

PT/531/0724 (July 2024)

Assessment Schedule for Retrofit Non-Return Valve NRV100 as supplied by Fernco Group



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1. SCOPE

This schedule specifies requirements for the Retrofit Non-Return Valve NRV100 as supplied by Fernco Group for use in drains serving single properties and carrying a 6 litre WC discharge. The 'rodent resistant' claim is outside the scope of this assessment.

2. PRODUCT DESCRIPTION

2.1 Introduction

The Retrofit Non-Return Valve NRV100 comprises a Type 0 Anti-flooding device as per EN 13564-1:2002 (non-return valve) for use in domestic lateral drains serving a single property.

Manufactured in moulded polypropylene, it is designed as a retrofit device to fit into the outlet of DN100 plastic or clay pipes discharging into brick or concrete chambers or to fit into preformed plastic manhole bases (in accordance with BS EN 1329-1:2000), located external to the building.

The unit is push-fit, being retained in the pipe by an elastomeric seal in the form of a series of rubber fins on the body of the Retrofit Non-Return Valve NRV100.

The closure flap is 'egg' shaped so that allows it to be installed on bends without the channel sides or benching inhibiting the articulation of the flap. The gravity activated flap has a stainless-steel plate moulded into the body of the flap to provide rat resistance. A manually operated locking handle allows the user to temporarily lock the flap in the shut position.

2.2 Applicable Standards

The following standards are applicable to this product:

- BS EN 681-1:1996⁽¹⁾
- BS EN 1852-1:2018+A1:2022⁽²⁾
- BS EN 10088-1:2023⁽³⁾
- BS EN 10088-2:2014⁽⁴⁾

Although the Retrofit Non-Return Valve NRV100 is designed for retrofit installation external to the building, the following standards are relevant considerations for Retrofit Non-Return Valve NRV100 performance testing:

- EN 13564-1:2002⁽⁵⁾
- EN 13564-2:2002⁽⁶⁾

2.3 Approval History

This is the first WRC Approved certification for the Retrofit Non-Return Valve NRV100 since the previous approval PT/377/0916 expired in September 2021.

3. REQUIREMENTS AND TESTING

3.1 General

- The Retrofit Non-Return Valve NRV100 shall automatically close when backflow occurs and shall allow the normal flow when backflow ceases.
- In normal flow conditions the Retrofit Non-Return Valve NRV100 shall open when there is a depth of water in the pipe on the upstream side of the NRV is 50mm or more.
- Internal surfaces of the Retrofit Non-Return Valve NRV100 shall be smooth.

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- Steps in the invert shall be limited to 6mm.
- When installed in accordance with the manufacturer's instructions, there should be a clearance of at least 5mm between the closure flap and the adjacent wall of the channel.
- Closure flap seal test: when installed in a pipe at a 1:40 gradient and tested in accordance with BS EN 13564-2 clause 3.4.4 using the test medium specified in clause 3.4.2.2, the Retrofit Non-Return Valve NRV100 will meet the requirements 3.4.4.3.
- When installed at an angle of 10° radially from vertical and tested in accordance with BS EN 13564-2 clause 3.4.4, the Retrofit Non-Return Valve NRV100 will meet the requirements 3.4.4.3.
- BS EN 13564-2:2002 clauses 3.4.2 (automatic closure device pressure test) with a modified test arrangement to accommodate end of pipe Retrofit Non-Return Valve NRV100 design.
- Conveyance test: When installed in a pipe at a gradient of 1:80 at a distance 10 metres downstream of a WC, solids and toilet tissue discharged 10 times with a 6 litre WC flush will pass through the Retrofit Non-Return Valve NRV100 with a maximum of 3 flushes on each occasion.

3.2 Materials and components

The Retrofit Non-Return Valve NRV100 shall comply with:

- Elastomeric materials shall comply with the requirements of BS EN 681-1:1996.

- Polypropylene shall comply with the requirements of BS EN 1852-1:2018+A1:2022 Clause 5.
- Stainless steel shall with the requirements of BS EN 10088-1:2023 and BS EN 10088-2:2014, Steel number 1.4016 (SS430).

3.3 Durability

- The valve shall comply with the requirements of BS EN 13564-2:2002 clause 3.2 (temperature cycling).
- Accelerated wear test: After having been subjected to 234,000 operation cycles (simulating 10 years operation) the hinge shall show no visible signs of wear.
- In-pipe security test: When installed in accordance with the manufacturer's instructions, the Retrofit Non-Return Valve NRV100 shall remain fully inserted into the pipe when subjected to a tension of 0.07 kN.
- Security against unintended locking test: After cleaning with a domestic broom with soft bristles or cleaned with a domestic hose pipe at 1 bar pressure, the closure flap and locking lever shall remain in the unlocked position.

3.4 Manufacture

To ensure the quality and performance of the Retrofit Non-Return Valve NRV100 the manufacturing process shall include appropriate systems for the:

- Specification of component materials
- Verification component materials received are to specification

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- Handling and storage of all component materials and finished units
- Detailed drawing / schedule for manufacture
- Manufacture / assembly of Retrofit Non-Return Valve and
- Fabrication and quality control of workmanship.

The production of the Retrofit Non-Return Valve NRV100 and related quality control procedures shall comply with requirements to ensure the stated performance of the product is reliably achieved.

3.5 Installation

When installed in accordance with the installation documentation ⁽⁷⁾, the Retrofit Non-Return Valve NRV100 shall be reasonably expected to perform as described.

4. APPROVAL

The Retrofit Non-Return Valve NRV100 has been audited and successfully met all the requirements stated within this assessment schedule

Signed:

A handwritten signature in black ink, appearing to be 'G.L.' followed by a horizontal line.

Valid until 30th June 2029

seals used in water and drainage applications - Vulcanized rubber.

2. BS EN 1852-1:2018+A1:2022 Plastics piping systems for non-pressure underground drainage and sewerage. Polypropylene (PP) - Specifications for pipes, fittings and the system
3. BS EN 10088-1:2023 Stainless steels - List of stainless steels
4. BS EN 10088-2:2014 Stainless steels - Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes.
5. EN 13564-1:2002 Anti-flooding devices for buildings – Requirements.
6. EN 13564-2:2002 Anti-flooding devices for buildings - Test methods.
7. Retrofit Non-Return Valve data sheet, version V010MAR22

5. REFERENCES

1. BS EN 681-1:1996 Elastomeric seals. Material requirements for pipe joint