WaterRegsUK

Bathroom Backflow Risks

The water fittings regulations in England, Wales and Northern Ireland, byelaws in Scotland are legal requirements which apply to all premises which have, or will have, a mains water supply, even it is only a backup supply.

An important item of public health legislation, their purpose is to protect drinking water supplies. Their objective is to prevent contamination, misuse, waste, undue consumption or erroneous measurement of water. They do this by setting legal requirements for the design, installation, operation and maintenance of water fittings, including water-using appliances.

The booklet provides information to help protect systems from the backflow risks which can be found in bathrooms, wet rooms, changing rooms, washrooms, sanitary and other hygiene conveniences or washing facilities which have a mains water supply (collectively referred to as ‘bathrooms’).

For further information about these requirements please refer to the Water Reg UK website www.waterregsuk.co.uk. or contact the local water undertaker.

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Backflow protection in bathrooms

All water fittings in a bathroom must be supplied via an appropriate and adequate form of backflow protection which is rated either equal to or higher than the highest downstream contamination risk (fluid category) for the type of backflow (back pressure or back siphonage) it is likely to be exposed to.

As some backflow prevention arrangements and devices have operational limitations you should always check with the local water undertaker to make sure they are suitable for the intended application.

Where the local water undertaker requires additional backflow protection such as zone protection should be installed.

The level of zone backflow prevention required is a matter for the water undertaker.

Toilets

A toilet is considered to be a fluid category 5 risk.

Typically, toilets have built in fluid category 5 protection such as a Type AUK1 backflow arrangement, but if not, they need to be supplied via a suitable backflow prevention arrangement offering fluid category 5 protection.

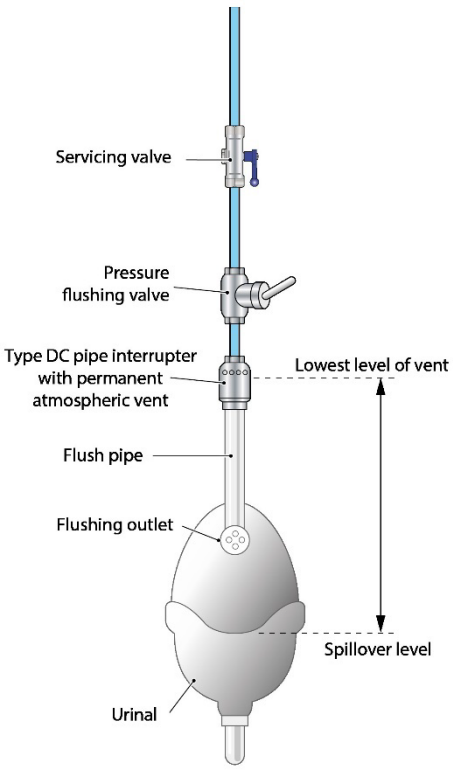
For further information contact the local water undertaker.

Urinals

Urinals are considered to be a fluid category 5 risk.

There are two accepted methods for using mains supplied water to flush urinals:

1. A pressure flushing valve and Type DC device arrangement installed in accordance with the requirements of schedule 2 paragraph 25(c) in the relevant legislation in England, Wales, Scotland and Northern Ireland.



