

1. SCOPE

This schedule specifies requirements for the CONNEX-Junction produced by Funke Kunststoffe GmbH for the *in situ* connection of DN160 and DN200 (OD) laterals to solid wall plastics, gravity sewers and other materials of suitable wall thickness, such as glass reinforced plastics (GRP) and ductile iron (DI).

This Assessment Schedule applies to the use of the CONNEX-Junction with plastics sewer pipes of stiffness SN2 (SDR51) to SN8 (SDR34).

2. PRODUCT DESCRIPTION

2.1 Introduction

The body of the CONNEX-Junction comprises of upper and lower moulded PVC-U sections. The lower section locks into the sewer pipe and the upper section screws into the lower section. The angular adjustment of the socket ranges from 0° to 11° which allows up to 5° adjustment for deflection of the pipe and up to 6° to compensate for ground settlement.

EPDM seals are located between the lateral and upper section, upper section and lower section, and the sewer pipe and lower section. The latter seal is fixed to the lower section by adhesive at the factory. The adhesive ensures the seal remains in position during the installation process and does not serve any function after installation is complete.

The CONNEX-Junction may be used for connecting laterals made of clay, solid wall plastics and structured wall plastics. Adapters are required for clay and structured wall plastics laterals. The wall thickness of the sewer pipe must be between 4.0 and 31.8mm.

During installation, the lower section is held in place by retention clips before being locked to the sewer pipe using a PVC-U screw ring and shaped spacer ring.

2.2 Relevant Standards

Performance: the following relevant standards were identified:

- BS EN 476: 2011⁽¹⁾ General requirements for components used in drains and sewers.

Materials: Materials used shall comply with:

- BS EN 295-1: 2013⁽²⁾ Vitrified clay pipe systems for drains and sewers. Requirements for pipes, fittings and joints.
- BS EN 1401-1: 2009⁽³⁾ Plastic piping systems for non-pressure underground drainage and sewerage. Unplasticized poly(vinyl chloride) (PVC-U). Specifications for pipes, fittings and the system.

2.3 Approval History

The CONNEX-Junction has been WRc Approved since December 2003

PT/206/0203 – 2003

PT/276/1208 – 2008

PT/357/1213 – 2013

3. TESTING AND REQUIREMENTS

3.1 Type Testing

The CONNEX-Junction shall comply with the following test requirements:

- BS EN 476: 2011

Each category of lateral pipe material shall be tested with the connection system whilst fitted to a PVC-U pipe to BS EN 1401-1. Where an adapter is required, the tests shall be carried out with a typical adapter as recommended by Funke Kunststoffe GmbH.

Materials: The CONNEX-Junction shall be produced from:

- Elastomeric components to BS EN 681-1:1996⁽⁴⁾.
- PVC-U components to Clause 4 BS EN 1401-1:2009.

The adhesive used to fix the EDPM seal to the lower section of the fitting shall not adversely affect the performance of the seal or the fitting.

Mechanical/Physical: When tested in accordance with the test methods specified in Tables 11 and 13 of BS EN 1401-1:2009, the connection system shall have mechanical characteristics conforming to the requirements given in those tables.

Tolerance: The manufactured connection system shall be of sufficient tolerance to ensure a correct fit in a hole of the specified diameter ± 1 mm.

Leaktightness: When tested for tightness of elastomeric sealing ring joints, in accordance with the test methods specified in Table 15 of BS EN 1401-1:2009, connections to plastics laterals shall have leaktightness characteristics conforming to the requirements given in that table. The requirements have been summarised in Table 1.

Table 1 Plastics laterals leaktightness requirements from BS EN 1401-1:2009 Table 15

Test Type	Conditions	Requirement
Pressure/distortion	0.05 and 0.5 bar with 5% distortion	No leakage
Vacuum/distortion	-0.3 bar with 5% distortion	≤ -0.27 bar
Pressure/deflection	0.05 and 0.5 bar at 2° deflection	No leakage
Vacuum/deflection	-0.3 bar at 2° deflection	≤ -0.27 bar

When tested in accordance with the test methods specified in Clause 6.2.2 and 6.2.3 of BS EN 295-1:2013, connections to clay laterals shall have leaktightness characteristics conforming to the requirements given by those clauses. The requirements have been summarised in Table 2 below.

