

Unit 205: Cold water systems

Outcome 4

Requirements for pipework installations in domestic cold water systems

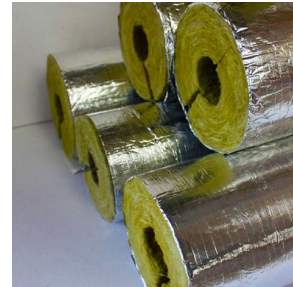
Installations

Insulation

This is the installation of material to prevent the transmission of heat: heat loss, heat gain or frost protection.

Good insulating material uses still air to an advantage and should be of adequate thickness and have the following characteristics:

- It should not be flammable
- It should be vermin proof
- It should be draught proof
- It should be impervious to moisture
- It should be sufficiently robust for the job



Installations

Insulation

Any pipework in a vulnerable position should be insulated.

- Outside
- Loft area
- Under suspended downstairs floor
- Outhouse
- Service pipe (750-1,350mm)
- Service pipe entrance (within 750mm)
- Temporary supplies (standpipe)
- Hot and cold pipe proximity



Video link:

<http://www.youtube.com/watch?v=stuJriUkxo8&list=UUwJUiXXJtDx-zA&index=1&feature=plcp>

Installations

Materials

Approved materials include:

Copper, plastic, barriered plastic, galvanised LCS, stainless, gun metal, brass, aluminium.

Non-approved materials include:

Lead and those not listed on the WRAS register.



WRAS
APPROVED
PRODUCT

Installations

Fluid categories

Fluid category	Description	Example
1	Wholesome water supplied from the water undertaker	Mains water
2	Water that would be classed as Cat 1 except for colour, odour, appearance or temperature	Hot water in cylinder, discharge from combi tap, softened water
3	Fluids representing a slight health risk and aren't suitable to be drunk	Primary water, bath and shower water
4	Fluids representing a significant health risk, containing toxic substances	Microorganisms, pesticides, washing machines, dishwashers
5	Fluids representing a severe/serious health risk, containing pathogenic organisms, radioactive, faecal	Urinal, sink, WC, bidets, grey water, medical rooms, laboratories, abattoirs

Installations

Back flow

When water is allowed to flow in the opposite direction to which it is designed to travel.

In some circumstances this will allow contamination to occur and has to be prevented.

Back syphonage

When water is drawn back out of an appliance due to negative pressure (sucking).

In some circumstances this will allow contamination to occur and has to be prevented.

Installations

Back flow and syphonage

A customer would not want:

- Dirty bath water to be drawn into the kitchen tap
- WC water to be drawn into the bath taps
- Outside tap to be drawn into the CWSC

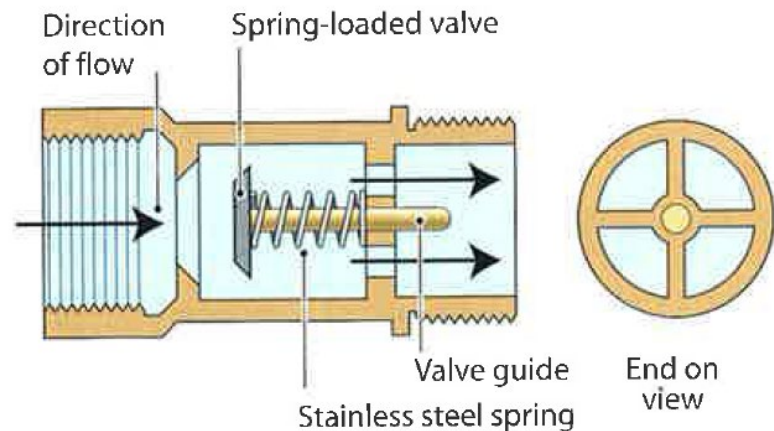
This means the proper protection is a legal requirement, to be installed by the plumber.



