PT/497/0222 (October 2024)

Assessment Schedule for StormBrake™ vortex flow control system as manufactured by FP McCann

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1. SCOPE

This schedule specifies requirements for the StormBrake™ vortex flow control system as supplied by FP McCann Limited. It is applicable to surface water applications with design flows from 1 l/s up to 110 l/s, with a hydrostatic head of range 0.3 m to 3.5 m.

1.1 Introduction

The system is designed to control the rate of discharge of surface water from attenuation tanks or other storage. The flow rate is achieved by creating a vortex in the outlet once a defined head of water is reached.

The system is designed for a given location based upon allowable discharge, pipe sizing and water level. The system is fabricated entirely from stainless steel other than the backing plate and door seals.

The system is typically fitted in an independent chamber in-situ. The device can also be installed in-situ inside an attenuation system when required.

1.2 Applicable standards

Performance: No applicable British, European or International Standards have been identified that are applicable to this product.

Materials: Materials used in the manufacture shall comply with:

- BS EN 10088-1:2014
- BS EN 10088-2:2014
- BS EN ISO 3506-1:2020
- BS EN 12385-4 2002 + A1 : 2008
- BS EN 681-1:1996

1.3 Approval History

The StormBrake™ vortex flow control system was originally awarded WRc Approved™ certification in February 2017. The previous certification number was:

- PT/398/0217

2. REQUIREMENTS AND TESTING

2.1 General

The StormBrake™ vortex flow control system shall comply with the material requirements of 2.2.

2.2 Materials and components

Stainless steel sheet shall be grade 1.4307 (or 1.4404 where required) in accordance with BS EN 10088- 1:2014 and shall comply with the requirements of BS EN 10088-2:2014.

Stainless steel nuts, bolts and fixings shall be grade A4 and comply with the requirements of BS EN ISO 3506:2020.

Steel cable shall meet the requirements of BS EN 12385-4 2002 + A1 :2008.

Closed cell Neoprene backing gasket shall meet the requirements of BS EN 681-1:1996.

2.3 Type Testing

Mechanical resistance: The centre of the upstream-facing side and the centre of the curved volute of the StormBrake™ vortex flow control system shall withstand the impact of a 5 kg test piece dropped directly onto its centre from a height of 2 m without causing permanent indentation greater than 10 mm.

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Flow characteristics: The design procedure for the StormBrake™ vortex flow control system shall be designed using FP McCann's latest design procedure and verified by testing.

Flows from 1 l/s up to 60 l/s with a hydrostatic head of 0.3 m up to 2.5 m to achieve the specified discharge (±5%) at the specified head.

Flows greater than 60 l/s up to 110 l/s with a hydrostatic head of 0.3 m up to 3.5 m to achieve the specified discharge (±10%) at the specified head.

2.4 Manufacture

To ensure the quality and performance of the StormBrake™ vortex flow control system, 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 StormBrake™ vortex flow control system; and,
- Fabrication and quality control of workmanship.

The production of the StormBrake™ vortex flow control system and related quality control procedures shall comply with requirements to ensure the stated performance of the product is reliably achieved.

Dimensional requirements: The vortex chamber of the StormBrake™ device shall be manufactured to dimensional tolerances of ±2%.

Appearance: The internal and external surfaces of the vortex chamber and the mounting plate/spigot shall be smooth, clean, and free from scoring, cavities and other surface defects.

2.5 Installation

When installed in accordance with the installation documentation[6], the StormBrake™ vortex flow control system shall be reasonably expected to perform as described.

3. APPROVAL

The StormBrake™ vortex flow control system has been audited and successfully met all the requirements stated within this assessment schedule.

Signed:

Valid until 14/02/2027

4. REFERENCES

1. BS EN 10088-1:2014 Stainless steels. List of stainless steels.

2. BS EN 10088-2:2014 Stainless steels. Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes.

 WRc contract no. 2752226

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3. BS EN ISO3506:2020 Mechanical properties of corrosion-resistant stainless steel fasteners. Bolts, screws and studs.

4. BS EN 12385-4:2002+A1 2008 Steel wire ropes, Safety stranded ropes for general lifting.

5. BS EN 681-1:1996 Elastomeric seals. Material requirements for pipe joint seals used in water and drainage applications. Vulcanized rubber.

6. StormBrake™ Installation Manual v 4.1: FP McCann 2022.

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