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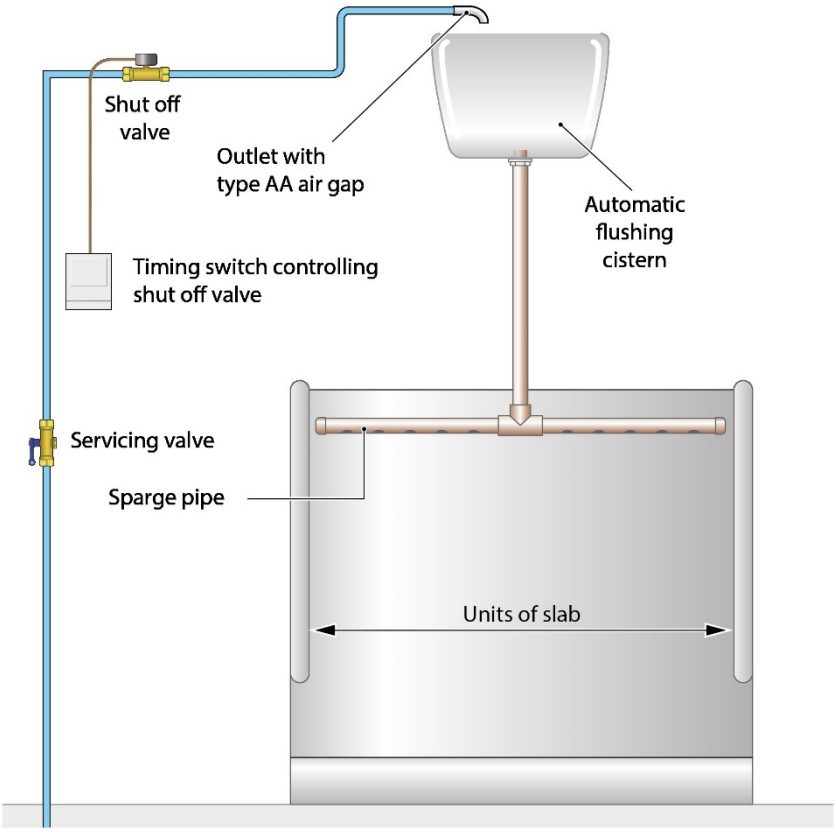
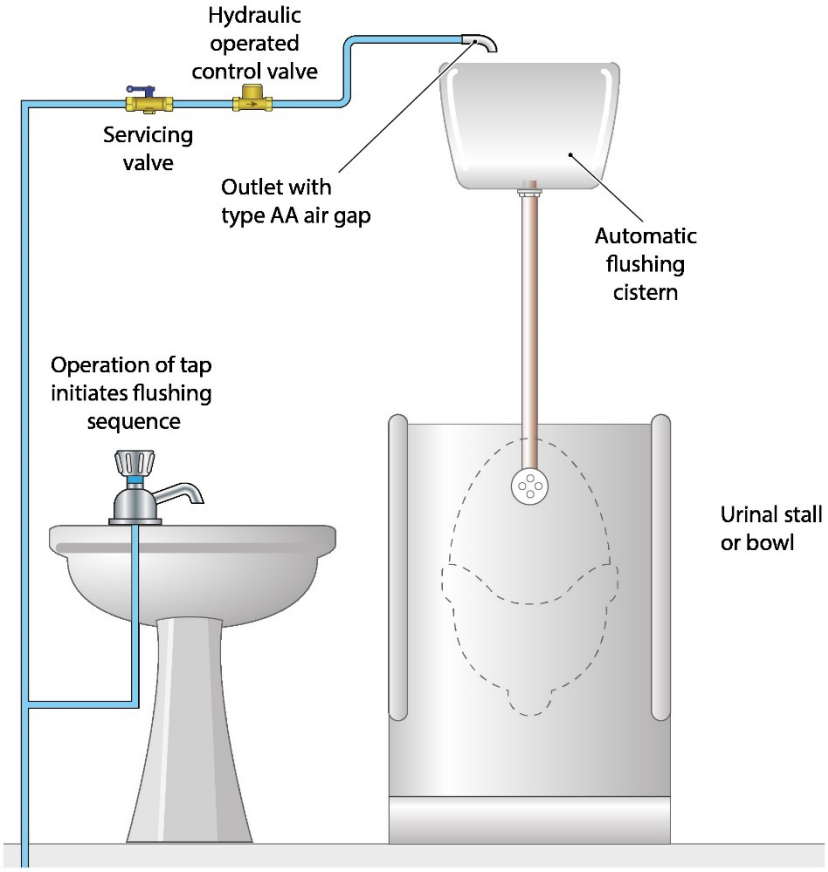
2. A flushing cistern which is supplied via an appropriate form of fluid category 5 backflow protection.





