

Water Supply and Sewerage Approved Products Manual - February 2006

Gravity Sewerage Products (other) – Maintenance Products

Section SGO 02

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SGO 02-S1 METAL BANDED FLEXIBLE COUPLINGS TO AS/NZS 4327

STANDARD	AS/NZS 4327: 1995 Metal banded flexible couplings for low pressure applications																																																							
DESIGN	Metal-banded flexible couplings covered under AS/NZS 4327 are for joining pipes of the same or similar nominal internal diameters, made from the same or different materials. Adaptor flexible couplings for joining pipe of significantly different diameters are not covered. Metal banded flexible couplings to AS/NZS 4327 comprise an elastomeric sleeve, which is tightened on to each pipe using a narrow metal band at each end of the sleeve. In between, the elastomeric sleeve may also be encircled with a wide shear ring, which in part is also tightened on to the pipe ends. AS/NZS 4327 covers couplings with or without shear rings but WS21 allows only couplings with shear rings unless otherwise specified. The shear band gives resistance to shear forces and imposed loads whilst allowing some flexibility to cater for ground settlement. For couplings using the shear ring, where the difference between the inside diameter of the coupling and the outside diameter of the pipe is greater than 16 mm, the coupling is required to be fitted with an adaptor bush.																																																							
MATERIALS	<p>Sleeve & adaptor bush: Approved elastomer of: Type A coupling – to Appendix B of AS/NZS 4327 Type B coupling – to AS 1646 and SP15 with hardness not less than 60 IRHD and ozone resistance to Clause B8 of Appendix B of AS/NZS 4327</p> <p>Shear ring, bands, fasteners & housings: Stainless steel grade to AS 1449 and AS 2837, grade 316 or greater</p>																																																							
DIMENSIONS	<table border="0"> <thead> <tr> <th rowspan="2">Coupling Nominal size*</th> <th colspan="2">Sleeve (mm min.)</th> <th colspan="2">Metal band (mm min.)</th> <th colspan="2">Metal shear ring (mm min.)</th> </tr> <tr> <th>Width</th> <th>Thickness</th> <th>Width</th> <th>Thickness</th> <th>Width</th> <th>Thickness</th> </tr> </thead> <tbody> <tr> <td>≤65</td> <td>85</td> <td>3.7</td> <td>12</td> <td>0.55</td> <td>38</td> <td>0.35</td> </tr> <tr> <td>>65 ≤145</td> <td>100</td> <td>6.2</td> <td>12</td> <td>0.55</td> <td>53</td> <td>0.35</td> </tr> <tr> <td>>145 ≤200</td> <td>120</td> <td>6.2</td> <td>12</td> <td>0.55</td> <td>78</td> <td>0.35</td> </tr> <tr> <td>>200 ≤395</td> <td>145</td> <td>6.2</td> <td>12</td> <td>0.55</td> <td>78</td> <td>0.35</td> </tr> <tr> <td>>395 ≤455</td> <td>165</td> <td>6.2</td> <td>12</td> <td>0.55</td> <td>97</td> <td>0.35</td> </tr> <tr> <td>>455 ≤600</td> <td>185</td> <td>6.2</td> <td>12</td> <td>0.55</td> <td>97</td> <td>0.35</td> </tr> </tbody> </table> <p>*Coupling nominal size is the maximum outside pipe diameter the coupling can join</p>	Coupling Nominal size*	Sleeve (mm min.)		Metal band (mm min.)		Metal shear ring (mm min.)		Width	Thickness	Width	Thickness	Width	Thickness	≤65	85	3.7	12	0.55	38	0.35	>65 ≤145	100	6.2	12	0.55	53	0.35	>145 ≤200	120	6.2	12	0.55	78	0.35	>200 ≤395	145	6.2	12	0.55	78	0.35	>395 ≤455	165	6.2	12	0.55	97	0.35	>455 ≤600	185	6.2	12	0.55	97	0.35
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>455 ≤600	185	6.2	12	0.55	97	0.35																																																		
STORAGE (MANUFACTURER, DISTRIBUTOR & SUPPLIER)	<p>Protection from ozone from mercury vapour lights, high voltage electrical equipment, electric motors or other equipment which could cause electrical discharges.</p> <p>Storage and handling in a relaxed condition free from compression, tension or other deformation.</p> <p>Protection from ultraviolet light.</p> <p>Storage temperature not to exceed 35°C and preferably not more than 25°C and not less than 5°C.</p>																																																							
PACKAGING DATA	<p>Name and address of the manufacturer or agent</p> <p>Maximum intermittent and continuous storage and operation temperatures in °C</p> <p>Elastomeric material</p> <p>Installation details including tightening torque (N.m), the product code of the item and the range of external diameters for the jointed items in mm.</p> <p>For each metal shear ring, the product code of the compatible flexible couplings</p>																																																							
SLEEVE & ADAPTOR BUSH MARKINGS	<p>Manufacturer's identification mark</p> <p>Product code of the item marked</p> <p>Elastomer type, i.e. Type A or Type B</p> <p>Batch number or equivalent identification</p> <p>Size range of coupling or bush size (WS21 optional requirement)</p> <p>Product certification mark and manufacturer's licence number (WS21 optional requirement)</p>																																																							

