

# UltraGrip®

## AMPLIFIED

NEW

Couplings & Flange Adaptors DN700 - DN800

Performing for Generations to Come

 **VIKING JOHNSON®**



# UltraGrip®



## Performing for Generations to Come



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# Climate change is reshaping how Utilities operate

## Adapting to Environmental Extremes

Many utilities around the world are finding a need to transport water over longer distances, and especially from regions with a surplus to drought stricken ones.

Consequently, the industry has sort more cost effective pipeline designs that utilise larger sizes and higher pressure ratings, with 16 bar becoming the standard working pressure across their networks.



# A Perfect Partner for Infrastructure & Repairs

Viking Johnson, is a trusted industry name, with a rich history, dating back to the 1930's and internationally recognised for the design and manufacture of large diameter restrained couplings and flange adaptors.

The extension to the proven UltraGrip range of wide tolerance restrained fittings now includes DN700 and DN800 sizes, which are ideal for new lay and large scale infrastructure projects.

Viking Johnson has made specification easy across the UltraGrip Amplified range. Couplings and reducing couplings are rated 16 bar with a choice of flange adaptors rated 10 bar and 16 bar. There is also a full set of 2D and 3D CAD and BIM models.



UltraGrip Coupling

UltraGrip Reducing Coupling

UltraGrip Flange Adaptor



## Upsized for the challenges ahead



### Unique Restraining System

The UltraGrip restraint system is equipped with a unique sealing and gripping technology that allows water utilities contractors to repair pipelines faster, without the need for external restraints, like for example thrust blocks.



Advanced grip and seal technology



# Dedicated Gasket Design

UltraGrip DN700 & 800 has adapted a proven, high performance wide tolerance gasket technology which provides maximum sealing pressure, even on scored, pitted and corroded pipe surfaces. It is a gasket technology which Viking Johnson has been using in their products, for the water industry since the 1980's with over 9 million units sold.



# Versatile Fittings

UltraGrip is the perfect choice for water and wastewater applications for projects below or above ground\*. It is the ideal solution for joining diverse pipe materials such as Ductile Iron, Cast Iron, Steel, PE, MOPVC and Asbestos Cement.



Cast Iron to Steel



Steel to Asbestos Cement



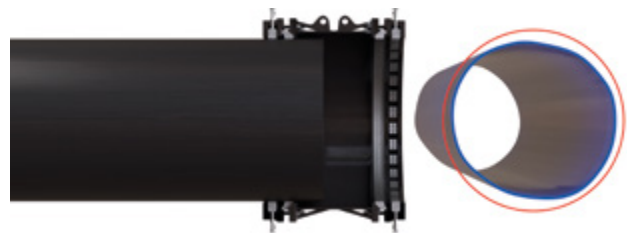
Cast Iron to MOPVC



Ductile Iron to PE

## Wide Tolerance

When pipes are distorted or out of round the UltraGrip's market leading 35mm tolerance provides more clearance to ensure a simple connection. The fitting can accommodate pipe distortion within the manufacturing tolerances and connects both the spigot end and mid barrel ductile iron pipe in one fitting as well as both class AB and CD cast iron.



Accommodates pipe distortion

\*UltraGrip can be used in above ground applications, where it is not exposed to direct sunlight, and falls within the 40 degrees operating temperature range (between -20 and +60).



## Big fittings that deliver results

### For Peace of Mind

UltraGrip offers 4° angularity at each end covering the entire range including top and bottom tolerance. This feature eliminates the need for installers to measure the pipe to calculate the allowable angularity.

It also offers benefits on the design of new pipe networks as bends can be designed into the pipeline without use of specialist fittings and offers flexibility on installation covering pipe misalignment.





## Ease of Installation

UltraGrip is easy to install on site even in narrow trenches. Installation is made simple with lifting eyes added for ease of manoeuvrability. The product is preassembled to allow for quick positioning over the top and bottom tolerance pipe with captive studs requiring only a single spanner for tightening when dealing with tricky site conditions.

Plus after installation there is no requirement to re-torque or to revisit after initial bolt up.



### Exceptional Versatility for Large Scale Infrastructure Projects



4° Angularity across the range at both ends

## Focused on sustainability



### A Renewable Resource

All UltraGrip lines are coated in Rilsan Nylon, a bio sourced coating, manufactured from a renewable raw material of castor seeds, that grows easily in semi-arid regions, causing no deforestation and not competing with food production, making it a truly renewable material.





# A Unique Bio Coating

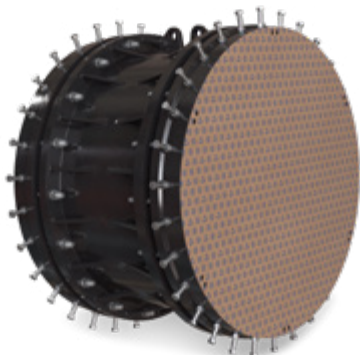
Rilsan® powder coatings have been used in the water industry since 1967. It is a unique, high performance polyamide providing the highest degree of corrosion protection for metal parts whilst being compliant with the most demanding drinking water regulations (WRAS, KIWA etc.).

Selected not only for the coating's excellent protection against corrosion it also withstands rough high levels of deformation making it ideal for products that flex during bolt up.



# Castor Scholarships

In 2022 Arkema awarded Viking Johnson one of the first Castor Scholarships as a selected global customer with a strong commitment to sustainability.



## Biodegradable Protective Packaging

Protective caps have been introduced to keep the fitting clean and free from any contamination. The caps are made of biodegradable material to minimise impact to the environment and ensure fittings are clean and ready for use on potable water applications.




# Focused on sustainability

### Reducing Our Carbon Footprint


One of the core values within Crane Co. businesses is the elimination of waste throughout the organisation.

The Company also has a structured cadence and process to manage and measure progress of sustainability initiatives.

### 2030 Targets

 **10%↓**  
Reduction in water consumed per direct labor hour by 2030

 **20%↓**  
Reduction in greenhouse gas emissions per direct labor hour by 2030

 **20%↓**  
Reduction in electricity consumed per direct labor hour by 2030

 **15%↓**  
Reduction in solid non-hazardous waste per direct labor hour by 2030



## Source Materials

UltraGrip is manufactured from 80% recycled steel. Utilising recycled steel uses up to 75% less energy than producing new fittings, from fresh raw materials and reduces waste by not having to extract minerals from the ground.



## Concrete Removal

A key ingredient of concrete thrust block manufacturing is Cement which contributes up to 8% of global CO<sub>2</sub> emissions. UltraGrip minimises the need for thrust blocks because the enhanced gripping design accommodates end load forces from the internal pressure within pipelines.

## Long Life Protection

UltraGrip has a 50 year design life expectancy which helps meet global climate targets in reducing carbon emissions. This minimises manufacturing, shipping, installation and repairs ensuring a better life style for generations to come.



### Reduce Stock Holding

Stock holding can be kept to a minimum with careful placement of the tolerance range to cover core pipe materials.





### Cost Effective Pipelines

UltraGrip restraint system is equipped with a unique gripping technology that allows consulting engineers to design more cost effective pipelines, without the need for external restraints, like for example thrust blocks.

