

PT/494/0421 (April 2021)

Assessment Schedule for the Watertight International Non-Return Valve for domestic drain applications.



independent certification of your products & services

1. SCOPE

This assessment schedule specifies requirements for the Watertight International Non-Return Valve (NRV) as marketed by Watertight International, and as manufactured by Displays and Boxes Ltd., for use in drains serving single properties.

2. PRODUCT DESCRIPTION

2.1 Introduction

The product comprises of 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 where a WC flush is regularly discharged through the Watertight NRV.

Manufactured in moulded polypropylene, there are two versions of the design for DN100 uPVC pipes and DN100 clay pipes. The device is intended for temporary fitting to the end of pipe discharging into straight benching or channels in brick or concrete chambers located outside the building.

The push fit NRV designed for uPVC pipes, is retained in the pipe by an elastomeric 'O-ring' seal. The NRV designed for use in clay pipes is retained in the pipe by a series of rubber fins on the body of the NRV.

The gravity activated flap has a manually operated locking handle which allows the user to temporarily lock the flap in the closed position.

The rat resistant version, fitted with a stainless steel plate to the face of the flap, is outside the scope of this approval.

2.2 Applicable standards

Although the NRV is designed for retrofit installation outside the building, the following standards are relevant

considerations for NRV performance testing:

- EN13564-1:2002⁽¹⁾
- EN 13564-2:2002⁽²⁾

The following materials standards have been identified

- BS EN 681-1:1996⁽³⁾
- BS EN 1852-1:2018⁽⁴⁾

2.3 Approval History

This is the second re-approval of the Watertight Non-Return Valve.

- PT/314/0111.- initial approval.
- PT/401/0416 - revised April 2016 to include the addition of the device to fit clay pipes.

3. REQUIREMENTS AND TESTING

3.1 General

The NRV shall comply with the following requirements:

3.2 Materials and components

- Rubber seals shall comply with requirements of BS EN 681-1:1996.
- Polypropylene shall comply with the requirements of BS EN 1852-1:2018 Clause 5.

3.3 Type Testing

- The NRV shall automatically close and seal when backflow occurs and shall allow the normal forward flow when backflow ceases.
- In normal flow conditions the NRV shall open when there is a depth of water in the pipe, on the upstream side of the NRV, of 50 mm or more.

PT/494/0421 (April 2021)

Assessment Schedule for the Watertight International Non-Return Valve for domestic drain applications.



independent certification of your products & services

- Internal surfaces of the NRV shall be smooth.
- Steps in the invert shall be limited to 6 mm.
- When installed in accordance with the manufacturer's instructions, there should be a clearance of at least 5 mm 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 NRV will meet the requirements 3.4.4.3.
- When installed at a rotation of 20° radially from vertical and tested in accordance with BS EN 13564-2 clause 3.4.4, the NRV will meet the requirements 3.4.4.3.
- When installed in accordance with the manufacturer's instructions, the NRV will meet the requirements of BS EN 13564-2:2002 clauses 3.4.2 (automatic closure device pressure test) with a modified test arrangement to accommodate end of pipe NRV 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 NRV with a maximum of 3 flushes on each occasion.

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 NRV shall remain fully inserted into the pipe when subjected to a tension 0.075 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 Watertight NRV the manufacturing process shall include appropriate systems for the:

- Specification of component materials;
- Verification component materials received are to specification;
- Handling and storage of all component materials and finished units;
- Detailed drawing / schedule for manufacture;
- Manufacture / assembly of Watertight NRV; and
- Fabrication and quality control of workmanship.

The production of the Watertight NRV 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⁽⁵⁾, the

PT/494/0421 (April 2021)

Assessment Schedule for the Watertight International Non-Return Valve for domestic drain applications.



independent certification of your products & services

Watertight NRV shall be reasonably expected to perform as described.

4. APPROVAL

The Watertight NRV has been audited and successfully met all the requirements stated within this assessment schedule.

Signed:

A handwritten signature in black ink, appearing to read 'E. McArthur'.

Valid until 26 April 2026

5. REFERENCES

1. BS EN 13564-1:2002. Anti -flooding devices for buildings - Part 1: Requirements.
2. BS EN 13564-2:2002 Anti-flooding devices for buildings - Part 2: Test methods.
3. BS EN 681-1:1996 Elastomeric seals- Material requirements for pipe joint seals used in water and drainage applications.
4. BS EN 1852-1:2018 Plastics piping systems for non-pressure underground drainage and sewerage. Polypropylene (PP). Specifications for pipes, fittings and the system.
5. Installation instructions: Flood Control NI Ltd. 2016.