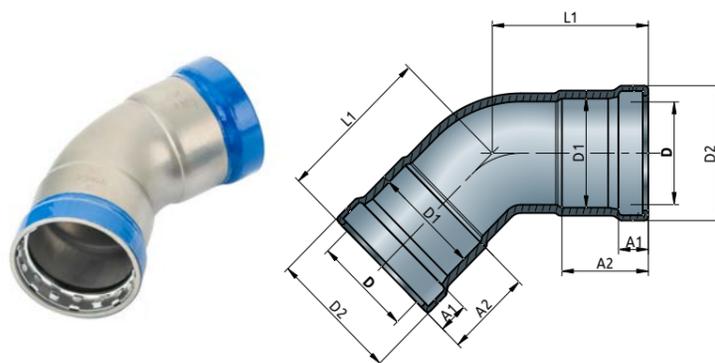
STOCK No.	D (") Nominal Size	L (mm) min.	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.
28300	1/2	56.9	22.0	31.8	14.1	26.5
28301	3/4	64.0	27.6	37.8	14.1	29.0
28302	1	78.0	34.4	45.1	14.1	34.0
28303	1 1/4	97.0	43.1	55.9	18.1	45.0
28304	1 1/2	104.9	49.4	61.8	18.1	47.0
28305	2	121.4	61.4	73.6	18.1	50.0

➤ 90° Bend M x F



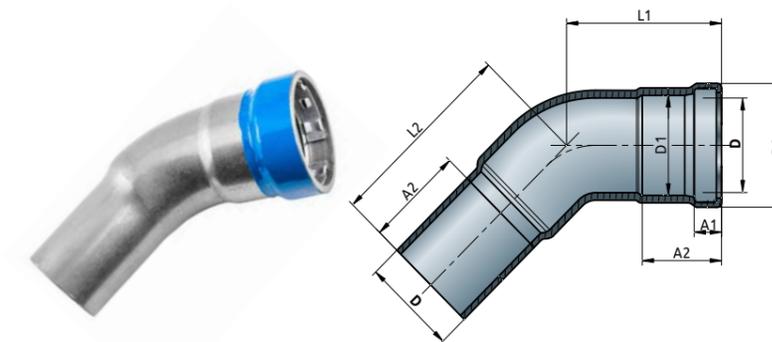
STOCK No.	D (") Nominal Size	L1 (mm) Nominal	L2 (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.
28309	½	56.9	65.0	22.0	31.8	14.1	26.5
28310	¾	64.0	72.9	27.6	37.8	14.1	29.0
28311	1	78.0	86.1	34.4	45.1	14.1	34.0
28312	1 ¼	97.0	102.6	43.1	55.9	18.1	45.0
28313	1 ½	104.9	106.9	49.4	61.8	18.1	47.0
28314	2	121.4	129.0	61.4	73.6	18.1	50.0

➤ 45° Bend F x F



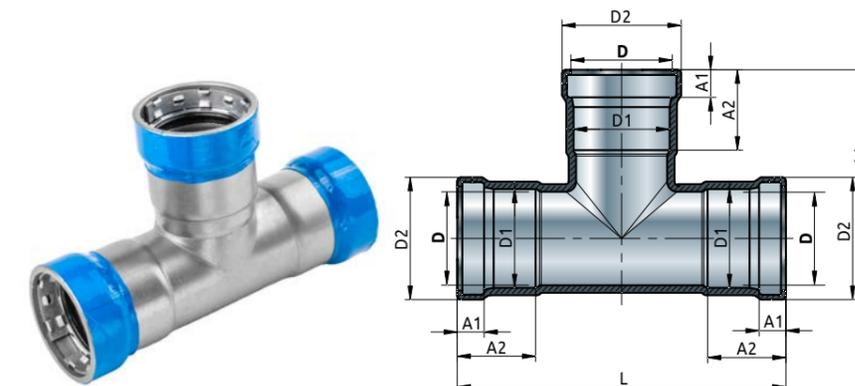
STOCK No.	D (") Nominal Size	L1 (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.
28318	½	42.4	22.0	31.8	14.1	26.5
28319	¾	47.5	27.6	27.8	14.1	29.0
28320	1	55.9	34.4	45.1	14.1	34.0
28321	1 ¼	71.1	43.1	55.9	18.1	45.0
28322	1 ½	75.9	49.4	61.8	18.1	47.0
28323	2	84.1	61.4	73.6	18.1	50.0