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Combined WC bidets

A combined WC bidet is considered to be a fluid category 5 risk.

The installation of a combined WC bidet is notifiable in Scotland and Northern Ireland and could be notifiable in England and Wales as either a bidet or a material change of use. If notification is not required, for example because it is undertaken by an approved contractor, there remains a legal obligation for the premises owner or occupier to ensure the plumbing work is fully compliant with the water fittings regulations, byelaws in Scotland.

Some combined WC bidets incorporate backflow protection. Where this is the case, it is essential to confirm it meets all UK requirements, which is why it is so important to take advantage of the notification check offered by water undertakers.

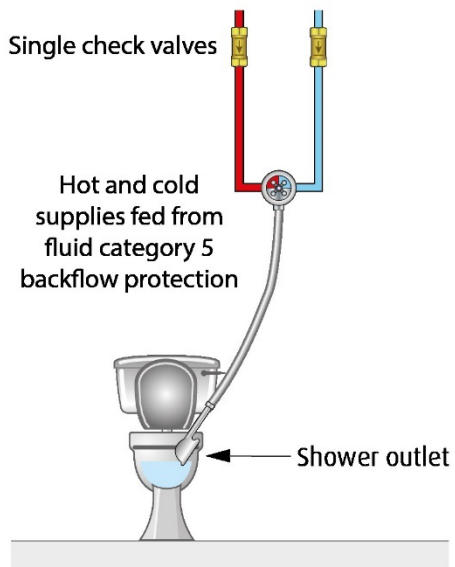
If there is no acceptable built in backflow protection the installation must be supplied via a suitable form of fluid category 5 backflow prevention, for example via a break tank arrangement incorporating a Type AB air gap.

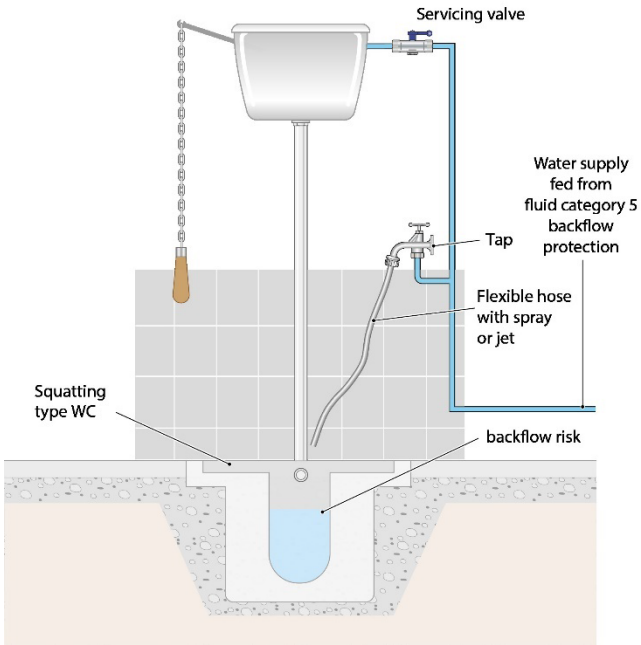
Bidets adjacent to toilets

Bidet showers adjacent to toilets are considered to be a fluid category 5 risk meaning both the cold water, and where appropriate hot water, must be supplied via a suitable form of fluid category 5 backflow prevention, for example via a break tank arrangement incorporating a Type AB air gap.

The installation of bidet showers is notifiable in Scotland and Northern Ireland and could be notifiable, for example as material change of use, in England and Wales. If notification is not required, for example because it is undertaken by an approved contractor, there remains a legal obligation for the premises owner or occupier to ensure the plumbing work is fully compliant with the water fittings regulations, byelaws in Scotland.