Table 2 Clay laterals water tightness requirements from BS EN 295-1:2013 Clause 6.2.2 and 6.2.3

Test Type	Conditions	Requirement
Pressure/deflection	0.05 and 0.5 bar at 30 mm deflection (per metre)	No leakage
Vacuum/deflection	-0.05 and -0.5 bar at 30 mm deflection (per metre)	No leakage
Pressure/Shear	0.05bar and 0.5 bar with 25 N/mm dia. load on pipe	No leakage
Vacuum Shear	-0.05 bar and 0.5 bar with 25 N/mm dia. load on pipe	No leakage

When tested in accordance with the test methods specified in Table 15 of BS EN 1401-1:2009 (tightness of elastomeric sealing ring joints), Clause 6.2.2 and 6.2.3 of BS EN 295-1:2013 and a combination of

the latter with the mechanical strength test as specified in Table 11 of BS EN 1401-1:2009, the integrity of the junction fitted to plastics sewer pipe shall conform to the requirements given in those tables and clauses. These requirements have been summarised in Table 3 below.

Table 3 Loading on connection with sewer pipe

Test Type	Conditions	Requirement
Pressure/ distortion of sewer	0.5 bar and 10% distortion of sewer pipe at junction	No leakage
Vacuum/ distortion of sewer	-0.3 bar and 10% distortion of sewer pipe at junction	No leakage
Pressure/ shear	0.5 bar with 25N/mm pipe dia. shear	No leakage
Vacuum/ shear	-0.5 bar with 25N/mm pipe dia. shear	No leakage
Vacuum + displacement	-0.3 bar and displacement as per BS EN ISO 13264:2017 ⁽⁵⁾	No leakage
Pressure + displacement	0.5 bar and displacement as per BS EN ISO 13264:2017(5)	No leakage

3.2 Product Design

The Connex-Junction system shall be designed in accordance with those standards quoted in section 2.2.

3.3 Manufacture

To ensure the quality and performance of Connex-Junction, the manufacturing process shall include appropriate systems for:

- Verification of component materials received are to specification
- Handling and storage of all component materials and finished units
- Records of the Connex-Junction
- Detailed drawings for the Connex-Junction
- Inspection and maintenance of the Connex-Junction
- Fabrication of bespoke sections and quality of workmanship

The production of Connex-Junction and related Quality Control procedures shall comply with requirements to ensure the stated performance of the product is reliably achieved.

3.4 Installation

When installed in accordance with the installation documentation, the installation shall be practicable and suitable for conditions that could reasonably be expected on site.

PT/435/0119 - AS (January 2019)

**Assessment Schedule for the CONNEX-
Junction as manufactured by Funke
Kunststoffe GmbH**



Independent certification of your products & services

4. APPROVAL

The Connex-Junction has been audited and has successfully met all the requirements stated within this assessment schedule.

Signed:

A handwritten signature in black ink, appearing to read 'J V Bodger'.

Valid until January 2024

polypropylene (PP) and
polyethylene (PE)

Part 1: Specifications for ancillary fittings including shallow inspection chambers

6) CONNEX-Junction Installation manual.

5. REFERENCES

- 1) BS EN 476:2011 General requirements for components used in drains and sewers. 2011
- 2) BS EN 295-1:2013 Vitriified clay pipe systems for drains and sewers. Requirements for pipes, fittings and joints. 2013
- 3) BS EN 1401-1:2009 Plastic piping systems for non-pressure underground drainage and sewerage. Unplasticized poly (vinyl chloride) (PVC-U). Specifications for pipes, fittings and the system. 2009
- 4) BS EN 681-1:1996 Elastomeric seals. Materials requirements for pipe joint seals used in water and drainage applications. Vulcanized rubber. 1996
- 5) BS EN ISO 13598:2010 Plastics piping systems for nonpressure underground drainage and sewerage — Unplasticized poly(vinyl chloride) (PVC-U),