### Long Term Performance

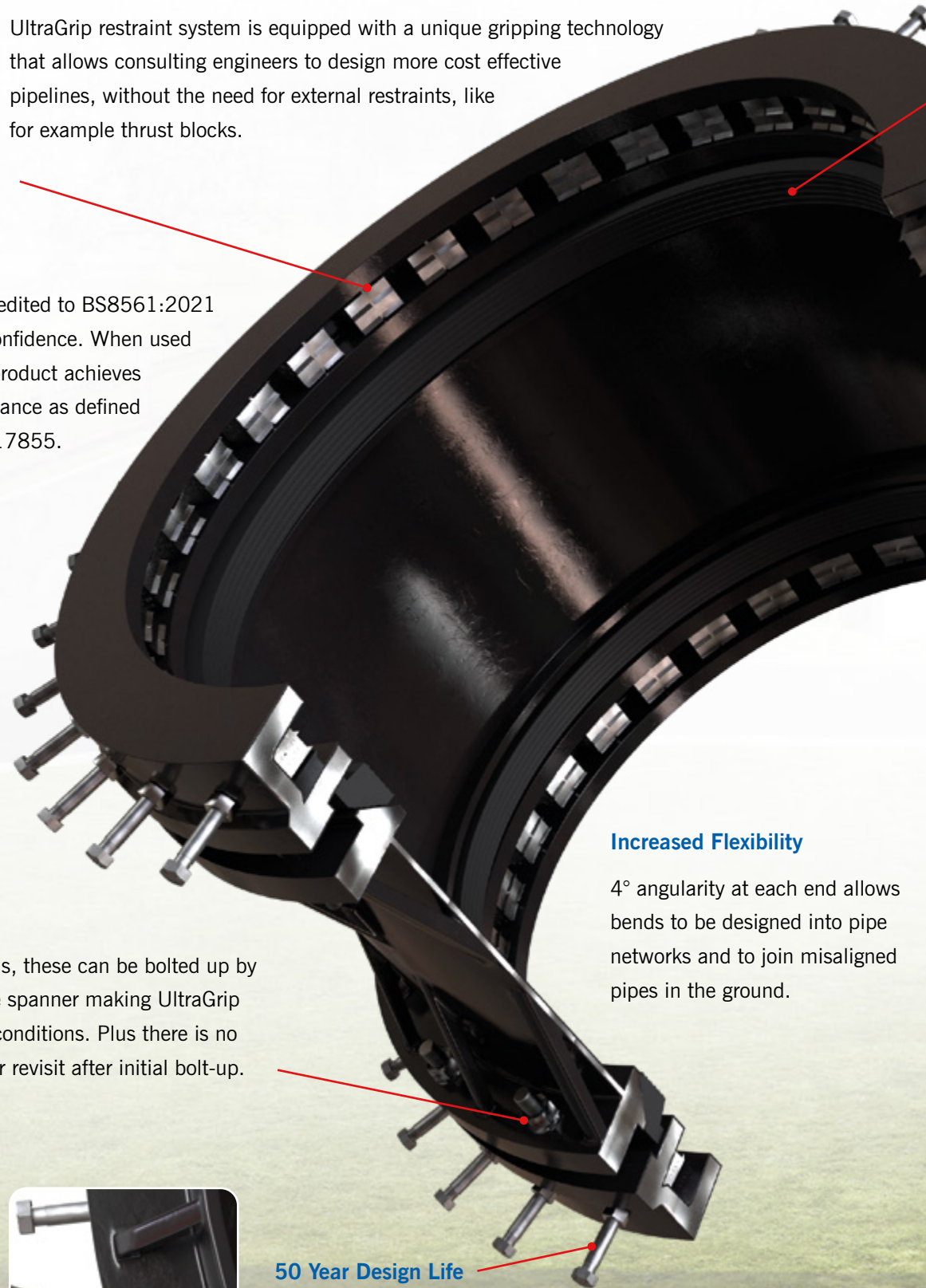
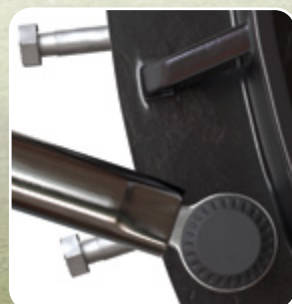
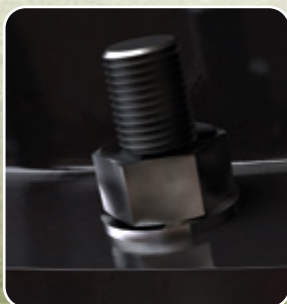
Product is third party accredited to BS8561:2021 which ensures end user confidence. When used on polyethylene pipe the product achieves a Type 2 end load performance as defined in WIS 4-24-01 and ISO 17855.

### Higher Pressures

16 bar product as standard, to support the growing requirement for higher operating pressure pipe networks.

### Simple to Fit

Supplied with captive studs, these can be bolted up by a technician using a single spanner making UltraGrip ideal for use in all trench conditions. Plus there is no requirement to re-torque or revisit after initial bolt-up.



### Increased Flexibility

4° angularity at each end allows bends to be designed into pipe networks and to join misaligned pipes in the ground.

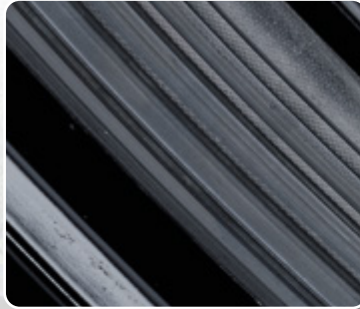
### 50 Year Design Life

Along with extensive long term testing, and high performance gasket, the stainless steel bolts coated with dry film lubricant provide excellent corrosion resistance against degradation and maximises the longevity of the product.

# DN700 - DN800

## No Leakages

A proven, high performance wide tolerance, EPDM gasket technology which Viking Johnson has been using in their products for the water industry over the last 40 years.



## Connects Various Pipe Materials

A 35mm tolerance ensures one size fits multiple pipe materials, and designed to allow for use on out of round and out of specification pipe.

## Simple Repairs

Large setting gaps allow operative bigger tolerances for cutting and positioning pipes making it quicker and easier when undertaking repairs.

## Ease of Handling

Installation made simple with incorporated lifting eyes for ease of manoeuvrability.



## Working Pressure & Temperature Ratings

Nominal Size	Gripping Product		Flex Product		Operating Temperature
	Gas	Water	Gas	Water	
DN700	N/A	16 bar	N/A	16 bar	-20 to +60
DN800	N/A	16 bar	N/A	16 bar	



## Exhaustive testing & accreditations

### Extensive Testing & Quality Endorsements

Viking Johnson products undergo vigorous testing regimes to ensure a long life, these includes finite element analysis (ANSYS) as well as extensive testing witnessed by third party test houses to verify compliance with the long term testing as defined in BS8561:2021, when used on Ductile Iron, Steel, PE, MOPVC, Cast Iron, and Asbestos Cement. For PE UltraGrip fittings also achieve an axial end load equivalent of a Type 2 performance as defined and tested by IGN 4-01-02:2017.

In addition, the performance has been validated through extensive physical testing, including hydrostatic, pull-out, leak tightness, strength and resistance to distortion tests. Furthermore, pressure tests with shear load have been carried out on grooved pipe, to simulate typical corrosion and ground loading found in old pipelines.

Also the products can mobilise restraint and seal effectively in all situations, giving installers and end users confidence the products will perform.





# Demonstration Centre

As part of the development of the UltraGrip range and for an enhanced customer experience, Viking Johnson has invested in a new Demonstration Centre.

The Centre enables simulations of real trench like conditions whilst testing product under pressure with both tensile and hydrostatic assessments. All the water used in these tests is provided by a sustainable rainwater harvesting system.

So, customers, contractors and technicians wishing to learn more about UltraGrip, can visit the Centre, view and handle the product whilst receiving essential hands on training.



UltraGrip is compliant with the industry standards as confirmed with WRc certification, which offers peace of mind and verifies the 50 years design life expectancy.

All water contact materials used in UltraGrip are approved for use with potable water; the gaskets are WRAS approved and the Rilsan Nylon coating has both WRAS and DWI certification.



## CASE STUDY

# ISE Valley & UltraGrip Amplified

Viking Johnson UltraGrip Amplified DN700's have been specified and installed at Stanton Cross on a new housing development near Wellingborough to repair an existing sewage mains which burst over the Christmas period in 2022. As a temporary measure 540 metres of overground piping was installed to handle the sewage while repairs were made to the existing 1970's pipe network.

