FlexLock
Couplings & Flange Adaptors
For Ductile Iron or Steel Pipes

Unrivalled

PIONEERS IN PIPE SOLUTIONS
Unique, Patented & Self Anchoring Joints for Ductile Iron or Steel Pipes

The FlexLock system provides a self-anchoring method of joining ductile iron or steel pipes and offers a cost effective, quick and simple alternative to traditional anchoring systems such as site welding, harnessing or thrust blocks.

**Above Ground or Buried Application**

FlexLock is a unique pipe jointing system that is fully end load bearing. Gaskets have embedded stainless steel teeth that grip the outer surface of the pipe, yet still allow for angular deflection of pipes in service. This prevents pipes from separating under pressure loads making FlexLock ideal for above ground and buried applications, soft ground conditions or temporary pipe work.

**End Load Restraint**

FlexLock works on the same compression joint principle as standard Viking Johnson products but as the compression bolts are tightened, the stainless steel teeth grip around the outside diameter of the pipe, providing a fully end load restraint joint. Internal pressure in the pipe causes the assembly to lock firmly providing a leak proof joint.

The FlexLock range consists of couplings and flange adaptors with nominal sizes from DN50 (2”) up to DN300 (12”) and are suitable for use on both gas and cold potable water pipelines with a maximum operating temperature of 40°C.
FlexLock Couplings & Flange Adaptors

Product Design Benefits

**Suitable for Water & Gas**

A FlexLock is supplied as standard with EPDM gaskets for water applications to EN 681. However, it is also available with Nitrile gaskets to EN 682 suitable for natural gas, petroleum products, low aromatic fuels, sewage and drainage.

**Excellent Corrosion Protection**

Metal components are coated with Rilsan Nylon 11 which is WRAS approved for use with potable water. The nuts and bolts are Sheraplex coated to WIS 4-52-03, offering long-term protection against corrosion, impact and abrasion to ensure continued reliable performance.

**Unique Load Bearing Teeth**

As the compression bolts are tightened, unique load bearing stainless steel teeth, that are moulded into the gasket grip around the outside diameter of the pipe, providing a fully end load restraint joint.

**Customer Benefits**

- FlexLock permits angular deflection between pipes (couplings ±6° / flange adaptors ±3°), allowing for normal pipeline movement such as ground settlement. Long radius curves can also be accommodated, reducing the need for special fittings.
- Cost effective – FlexLock provides significant cost savings compared to non-locking couplings with a harnessing system.
- Restrains pressure thrusts without thrust blocks at bends.
- Convert cut lengths of pipe into flanged pipes - allows use of pipe offcuts.
- Working Pressure of 16 bar on water up to and including DN200 and 10 bar for DN250 & DN300. For gas applications a working pressure of 6 bar can be achieved.
- FlexLock provides angular deflection in ANY plane unlike a harness assembly that can only provide angular deflection in one plane.
FlexLock Unique Sealing System

How FlexLock Works

FlexLock flange adaptors and couplings work on the same compression joint principle as standard Viking Johnson products. As the compression bolts are tightened, unique load bearing stainless steel teeth (moulded into the gasket) grip around the outside diameter of the pipe, providing a fully end load resistant joint. Internal pressure in the pipe causes the assembly to lock even more firmly.

Progressive tightening of the bolts drive the teeth into their correct locked position.

When the bolts are tightened to their correct torque, the FlexLock coupling or flange adaptor is securely locked in position providing a leak proof joint whilst at the same time allowing the joint to compensate for angular movement within the pipeline.
United Kingdom - Chesterfield

Yorkshire Water

FlexLock Flange Adaptors - DN250

Project
FlexLock installed on ductile iron pipe.

Client
Yorkshire Water

Contractor
Black & Veatch

Crane BS&U are solely the provider of products and have no direct influence on, or take any responsibility for any working practices employed or depicted in the images enclosed to install such products.
FlexLock Couplings

Key
1 = Sleeve
2 = End Ring
3 = Gasket
4 = Gasket Gripper Teeth
5 = Bolts, Nut & Washer

![Diagram of FlexLock Couplings]

### FlexLock Couplings

<table>
<thead>
<tr>
<th>Pipe Nom</th>
<th>Pipe OD (mm)</th>
<th>Pipe Material</th>
<th>Bolt Size No.-Dia x Length</th>
<th>Overall Length (L)</th>
<th>End Ring OD (A)</th>
<th>Sleeve Length x Thickness (mm) (S)</th>
<th>Setting Gap</th>
<th>Working Pressure (bar)</th>
<th>Gasket Mould</th>
<th>Coupling Weight (kg)</th>
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**FlexLock Couplings**

**Datasheet 2/2**

**Technical Information**

**Working Pressure Rating**

Water:
- DN50 to DN200 = 16 bar
- DN250 to DN300 = 10 bar

Gas:
- DN50 to DN300 = 6 bar

**Vacuum Pressure**

Capable of accommodating a vacuum pressure of -0.7 bar

**Site Test Pressure**

1.5 times working pressure for short duration (2 hours)

**Angularity**

Couplings 6°

**Bolt Torque/Spanner**

M12; Torque 55-65Nm on every bolt
M16; Torque 95-120Nm on every bolt

**Temperature Rating of Product**

EPDM -20°C to +40°C
Nitrile -20°C to +40°C

**General Notes**

- FlexLock is only suitable for use on Ductile Iron, Steel and Coated Steel Pipe
- For coated steel pipe the maximum permitted coating thickness is 500μ DFT. This is to ensure the stainless steel teeth properly grip onto the pipe surface to mobilize the end load capability of the products.
- Due to the surface characteristics of stainless steel pipe, FlexLock grippers are unable to achieve a guaranteed grip on the pipe surface.
- If the product has to be dismantled after installation then for reassembly a new gasket must be used, as there is a risk that the stainless steel teeth may become dislodged during this operation. These are available as spares from Viking Johnson by quoting gasket mould number from the table along with gasket compound.