Providing the water is not to be used for drinking, cooking or any other forms of washing, the local water undertaker may be willing to consider permitting under conditional consent the use of the same dedicated fluid category 5 backflow protection and distribution arrangement to supply multiple bidet shower arrangements or another bidet, toilet or urinal in the same bathroom. Please note this will be dependent upon advanced notification of any proposed installation, including any to be completed by an approved contractor.





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Bidets

Typically, bidets are considered to be a fluid category 5 risk, but some designs may be categorised as fluid category 3 in situations where the risk is considered to be lower, for example bidets supplied via taps above the spill over level in typical homes. It is however ultimately for the local water undertaker to determine what level of backflow protection is required.

The installation of a bidet with a hose handset or ascending spray (water outlet submerged i.e. below the bidet spill over level) is notifiable.

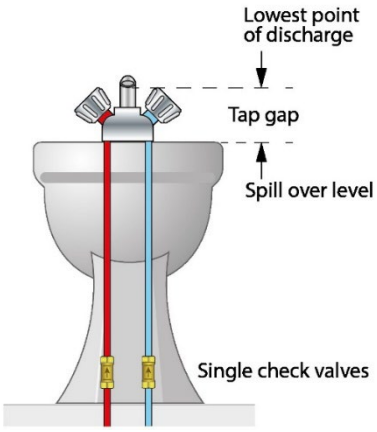
If notification is not required, for example because the work is undertaken by an approved contractor, there remains a legal obligation for the premises owner or occupier to ensure the plumbing work is fully compliant with the water fittings regulations, byelaws in Scotland.

Acceptable methods of backflow protection for bidets include:

Bidets with an ascending spray (water outlet below the bidet spill over level) or hose handset

Both the cold, and where appropriate hot water, supply to a bidet must be supplied via a suitable fluid category 5 backflow prevention arrangement. For example, a break tank incorporating a Type AB air gap.

Bidets with taps above the bidet spill over level



Providing an acceptable gap can be maintained between the lowest point of the tap outlet and spill over level of the bidet no additional backflow protection is required unless using a mixer tap which combines hot and cold water within the spout (single flow).

The gap required between the tap outlet and bidet spill over level will vary depending upon both the diameter of the pipework supplying the tap(s) and whether the bidet is fluid category 5 (Type AUK3 tap gap) or fluid category 3 (Type AUK2 tap gap).

If the bidet is supplied using single flow mixer tap (as opposed to a dual or bi-flow tap which has separate water paths to the end of the spout) in addition to maintaining the required tap gap single check valves will need to be installed on the pipework supplying the tap. This is to prevent cold water pressurising the hot water and hot water accessing the cold water mains supply under fault conditions.

If the outlet can become submerged, or the required tap gap cannot be maintained, the bidet must be supplied via a suitable form of fluid category 5 backflow protection.

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Fluid category 3 bidet: Type AUK2 tap gap	
Tap or shower connection size	Minimum tap gap
Up to and including 15 mm (½")	20 mm
Larger than 15 mm (½") but smaller than 20 mm (¾")	25 mm
20 mm (¾") or larger	70 mm

Fluid category 5 bidet: Type AUK3 tap gap	
20 mm or twice the internal diameter of the tap or shower connection whichever is the greater	
For example: Tap or shower connection size	Minimum tap gap
8 mm	20 mm
10 mm	20 mm
12 mm	24 mm
15 mm	30 mm
20 mm	40 mm
25 mm	50 mm

Showers

Although ultimately it is for the local water undertaker to determine what level of backflow protection is required, showers in low risk environments, for example a typical home may be categorised as a fluid category 3 risk, whereas those installed in high risk situations, such as health care premises are a fluid category 5 risk.

If the installation of the shower is notifiable installation advice should be provided as part of the notification process.

If it is not notifiable there remains a legal obligation for the premises owner or occupier to ensure the plumbing work is fully compliant with the water fittings regulations, byelaws in Scotland.