Four Viking Johnson UltraGrip Amplified DN700 flange adaptors were chosen by Anglian Water One Alliance for the project to rejoin corroded ductile iron pipe sections where the pipe network on the estate changes direction.

UltraGrip is ideal for this type of work, and easily met the requirements for the 6 bar pipework rating for this repair project and as it is a restrained fitting allowed the contractor to remove and not replace expensive thrust blocks. The installation was also quick and easy.



“ It has worked perfectly. There is a cost benefit of course, we would have been thrust blocking - time saved us probably a week plus a lot smaller excavation. Also our carbon footprint is a lot lower. This joint is perfect, worked lovely, it's all gone to plan.

**Trevor Newman Site Foreman**  
@one Alliance (Barhale)

### SECTOR

Repair Sewage mains

### LOCATION

ISE Valley Wellingborough

### CLIENT

Anglian Water @one Alliance

### CONTRACTOR

Barhale, Skanska

### DISTRIBUTOR

Wolseley

### SPECIFICATION

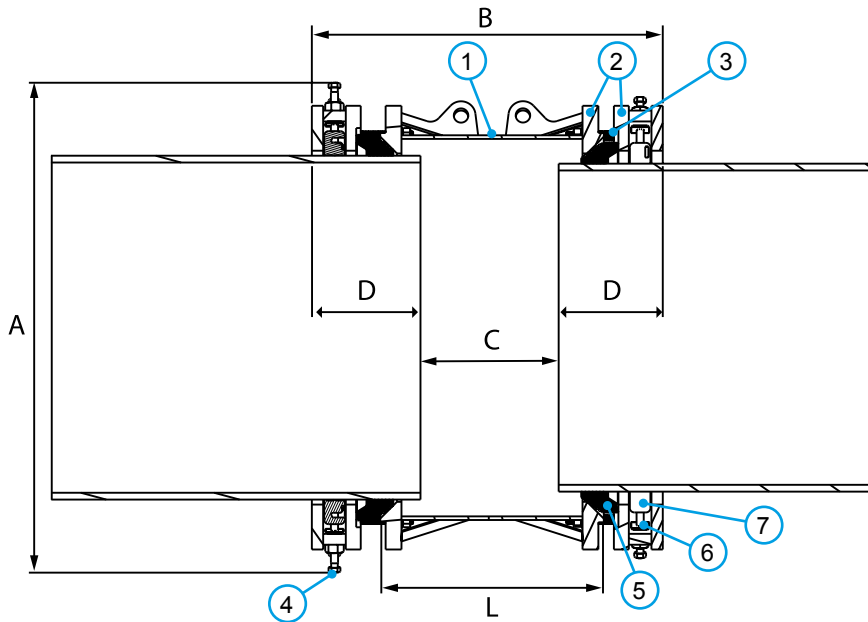
Viking Johnson 4x UltraGrip Amplified  
Flange Adaptors DN700





Viking Johnson (part of Crane BS &U) manufactures couplings, flange adaptors and associated fittings for the Utilities industries. Viking Johnson cannot make recommendations regarding the pipeline design, which includes all components, intended operational substances, introduced chemical species and materials. Any comments made by Viking Johnson regarding product compatibility apply only to Viking Johnson's product range.

### Couplings



#### Key

- 1 = Centre Sleeve
- 2 = End Ring
- 3 = Studs
- 4 = Bolt, Nut & Washer
- 5 = Gasket
- 6 = Square Bush Nut
- 7 = Gripper



**HAZARD WARNING:** Lifting lugs, where provided, are designed/tested for lifting only the components to which they are attached. Failure to follow these instructions could result in property damage, serious personal injury or death. The maximum safe working load of the lifting eye is equal to the product weight.

### Couplings

Nom Size	Size Range (mm)		Insertion Depth (D) (mm)		Setting Gap (C) (mm)		Dimensions (mm)			Fasteners		Weight (kg)
	Min	Max	Min	Max	Min	Max	Overall		Sleeve	Axial Stud No-size	Radial Bolt No-size	
							A	B				
700	700	735	220	325	165	375	1085	815	495	32 x M20	48 x M16	559
700	727	762	220	325	165	375	1115	815	495	32 x M20	64 x M16	591
700	750	785	220	325	165	375	1135	815	495	32 x M20	48 x M16	592
800	789	824	220	325	170	380	1175	820	500	36 x M20	60 x M16	638
800	825	860	220	325	170	380	1210	820	500	36 x M20	80 x M16	684
800	853	888	220	325	170	380	1240	820	500	36 x M20	60 x M16	680

### Connections based on standard pipe OD's\*

Nom Size	Range		Ductile Iron	PE / MOPVC	Steel / FBE Coated Steel	Cast Iron	Asbestos Cement
	Min	Max					
DN700	700	735		710mm	DN700	26" (AB & CD)	26" (AB & CD)
DN700	727	762	DN700			27" (AB & CD)	27" (AB & CD)
DN700	750	785			DN750	28" (AB & CD)	28" (AB & CD)
DN800	789	824		800mm	DN800	30" (AB)	30" (AB)
DN800	825	860	DN800				
DN800	853	888				32" (AB & CD)	32" (AB & CD)

\*The above table is for guidance only, please ensure the OD and material of the pipe is compatible before installation

### Working Pressure & Temperature Ratings

Nominal Size	Gripping Product		Flex Product		Operating Temperature
	Gas	Water	Gas	Water	
DN700	N/A	16 bar	N/A	16 bar	-20 to +60
DN800	N/A	16 bar	N/A	16 bar	

### Pipe Materials



Every effort has been made to ensure that the information contained in this publication is accurate at the time of publishing. Crane Ltd assumes no responsibility or liability for typographical errors or omissions or for any misinterpretation of the information within the publication and reserves the right to change without notice.

### Couplings

### Technical Information

#### Working pressure rating:

Water:  
DN700 to DN800 = 16 bar  
Gas:  
Not approved

#### Site test pressure:

1.5 times working pressure

#### Angularity

Couplings 8°, +/- 4° angularity on each side

#### Gripping product suitable for

Ductile iron / PE (PE100, SDR 11, 17, 21, 26)  
Steel / Cast iron / MOPVC (SDR 33)

#### Flex product suitable for

Ductile Iron / PE (PE100, SDR 11, 17, 21, 26)  
Steel / Cast Iron / MOPVC / Asbestos Cement

Bolt Torque	Recommended Bolt Torque (Nm) on every bolt				
	Bolt Size	Ductile Iron	PE-100	Steel & Cast Iron	MOPVC
<b>Axial Fastener</b> (For Gasket Engagement)	M20	190-210	190-210	190-210	190-210
<b>Radial Fastener</b> (For Grippers)	M16	175-185	140-150	110-120	95-105

For the full installation details and to ensure correct fitting, please refer to the Ultragrip DN700 DN800 installation instructions.

#### Temperature rating of product

Operating temperature -20°C to +60°C

#### Support liners – PE and MOPVC pipes

A close fit Viking Johnson support liner is required when used on:

- All PE pipes
- MOPVC pipes

#### Use of restrained couplings on exposed pipework

Above ground exposed pipework is subject to both loads from the internal pressure and those from temperature changes / thermal expansion, which can be substantially higher than those from internal pressure and cannot always be safely determined. UltraGrip can be used in above ground applications, where it is not exposed to direct sunlight, and falls within the 40°C operating temperature range (between -20°C and +60°C).

#### Approvals

The following water contact materials used in UltraGrip are approved for use with potable water:-

Rilsan Nylon 11:

- WRAS, DVGW, W270, ACS & KIWA

Gasket (EPDM):

- WRAS, W270

#### Finished Product:

BS8561; WRc certification verifying that the product complies with BS8561 (Specification for mechanical fittings for use in the repair, connection and renovation of pressurized water supply pipelines — Requirements and test methods).

