

Water Regulations Tutorial # 2 – Hose Union Taps

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Hose union taps in “non-house” situations are undoubtedly the most contentious backflow issue of all. To a large extent the national Water Regulations have harmonised the views of the UK water supply industry. However, proposed hose union tap installations require the water company to “risk assess” and this can – and often does – lead to differing interpretations and hence the level of backflow protection required.

Types of Tap



Most taps mounted above the rim of a hand washbasin, sink or bath etc, are not designed to accept a hose. Furthermore the outlet is positioned above the “spill-over” level of the basin etc. This “tap gap” provides point of use protection to Fluid Category 3 if “AUK2” and Category 5 if “AUK3”. AUK2 requires the gap to be 20 mm for ½” tap, 25 mm for ¾” and 70 mm for larger taps. AUK3 requires the air gap to be twice the bore of the inlet pipe to the tap and not less than 20 mm. Note - Zone protection may be required in certain circumstances.

Hose union taps clearly do not have an air gap when the hose is connected. Any tap - including laboratory taps - **capable** of accepting a hose, must have appropriate backflow protection. Incidentally school laboratory taps are generally considered as a Fluid Category 4 risk, whereas other laboratories are Fluid Category 5 (G6.1e).

Topic B01 states –

“In general, laboratories should be regarded as presenting the highest level of backflow risk (Fluid Category 5) unless, following a risk assessment, there is evidence to the contrary. However, arising from Health and Safety restrictions which should be in place, the laboratories of secondary schools can be considered less than a Category 5 risk.”

Fluid Categories

Backflow protection must be appropriate to the level of risk. Central to backflow prevention requirements is the concept of fluid risk. Schedule 1 of the regulations refers to 5 Fluid Categories; where 1 is drinking water and 5 represents a serious health risk. These categories are used for all situations, not just taps.

The illustration below compares the previous 3 Byelaw schedules with the new 5 Fluid Categories. The main change is the introduction of Category 4. Many of the applications in a house that are Fluid Category 3 or 4 become Category 4 or 5 respectively in a non-house situation.

Previous UK Classification	European/New UK Classification	Backflow Prevention Examples (Used in Building Services)
Class 1 Schedule A Risk	European Fluid Category 5	Air Gap – AA AB Pipe Interrupter - DC
Class 2 Schedule B Risk	European Fluid Category 4	RPZ – BA Pipe Interrupter - DB
Class 3 Schedule C Risk	European Fluid Category 3	Double Check – ED
Wholesome Water	European Fluid Category 2	Single Check – EB
	European Fluid Category 1	No Protection Required (Except whole site, at times)

Table G6.1 in the Water Regulations Guide lists numerous examples of appliances and processes in house and non-house situations.

House Gardens & Similar Installations – Fluid Category 3

The minimum level of protection required for a HU tap in a house garden is a Double Check Valve. HU taps incorporating two check valves cartridges (now described as HUK1) are **no longer acceptable** for new exterior installations. This design is prone to frost damage so the regulations now require a Double Check Valve to be provided upstream of the HU tap inside the thermal envelope of the building (where applicable) and protected from freezing.

Where there is no building available to attach to, the Arrow Valves Standpipe model SPTB offers an alternative, with integral Double Check Valve and a degree of frost protection.



*Miniature Watering Point
– ground mounting
(model SPTB)
Hinged lid secured using
padlock.
(Insulation not shown)*



*Very low headloss Double
Check Valve
(model ED132)*

The Double Check Valve no longer needs to have a test point. A DCV with no test points is described as “non-verifiable” and coded as type “ED device”. There is absolutely nothing to be gained from using a verifiable “EC” device. This would require 3 test points and would still only provide the same backflow protection as the ED – Category 3 – besides none is currently approved. Some Double Check Valves are very restrictive and can cause up to 0.5 bar pressure drop @ 3 m/s. The Arrow Valves model ED132 has an exceptionally low head loss of 0.1 bar at the same flow rate making it ideal for hose taps.