SGO 02-S1 METAL BANDED FLEXIBLE COUPLINGS TO AS/NZS 4327

METAL BAND MARKING	Manufacturer's identification mark The grade of stainless steel
MARKING METHODS	Clearly and durably marked on the external surfaces. Sleeve and adaptor bush markings to be clear of metal bands. Lettering not less than 3 mm height on sleeves and adaptor bushes and not less than 2 mm height on metal bands.
USE LIMITS	Couplings having metal shear rings are to be used unless otherwise specified. Couplings to be type B unless otherwise specified.

SGO 02-S1.1 METAL BANDED FLEXIBLE COUPLINGS TO EN 295-4

STANDARD	EN 295-4: 1995 Vitriified clay pipes and fittings and pipe joints for drains and sewers Part 4. Requirements for special fittings, adaptors and compatible accessories						
DESIGN	Metal-banded flexible couplings covered under EN 295-4 are for joining pipes of the same or different nominal internal diameters, made from the same or different materials. Metal banded flexible couplings comprise an elastomeric sleeve which is tightened on to each pipe using a narrow metal tension band at each end of the sleeve. In between, the elastomeric sleeve may optionally be encircled with a wide shear band, which in part is also tightened onto the pipe ends and spans any gap between the pipe ends. In EN 295-4, couplings without shear bands are known as Type 1 and with shear bands as Type 2 (type 2A and 2B bands are bands having different dimensional requirements). The shear band gives resistance to shear forces and imposed loads whilst allowing some flexibility to cater for ground settlement. Adaptor bushes are used to compensate for variations between outside diameters of pipes and are only used with couplings having shear bands. Stainless steel parts are to be edge dressed and free from sharp edges to prevent injury or sleeve damage.						
MATERIALS	<p>Sleeve & adaptor bush: Approved vulcanised rubber to ISO/DIS 4633</p> <p>Bands including fasteners & housings: Austenitic stainless steel with minimum chromium content of 17% and minimum nickel content of 8% from either table 1c of Euronorm 88 part 1:1986 or Table 1c of Euronorm 88 Part 2:1986 as appropriate. Welds to comply to A.5 of EN-295-4 when tested to A.6 of EN-295-4.</p>						
DIMENSIONS	Coupling Nominal size	Sleeve (mm min.)		Tension band (mm min.)		Shear band (mm min.)	
		Width	Thickness*	Width	Thickness	Width	Thickness
				TYPE 2A			
	Up to 200	102	3.0	12	0.6	32	0.4
	201 to 400	102	3.0	12	0.6	32	0.4
	401 to 1000	160	3.5	12	0.6	32	0.5
				TYPE 2B			
	Up to 200	120	7.0	12	0.6	54	0.35
	201 to 300	150	7.5	12	0.6	78	0.35
	301 to 1000	185	9.0	12	0.6	97	0.75
	* Applies to thickness under tension band only						
TERMINOLOGY	Tension band (EN 295-4) = Metal band (AS/NZS 4327) = Clamping band (WIS 4-41-01) Shear band (EN 295-4 and WIS 4-41-01) = Metal shear ring (AS/NZS 4327)						
MARKINGS	EN295-4 (only use if certified by third party certification body according to EN 295-4 reqts) CE mark Identification symbol of the third party certification body Manufacturer's identification Date of manufacturing Nominal size Dimensional jointing system of EN 295 if appropriate Other applicable pipeline system if appropriate Type of coupling if appropriate Recommended assembly torque and assembly tool if appropriate						
MARKING METHOD	Impressed or indelible marking						
USE LIMITS	Type 1 couplings (without shear bands) are not permitted unless specified						