Polyethylene Pipe Pull Out Performance; WRc certification confirming on PE a Type 2 end load performance (defined in IGN 4-01-02:2017 [N3]) when tested in accordance with the method given in BS EN ISO 3501.

## Materials & Relevant Standards

#### 1) End Rings 2) Centre Sleeve

Mild steel to BS EN10025 Grade S355

#### 3) Studs

Stainless steel – BS EN ISO 3506-1  
Grade A4-80

#### 4) Bolts

Stainless steel to BS EN ISO 3506-1  
Grade A4-80

#### 4) Nuts

Stainless steel – BS1449:PT2 ISO 3506-1  
Grade A4-80

#### 4) Washers

Stainless steel – BS1449:PT2 ISO 3506-1  
Grade A4-50

#### 5) Gasket

EPDM to BS EN 681-1

#### 6) Square Bush Nut

Cast stainless steel to ASTM  
A487/A487M-21, Grade CA6NM Class A

#### 7) Gripper

Stainless steel (Cast) PH 17-4 H925  
to BS EN 10088-1

#### Retention Insert

Nylon 6

#### Coatings

End Rings / Centre Sleeve / Flange:

- Rilsan Nylon 11 (Black)

Bolts:

- Dry Film Lubricant GZ – Silver

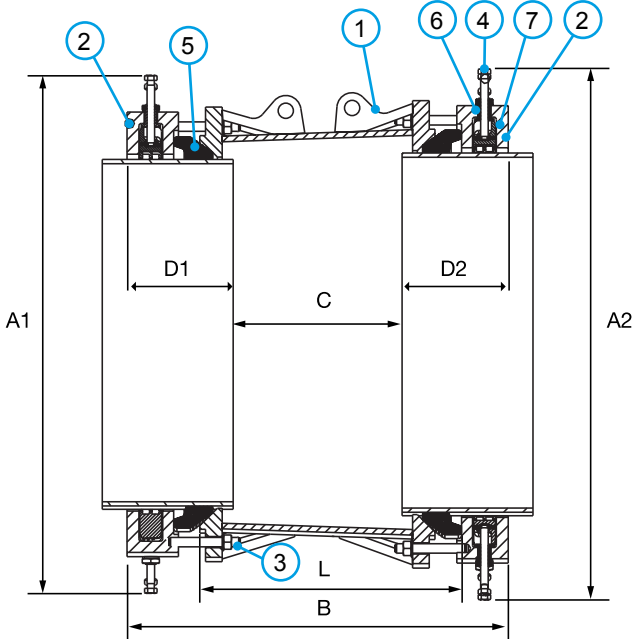
Nuts:

- Dry Film Lubricant GZ – Silver

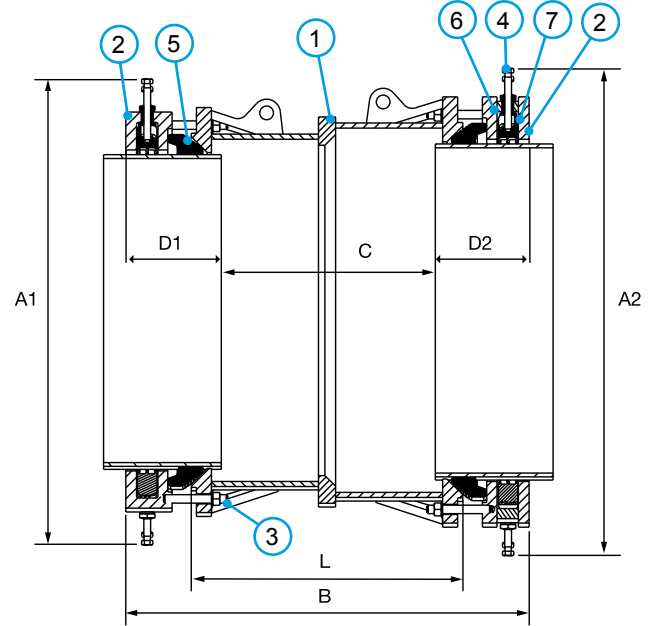
Gripper - None

## Reducing Coupling

### Type A - Tapered sleeve design



### Type B - Make up ring design



**HAZARD WARNING:** Lifting lugs, where provided, are designed/ tested for lifting only the components to which they are attached. Failure to follow these instructions could result in property damage, serious personal injury or death. The maximum safe working load of the lifting eye is equal to the product weight.

#### Key

- 1 = Centre Sleeve
- 2 = End Ring
- 3 = Studs
- 4 = Bolt, Nut & Washer
- 5 = Gasket
- 6 = Square Bush Nut
- 7 = Gripper

## Reducing Couplings

Nom Size		Size Range				Insertion Depth				Setting Gap		Dimensions				Fasteners				Weight (kg)	
Small End	Large End	Small End		Large End		Small End (D1)		Large End (D2)		(C)		Overall				Small End		Large End			
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	A1	A2	B	L	Radial Bolt No-size	Axial Bolt No-size	Radial Bolt No-size	Axial Bolt No-size		
<b>Type - A: Tapered Sleeve Design</b>																					
700	700	700	735	727	762	220	245	220	245	165	375	1089	1115	801	494	24 X M16	16 X M20	32 X M16	16 X M20	580.03	
700	700	727	762	750	785	220	245	220	245	165	375	1116	1138	803	494	32 X M16	16 X M20	24 X M16	16 X M20	611.58	
700	800	727	762	789	824	220	245	220	245	165	375	1116	1177	806	496	32 X M16	16 X M20	30 X M16	18 X M20	635.71	
800	800	825	860	853	888	220	245	220	245	170	380	1214	1241	805	496	40 X M16	18 X M20	30 X M16	18 X M20	705.17	
<b>Type - B: Make Up Ring Design</b>																					
700	700	700	735	750	785	220	245	220	245	165	375	1089	1115	942	634	24 X M16	16 X M20	24 X M16	16 X M20	666.69	
700	800	700	735	789	824	220	245	220	245	165	375	1089	1177	940	496	24 X M16	16 X M20	30 X M16	18 X M20	635.71	
800	800	789	824	825	860	220	245	220	245	170	380	1178	1213	940	638	30 X M16	18 X M20	40 X M16	18 X M20	1054.65	
800	800	789	824	853	888	220	245	220	245	170	380	1178	1241	944	496	30 X M16	18 X M20	30 X M16	18 X M20	762.91	

## Connections based on standard pipe OD's\*

Nom Size	Range		Ductile Iron	PE / MOPVC	Steel / FBE Coated Steel	Cast Iron	Asbestos Cement
	Min	Max					
DN700	700	735		710mm	DN700	26" (AB & CD)	26" (AB & CD)
DN700	727	762	DN700			27" (AB & CD)	27" (AB & CD)
DN700	750	785			DN750	28" (AB & CD)	28" (AB & CD)
DN800	789	824		800mm	DN800	30" (AB)	30" (AB)
DN800	825	860	DN800				
DN800	853	888				32" (AB & CD)	32" (AB & CD)

\*The above table is for guidance only, please ensure the OD and material of the pipe is compatible before installation

## Working Pressure & Temperature Ratings

Nominal Size	Gripping Product		Flex Product		Operating Temperature
	Gas	Water	Gas	Water	
DN700	N/A	16 bar	N/A	16 bar	-20 to +60
DN800	N/A	16 bar	N/A	16 bar	

## Pipe Materials



### Reducing Couplings

### Technical Information

#### Working pressure rating:

Water:  
DN700 to DN800 = 16 bar  
Gas:  
Not approved

#### Site test pressure:

1.5 times working pressure

#### Angularity

Couplings 8°, +/- 4° angularity on each side

#### Gripping product suitable for

Ductile iron / PE (PE100, SDR 11, 17, 21, 26)  
Steel / Cast iron / MOPVC (SDR 33)

#### Flex product suitable for

Ductile Iron / PE (PE100, SDR 11, 17, 21, 26)  
Steel / Cast Iron / MOPVC / Asbestos Cement

Bolt Torque	Recommended Bolt Torque (Nm) on every bolt				
	Bolt Size	Ductile Iron	PE-100	Steel & Cast Iron	MOPVC
<b>Axial Fastener</b> (For Gasket Engagement)	M20	190-210	190-210	190-210	190-210
<b>Radial Fastener</b> (For Grippers)	M16	175-185	140-150	110-120	95-105

For the full installation details and to ensure correct fitting, please refer to the Ultragrip DN700 DN800 installation instructions.