**Approvals**

The following water contact materials used in FlexLock are approved for use with potable water:-
- Rilsan Nylon 11:
  - WRAS, AS/NZS 4020, DVGW, W270, ACS & KIWA
- EPDM Gaskets:
  - WRAS, AS/NZS 4020

In addition to the above, FlexLock range as a finished product has KIWA certification verifying that the above products comply with the requirements of the Water Supply (Water Fittings) Regulations for England and Wales 1999, the Water Byelaws 2000, Scotland and the Water Regulations Northern Ireland.

**Materials & Relevant Standards**

**Centre Sleeve & End Ring Options:**
- SG. Iron to BS 1563: Symbol EN-GJS-450-10
- Rolled Steel to: BS EN 10025: Grade S275

**Coupling Body Options:**
- Ductile Iron to BS EN 1563 EN-GJS-450-10
- Mild Steel to: BS EN 10025: Grade S275

**Gasket**

EPDM compound Grade E to BS EN 681-1
Nitrile compound Grade ‘G’ to BS EN 682-1

**Gasket Gripper Teeth**

Stainless Steel BS 3146: Part 2 Grade ANC2

**Coatings**

Body, Centre Sleeve, & End Rings:
- Rilsan Nylon 11 to WIS 4-52-01 Part 1
- Sheraplex coated to WIS 4-52-03

**Bolts**

Cold Forged Steel Fasteners to: BS EN ISO898-1: Property Class 8.8

**Nuts**

Steel BS EN 20898-2: Property Class 8

**Washers**

BS 4320 Form B Stainless Steel BS 1449:PT2: Grade 304 S15

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## FlexLock Flange Adaptors

### Key

1 = Flange Adaptor  
2 = End Ring  
3 = Gasket  
4 = Gasket Gripper Teeth  
5 = Stud

### FlexLock Flange Adaptors

<table>
<thead>
<tr>
<th>Pipe Nom</th>
<th>Pipe OD (mm)</th>
<th>Pipe Material</th>
<th>Bolt Size No.-Dia x Length</th>
<th>Flange OD (A)</th>
<th>Overall Length (L)</th>
<th>Flange Thickness (mm) (F)</th>
<th>Sleeve Length (mm) (S)</th>
<th>Flange Nominal Drilling BS EN 1092-1</th>
<th>Working Pressure (bar)</th>
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Technical Information

Working Pressure Rating

**Water:**
- DN50 to DN200 = 16 bar
- DN250 to DN300 = 10 bar

**Gas:**
- DN50 to DN300 = 6 bar

Vacuum Pressure
Capable of accommodating a vacuum pressure of -0.7 bar

Site Test Pressure
1.5 times working pressure for short duration (2 hours)

Flange Drilling
While DN250 to DN300 are supplied with PN1616 drilling the rated working pressure (water) is only 10 bar as stated in the table.

Angularity
Flange Adaptors 3°

Bolt Torque/Spanner
- M12; Torque 55-65Nm on every bolt
- M16; Torque 95-120Nm on every bolt

Temperature Rating of Product
- EPDM: -20°C to +40°C
- Nitrile: -20°C to +40°C

Materials & Relevant Standards

End Rings Options:
- SG. Iron to BS 1563: Symbol EN-GJS-450-10
- Rolled Steel to: BS EN 10025: Grade S275

Flange Adaptor Body Options:
- Ductile Iron to BS EN 1563 EN-GJS-450-10
- Mild Steel to: BS EN 10025: Grade S275

Gasket
- EPDM compound Grade E to BS EN 681-1
- Nitrile compound Grade ‘G’ to BS EN 682-1

Gasket Gripper Teeth
- Stainless Steel BS 3146: Part 2 Grade ANC2

General Notes

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- EPDM Gaskets:
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Approvals

Body, Centre Sleeve, & End Rings:
- Rilsan Nylon 11 to WIS 4-52-01 Part 1
- Sheraplex coated to WIS 4-52-03

Studs & Nuts
- Cold Forged Steel Fasteners to: BS EN ISO898-1: Property Class 8.8

Studs
- Steel BS EN 20898-2: Property Class 8

Washers
- BS 4320 Form B Stainless Steel BS 1449:PT2: Grade 304 S15

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United Kingdom - Liverpool

West East Link Main

FlexLock - DN150
Large Diameter - DN800

Project
West East link transmission main.
The 53km pipeline runs from Prescot near Liverpool to Bury, near Manchester.

Client
United Utilities

Contractor
Murphys