

pH CORRECTION

FOR NEUTRALISING ACID WATER AND REMINERALISING VERY PURE WATER

When rain falls, the water has a naturally aggressive, slightly acidic nature. This water then dissolves chalk and/or metallic deposits present in the local rock strata which leads to contamination of the water. This results in ground and borehole water containing a number of elements that would not otherwise be present in mains water. These contaminants (such as iron and manganese) then cause problems when the water is put into use.

Acidic water results in corrosion of pipework, heating cylinders and equipment. Any iron and manganese present will result in poor tasting water, in addition to staining baths, basins and any appliances with which the water may come into contact.

A pH value below 7 is considered to be acidic, and corrosion accelerates at pH levels below 6.5, with levels below 6.0 considered to be extremely aggressive. It is usually difficult to remove iron and manganese from acidic water, so often the first step in the process is to raise the pH.

The simplest and safest way to raise the pH is to run the water through a pressure vessel containing a bed of specially activated limestone. This is a mixture of calcium and magnesium salts, which are the salts found in waters of pH greater than 7.0. This limestone gradually dissolves increasing the pH level of the water. As the limestone dissolves, it will need refilling periodically. Refilling is straightforward as the media is inert and easy to handle.

To treat waters that are otherwise clean and pure, a basic up-flow system is all that is required. For water with iron, manganese or turbidity problems, an automatic back-washing downflow system will be needed to remove accumulated debris.



Manual upflow and Fleck 2510 Valve illustrated

Water with a pH below 5.0 is uncommon and is unsuitable for this type of treatment.

Specifying and Sizing

The contact time of the water with the pH correction media is important in achieving consistent results. The recommended maximum service flows for each system are shown in the Technical Details tables overleaf.

For every 10mg/L CO₂ present in the water, the alkalinity and total hardness will be raised by approximately 18 mg/L as CaCO₃. For each 10 mg/L CO₂ removed, there will be a consumption of approximately 12 mg/L of media.

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HALPIN &
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System Management – upflow

Upflow 'manual' pH correction units are used for raising the pH of otherwise clean water, or for the re-mineralising of pure water produced by Reverse Osmosis or desalination. For water with significant iron and manganese levels an auto-backwashing or combination system will be required. Domestic units up to 13" include service flow controller and quick release couplings (QRCs) for ease of refilling. Larger

industrial systems of 14" diameter and above use a top and bottom entry vessel for maximum flow. These do not include flow controllers or QRCs. With certain waters periodic manual high volume flushing will be needed in a 'manual' system to break up any Calcium Carbonate that has re-deposited onto the pH correction media bed. A manually operated flushing system can be incorporated into the unit at the time of manufacture.

Technical details and model numbers – upflow

Upflow pH Correction Model	FpH1054M	FpH1248M	FpH1354M	FpH1465M	FpH1665M	FpH1865M	FpH2160M	Fp2469M
Flow rate m ³ /h	0.60	0.85	1.00	1.20	1.50	2.10	2.60	3.40
Connections In/out	3/4" BSP	3/4" BSP	3/4" BSP	2" socket	2" socket	2" socket	2" socket	2" socket
Height mm	1455	1296	1445	1920	1920	1980	1860	2210
Diameter mm	270	315	335	370	410	510	560	620

System Management – backwashing systems

Backwashing systems include service and drain line flow controllers. NB Backwash flow per vessel is 1.5 times the service flow. Therefore where possible use two or more

small units instead of one large one to reduce the pumping requirement. In areas of high media usage, special vessels can be supplied with an additional filling port eliminating the need to remove the backwashing valve during media replenishment.

Technical details and model numbers – backwashing systems

Automatic Backwashing pH Correction Model	FpH 1054	FpH 1248	FpH 1354	FpH 1465	FpH 1665	FpH 1865	FpH 2160	FpH 2469	FpH 3072	FpH 3672	FpH 4278
Flow rate m ³ /h	0.60	0.85	1.00	1.20	1.50	1.90	2.60	3.40	5.30	7.70	10.50
B/W flow m ³ /h	0.90	1.28	1.50	1.80	2.25	2.85	3.90	5.10	7.95	11.55	15.75
Connections In/Out	1" BSP	1" BSP	1" BSP	1" BSP	1" BSP	1" BSP	1/1 1/2" BSP	2" BSP	2" BSP	2" BSP	2" BSP
Height mm	1607	1458	1601	1880	1885	1997	1840	2130	2290	2360	2338
Diameter mm	270	315	335	370	410	510	560	620	770	930	1080

NB. To prevent damage to the vessel these filters must be protected from negative pressure from the drain or supply. A vacuum relief valve is recommended on the inlet supply and is supplied with all vessels from 370mm diameter upwards.

Special product features:

High efficiency British made media uses less mineral volume to correct pH than conventional systems. Replacement media is safe to handle and convenient.

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