

Water Regulations Tutorial # 2

Hose Union Taps

Updated October 2022

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. All non-domestic hose union taps are classed as a Fluid Category 5 risk, unless risk assessed by the local water company.

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	Fluid Category 5	Air Gap – AA AB Pipe Interrupter – DC
	Fluid Category 4	RPZ – BA
Class 2 Schedule B Risk	Fluid Category 3	Double Check – EC ED
	Fluid Category 2	Single Check – EA EB
Class 3 Schedule C Risk	Fluid Category 2	Single Check – EA EB
Wholesome Water	Fluid Category 1	No Protection Required

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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, Arrow Valves offer a range of standpipes such as the Pillar Standpipe model SPHUD, with integral Double Check Valve and a degree of frost protection.



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. 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.

For Fluid Category 5 risks, Arrow Valves have designed a Category 5 Standpipe, model SPFC5, as an alternative to a Break Tank & Booster Set. The SPFC5 has no power requirements and will provide a good flow of water for Category 5 applications such as filling canal boats. For higher pressure applications such as wash down, a Break Tank & Booster Set would be more suitable.

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.

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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.



*Fluid Category 4 Standpipe
(model SPBA)*



*Below ground hose
union tap
(model HUBG)*

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

Except 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.

For domestic or commercial irrigation systems, without insecticide or fertiliser additives, Arrow Valves offer a Fluid Category 3 Miniature Standpipe with the outlet just above the 150 mm threshold.



*Miniature Standpipe
to be buried in soft
ground
(model SPTB)*

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 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).



*Hose union tap
in tamperproof
Standpipe
enclosure
(model SPED)*

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 head-loss Double Check Valve (ED132), servicing valve, and lockable enclosure. This unit can be mounted in soft ground with the optional Pile.

A 1/2" 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.

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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”*.

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 a Break Tank with Type AB Air Gap.
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