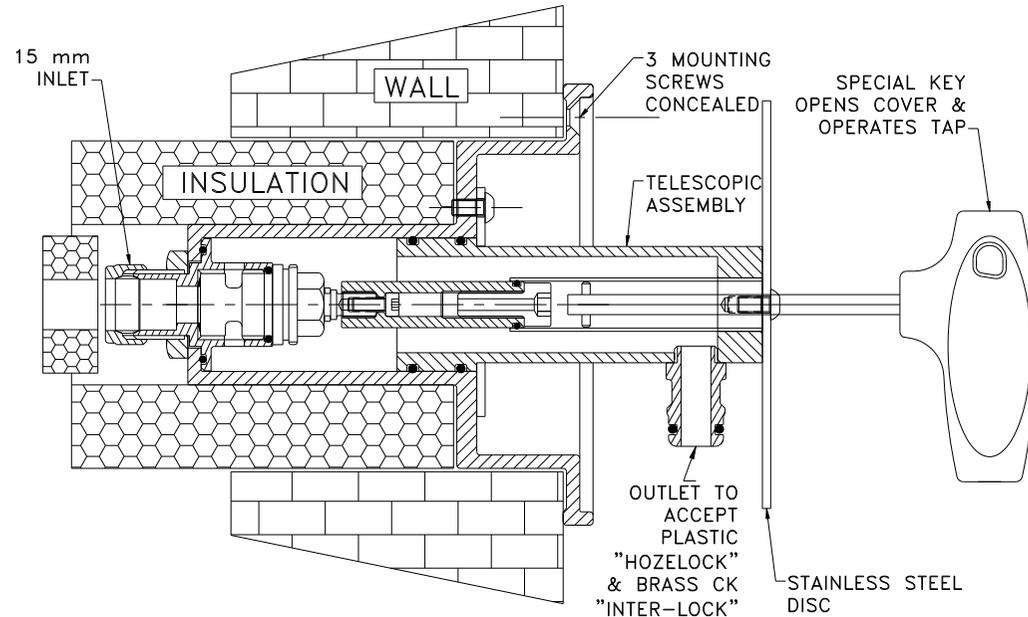
Non-House Installations – Fluid Category 3, 4 or 5

Most consultants are designing plumbing systems for non-house situations such as offices, factories, schools and recreational areas. G15.18 states the backflow prevention device should be appropriate to the downstream Fluid Category. **By default, all commercial HU taps are Fluid Category 5 (G6.1e).** However the local water company can “risk assess” the proposed installation and determine the level of protection required (G15.18). The designer should therefore provide details to the water company of the likely uses for the tap. Clearly this is an onerous task but it could be the difference between a Double Check Valve (ED device) at nominal cost, an RPZ valve (BA device) at moderate cost or a Break Tank and booster set (Type AB) at significant cost.

If the water company considers the declared use and risk to be similar to that in a house garden, they may accept a Double Check Valve but grant consent subject to conditions of limited use.

Interpretation of “Domestic”

The Regulations do not define “commercial” or “domestic”. “Domestic” may refer to the type of premises or the use. The term “house” does include a flat and bungalow. Generally, “domestic” means as used in a house. R15.20 states “house garden” includes recreational areas **excluding** agricultural and horticultural use. Consequently most (but do check) water companies consider a hose union tap in a non house garden situation to be Fluid Category 3 if a hand held hose is to be used - with self closing nozzle – for uses similar to those used in a house garden – e.g. above ground watering.





*Below Ground Hose Union Tap
(model HUBG)*

Where the tap is intended for car washing, degreasing plants, industrial areas or where there are likely be chemicals (including insecticides) etc, the water company may deem the risk to be Fluid Category 4 and an RPZ Valve (BA device) could be used. The RPZ valve would ideally be inside the building, otherwise it should be frost protected in an insulated cabinet. Where there is no building the Arrow Valves Standpipe [model SPBA](#) provides a solution. The regulations are concerned with the minimum level of protection and it is acceptable to provide a higher level of protection e.g. using a dedicated Break Tank with Type AB air gap can be used for all applications without conditions.



Hose union tap in galvanised & vandal resistant housing Standpipe (model SPBA). Incorporates Fluid Category 4 protection

In situations where it is not practical to use a standpipe, the Arrow Valves below ground hose union tap assembly [model HUBG](#) provides an alternative. Since the outlet is clearly less than 150 mm above the ground, it is necessary to supply this from a dedicated Break Tank with type AB air gap ("Boost-A-Break" - model BTAB) – **not** directly from a supply pipe.