➤ 45° Bend M x F



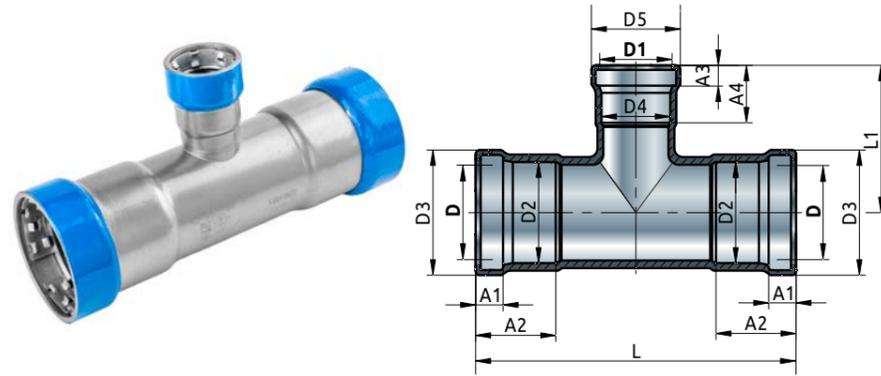
STOCK No.	D (") Nominal Size	L1 (mm) Nominal	L2 (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.
28327	½	42.4	50.0	22.0	31.8	14.1	26.5
28328	¾	47.5	54.1	27.6	37.8	14.1	29.0
28329	1	55.9	64.0	34.4	45.1	14.1	34.0
28330	1 ¼	71.1	75.9	43.1	55.9	18.1	45.0
28331	1 ½	75.9	78.0	49.4	61.8	18.1	47.0
28332	2	84.1	90.9	61.4	73.6	18.1	50.0

➤ Equal Tee



STOCK No.	D (") Nominal Size	L1 (mm) Nominal	L2 (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.
28336	½	103.6	50.8	22.0	31.8	14.1	26.5
28337	¾	114.8	56.9	27.6	37.8	14.1	29.0
28338	1	130.6	65.3	34.4	45.1	14.1	34.0
28339	1 ¼	164.0	81.3	43.1	55.9	18.1	45.0
28340	1 ½	174.8	86.6	49.4	61.8	18.1	47.0
28341	2	193.2	96.3	61.4	73.6	18.1	50.0

