

PT/476/1220 - AS (December 2020)

Assessment Schedule for Type FA 150B and type FA 200B flexible saddles as manufactured by Flexseal Couplings Ltd



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1. SCOPE

This schedule specifies the requirements for the type FA flexible saddle manufactured by Flexseal Couplings Ltd for the in situ connection of laterals to gravity sewers with a wall thickness of 50 to 150 mm.

It is applicable to the connection of DN150 laterals to DN375 – DN1500 gravity sewers and the connection of DN 200 laterals to DN 450 – DN 1500 gravity sewers.

2. PRODUCT DESCRIPTION

2.1 Introduction

The FA saddle enables a secure and leaktight lateral connection to be made to a larger sewer without the need to excavate and disturb the bedding.

A cored hole is required having a diameter of 172 mm for the FA 150B and 232 mm for the FA 200B and can have a deflection on the lateral of 15 degrees.

The internal diameter of the main pipe can range from 375 to 1500 mm for the FA 150B and from 450 to 1500 mm for the FA 200B. The wall thickness of the sewer can range from 50 mm to 150 mm for both saddle sizes. The saddle can be used with solid walled lateral pipes of any pipe material. It is however, most suitable for: concrete, vitrified clay, fibre cement. An elastomeric bush may also be required for connecting to some sewer pipe materials.

2.2 Applicable Standards

The following relevant standard was identified for this product:

- BS EN 16397-1:2014⁽¹⁾

2.3 Approval History

The FA 150B and FA 200B Flexseal saddle junctions were originally awarded WRc Approved™ certification in February 2000 (Certificate reference PT/90/0200 and PT/100/0600) respectively. Followed by three re-approvals:

- 2005 (Certificate reference PT/243/0405 and PT/244/0405)
- 2010 (Certificate reference PT/303/0410 and PT/302/0410)
- 2015 (Certificate reference PT/382/0415)

3. TESTING & REQUIREMENTS

3.1 Materials and Components

Materials Properties

Elastomeric components shall comply with the requirements of BS EN 681-1:1996⁽²⁾;

Stainless steel bands shall comply with the requirements of BS EN 16397-2:2014⁽³⁾ clause 4.2.1 and the strength of band shall comply with BS EN 16397-2:2014 clause 4.3.3;

The ABS sleeve shall be in accordance with the manufacturer's specification.

3.2 Type Testing

Water Tightness

When tested in accordance with BS EN 16397-1:2014⁽¹⁾, clause 6.1, using the pressure requirements specified in BS EN 295-4:2013⁽⁴⁾, Appendix A 3.4.1, the saddle shall meet the requirements of BS EN 16397-1:2014⁽¹⁾, clause 5.4. The

saddle shall be assembled in accordance with the manufacturer's instructions including, when necessary, the use of a bush.

Shear & Deformation test

When tested in accordance with BS EN 16397-1:2014⁽¹⁾ clause 5.4.4, with an applied shear force or deformation as specified from the requirements in Table 1. The saddles shall be separately tested for the internal pressure (0.5 bar) and internal vacuum (-0.25 bar) for 15 minutes. There shall be no visible leakage or more than 10% change in pressure after the pressure has stabilised.

Table 1 Shear

Type of lateral pipe	Shear load at joint assembly (BS EN 16397-1:2014, 5.4.4)	Deformation (BS EN 16397-1:2014, 5.4.4)
Rigid	25N per mm of nominal size (BS EN 16397-1:2014, 5.4.4.2)	n/a
Rigid & Flexible	n/a	(5±0.5)% (BS EN 16397-1:2014, 5.4.4.3)
Flexible	n/a	(10±1.0)% (BS EN 16397-1:2014, 5.4.4.3)

Properties of saddle connection (to concrete pipe)

When an axial load (20 kN) is applied along the lateral there shall be no permanent visible deformation or damage on the connection.

Shear load through the connection shall be as given in Table 1 in accordance with BS EN 16397-1⁽¹⁾, clause 5.4.4. The tests shall be undertaken on DN 450 concrete

pipe, (this is believed to satisfy the needs of the range of applicable pipes).

Deflection test

When tested in accordance with BS EN 16397-1:2014⁽¹⁾, clause 5.4.3, with an angular deflection as specified in Table 2, at an internal pressure of 0.5 bar for 5 minutes, there shall be no visible leakage or more than 10% change in pressure after the pressure has stabilised.

When tested in accordance with BS EN 16397-1:2014⁽¹⁾, clause 5.4.3, with an angular deflection as specified in Table 2, at an internal vacuum of -0.25 bar (0.75 bar absolute) for 5 minutes, there shall be no visible leakage or more than 10% change in pressure after the pressure has stabilised.

Table 2 Angular Deflection

Type of saddle	Angle
FA 150B	Minimum: 4.6 degrees Declared value: 18 degrees
FA 200B	Minimum: 4.6 degrees Declared value: 13 degrees

Thermal Cycling

When tested in accordance with BS EN 295-3:2012⁽⁵⁾, clause 24.2, the joint assemblies shall withstand a long term thermal stability test for 7 days at 45°C, followed by a Leaktightness test applying 0.5 bar internal pressure for 15 minutes, there shall be no visible leakage.

Resistance to High Pressure Water Jetting

When tested in accordance with WIS 4-35-01⁽⁶⁾, Appendix B. The high-pressure water jet is applied for 120 seconds and shall meet the minimum requirement of 180 Bar

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(2600 psi), there shall be no penetration through the pipe wall.

3.3 Installation Documentation

The product and installation documentation supplied by Flexseal Couplings Ltd. shall be complete and accurate and allow for the full benefit of the product to be achieved through clear installation procedures⁽⁷⁾.

4. APPROVAL

The Flexseal FA 150B & FA 200B has been audited and has successfully met all of the requirements stated within this assessment schedule.

Signed:

A handwritten signature in black ink, appearing to read 'G. Han', written over a light blue horizontal line.

Valid until: 24th April 2025

sewers - Part 4 Requirements for special fittings, adaptors and compatible accessories. 2013

5. BS EN 295-3 Vitrified clay pipe systems for drains and sewers. Requirements for pipes, fittings and joints. 2012
6. WIS 4-35-01: Specification for Thermoplastic Structured Wall Pipes – Supplementary Test Requirements. 2008
7. Saddle Installation data Sheet and website video (Installation Procedures).

5. REFERENCES

1. BS EN 16397-1 Flexible Couplings – Part 1 Performance requirements: 2014
2. BS EN 681-1: Elastomeric seals. Materials requirements for pipe joint seals used in water and drainage applications. 1996.
3. BS EN 16397-2 Flexible Couplings Part 2: Characteristics and testing for metal banded flexible couplings, adaptors and bushes 2014.
4. BS EN 295-4: Vitrified clay pipe and fittings and pipe joints for drains and