#### Temperature rating of product

Operating temperature -20°C to +60°C

#### Support liners – PE and MOPVC pipes

A close fit Viking Johnson support liner is required when used on:

- All PE pipes
- MOPVC pipes

#### Use of restrained couplings on exposed pipework

Above ground exposed pipework is subject to both loads from the internal pressure and those from temperature changes / thermal expansion, which can be substantially higher than those from internal pressure and cannot always be safely determined. UltraGrip can be used in above ground applications, where it is not exposed to direct sunlight, and falls within the 40°C operating temperature range (between -20°C and +60°C).

#### Approvals

The following water contact materials used in UltraGrip are approved for use with potable water:-

Rilsan Nylon 11:

- WRAS, DVGW, W270, ACS & KIWA

Gasket (EPDM):

- WRAS, W270

#### Finished Product:

BS8561; WRc certification verifying that the product complies with BS8561 (Specification for mechanical fittings for use in the repair, connection and renovation of pressurized water supply pipelines — Requirements and test methods).

Polyethylene Pipe Pull Out Performance; WRc certification confirming on PE a Type 2 end load performance (defined in IGN 4-01-02:2017 [N3]) when tested in accordance with the method given in BS EN ISO 3501.

## Materials & Relevant Standards

#### 1) End Rings 2) Centre Sleeve

Mild steel to BS EN10025 Grade S355

#### 3) Studs

Stainless steel – BS EN ISO 3506-1  
Grade A4-80

#### 4) Bolts

Stainless steel to BS EN ISO 3506-1  
Grade A4-80

#### 4) Nuts

Stainless steel – BS1449:PT2 ISO 3506-1  
Grade A4-80

#### 4) Washers

Stainless steel – BS1449:PT2 ISO 3506-1  
Grade A4-50

#### 5) Gasket

EPDM to BS EN 681-1

#### 6) Square Bush Nut

Cast stainless steel to ASTM  
A487/A487M-21, Grade CA6NM Class A

#### 7) Gripper

Stainless steel (Cast) PH 17-4 H925  
to BS EN 10088-1

#### Retention Insert

Nylon 6

#### Coatings

End Rings / Centre Sleeve / Flange:

- Rilsan Nylon 11 (Black)

Bolts:

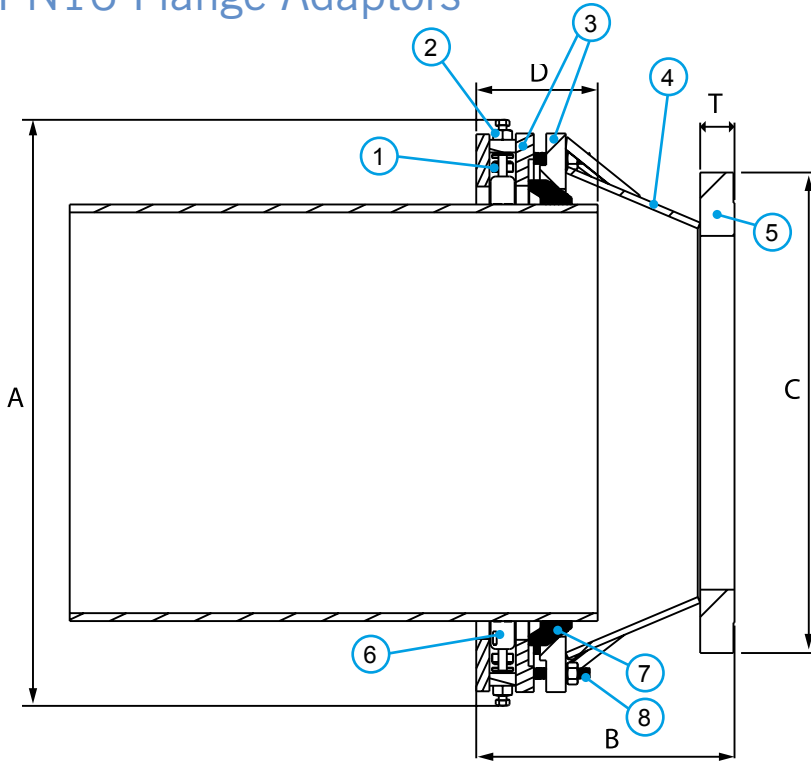
- Dry Film Lubricant GZ – Silver

Nuts:

- Dry Film Lubricant GZ – Silver

Gripper - None

## PN16 Flange Adaptors



### Key

- 1 = Square Bush Nut
- 2 = Bolt, Nut & Washer
- 3 = End Ring
- 4 = Centre Sleeve
- 5 = Flange Ring
- 6 = Gripper
- 7 = Gasket
- 8 = Studs



**HAZARD WARNING:** Lifting lugs, where provided, are designed/tested for lifting only the components to which they are attached. Failure to follow these instructions could result in property damage, serious personal injury or death. The maximum safe working load of the lifting eye is equal to the product weight.

### Flange Adaptors

Nom Size	Size Range		Flange Nom Size	Flange Drilling	Insertion Depth (D)		Setting Gap		Dimensions				Fasteners		Weight (kg)
	Min	Max			Min	Max	Min	Max	C	A	B	T	Axial Stud No-size	Radial Bolt No-size	
700	700	735	600	PN16	220	245	275	300	840	1085	615	55	16 x M20	24 x M16	413
700	700	735	700	PN16	220	245	275	300	910	1085	520	63	16 x M20	24 x M16	437
700	727	762	700	PN16	220	245	275	300	910	1135	520	63	16 x M20	32 x M16	454
700	750	785	700	PN16	220	245	275	300	910	1135	520	63	16 x M20	24 x M16	455
800	789	824	700	PN16	220	245	480	505	910	1175	725	63	18 x M20	30 x M16	484
800	789	824	800	PN16	220	245	290	315	1025	1175	535	74	18 x M20	30 x M16	536
800	825	860	800	PN16	220	245	290	315	1025	1210	535	74	18 x M20	40 x M16	559
800	853	888	800	PN16	220	245	290	315	1025	1240	535	74	18 x M20	30 x M16	559

Flange Drilling - All flanges are drilled to BS EN 1092- part 1 and are flat face flanges

### Connections based on standard pipe OD's\*

Nom Size	Range		Ductile Iron	PE / MOPVC	Steel / FBE Coated Steel	Cast Iron	Asbestos Cement
	Min	Max					
DN700	700	735		710mm	DN700	26" (AB & CD)	26" (AB & CD)
DN700	727	762	DN700			27" (AB & CD)	27" (AB & CD)
DN700	750	785			DN750	28" (AB & CD)	28" (AB & CD)
DN800	789	824		800mm	DN800	30" (AB)	30" (AB)
DN800	825	860	DN800				
DN800	853	888				32" (AB & CD)	32" (AB & CD)

\*The above table is for guidance only, please ensure the OD and material of the pipe is compatible before installation

### Working Pressure & Temperature Ratings

Nominal Size	Gripping Product		Flex Product		Operating Temperature
	Gas	Water	Gas	Water	
DN700	N/A	16 bar	N/A	16 bar	-20 to +60
DN800	N/A	16 bar	N/A	16 bar	

### Pipe Materials



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### PN16 Flange Adaptors

### Technical Information

#### Working pressure rating:

Water:  
DN700 to DN800 = 16 bar  
Gas:  
Not approved

#### Site test pressure:

1.5 times working pressure

#### Angularity

Flange Adaptor 4°

#### Gripping product suitable for

Ductile iron / PE (PE100, SDR 11, 17, 21, 26)  
Steel / Cast iron / MOPVC (SDR 33)

#### Flex product suitable for

Ductile Iron / PE (PE100, SDR 11, 17, 21, 26)  
Steel / Cast Iron / MOPVC / Asbestos Cement

#### Bolt Torque

	Recommended Bolt Torque (Nm) on every bolt				
	Bolt Size	Ductile Iron	PE-100	Steel & Cast Iron	MOPVC
<b>Axial Fastener</b> (For Gasket Engagement)	M20	190-210	190-210	190-210	190-210
<b>Radial Fastener</b> (For Grippers)	M16	175-185	140-150	110-120	95-105

For the full installation details and to ensure correct fitting, please refer to the Ultragrip DN700 DN800 installation instructions.