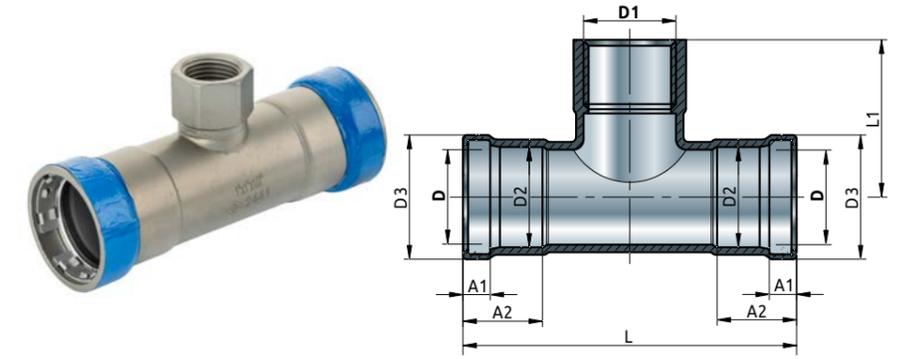
Reducing Tee



NOTE: END x END x CENTRE

STOCK No.	D (") Nominal Size	D1 (") Nominal Size	L (mm) Nominal	L1 (mm) Nominal	D2 (mm) min.	D3 (mm) min.	D4 (mm) min.	D5 (mm) min.	A1 (mm) min.	A2 (mm) min.	A3 (mm) min.	A4 (mm) min.
28345	3/4	1/2	114.8	54.4	17.6	37.8	22.0	31.8	14.1	29.0	14.1	26.5
28347	1	1/2	130.6	57.9	34.4	45.1	22.0	31.8	14.1	34.0	14.1	26.5
28346	1	3/4	130.6	61.0	34.4	45.1	27.6	37.8	14.1	34.0	14.1	29.0
28350	1 1/4	1/2	164.0	61.5	43.1	55.9	22.0	31.8	18.1	45.0	14.1	26.5
28349	1 1/4	3/4	164.0	64.8	43.1	55.9	27.6	37.8	18.1	45.0	14.1	29.0
28348	1 1/4	1	164.0	69.3	43.1	55.9	34.4	45.1	18.1	45.0	14.1	34.0
28354	1 1/2	1/2	174.8	63.8	49.4	61.8	22.0	31.8	18.1	47.0	14.1	26.5
28353	1 1/2	3/4	174.8	67.1	49.4	61.8	27.6	37.8	18.1	47.0	14.1	29.0
28352	1 1/2	1	174.8	71.9	49.4	61.8	34.4	45.1	18.1	47.0	14.1	34.0
28351	1 1/2	1 1/4	174.8	84.3	49.4	61.8	43.1	55.9	18.1	47.0	18.1	45.0
28359	2	1/2	193.0	71.4	61.4	73.6	22.0	31.8	18.1	50.0	14.1	26.5
28358	2	3/4	193.0	74.9	61.4	69.6	27.6	37.8	18.1	50.0	14.1	26.5
28357	2	1	193.0	96.5	61.4	69.9	34.4	45.1	18.1	50.0	14.1	34.0
28356	2	1 1/4	193.0	96.5	61.4	69.6	43.1	55.9	18.1	50.0	18.1	45.0
28355	2	1 1/2	193.0	96.5	61.4	69.6	49.4	61.8	18.1	50.0	18.1	47.0

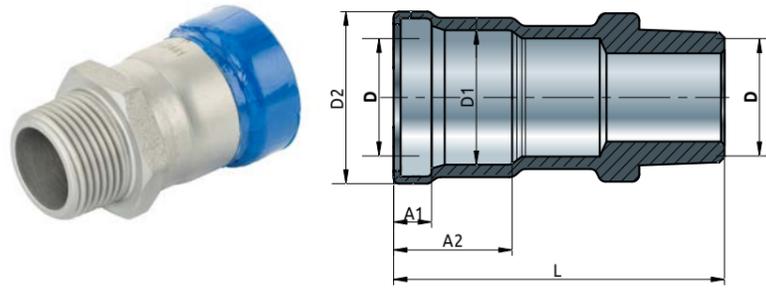
Female Threaded Branch Tee



NOTE: End x End x Centre

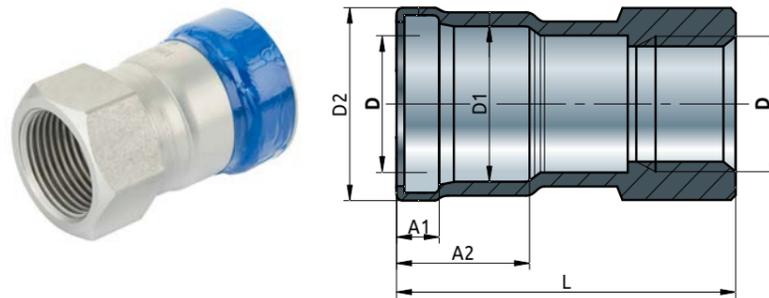
STOCK No.	D (") Nominal Size	D1 (") Nominal Size	L (mm) Nominal	L1 (mm) Nominal	D2 (mm) min.	D3 (mm) min.	A1 (mm) min.	A2 (mm) min.
28382	3/4	1/2	114.8	39.4	27.6	37.8	14.1	29.0
28381	3/4	3/4	114.8	40.1	27.6	37.8	14.1	29.0
28384	1	1/2	130.6	43.9	34.4	45.1	14.1	34.0
28383	1	3/4	130.6	43.9	34.4	45.1	14.1	34.0
28387	1 1/4	1/2	164.0	47.0	43.1	55.9	18.1	45.0
28386	1 1/4	3/4	164.0	48.0	43.1	55.9	18.1	45.0
28385	1 1/4	1	164.0	51.6	43.1	55.9	18.1	45.0
28391	1 1/2	1/2	174.8	49.5	49.4	61.8	18.1	47.0
28390	1 1/2	3/4	174.8	50.0	49.4	61.8	18.1	47.0
28389	1 1/2	1	174.8	56.9	49.4	61.8	18.1	47.0
28388	1 1/2	1 1/4	174.8	54.6	49.4	61.8	18.1	47.0
28396	2	1/2	193.0	56.9	61.4	73.6	18.1	50.0
28395	2	3/4	193.0	57.9	61.4	73.6	18.1	50.0
28394	2	1	193.0	64.8	61.4	73.6	18.1	50.0
28393	2	1 1/4	193.0	62.2	61.4	73.6	18.1	50.0
28392	2	1 1/2	193.0	61.2	61.4	73.6	18.1	50.0

