Global leaders in flexible couplings,
drainage & plumbing systems

Flexseal Civils & Drainage

Flexible Couplings

Large Diameter Coupling

Flexseal can provide Large Diameter Couplings that are manufactured to order, thereby meeting the specific contractor and site requirements.

Large Diameter Couplings can be manufactured to suit any outside pipe diameter and utilising Flexseal's advanced production capabilities, any size of coupling can be supplied direct to site using our Next Day Delivery Service.

Large Diameter Couplings are made from EN681-1 EPDM rubber and have Grade 1.4301 (304) clamps and shearbands. Flexseal can also supply the product with nitrile sleeves for use with effluent which may be contaminated with hydrocarbons. Couplings are also available with Grade 1.4401 (316) stainless steel for improved corrosion protection.

Benefits

- Can be used with all common pipe materials (clay, concrete, cast and ductile iron, asbestos/ cement, plastic or fibreglass)
- Easy to install
- Provide a watertight connection
- Available in any size to meet site requirements
- Unique bolting system on Large Diameter Standard Coupling range

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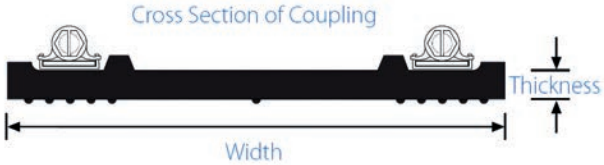
Product specification for Large Diameter Couplings	
Size Range	Manufactured to suit individual site requirements
Tolerance	25mm
Material	EPDM Rubber
Steel	1.4401 (316) Stainless Steel
Pressure Rating	1bar, 14.50psi
Temperature Range	-50°c to 150°c
Tightening Torque	25Nm

Range

Product Code	Size (mm)	Width (mm)	Thickness (mm)
LC600	600 - 699	190	9
LC700	700 - 799	190	9
LC800	800 - 899	190	9
LC900	900 - 999	190	9
LC1000	1000 - 1099	190	9
LC1100	1100 - 1199	190	9
LC1200	1200 - 1299	190	9
LC1300	1300 - 1399	190	9
LC1400	1400 - 1499	190	9
LC1500	1500 - 1599	190	9
LC1600	1600 - 1699	190	9
LC1700	1700 - 1799	190	9
LC1800	1800 - 1899	190	9
LC1900	1900 - 1999	190	9
LC2000	2000 - 2099	190	9

Note: The coupling size range is an indication of size for ordering purposes only. Large Diameter Couplings are manufactured individually to suit customers exact requirements. If you require a connection of over 2100mm, an Extra Wide or Magnum Coupling should be used.



Bolting System

For Flexseal couplings of 600mm and above, a unique bolting system has been designed by Flexseal.

These are installed at 25Nm.

- The optimised conversion of torque to tension in the band maximises the contact pressure between the seal and the pipe surface.
- Tighten using only one tool, either ratchet torque wrench or drill.
- 3/8" square drive with 6mm hex head provided with each bolt
- All clamp components are manufactured from Grade 1.4401 (316) stainless steel.
- The bolt thread is lubricated, both reducing friction in the thread and preventing galling between the nut and the bolt.
- All bolts are subject to Flexseal's strict quality testing and performance guarantee.

Materials

Seal

The elastomeric seal is normally manufactured from EPDM material in compliance with EN681:1. The seal is produced from extruded strip with a vulcanized rubber joint.

Standard large couplings (LC) are manufactured from 190mm wide rubber strip. A wider version (LCW) utilises sealing material at 300mm width. The Magnum variant (MAG) of the product uses a strip at 370mm wide.

Stainless Steel Bands

We normally offer steel parts made from austenitic stainless steel to Grade 1.4301 (304). We can offer an option for stainless bands to 1.4401 (316) but we are unable to supply higher grade alloys such as Duplex steels.

All products have sealing clamp bands at the outer edges of the seal and a separate single shear band in the centre of the product. The clamp bands produce the contact pressure between the seal and the pipe surface to achieve the hydrostatic performance. The shear band is to support the pipe ends; ensuring concentricity under ground settlement conditions.

