

Water Supply and Sewerage Approved Products Manual 2024

Water Operations – Maintenance Products

Section W0 04

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Abbreviation	In full
AS	Australian Standard
AS/NZS	Australian / New Zealand Standard
WSA PS	Water Services Association Product Specification

1 Mechanical couplings



1.1 Straight, stepped and adaptor flange couplings

Compliance	Size DN (mm)	Products	Manufacturers
AS/NZS 4998 WSA PS 270	100		AVK (Series 601 Supa-Gib) Viadux (Vari-Gib) Viking Johnson (Maxifit)
	150		
	225		
	300		AVK (Series 602 Supa-Step) Viadux (Vari-Gib) Viking Johnson (MaxiStep)
	375		
			AVK (Series 603 Universal Flange Adaptor) Viking Johnson (MaxiDaptor)

Notes: Bolts to be grade 316 stainless steel. Larger sizes require approval from a Power and Water representative.

2 Repair clamps

2.1 Single and double part stainless steel repair clamp

Compliance	Size DN (mm)	Type	Products	Manufacturers
AS 4181 WSA PS 313	150 225 300	Single part		AVK Viadux
		Double part		

Notes: For repairs and maintenance only. Do not use in conditions deleterious to stainless steel. Clamps shall be wrapped. Larger sizes require approval from a Power and Water representative.

2.2 Single and double part stainless steel repair clamp with offtake

Compliance	Size DN (mm)	Type	Products	Manufacturers
AS 4181 WSA PS 313	150 225 300	Threaded offtake		AVK Viadux
		Flanged offtake		

Notes: For repairs and maintenance only. Do not use in conditions deleterious to stainless steel. Clamps shall be wrapped. Larger sizes require approval from a Power and Water representative.

3 Specifications

3.1 Mechanical couplings

Shall comply with the following standard and specification:

- AS/NZS 4998:2009 – Bolted unrestrained mechanical couplings for waterworks purposes
- WSA PS 270 – Mechanical couplings, non-end thrust restraint for pressure applications – drinking water, non-drinking water supply and sewerage.

Design:

Mechanical couplings are limited to joining a pipe of a specific OD to another of specific OD, i.e. single purpose. Couplings comprise two end rings (flanges) with each retaining between a central sleeve an elastomeric ring seal. When tie bolts between the end rings are tightened, the ring seals are compressed and distorted between the end rings and sleeve ends to seal against the adjoining pipes. Seal distortion causes only minimal variation in the seal inner diameter so a coupling which matches pipe's outer diameter (OD) is critical. Joining pipe of different outside diameters can be achieved by using end rings and seals of different diameters and sleeves of different shape than used for compatible OD pipe.

Materials:

- Sleeve (barrels):
 - Ductile cast iron grade AS 1831/400-15.
- End rings (flanges):
 - Ductile cast iron grade AS 1831/400-15.
- Bolts and nuts:
 - Stainless steel grade AS 2837/304 or 316.
- Washers:
 - Stainless steel grade AS 1449/304 or 316.
- Seals:
 - Approved elastomer to AS 1646.
- Sleeve and flange coating:
 - Complete polymeric coating to AS/NZS 4158, using an approved polymer e.g. Rilsan Nylon 11 or Nap-Gard 7-2501
 - Non-preferred – Bitumen dipped coating to AS/NZS 3750.4 (sleeve with or without prior cement mortar lining). Resistance to weathering and salt droplets tests in AS 4089 do not apply.

Fasteners design:

- Bolts/studs to AS/NZS 1111
- Nuts to AS/NZS 1112
- Washers to AS 1237
- Ends of bolts/studs to be fitted with protective caps to prevent thread damage.

Working pressure:

- Minimum of 1.6 megapascals (MPa).

Coupling markings:

- Manufacturer's name or trademark
- Nominal size
- The manufacturer's identification mark for the pipes to be joined.

Marking method:

- Clearly and permanently marked in at least one location.