#### Temperature rating of product

Operating temperature -20°C to +60°C

#### Support liners – PE and MOPVC pipes

A close fit Viking Johnson support liner is required when used on:

- All PE pipes
- MOPVC pipes

#### Use of restrained couplings on exposed pipework

Above ground exposed pipework is subject to both loads from the internal pressure and those from temperature changes / thermal expansion, which can be substantially higher than those from internal pressure and cannot always be safely determined. UltraGrip can be used in above ground applications, where it is not exposed to direct sunlight, and falls within the 40°C operating temperature range (between -20°C and +60°C).

#### Approvals

The following water contact materials used in UltraGrip are approved for use with potable water:-

Rilsan Nylon 11:

- WRAS, DVGW, W270, ACS & KIWA

Gasket (EPDM):

- WRAS, W270

#### Finished Product:

BS8561; WRc certification verifying that the product complies with BS8561 (Specification for mechanical fittings for use in the repair, connection and renovation of pressurized water supply pipelines — Requirements and test methods).

Polyethylene Pipe Pull Out Performance; WRc certification confirming on PE a Type 2 end load performance (defined in IGN 4-01-02:2017 [N3]) when tested in accordance with the method given in BS EN ISO 3501.

## Materials & Relevant Standards

#### 1) Square Bush Nut

Cast stainless steel to ASTM A487/A487M-21, Grade CA6NM Class A

#### 2) Bolts

Stainless steel to BS EN ISO 3506-1 Grade A4-80

#### 2) Nuts

Stainless steel – BS1449:PT2 ISO 3506-1 Grade A4-80

#### 2) Washers

Stainless steel – BS1449:PT2 ISO 3506-1 Grade A4-50

#### 3) End Rings 4) Centre Sleeve

Mild steel to BS EN10025 Grade S355

#### 5) Flange Ring

S275 Mild Steel to BS EN 10025-2

#### 6) Gripper

Stainless steel (Cast) PH 17-4 H925 to BS EN 10088-1

#### 7) Gasket

EPDM to BS EN 681-1

#### 8) Studs

Stainless steel – BS EN ISO 3506-1 Grade A4-80

#### Coatings

End Rings / Centre Sleeve / Flange:

- Rilsan Nylon 11 (Black)

Bolts:

- Dry Film Lubricant GZ – Silver

Nuts:

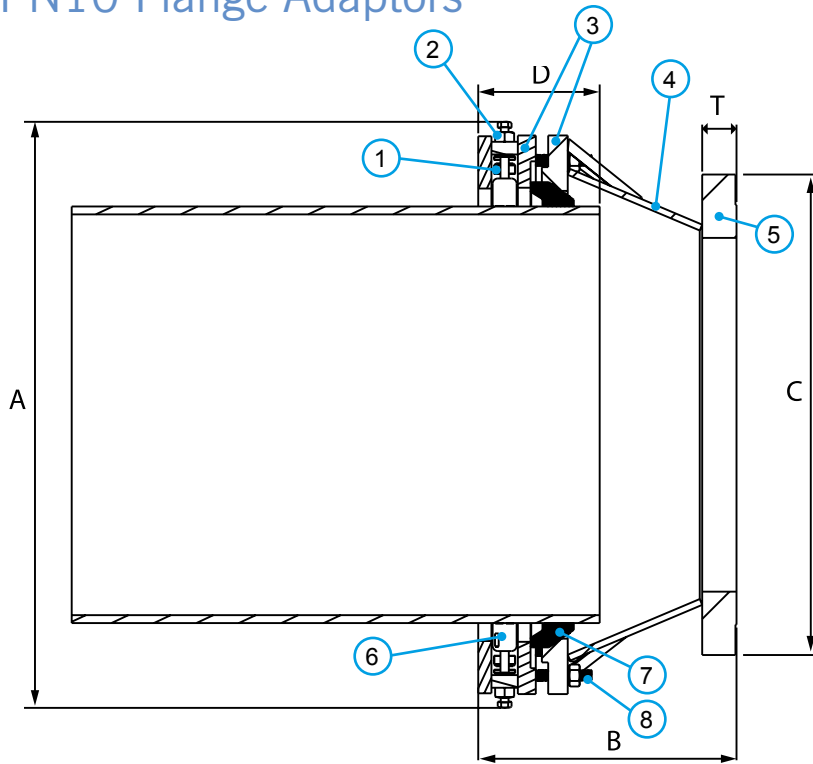
- Dry Film Lubricant GZ – Silver

Gripper - None

#### Retention Insert

Nylon 6

## PN10 Flange Adaptors



### Key

- 1 = Square Bush Nut
- 2 = Bolt, Nut & Washer
- 3 = End Ring
- 4 = Centre Sleeve
- 5 = Flange Ring
- 6 = Gripper
- 7 = Gasket
- 8 = Studs



**HAZARD WARNING:** Lifting lugs, where provided, are designed/tested for lifting only the components to which they are attached. Failure to follow these instructions could result in property damage, serious personal injury or death. The maximum safe working load of the lifting eye is equal to the product weight.

### Flange Adaptors

Nom Size	Size Range		Flange Nom Size	Flange Drilling	Insertion Depth (D)		Setting Gap		Dimensions				Fasteners		Weight (kg)
	Min	Max			Min	Max	Min	Max	C	A	B	T	Axial Stud No-size	Radial Bolt No-size	
700	700	735	700	PN10	220	245	265	290	780	1085	710	42	16 x M20	24 x M16	437
700	727	762	700	PN10	220	245	265	290	985	1115	510	50	16 x M20	32 x M16	454
700	750	785	700	PN10	220	245	265	290	895	1135	510	50	16 x M20	24 x M16	455
800	789	824	800	PN10	220	245	275	300	1015	1135	520	56	18 x M20	30 x M16	539
800	825	860	800	PN10	220	245	270	295	1015	1210	515	56	18 x M20	40 x M16	559
800	853	888	800	PN10	220	245	275	300	1015	1240	520	56	18 x M20	30 x M16	559

Flange Drilling - All flanges are drilled to BS EN 1092- part 1 and are flat face flanges

### Connections based on standard pipe OD's\*

Nom Size	Range		Ductile Iron	PE / MOPVC	Steel / FBE Coated Steel	Cast Iron	Asbestos Cement
	Min	Max					
DN700	700	735		710mm	DN700	26" (AB & CD)	26" (AB & CD)
DN700	727	762	DN700			27" (AB & CD)	27" (AB & CD)
DN700	750	785			DN750	28" (AB & CD)	28" (AB & CD)
DN800	789	824		800mm	DN800	30" (AB)	30" (AB)
DN800	825	860	DN800				
DN800	853	888				32" (AB & CD)	32" (AB & CD)