Large couplings manufactured by Flex-Seal use a unique bolt system designed specifically for use with these products. This design sets the bolt at a tangent to the coupling; optimising the conversion of the applied torque to tension in the band and so maximising the contact pressure between the seal and the pipe surface.

Both anchor points for the bolt are circular and their ability to rotate gives perfect alignment of the bolt as the clamp band is tightened.

All the bolt components are manufactured from Grade 1.4401 (316) stainless steel and the bolt thread is lubricated with grease that both reduces friction in the thread and prevents galling between the nut and the bolt. (This phenomenon is a characteristic of stainless materials).

These clamps are very robust and can be used with applied torque up to 25Nm. They are easy to install and have a proven track record of reliability in the field

Design

Flexseal manufacture couplings in accordance with BS EN 295:4 and hold a Kitemark Licence for these products. However the scope of this standard only covers sizes up to 1000mm. Couplings for sizes larger than DN1000 use the same materials, design and test methods outlined within the standard.

Performance

These products are capable of withstanding 0.5 bar internal pressure. The coupling manufacturing standard requires the products to be tested at this pressure whilst the coupling is subjected to deflection and subjected to shear or deformation across the joint.

For large couplings these requirements are defined as follows in BS EN 295:-

Deflection

DN600 to DN800 – 20mm/m

Greater than DN800 – 10mm/m

Shear Load (Applicable for rigid pipes – Concrete/Clay/Cast Iron etc)

25N/mm nominal pipe size

Deformation (Applicable for flexible pipes – PVC/PE/PP etc)

3% of external diameter

Durability

We have to consider three aspects concerning the durability of the product.

1. The life of the elastomeric sleeve.

2. The life of the stainless steel clamp bands.

3. The performance of the product.

1. The durability of elastomers is influenced by many factors such as the type of elastomer, the temperature and the environment in which the elastomer is functioning. EPDM has good or excellent resistance to oxidation, ozone, ultra-violet light and heat. This property makes the elastomer suitable for both underground and above ground applications

   The product is manufactured for use in drains and sewers. Any substance not usually associated with this application could possibly be detrimental to the elastomer. In such cases advice should be sought about the suitability of the elastomer to resist chemical attack. EPDM is not suitable for effluent contaminated by hydrocarbons. In these cases Nitrile seals should be used.

   We state that our product is suitable for normal drain or sewer operation at a continuous temperature of no more than 80°C and an intermittent temperature of 100°C. It should be noted that EPDM has a quoted operating temperature range up to 150°C and our recommended maximum temperature are listed to consider product longevity.

2. Stainless steel usually has excellent durability. It can be attacked by chloride ions present in soils by the mechanism of crevice corrosion. If this is anticipated to be a problem then the higher Grade 1.4401 (316) stainless steel should be utilized. If this is not suitable for the application then the stainless steel needs to be protected from the environment by wrapping with waterproof tapes.

3. The performance of the Flex-Seal product is dependent upon maintaining contact pressure under the clamp band to ensure the seal remains tight. The elastomer has to meet performance criteria specified in BS EN 681:1. This factor ensures that the physical properties of the material are both known and consistent. Extrapolation of the results of stress relaxation under compression provides a figure for 50 year relaxation. Our clamp bands can exert sufficient clamping pressure at the recommended tightening torque to ensure that there is adequate contact pressure even after 50 years of stress relaxation.

We are confident that these products, if correctly specified and installed, are adequate for a 50 year life in above or below ground applications.

Use with plastic pipes

Some caution has to be exercised when couplings are used with plastic pipes. All plastics have high coefficient of expansion and very often the couplings are fitted onto pipes that have been stored above ground. If the pipe cools to the ambient underground temperature then it is very likely that the pipe will reduce in diameter; reducing the contact pressure between the coupling and the pipe wall. To avoid this, the pipeline should only be partially backfilled and left to cool to the ambient ground temperature and then the couplings should be retightened before completing the backfill.