Acceptable methods of backflow protection for showers include:

Showers with hose handsets

In all premises a shower arrangement (including those combined with fixed shower head outlets) with a hose handset capable of reaching into a toilet bowl or bidet (irrespective of the bidet design) is considered to be a fluid category 5 risk.

This means unless the shower hose can be permanently restrained or shortened to achieve a specific gap, known as a Type AUK3 tap gap, between the hose handset and spill over level of the toilet or bidet, all water supplies to the shower must be supplied via a suitable

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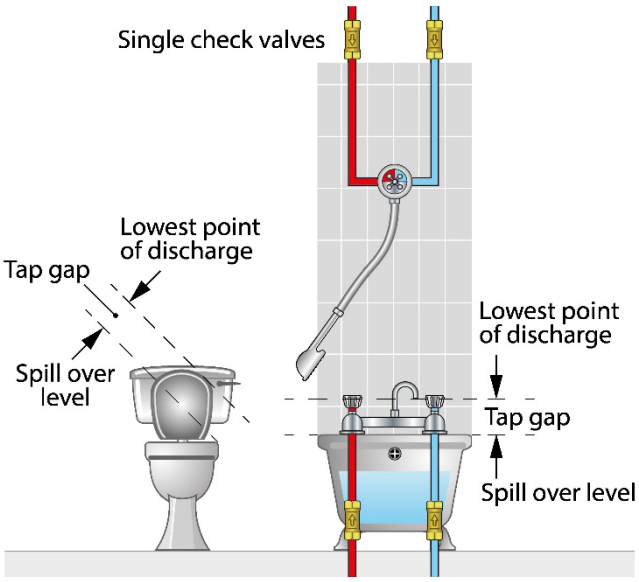
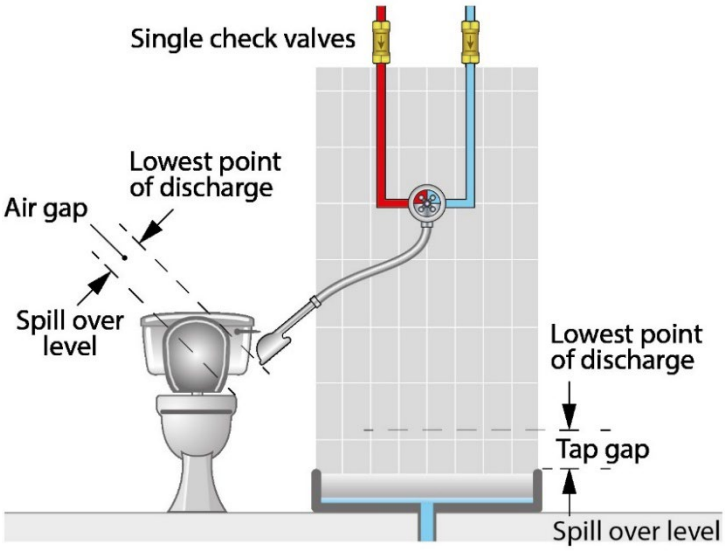
fluid category 5 backflow prevention arrangement. For example, a break tank arrangement incorporating a Type AB air gap.





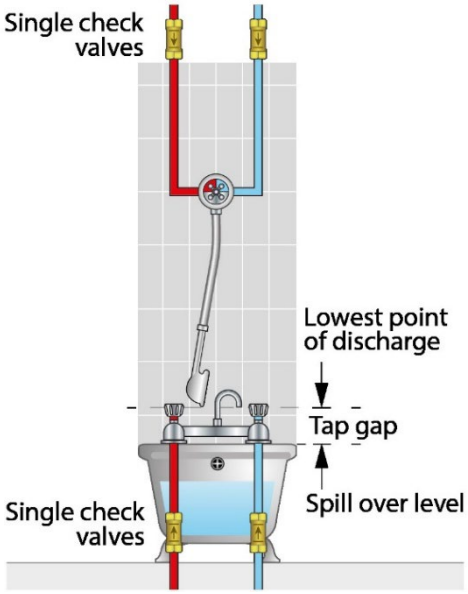
The hose handset being able to reach into a toilet bowl or bidet is not the only contamination risk of concern, preventing backflow from:

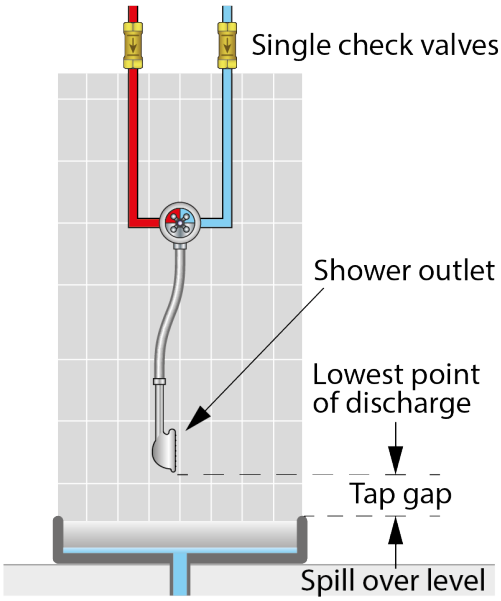
- water from the bath or shower tray via the hose; and
- either the cold or hot water supplies to the shower valve under fault conditions

also needs to be addressed.

Typically, the risk of back siphonage of water in the bath or shower tray is tackled by ensuring the hose handset also maintains a suitable tap gap above the spill over level of the bath or shower tray. This gap will vary depending upon both the diameter of the pipework supplying the shower and whether the installation is fluid category 5 (Type AUK3 tap gap) or fluid category 3 (Type AUK2 tap gap).

If the shower handset cannot maintain the required tap gap then alternative backflow protection appropriate to the risk associated with the shower installation is needed.





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The risk of cold water pressurising the hot water and hot water accessing the cold water mains supply under fault conditions is usually addressed by the installation of single check valves on the supplies to the shower valve. In the case of fluid category 3 shower installations if double check valves are fitted on the supply to the shower valve this would also address back siphonage via the hose where the required tap gap could not be maintained.

Fluid category 3: Type AUK2 tap gap	
Tap or shower connection size	Minimum tap gap
Up to and including 15 mm (½")	20 mm
Larger than 15 mm (½") but smaller than 20 mm (¾")	25 mm
20 mm (¾") or larger	70 mm

Fluid category 5: Type AUK3 tap gap	
20 mm or twice the internal diameter of the tap or shower connection whichever is the greater	
For example: Tap or shower connection size	Minimum tap gap
8 mm	20 mm
10 mm	20 mm
12 mm	24 mm
15 mm	30 mm
20 mm	40 mm
25 mm	50 mm

Showers with fixed shower heads

As with showers hoses it is important to address the risk of backflow of the bath or shower water via any fixed shower outlets as well as supplies to the shower valve.

The information relating to these two concerns given above also applies to these types of showers, but in the case of fixed shower heads the gap is measured between the lowest point of the shower head and spill over level of the bath or shower tray.