\*The above table is for guidance only, please ensure the OD and material of the pipe is compatible before installation

### Working Pressure & Temperature Ratings

Nominal Size	Gripping Product		Flex Product		Operating Temperature
	Gas	Water	Gas	Water	
DN700	N/A	10 bar	N/A	10 bar	-20 to +60
DN800	N/A	10 bar	N/A	10 bar	

### Pipe Materials



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### PN10 Flange Adaptors

### Technical Information

#### Working pressure rating:

Water:  
DN700 to DN800 = 10 bar  
Gas:  
Not approved

#### Site test pressure:

1.5 times working pressure

#### Angularity

Flange Adaptor 4°

#### Gripping product suitable for

Ductile iron / PE (PE100, SDR 11, 17, 21, 26)  
Steel / Cast iron / MOPVC (SDR 33)

#### Flex product suitable for

Ductile Iron / PE (PE100, SDR 11, 17, 21, 26)  
Steel / Cast Iron / MOPVC / Asbestos Cement

#### Bolt Torque

	Recommended Bolt Torque (Nm) on every bolt				
	Bolt Size	Ductile Iron	PE-100	Steel & Cast Iron	MOPVC
<b>Axial Fastener</b> (For Gasket Engagement)	M20	190-210	190-210	190-210	190-210
<b>Radial Fastener</b> (For Grippers)	M16	175-185	140-150	110-120	95-105

For the full installation details and to ensure correct fitting, please refer to the Ultragrip DN700 DN800 installation instructions.

#### Temperature rating of product

Operating temperature -20°C to +60°C

#### Support liners – PE and MOPVC pipes

A close fit Viking Johnson support liner is required when used on:

- All PE pipes
- MOPVC pipes

#### Use of restrained couplings on exposed pipework

Above ground exposed pipework is subject to both loads from the internal pressure and those from temperature changes / thermal expansion, which can be substantially higher than those from internal pressure and cannot always be safely determined. UltraGrip can be used in above ground applications, where it is not exposed to direct sunlight, and falls within the 40°C operating temperature range (between -20°C and +60°C).

#### Approvals

The following water contact materials used in UltraGrip are approved for use with potable water:-

Rilsan Nylon 11:

- WRAS, DVGW, W270, ACS & KIWA

Gasket (EPDM):

- WRAS, W270

#### Finished Product:

BS8561; WRc certification verifying that the product complies with BS8561 (Specification for mechanical fittings for use in the repair, connection and renovation of pressurized water supply pipelines — Requirements and test methods).

Polyethylene Pipe Pull Out Performance; WRc certification confirming on PE a Type 2 end load performance (defined in IGN 4-01-02:2017 [N3]) when tested in accordance with the method given in BS EN ISO 3501.

## Materials & Relevant Standards

#### 1) Square Bush Nut

Cast stainless steel to ASTM A487/A487M-21, Grade CA6NM Class A

#### 2) Bolts

Stainless steel to BS EN ISO 3506-1 Grade A4-80

#### 2) Nuts

Stainless steel – BS1449:PT2 ISO 3506-1 Grade A4-80

#### 2) Washers

Stainless steel – BS1449:PT2 ISO 3506-1 Grade A4-50

#### 3) End Rings 4) Centre Sleeve

Mild steel to BS EN10025 Grade S355

#### 5) Flange Ring

S275 Mild Steel to BS EN 10025-2

#### 6) Gripper

Stainless steel (Cast) PH 17-4 H925 to BS EN 10088-1

#### 7) Gasket

EPDM to BS EN 681-1

#### 8) Studs

Stainless steel – BS EN ISO 3506-1 Grade A4-80

#### Coatings

End Rings / Centre Sleeve / Flange:

- Rilsan Nylon 11 (Black)

Bolts:

- Dry Film Lubricant GZ – Silver

Nuts:

- Dry Film Lubricant GZ – Silver

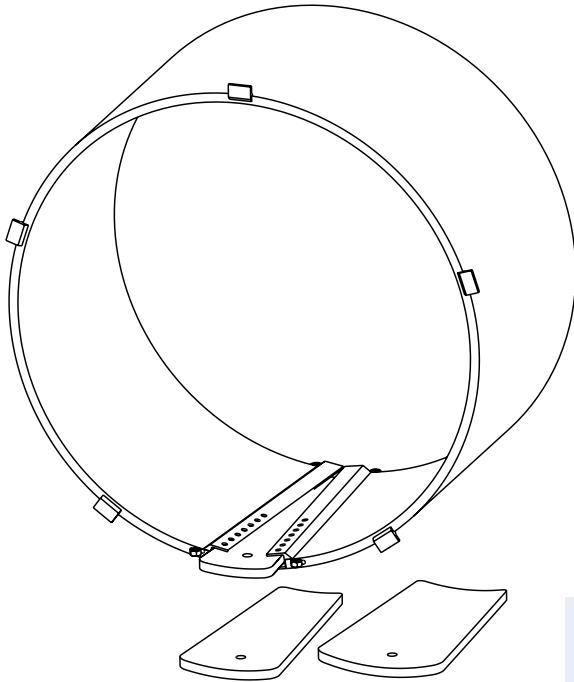
Gripper - None

#### Retention Insert

Nylon 6

## Support liners for PE & MOPVC

## Materials



### Support liner & wedges

Mild steel – BS EN10025 Grade S355

### Coatings

- Rilsan Nylon 11 (Black)

All DN700/800 UltraGrip products require a Viking Johnson approved support liner when used with PE and MOPVC. Please contact us regarding the availability.

### Support liners for PE pipes

Pipe code	Pipe size (mm)	Pipe OD		Pipe ID		Wedge 1				Wedge 2				Wedge 3				Wedge 4			
		Min (mm)	Max (mm)	Min (mm)	Max (mm)	Min ID (mm)	Max ID (mm)	Short Edge (mm)	Long Edge (mm)	Min ID (mm)	Max ID (mm)	Short Edge (mm)	Long Edge (mm)	Min ID (mm)	Max ID (mm)	Short Edge (mm)	Long Edge (mm)	Min ID (mm)	Max ID (mm)	Short Edge (mm)	Long Edge (mm)
DN710-SDR11	710	710	716.4	567	587	555	565	50	100	566	571	85	135	572	582	103	153	583	587	120	170
DN710-SDR17	710	710	716.4	618	633	610	617	50	100	618	621	76	126	622	629	89	139	630	633	102	152
DN710-SDR21	710	710	716.4	635	649	626	633	50	100	634	641	76	126	642	645	89	139	646	649	102	152
DN710-SDR26	710	710	716.4	650	662	642	648	50	100	649	652	72	122	653	655	83	133	656	662	94	144
DN800-SDR11	800	800	807.2	640	662	627	638	50	100	639	644	88	138	645	656	107	157	657	661	126	176
DN800-SDR17	800	800	807.2	696	713	687	695	50	100	696	700	79	129	701	709	94	144	710	713	108	158
DN800-SDR21	800	800	807.2	716	731	708	715	50	100	716	723	76	126	724	727	89	139	728	731	102	152
DN800-SDR26	800	800	807.2	732	746	723	730	50	100	731	734	76	126	735	738	89	139	739	746	102	152