Male Adaptor



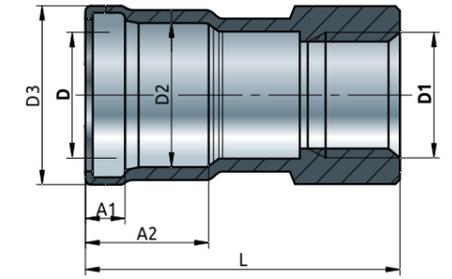
STOCK No.	D (") Nominal Size	L (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.
28418	1/2	64.0	22.0	31.8	14.1	26.5
28419	3/4	67.6	27.6	37.8	14.1	29.0
28420	1	76.2	34.4	45.1	14.1	34.0
28421	1 1/4	64.0	43.1	55.9	18.1	45.0
28422	1 1/2	96.5	49.4	61.8	18.1	47.0
28423	2	99.6	61.4	73.6	18.1	50.0

Female Adaptor



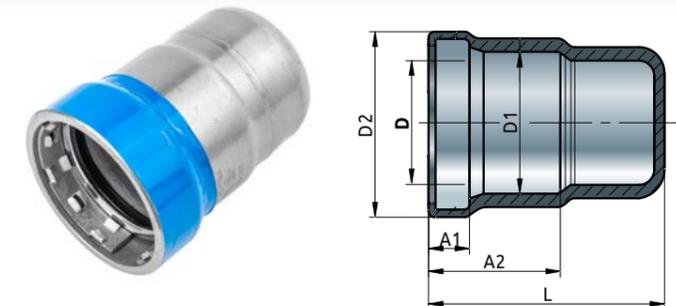
STOCK No.	D (") Nominal Size	L (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.
28427	1/2	58.2	22.0	31.8	14.1	26.5
28428	3/4	62.2	27.6	37.8	14.1	29.0
28430	1	69.6	34.4	45.1	14.1	34.0
28433	1 1/4	83.1	43.1	55.9	18.1	45.0
28437	1 1/2	83.1	49.4	61.8	18.1	47.0
28442	2	87.4	61.4	73.6	18.1	50.0

Female Reducing Adaptor



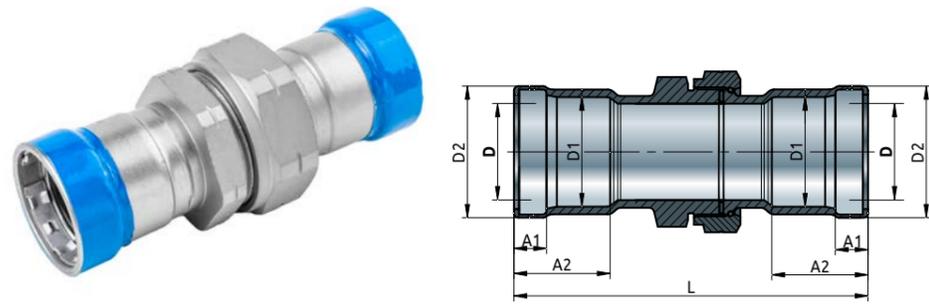
STOCK No.	D (") Nominal Size	D1 (") Nominal Size	L1 (mm) Nominal	D2 (mm) min.	D3 (mm) min.	A1 (mm) min.	A2 (mm) min.
28429	3/4	1/2	61.7	27.6	37.8	14.1	29.0
28432	1	1/2	73.9	34.4	45.1	14.1	34.0
28431	1	3/4	68.1	34.4	45.1	14.1	34.0
28436	1 1/4	1/2	88.9	43.1	55.9	18.1	45.0
28435	1 1/4	3/4	88.4	43.1	55.9	18.1	45.0
28434	1 1/4	1	82.3	43.1	55.9	18.1	45.0
28441	1 1/2	1/2	94.5	49.4	61.8	18.1	47.0
28440	1 1/2	3/4	94.0	49.4	61.8	18.1	47.0
28439	1 1/2	1	92.5	49.4	61.8	18.1	47.0
28438	1 1/2	1 1/4	86.6	49.4	61.8	18.1	47.0
28447	2	1/2	103.1	61.4	73.6	18.1	50.0
28446	2	3/4	103.6	61.4	73.6	18.1	50.0
28445	2	1	101.6	61.4	73.6	18.1	50.0
28444	2	1 1/4	99.8	61.4	73.6	18.1	50.0
28443	2	1 1/2	94.0	61.4	73.6	18.1	50.0