Installations

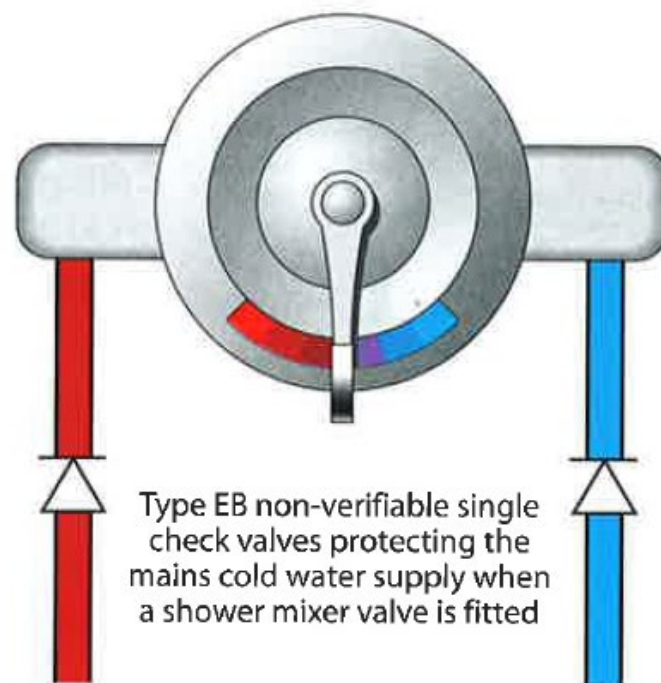
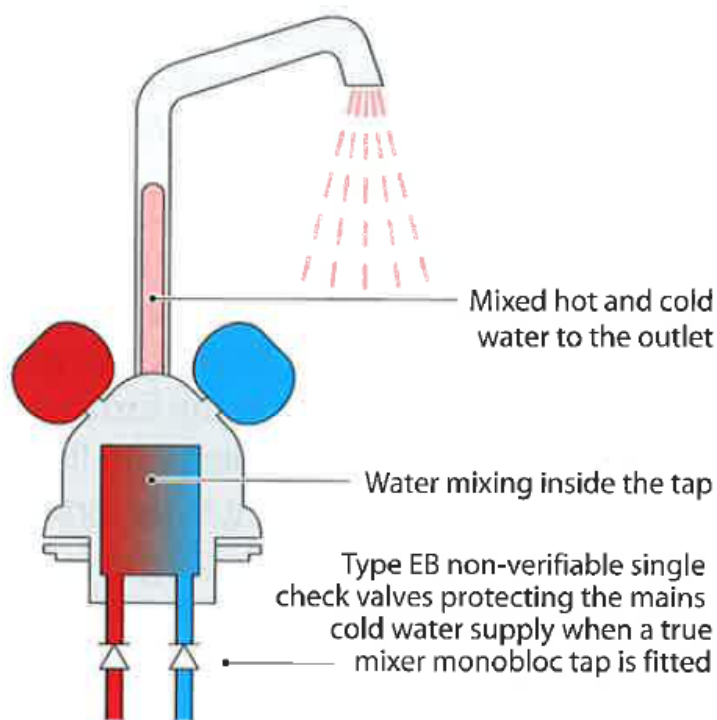
Protecting category 1 water from 2
(eg wholesome water from hot water or CWSC)

In this case a **single check valve** or non-return valve **must** be installed prior to the outlet. These would be used under a mixer tap, or shower mixer valve.



Installations

Protecting category 1 water from 2 Single check valve

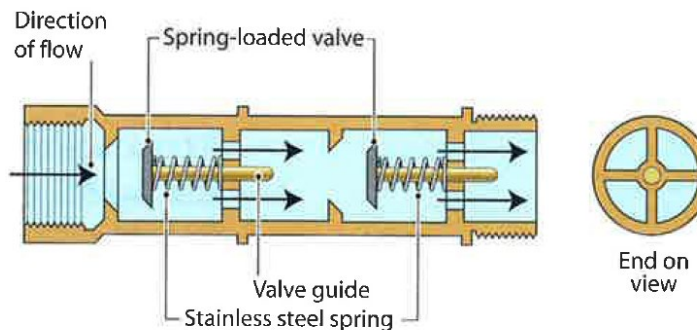


Installations

Protecting category 1 water from 3
(eg wholesome water from filling loop on combi boiler)

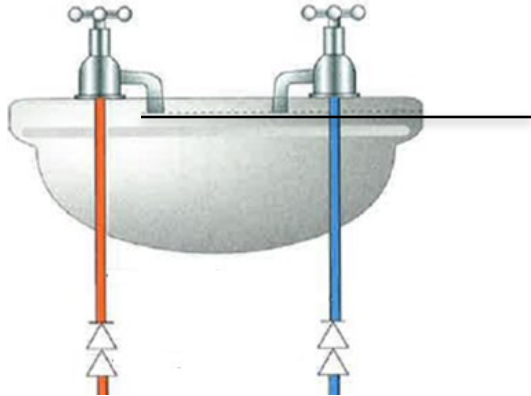
In this case a **double check valve** or double non-return valve **must** be installed prior to the outlet protecting the wholesome water.

These would be used under a sink with no air gap, on a filling loop for a heating system or on an outside tap.