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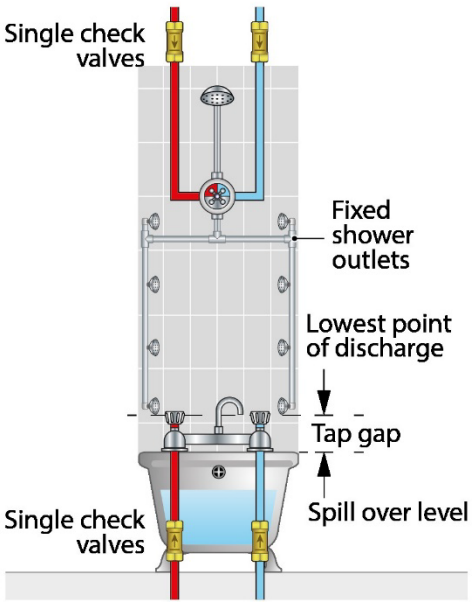
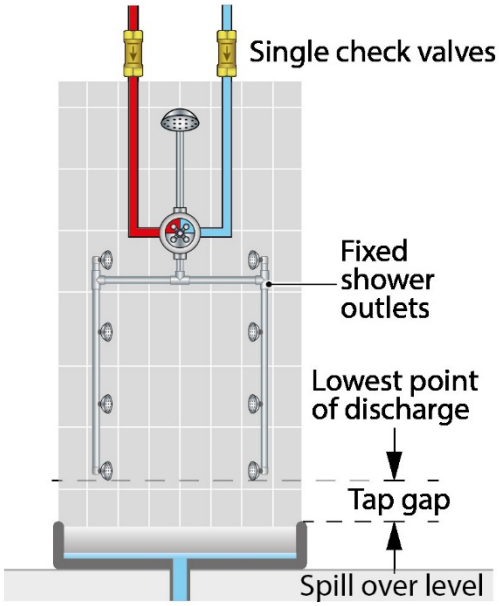


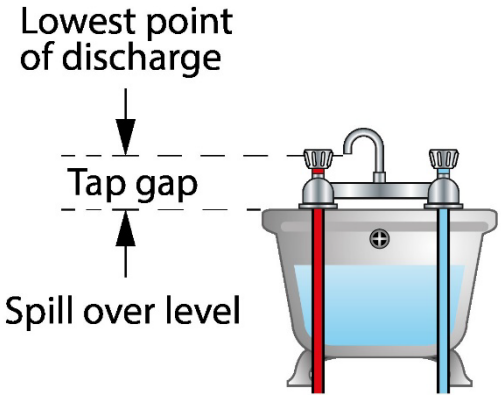


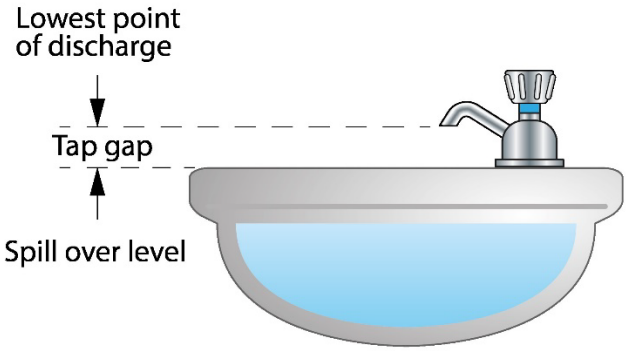
Bath and basin taps

The backflow risks associated with bath and basin taps will vary dependent upon their use (intended or otherwise) and the environment in which they are sited.

Although ultimately it is for the local water undertaker to determine what level of backflow protection is required, typically bath and basin taps used in domestic premises are categorised as a fluid category 3 risk, whereas those installed non-domestic premises can be a fluid category 5 risk.

There are a number of ways in which to prevent backflow via a tap, one of the most commonly used forms being a tap gap. A tap gap is a ‘gap’ between the lowest point of the tap outlet and spill over level of the bath, basin or bidet, the size of which varies depending upon the diameter of the pipe supplying the tap. If a tap gap cannot be maintained or the outlet is submerged, appropriate backflow protection is required. In domestic properties a double check valve is typically used.





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Fluid category 3: Type AUK2 tap gap	
Tap connection size	Minimum tap gap
Up to and including 15 mm (½")	20 mm
Larger than 15 mm (½") but smaller than 20 mm (¾")	25 mm
20 mm (¾") or larger	70 mm

Fluid category 5: Type AUK3 tap gap	
20 mm or twice the internal diameter of the tap or shower connection whichever is the greater	
For example: Tap connection size	Minimum tap gap
8 mm	20 mm
10 mm	20 mm
12 mm	24 mm
15 mm	30 mm
20 mm	40 mm
25 mm	50 mm

Please note if tap is a single flow mixer tap (as opposed to a dual or bi-flow tap which has separate water paths to the end of the spout) in addition to maintaining the required tap gap single check valves will need to be installed on the pipework supplying the tap. This is to prevent cold water pressurising the hot water and hot water accessing the cold water mains supply under fault conditions.