Irrigation

Where the HU tap is to be used in a house garden for below ground irrigation – e.g. porous hoses – a [DB Pipe Interrupter](#) must be used **in addition to** the Double Check Valve when connected to a supply pipe. This is normally connected to the tap – providing the device is more than 300 mm above the highest outlet of the hose.

A DB Pipe Interrupter is a cheap and easy way to achieve Fluid Category 4 protection; however clause G15.17 (see "Conservation" paragraph) essentially limits its use to porous irrigation hoses for house gardens. The local water company may permit a DB device to be used for mini irrigations systems in a non-house garden if the area is sufficiently small.

Save for exceptional circumstances (small & remote areas), where the water company may accept a Category 4 device, non-house irrigation systems with the outlets less than 150 mm above ground, are deemed to be Fluid Category 5 (the highest risk) and must be supplied from a Break Tank with a type AB air gap – e.g. "Boost-A-Break" [model BTAB](#). Any fitting with apertures, including – pop-up sprinklers, HU taps, drain taps, quick release couplings, irrigation hoses etc, are all Fluid Category 5 when installed below ground. Even a sprinkler head laid on the lawn is considered Category 5 because the apertures would be less than 150 mm above the surface.



RPZ Valve Assembly in a tamperproof cabinet



*"Boost-A-Break"
Compact Break Tank with type AB air gap. Supplied as package on base plate. Solid state filling control.*



DB Pipe Interrupter (model DB256)

DB Pipe Interrupter c/w Hose Union connector (model DBIL)

Zone Protection

Schedule 2, paragraph 15 requires “point of use” backflow protection. For Category 4 or 5 situations, a single device, e.g. RPZ and Break Tank respectively, can serve several HU taps. This is known as “zone” protection. Clause G15.25 states that zone protection should be in addition to points of use. One reason for this is to prevent cross contamination. Suppose one tap has a hose in chemical A and another tap has its hose in chemical B. Under backflow conditions the two chemicals could mix to create a dangerous combination. In some cases the water supplier would require a Double Check Valve (FC 3 protection) for each HU tap and a zone device according to the highest Fluid Category, e.g. a Break Tank with AB air gap (Category 5).



Compact surface mounted stainless steel box (model HUTB). With spherical valve and hose connection. Foam encapsulated.

Installation

In addition to backflow requirements, frost protection and misuse (vandal resistance) should be considered. Underground joints should be avoided where possible. Where there is no wall to mount a tap, a standpipe could be used. Arrow Valves Standpipe [model SPED](#) features a low headloss Double Check Valve (ED132), servicing valve, and lockable enclosure. This unit can be mounted in soft ground with the optional Pile.

A ½” broken tap or one left open can consume more than £70 of water per day. If an enclosure such as model SPED is not used, a lockable wall mounted hose union tap can be used to prevent unauthorised use. It should be noted that most plumbers install taps with a parallel male thread into a wall plate using PTFE tape. It is easy to unscrew the tap from the back plate or break the plate. A solution is offered with the Arrow Valves secure hose tap housed in a lockable stainless steel box [model HUTB](#). Alternatively we can offer a concealed and frost protected arrangement suitable for wide (130 mm min cavity) walls (see “Conceal-A-Tap” [model HUC](#)).



Hose union tap in galvanised & vandal resistant housing Standpipe (Model SPED)



Washdown guns

Conservation

To conserve water and provide additional backflow protection, clause G15.17 states that *“hand held hoses should be fitted with a self-closing mechanism at the outlet of the hose”*. Note a control valve – such as a self-closing nozzle – must not be fitted.

Labelling

G27.4 states - *“except in a house, all taps that are supplied with cold water that is not wholesome should be labelled “Not Drinking Water”*. The industry guidance for this clause states that it is acceptable to label the other way, known as the safe condition, i.e. wholesome water taps labelled *“Drinking Water”*.

Summary

1. Do not use HU taps with integral check valves (HUK1)
2. Position all outlets at least 150 mm above ground - unless supplying from Break Tank with AB.
3. Protect from misuse and frost.
4. Notify the local water company of your design or proposed installation.
5. Make the client aware of any limited use consent and servicing requirements.

Thank you for your interest