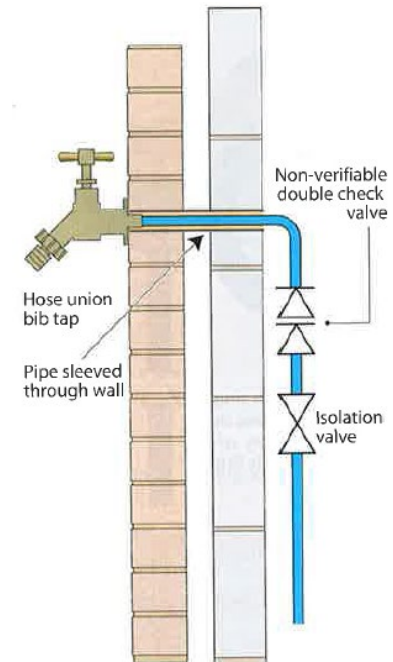
Installations

Protecting category 1 water from 3



Tap outlet is
below spillover
level of basin

Tap outlet could
come into contact
with contaminated
water



Installations

Protecting category 1 water from 4

This situation is rare in a domestic home but can sometimes be found if the house has a swimming pool and the chlorinated water must not contaminate the wholesome water.

In this case, an RPZ valve must be installed.



Installations

Protecting category 1 water from 5 (eg wholesome water from foul water)

In this case an air gap **must** be maintained to prevent any contamination.

These air gaps are found in:

- CWSC
- WC cisterns
- Basins
- Baths
- Sinks
- Shower hoses

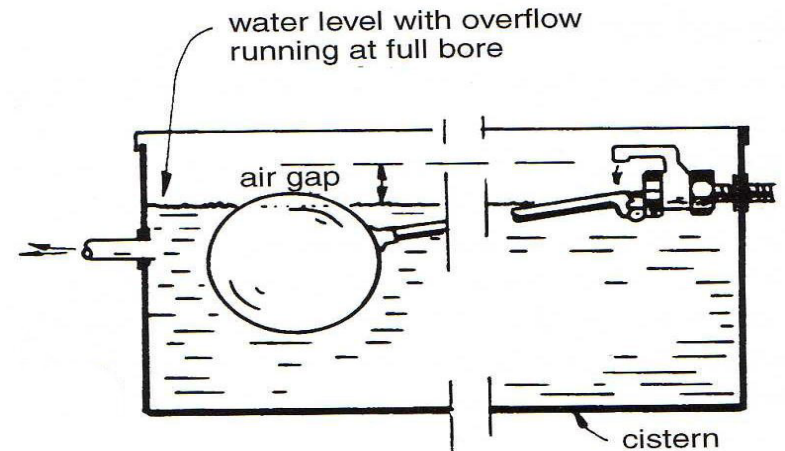
Installations

Air gaps

AUK1 or AG

The AUK1 is the height from the WC pan spillover to the cistern spillover (300mm).

The AG is the height from the warning pipe to the FOV outlet (25mm).



Installations

Air gaps

AUK2

This air gap is the distance between the outlet of the tap and the spillover level of a bath or basin, or over the rim of a bidet.

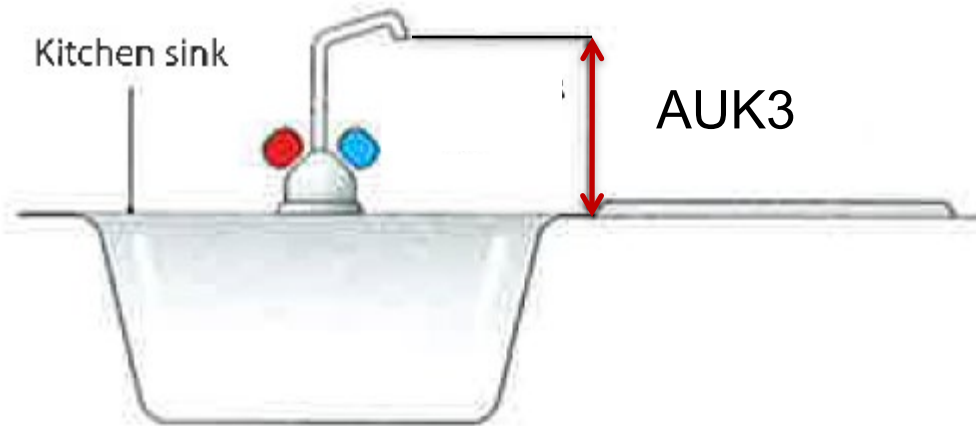


Installations

Air gaps

AUK3

This air gap is the distance between the outlet of a tap and the spillover level on a sink.



Installations

Air gaps

Flexible shower hoses must also be restricted from being submerged in bathwater by the use of a shower rail, with a rubber restrainer for the hose.



Installations

The Water Regulations

Protecting the pipework from freezing, and protecting the pipework from undue heat, are covered in the water Regulations and BS6700.

One of the five main areas of the Water Regulations is to protect wholesome water from contamination. The correct use and positioning of backflow devices is important to a plumber.