End Cap



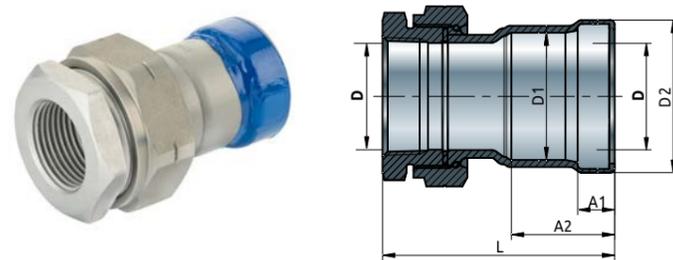
STOCK No.	D (") Nominal Size	L (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.
28481	1/2	54.4	22.0	31.8	14.1	26.5
28482	3/4	57.4	27.6	37.8	14.1	29.0
28483	1	61.7	34.4	45.1	14.1	34.0
28484	1 1/4	74.4	43.1	55.9	18.1	45.0
28485	1 1/2	76.7	49.4	61.8	18.1	47.0
28486	2	79.0	61.4	73.6	18.1	50.0

➤ F x F Union



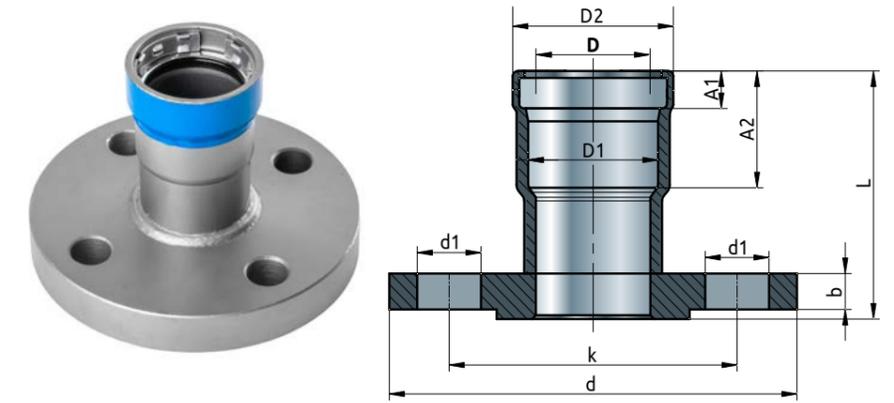
STOCK No.	D (") Nominal Size	L (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.
28490	1/2	114.3	22.0	31.8	14.1	26.5
28491	3/4	126.7	27.6	37.8	14.1	29.0
28492	1	135.6	34.4	45.1	14.1	34.0
28493	1 1/4	164.6	43.1	55.9	18.1	45.0
28494	1 1/2	168.4	49.4	61.8	18.1	47.0
28495	2	200.4	61.4	73.6	18.1	50.0

➤ Flat Seal Union



STOCK No.	D (") Nominal Size	L (mm) Nominal	D2 (mm) min.	D3 (mm) min.	A1 (mm) min.	A2 (mm) min.
28499	1/2	72.4	22.0	31.8	14.1	26.5
28500	3/4	81.3	27.6	37.8	14.1	29.0
28501	1	85.9	34.4	45.1	14.1	34.0
28502	1 1/4	102.4	43.1	55.9	18.1	45.0
28503	1 1/2	104.1	49.4	61.8	18.1	47.0
28504	2	127.0	61.4	73.6	18.1	50.0

➤ Flange Adaptor



STOCK No.	D (") Nominal Size	L (mm) Nominal	D1 (mm) min.	D2 (mm) min.	A1 (mm) min.	A2 (mm) min.	D (mm) min.	k (mm) min.	d1 (mm) min.	b (mm) min.
28472	1/2	65.5	22.0	31.8	14.1	26.5	90.0	59.9	16.0	13.0
28473	3/4	69.6	27.6	37.8	14.1	29.0	100.0	70.1	16.0	13.0
28474	1	78.7	34.4	45.1	14.1	34.0	110.0	79.0	16.0	14.0
28475	1 1/4	94.2	43.1	55.9	18.1	45.0	115.0	88.9	16.0	16.0
28476	1 1/2	99.8	49.4	61.8	18.1	47.0	125.0	98.0	16.0	18.0
28477	2	103.1	61.4	73.6	18.1	50.0	150.0	120.9	16.0	19.5

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