SGO 02-S1.2 METAL BANDED FLEXIBLE COUPLINGS TO WIS 4-41-01

STANDARD	UK WIS 4-41-01 Issue 2 (Feb 1993)	Specification for flexible couplings for gravity sewerage and drainage pipes																																							
DESIGN	<p>Metal-banded flexible couplings covered under WIS 4-41-01 are for joining pipes of the same or similar nominal diameters, made from the same or different materials. Metal banded flexible couplings to WIS 4-41-01 comprise a moulded elastomeric sleeve which is tightened on to each pipe using a narrow metal clamping band at each end of the sleeve. In between, the elastomeric sleeve is encircled with a wide shear band, which in part is also tightened onto the pipe ends and spans any gap between the pipe ends. The shear band gives resistance to shear forces and imposed loads whilst allowing some flexibility to cater for ground settlement. Where the difference in the outside diameter of the pipes is greater than 16 mm, the coupling is required to be fitted with an adaptor bush. Couplings for connecting pipes of significantly different diameters do not include a shear band and are not covered by WIS 4-41-01. WIS 4-41-01 covers nominal coupling sizes of DN 100 to 600 only.</p> <p>Couplings are not to damage or distort the pipes. Stainless steel parts are to be edge dressed and free from sharp edges to prevent injury or sleeve damage.</p>																																								
MATERIALS	<p>Sleeve & adaptor bush:</p> <p>Bands including fasteners & housings:</p>	<p>Approved vulcanised rubber to Type D of BS 2494. Nominal hardness to be 60 IRHD</p> <p>Austenitic stainless steel with minimum chromium content of 17% and minimum nickel content of 8% from either table 1c of Euronorm 88 part 1:1986 or Table 1c of Euronorm 88 Part 2:1986 as appropriate. Strip components to be manufactured from tempered rolled steel with a minimum hardness of 250 HV. Welds to comply to 8.3 of WIS 4-41-01.</p>																																							
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TERMINOLOGY	<p>Clamping band (WIS 4-41-01) = Metal band (AS/NZS 4327) = Tension band (EN 295-4) Shear band (EN 295-4 and WIS 4-41-01) = Metal shear ring (AS/NZS 4327)</p>																																								
MARKINGS	<p>Manufacturer's identification The number of the Water Industry Specification, i.e. WIS No. 4-41-01 Nominal size The month and year of manufacture Recommended assembly torque Recommended assembly tool</p>																																								
MARKING METHOD	<p>Legibly and durably marked on the outside surface.</p>																																								

SGO 02-S2A MULTI-PURPOSE UNRESTRAINED MECHANICAL COUPLINGS

STANDARD	WSA 105: 2005 Unrestrained mechanical couplings (for most part applicable)					
DESIGN	Multi-purpose (or universal) unrestrained mechanical couplings are able to join a pipe of one material to many different material pipes without varying any of the coupling components. The couplings comprise two end rings with each retaining between a central sleeve an elastomeric ring seal. When tie bolts between the end rings are tightened, the wedge face of the ring seals are compressed against the raised ends of the central sleeve, thus deforming the seal downwards onto the outside wall of the adjoining pipes. The wedge design of the elastomeric seals and sleeve ends adjust sealing where adjoining pipes have wide variations in their respective outside diameters. Pipe nominal sizes normally have to be compatible but outside diameters do not. DI, CI, AC, PVC, GRP and steel pipes may be joined to each other.					
MATERIALS	Sleeve (barrels):	Ductile iron to AS 1831 grade 400-15 Carbon steel to AS/NZS 1594 grade HU 250 ABS TO AS 3518 Stainless steel to ASTM A 240M grade 316L or 316				
	End rings (flanges or clips):	Ductile iron to AS 1831 grade 400-15 Carbon steel to AS/NZS 1594 grade HU 50 Gunmetal to AS 1565 grade C83600A Stainless steel to ASTM A 240M grade 316L or 316				
	Bolts:	Stainless steel to ASTM F593 grade 316				
	Nuts:	Stainless steel to ASTM AF594 grade 316				
	Washers:	Stainless steel ASTM F84 grade 316				
	Joint seals:	EPDM or NBR to AS 1646				
	Coatings:	Ductile iron and carbon steel components to have thermal bonded polymeric coating to AS/NZS 4158 on internal and external surfaces. Coating on fastener threads to be 50-75microns thick				
	Anti galling:	Stainless steel threads – Molybdenum disulphide or Teflon dry film lubricant				
FASTENERS DESIGN		Bolts	Nuts	Washers		
	Stainless Steel:	AS 1110.1 grade A	AS 1112.1 grade A	ISO 887 or ISO 7089 gr A		
	Bolt head to be captured in coupling end ring for single spanner operation.					
MINIMUM BARREL LENGTH (long series)	DN	Length(mm)	DN	Length(mm)	DN	Length(mm)
	80	175	225	175	450	215
	100	175	250	175	525	215
	150	175	300	215	600	215
	200	175	375	215	750	215
JOINT DEFLECTIONS	DN 80-300: 6°	DN 375: 5°	DN 450, 500: 4°	DN 600, 750: 3°		
COUPLING MARKINGS	Manufacturer's name or trademark	*Pipe OD range as tested (mm), e.g. OD 109-133				
	Batch identification	*Pipe types for which coupling suitable				
	Nominal diameter (DN, e.g. DN100)	*Maximum angle of deflection				
MARKING METHOD	Legibly and durably marked or cast.		*legibly marked on adhesive label on body or printed on packaging. Do not apply labels to stainless steel.			