If the installation is notifiable installation advice should be provided as part of the notification process.

If it is not notifiable there remains a legal obligation for the premises owner or occupier to ensure the plumbing work is fully compliant with the water fittings regulations, byelaws in Scotland.

Spa baths

The backflow risks associated with a spa bath will vary dependent upon its design, use (intended or otherwise) and the environment in which it is sited. As they are potentially a fluid category 5 risk the local water undertaker should be contacted prior to installation.

Assisted bathing baths

Bathing equipment in a nursing or care environment is considered to be a fluid category 5 risk. The supplies to all taps and showers outlets must be protected by a suitable form of fluid category 5 backflow protection. In practice this means being supplied from storage incorporating an adequate air gap (such as a Type AB air gap) or by maintaining a gap

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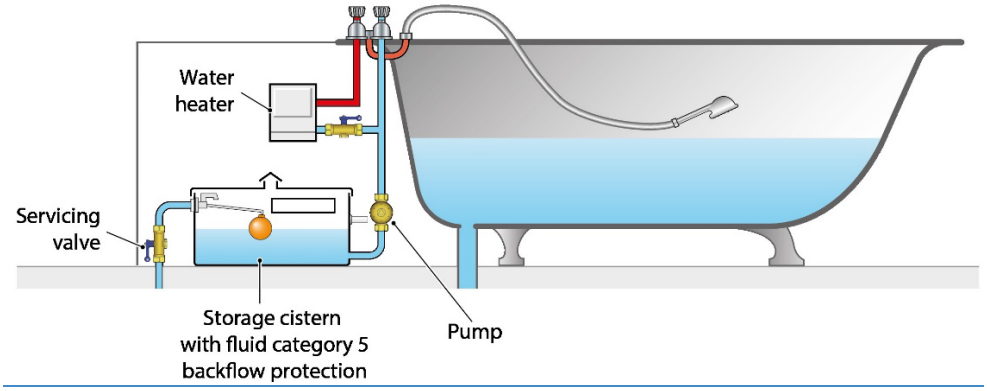
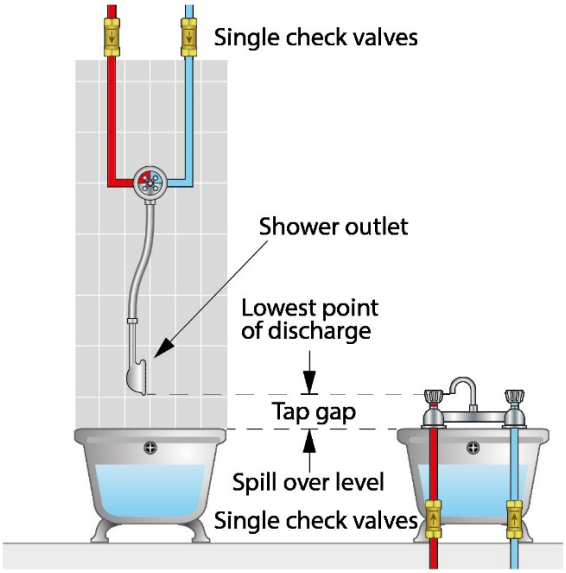
between a tap and shower outlet and spill over level of 20 mm or twice the diameter of the supply pipe (whichever is the greater) measured as shown below.





Fluid category 5: Type AUK3 tap gap	
20 mm or twice the internal diameter of the tap or shower connection whichever is the greater	
For example: Tap or shower connection size	Minimum tap gap
8 mm	20 mm
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12 mm	24 mm
15 mm	30 mm
20 mm	40 mm
25 mm	50 mm

Please refer to the assisted bathing equipment leaflet for additional information.

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