Elastomer markings:

- The letters AS 1646
- The year of manufacture, e.g. 22
- The manufacturer's identification mark
- The nominal size or nominal internal and cord diameters as appropriate
- The cavity number if applicable.

3.2 Stainless steel plain repair clamps

Shall comply with the following standard and specification:

- AS 4181:2013 – Repair and off-take clamps for water industry purposes
- WSA PS 313 – Repair and off-take clamps for pressure applications – drinking water and non-drinking water supply.

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.

Working pressure:

- Minimum of 1.6 megapascals (MPa).

Markings:

- Manufacturer's name or trademark
- Traceability code (not in AS 4181)
- Diameter range
- Allowable operating pressure
- StandardsMark certification mark on clamp body.

Marking method:

- Adhesive labels shall not be used.

Compatible pipe:

Repair clamps selected shall be compatible with existing pipes. Pipe examples include:

- Ductile iron (class K9 or K12)
- PVC series 1 and series 2
- GRP (Hobas)
- Grey cast iron (class B)
- Grey cast iron (class C)
- Asbestos cement (class A, B, C and D).

3.3 Stainless steel clamps with flange offtakes

Shall comply with the following standard and specification:

- AS 4181:2013 – Repair and off-take clamps for water industry purposes
- WSA PS 313 – Repair and off-take clamps for pressure applications – drinking water and non-drinking water supply.

Design:

Stainless steel clamps with flange offtakes are an alternative means of tapping a main. The offtake is located centrally along the clamp 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:

- Band, bolts, nuts, washers:
 - Stainless steel (SS) grade 316 or 316L to ASTM A240/240M, ASTM A276, ASTM A312/A312M or ANSI B16.3. SS surfaces finished to AS/NZS 1554.6, welding quality to category 2B of AS/NZS 1554.6 and welds meeting intergranular corrosion test in AS 2205.10.1 (electrodes to ANSI/AWS A 5.9)

- Clamp seal:
 - Approved elastomer to AS 1646 or BS EN 681-1, e.g. styrene butadiene rubber (SBR) or nitrile butadiene rubber (NBR).

Fastening system:

- Bolts to AS/NZS 1111, nuts to AS/NZS 1112 or bolts and nuts to AS/NZS 1252.
- Screw threads rolled, formed and sized to carry the designed torque and tension loads without user applied lubrication.

Offtake:

- Flange to AS 4087. Insulate stainless steel offtake from cast iron, mild steel and copper.

Working pressure:

- Minimum of 1.6 megapascals (MPa).

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.

3.4 Stainless steel clamps with threaded offtakes

Shall comply with the following standard and specification:

- AS 4181:2013 – Repair and off-take clamps for water industry purposes
- WSA PS 313 – Repair and off-take clamps for pressure applications – drinking water and non-drinking water supply.

Design:

Stainless steel clamps with threaded offtakes are a means of repairing a damaged main tapping. The offtake is located centrally along the clamp 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:

- Band, bolts, nuts, washers:
 - Stainless steel (SS) grade 316 or 316L to ASTM A240/240M, ASTM A276, ASTM A312/A312M or ANSI B16.3. SS surfaces finished to AS/NZS 1554.6, welding quality to category 2B of AS/NZS 1554.6 and welds meeting intergranular corrosion test in AS 2205.10.1 (electrodes to ANSI/AWS A 5.9).
- Clamp seal:
 - Approved elastomer to AS 1646 or BS EN 681-1, e.g. styrene butadiene rubber (SBR) or nitrile butadiene rubber (NBR).

Fastening system:

- Bolts to AS/NZS 1111, nuts to AS/NZS 1112 or bolts and nuts to AS/NZS 1252.
- Screw threads rolled, formed and sized to carry the designed torque and tension loads without user applied lubrication.

Offtake:

- For DN 20 and DN 25, internal thread of tapping to AS 1722.1, RP series. Insulate stainless steel offtake from copper water service.

Working pressure:

- Minimum of 1.6 megapascals (MPa).

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.

Contact

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