SGO 02-S2.3 SINGLE PURPOSE UNRESTRAINED MECHANICAL COUPLINGS

Specification under revision

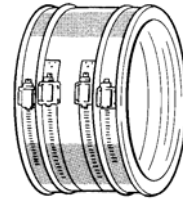
SGO 02-S4 STAINLESS STEEL PLAIN REPAIR CLAMPS

STANDARD	AS 4181: 1999 Stainless steel clamps for waterworks purposes	
DESIGN	Stainless steel plain repair clamps are designed for repair of holed or weak pipe. Repair clamps have limited ability to accommodate axial deflection and as such are not to be used to join pipes. They may be used however for repair of full pipe breaks where pipe ends are considered stable. Each clamp nominal size can cover a wide diameter range making them suitable for a number of pipe materials. The clamp is required to be self aligning and locking in its assembly prior to tightening of the retaining system. No contact between the stainless steel clamp and ferrous pipe material is allowed. Clamps may be designed to comprise of one, two or three stainless steel band parts. The clamp elastomeric seal is to be one continuous strip. The clamp design is required to eliminate any crevices between the gasket and mating stainless steel surfaces after tightening. Where applicable the clamp elastomeric seal is to be continuously and uniformly bonded to the inner surface of the clamp band.	
MATERIALS	Band, bolts, nuts, washers:	Specification under review
	Clamp seal:	Specification under review
FASTENING SYSTEM	Specification under review	
MARKINGS	Manufacturer's name or trademark Diameter range Allowable operating pressure	StandardsMark certification mark on clamp body. Traceability code (not in AS 4181)
MARKING METHOD	Adhesive labels shall not be used	
COMPATIBLE PIPE OD's	Ductile iron (class K9 or K12), PVC Series 1, GRP (Hobas), grey cast iron (class B), grey cast iron (class C), asbestos cement (class A and B), asbestos cement (class C and D)	

