



**Flexseal's PA Saddle fittings for the connection of laterals to structured wall sewers and drains – Assessment Schedule**

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**1. Scope**

1.1 To assess the PA saddle produced by Flexseal for the *in situ* connection of laterals to structured wall gravity sewers and drains.

1.2 Versions of the PA Saddle are available to cover connection to structured wall gravity sewers and drains from DN300 up to and including DN600.

1.3 The junctions may be used for connecting laterals made of solid wall PVC to BS EN 1401 (DN160) and, with an adaptor, Polysewer (twin walled PVC, DN150) to WIS 4-35-01.

1.4 The body of the junction comprises an inner sleeve (black ABS), a bolt ring and top flange (both glass filled nylon). A key is used to tighten 4 bolts between the bolt ring and the top flange to draw the elastomeric ring into the annular space between the saddle body and the hole. The seal is made on the edge of the hole around the inner skin of the pipe.

**2. Assessment schedule**

2.1 To assess the product against the performance requirements listed below through:

- a) an audit of test data; and
- b) witness testing.

2.2 Audit installation instructions.

2.3 Witness on-site installation for compliance with instructions.

**3. Review of properties**

3.1 BS EN 476<sup>1</sup>, BS EN1277<sup>3</sup> and prEN 13476-1<sup>4</sup> are the leading standards for couplings for gravity sewerage and drainage pipes. This assessment schedule has taken into account the requirements of these standards and the performance claims of the product.

3.2 Dimensions and tolerances are in accordance with the manufacturer's specification. The critical dimensions are the ID of socket into which the lateral fits and OD of the body and seal that fits into the pipe.

3.3 The sealing technique of the saddle has a +2/-0.5 mm tolerance for the hole diameter.

3.4 Materials Properties:

- a) Elastomeric components to BS EN 681-1<sup>2</sup>;
- b) ABS components to manufacturer's specification;
- c) Glass filled nylon to manufacturer's specification;
- d) Bolts (stainless steel: Grade 316).

3.5 Mechanical and physical properties of the components in accordance with the manufacturer's specification.



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3.6 Performance requirements with regard to water tightness of the connection to lateral as listed in the Table 1.

3.7 Each category of lateral pipe material will be tested under the appropriate range of tests with the junction fitted to structured wall pipe. Where an adapter is needed, the tests shall be carried out with a typical adapter as recommended by Flexseal.

Test	EN 1277	Conditions tested
Vacuum/deflection	Method 4 condition C	-0.3 bar at 2° deflection
Pressure/deflection	Method 4 condition C	0.5 bar at 2° deflection
Vacuum/distortion	Based upon method 4 condition B	-0.3 bar with 5% socket distortion @ entry to junction
Pressure/distortion	Based upon method 4 condition B	0.5 bar with 5% socket distortion @ entry to junction

**Table 1 - Plastic laterals including structured wall pipes**

3.8 Performance requirements with regard to water tightness and structural integrity of the saddle fitted to structured wall sewer/drain pipe as listed in Table 2.

Test	Conditions
Vacuum/ Shear load on saddle	-0.3 bar and 8.5° deflection on lateral pipe
Pressure/ Shear load on saddle	0.5 bar and 8.5° deflection on lateral pipe
Vacuum/ Distortion of main sewer	-0.3 bar and 10% distortion of main pipe
Pressure/ Distortion of main sewer	0.5 bar and 10% distortion of main pipe

**Table 2 – Loading on connection with sewer pipe**

**4. Review of procedures**

4.1 In addition to the performance of the junction, the following items will be checked.

4.2 Installation procedures including:

- a) cutting of main pipe;
- b) fitting instructions; and
- c) connection of laterals.



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4.3 Procedures for controlling the quality during manufacture.

4.4 The application of these procedures to be witnessed on-site by WRc.

**5. Reference documents**

1. BS EN 476 1998: General requirements for components used in discharge pipes, drains and sewers for gravity systems.

2. BS EN 681-1 1996: Elastomeric seals. Materials requirements for pipe joint seals used in water and drainage applications.

3. BS EN 1277 2003: Plastics piping systems – Thermoplastics piping systems for non-pressure applications – Test methods for leaktightness of elastomeric sealing ring type joints

4. prEN 13476 –1 Thermoplastic piping systems for non-pressure underground drainage and sewerage. Structured-wall piping systems of PVC-U, PP, PE. Part 1: Specification for pipes, fittings and the system.

5. BS EN 12256 Plastics piping systems – Thermoplastics fittings – Test method for mechanical strength or flexibility of fabricated fittings