WC, Cistern and Filling Valves Guide to the new water regulations and compliant products



Water Regulations

THE PROBLEM

Following concerns raised by several water companies in 2018 regarding contaminated water re-entering the mains supply, WRAS introduced measures to end this potentially dangerous situation. WRAS recommended the addition of an air gap to prevent the backflow of water from the cistern. In the UK there have been a number of documented cases where the water from toilet cisterns had been drawn back into the supply pipework and even distributed to other outlets. This backflow was often identified because the water contained evidence of the dissolved cistern block and these became known as 'blue water' incidents because of the characteristic colour.

An investigation was carried out to establish the root causes of contamination and water companies identified the criteria that products need to satisfy to be compliant. WRAS reviewed the following regulations:

- Regulation 4(1) of the Water Supply (Water Fittings) Regulations 1999
- The Water Supply (Water Fittings) (Scotland) Byelaws 2014
- · The Water Supply (Water Fittings) Regulations (Northern Ireland) 2009

This means that a number of products on the market are effectively illegal and cannot be specified or installed. The issue is therefore to find a solution to the problem.

Backflow Prevention



A WC system can include products from multiple manufacturers that all combine: (valve, cistern, WC pan), but regulations now require the design of the overall WC systems incorporates 'fail-safe' elements that remove the risk of "blue water" incidents or backflow by inserting a physical air-break into the system design.

These breaks are known as air gaps. AUK 1 air gap covers the entire system and includes requirement for a Type AG air gap on the filling valve. Type AG filling valves provide non-mechanical backflow prevention, creating a physical air break between the lowest level of water discharge from an inlet valve and the critical water level within a cistern.

When combined with other required performance specifications, including the spill-over level of the WC pan and size and shape of the overflow pipe, WC systems can meet WRAS' Type AUK 1 (air gap with interposed cistern) approval.

BACKFLOW PREVENTION

1 Inlet providing Type AG Air Gap

2 Internal Overflow

4 Water level

3 Lowest point of discharge

1 Lowest level of water discharge

2 Critical water level

TYPE AG

AIR GAP

A visible, unobstructed and complete physical air break exists between the lowest level of water discharge from an inlet valve and the critical water level in a cistern.

It must be not less than 20mm.

The overflow must be circular and have a minimum internal diameter of 19mm.

The fluid in a cistern shall not come into contact with the inlet valve discharge outlet.

The inlet valve must be of a BS1212 Part 2, 3 or 4 design which discharges above the critical water level.

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Filling valve designs NON-COMPLIANT & COMPLIANT



Example of a WC filling valve which could be used to provide a Type AC air gap. Type C air gap cannot be used to achieve a Type AUK1 air gap.



Example of a mechanical WC filling valve which cannot provide a recognised air gap.



Viega WC filling valve designed to provide the required Type AG air gap.

The new Viega frames and cisterns that qualify



1120 mm – Article 804190



980 mm – Article 804206



820 mm – Article 804213



3L (low) - Article 804664





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3H (high) - Article 804657