SGO 02-S5 STAINLESS STEEL CLAMPS WITH OBLIQUE OFFTAKES

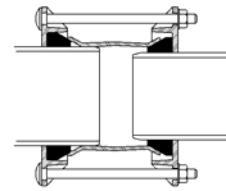
STANDARD	AS 4181: 1999 Stainless steel clamps for waterworks purposes						
DESIGN	Stainless steel clamps with oblique offtakes are an alternative means of providing a junction connection on either an existing or new mains. The offtakes are centrally located along the clamps length. Each clamp nominal size can cover a wide diameter range making them suitable for a number of pipe materials. The clamp is required to be self-aligning and locking in its assembly prior to tightening of the retaining system. No contact between the stainless steel clamp and ferrous pipe material is allowed. Clamps may be designed to comprise of one, two or three stainless steel band parts. The clamp elastomeric seal is to be one continuous strip. The clamp design is required to eliminate any crevices between the gasket and mating stainless steel surfaces after tightening. Where applicable the clamp elastomeric seal is to be continuously and uniformly bonded to the inner surface of the clamp band.						
MATERIALS	<table border="0"> <tr> <td style="padding-right: 10px;">Clamp, studs, nuts, washers</td> <td>Stainless steel grade 316 to ASTM A 240/A 240M and ASTM A 276</td> </tr> <tr> <td>Offtakes</td> <td>Stainless steel grade ASTM A 312/A 312M</td> </tr> <tr> <td>Clamp seal</td> <td>Nitrile butadiene rubber (NBR) elastomeric gasket to AS 1646</td> </tr> </table>	Clamp, studs, nuts, washers	Stainless steel grade 316 to ASTM A 240/A 240M and ASTM A 276	Offtakes	Stainless steel grade ASTM A 312/A 312M	Clamp seal	Nitrile butadiene rubber (NBR) elastomeric gasket to AS 1646
Clamp, studs, nuts, washers	Stainless steel grade 316 to ASTM A 240/A 240M and ASTM A 276						
Offtakes	Stainless steel grade ASTM A 312/A 312M						
Clamp seal	Nitrile butadiene rubber (NBR) elastomeric gasket to AS 1646						
FASTENING SYSTEM	Bolts to AS/NZS 1111, nuts to AS/NZS 1112 or bolts & nuts to AS/NZS 1252. Screw threads rolled, formed and sized to carry the designed torque and tension loads without user applied lubrication.						
MARKINGS	<p>Manufactures name</p> <p>Size range</p> <p>Tapping size (where applicable)</p> <p>Allowable operating pressure</p>						
MARKING METHOD	Adhesive labels shall not be used.						

**METAL BANDED FLEXIBLE COUPLINGS
with CENTRAL SHEAR BAND**



Nominal Size DN					
115					
120					
125					
137					
150					
175					
180					
200					
215					
225					
250					
275					
290					
310					
320					
335					
345					
360					
385					
410					
425					
430					
445					
465					
490					
510					
525					
540					
550					
560					
580					
600					
620					
700					
800					
900					
1000					
1100					
1200					
1300					
1400					
1500					
1600					
1700					
1800					
1900					
2000					

**MULTI-PURPOSE UNRESTRAINED
MECHANICAL COUPLINGS**
(FOR DI/ CI/ AC/ PVC)



Nominal Size DN	Viking <i>(Maxifit)</i>			Tyco <i>(Vari-Gib)</i>			AVK <i>(Series 601)</i>		
	Clamp Range ID (mm)	No of Bolts	Sleeve Length (mm)	Clamp Range ID (mm)	No of Bolts	Sleeve Length (mm)	Clamp Range ID (mm)	No of Bolts	Sleeve Length (mm)
80							84-106	4	175
100	109.6-127.8	4	245	109-133	3	176	109-133	4	175
150	159.2-181.6	4	245	158-182	3	176	157-183	4	175
200	218.1-235.0	4	245	214-238	5	176	218-242	4	175
225	250.0-267.0	6	185	240-264	5	176	242-268	6	175
250	272.0-289.0	6	185	272-296	5	176	266-292	6	175
300				310-334	5	216			
300				330-354 ¹	5	216	324-350 ¹	6	215
375	394.3-411.3 ¹	8	310	410-434 ¹	8	216			
375	418.2-435.2	8	310						
450				488-512	10	216			
450	501.9-518.9	10	310	498-522	10	216			
500				542-566	12	216			
500	555.3-572.3	12	310	552-576	12	216			
600	662.0-679.0	14	310	648-672	14	216			
750									

NOTES

1. Not suitable for Series 1 PVC OD

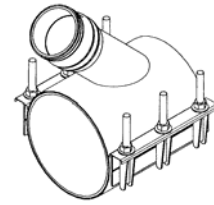
SLIP COUPLINGS (RRJ)
SN6 (SO-SO)

Nominal Size DN	Iplex
100	
150	✓ 1
225	
300	
375	

NOTES

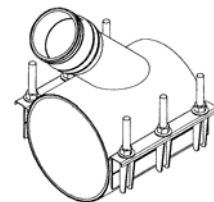
1. Also available as a fabricated item

OBLIQUE JUNCTION CLAMP FOR VC PIPE



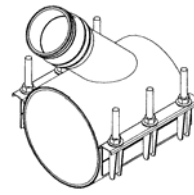
Nominal Size	Wang
Pipe DN x Junction dn	
100 x 100	OB4-138 x 100
150 x 100	OB4-194 X 100
150 x 150	OB6-194 X 150
225 x 100	OB4-280 X 100
225 x 150	OB6-280 X 150
225 x 225	OB8-280 X 225
300 x 100	OB4-370 X 100
300 x 150	OB6-370 X 150
300 x 225	OB8-370 X 225
375 x 100	OB4-445 X 100
375 x 150	OB6-445 X 150
375 x 225	OB8-445 X 225
400 x 100	OB4-480 X 100
400 x 150	OB6-480 X 150
400 x 225	OB8-480 X 225
450 x 100	OB6-530 X 100
450 x 150	OB8-530 X 150
450 x 225	OB8-530 X 225