### Support liners for MOPVC pipes

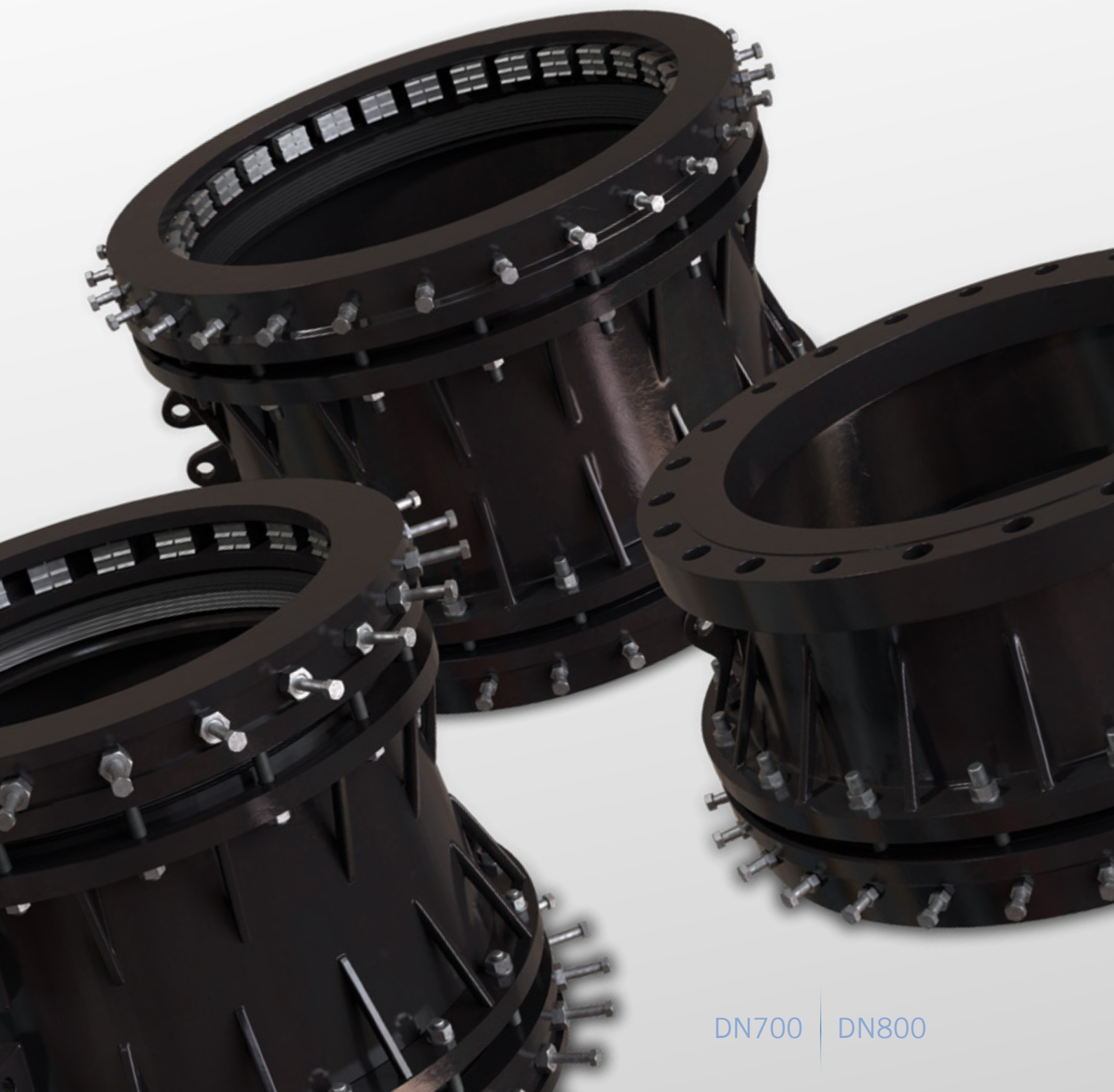
Pipe code	Pipe size (mm)	Pipe OD		Pipe ID		Wedge 1				Wedge 2				Wedge 3				Wedge 4			
		Min (mm)	Max (mm)	Min (mm)	Max (mm)	Min ID (mm)	Max ID (mm)	Short Edge (mm)	Long Edge (mm)	Min ID (mm)	Max ID (mm)	Short Edge (mm)	Long Edge (mm)	Min ID (mm)	Max ID (mm)	Short Edge (mm)	Long Edge (mm)	Min ID (mm)	Max ID (mm)	Short Edge (mm)	Long Edge (mm)
DN710-SDR33	710	710	712	662	668	656	661	50	100	662	664	88	138	665	670	79	129	671	673	126	176
DN800-SDR33	800	800	802	746	753	739	745	50	100	746	749	72	122	750	756	83	133	757	759	102	152

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**UltraGrip®**

# AMPLIFIED

For large scale projects choose a brand you can trust.



DN700

DN800



Viking Johnson (part of Crane BS & U) manufactures couplings, flange adaptors and associated fittings for the Utilities industries. Viking Johnson cannot make recommendations regarding the pipeline design, which includes all components, intended operational substances, introduced chemical species and materials. Any comments made by Viking Johnson regarding product compatibility apply only to Viking Johnson's product range.

## CASE STUDY

# Nimes Metropole Mains Upgrade - UltraGrip Amplified

Viking Johnson UltraGrip Amplified was selected by Eau de Nimes Metropole to support the work of installing a new flow meter to collect water consumption data for analysis to locate leaks and minimising water loss in their network, something that is critical to all utilities in their drive to conserve water and save costs.

The water utility Eau de Nimes Metropole is part of the Veolia group and covers 39 municipalities serving a population of 260.000 people in Southern France. Aliaxis depot in Mèze, Viking Johnsons channel partner in France delivered the product to the water authority.

Viking Johnson supplied two UltraGrip Amplified DN800 flange adaptors and four UltraGrip DN500 flange adaptors for use in the modification to the network, which had to be completed over a two week period coinciding with a school shut down. The large excavation trench was actually located immediately outside the school gates !

The DN800 cast iron main, which is over 150 years old dating back to 1872, runs at a maximum of 7 bar and due to its size and weight had to be cut and removed in two pieces. Viking Johnson had no reservations about offering their new Amplified UltraGrip for this pipe material, as their extensive testing program included both the new pipe materials like Ductile Iron, Steel, PE, and MOPVC, but also a specially manufactured section grey cast iron pipe. The two DN800 UltraGrip Amplified flange adaptors were pre-fitted to reducers used to step down the pipe to DN500 for lowering into the trench and on one end a gate valve was then installed to control water flow as and when required. Installation was made easy from both the lifting eye on the Amplified UltraGrip assisting in the handling of the fittings along with the wide tolerance of the fitting providing good clearance when offering up to the existing pipe. Finally, four DN500 UltraGrip flange adaptors were used to connect the new sections of ductile iron pipe located up and downstream of the flow meter, which completed the modifications to the network.

While Eau de Nimes have used the smaller size UltraGrip couplings and flange adaptors on previous projects and been pleased with the reliable performance along with how easy they are to fit, this was the first time they had installed the new larger diameter DN800 UltraGrip Amplified fittings. The significant advantages of UltraGrip are they connect many different pipe materials, offer a wide tolerance that allows for some variation in the outside diameter of the pipe and the restraining mechanism accommodates the end load forces due to internal pressure in pipelines.



**Mathieu Berart, who is responsible for the water network performance at Nimes Metropole Water Utility said**

“ We will now be able to understand water flow during the day and at night a lot better. The installation team decided to use a Viking Johnson solution taking into consideration space constraints on site and the need for tolerance to accommodate the pipe outside diameter. It is a lot more practical to use a solution offering a wide tolerance when working on such a critical project. ”

### SECTOR

Upgrade water mains

### LOCATION

Nimes, France

### CLIENT

Veolia - Eau de Nimes Metropole

### CONTRACTOR

Eau de Nimes Metropole

### DISTRIBUTOR

Aliaxis, Mèze

### SPECIFICATION

Viking Johnson 2 UltraGrip Amplified DN800 flange adaptors and 4 UltraGrip DN500 flange adaptors



Distributor stamp

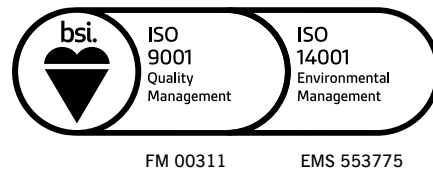


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