OBLIQUE JUNCTION CLAMP FOR PVC PIPE



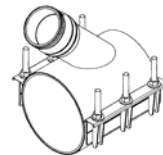
Nominal Size	Wang
Pipe DN x Junction dn	
100 x 100	OB4-110 x 100
150 x 100	OB4-160 X 100
150 x 150	OB6-160 X 150
225 x 100	OB4-250 X 100
225 x 150	OB6-250 X 150
300 x 100	OB4-315 X 100
300 x 150	OB6-315 X 150
300 x 225	OB8-315 X 225
375 x 100	OB4-400 X 100
375 x 150	OB6-400 X 150
375 x 225	OB8-400 X 225

**OBLIQUE JUNCTION CLAMP
FOR AC CLASS 35 PIPE**



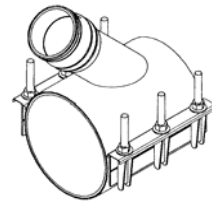
Nominal Size Pipe DN x Junction dn	Wang			
100 x 100	OB4-120 x 100			
150 x 100	OB4-175 X 100			
150 x 150	OB6-175 X 150			
200 x 100	OB4-230 X 100			
200 x 150	OB6-230 X 150			
225 x 100	OB4-255 X 100			
225 x 150	OB6-255 X 150			
250 x 100	OB4-280 X 100			
250 x 150	OB6-280 X 150			
250 x 225	OB8-280 X 225			
300 x 100	OB4-335 X 100			
300 x 150	OB6-335 X 150			
300 x 225	OB8-335 X 225			
375 x 100	OB4-415 X 100			
375 x 150	OB6-415 X 150			
375 x 225	OB8-415 X 225			
450 x 100	OB6-495 X 100			
450 x 150	OB8-495 X 150			
450 x 225	OB8-495 X 225			

**OBLIQUE JUNCTION CLAMP
FOR AC CLASS 50 PIPE**



Nominal Size Pipe DN x Junction dn	Wang			
100 x 100	OB4-120 x 100			
150 x 100	OB4-180 X 100			
150 x 150	OB6-180 X 150			
200 x 100	OB4-235 X 100			
200 x 150	OB6-235 X 150			
225 x 100	OB4-260 X 100			
225 x 150	OB6-260 X 150			
250 x 100	OB4-285 X 100			
250 x 150	OB6-285 X 150			
250 x 225	OB8-285 X 225			
300 x 100	OB4-345 X 100			
300 x 150	OB6-345 X 150			
300 x 225	OB8-345 X 225			
375 x 100	OB4-425 X 100			
375 x 150	OB6-425 X 150			
375 x 225	OB8-425 X 225			
450 x 100	OB6-505 X 100			
450 x 150	OB8-505 X 150			
450 x 225	OB8-505 X 225			

**OBLIQUE JUNCTION CLAMP
FOR DI, CI AND GRP¹ PIPE**



Nominal Size	Wang
Pipe DN x Junction dn	
100 x 100	OB4-120 x 100
150 x 100	OB4-175 X 100
150 x 150	OB6-175 X 150
200 x 100	OB4-230 X 100
200 x 150	OB6-230 X 150
225 x 100	OB4-255 X 100
225 x 150	OB6-255 X 150
250 x 100	OB4-285 X 100
250 x 150	OB6-285 X 150
250 x 225	OB8-285 X 225
300 x 100	OB4-345 X 100
300 x 150	OB6-345 X 150
300 x 225	OB8-345 X 225
375 x 100	OB4-425 X 100
375 x 150	OB6-425 X 150
375 x 225	OB8-425 X 225
450 x 100	OB6-505 X 100
450 x 150	OB8-505 X 150
450 x 225	OB8-505 X 225
500 x 100	OB6-560 X 100
500 x 150	OB8-560 X 150
500 x 225	OB8-560 X 225

NOTES

1. Junction clamps in sizes DN 300, 375 and 450 are compatible with centrifugally cast GRP pipe.