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Why and How to Convert Urinals to Low-Flushing

For those that do not like the concept of waterless urinals, or who feel that the weekly dosing procedure for waterless cannot be reliably implemented, the "low flushing" method is a good alternative that saves almost as much water.

What is low-flushing?

A urinal "sleeve / mushroom" (Urinal Maintenance Device) inserted in the waste outlet dispenses chemicals into the waste pipes to treat the urine, reducing the need for water. Usually, the urinals are flushed once every 4 or 12 hours, activated by an electronic flush controller which determines how much water is supplied to the urinal cistern. Like Gentworks, many washroom servicing companies now offer low-flushing urinal systems. The main reason for their introduction at the turn of the century was that the first designs of waterless urinals had gained a poor reputation in the 1990's. The technologies deployed and the cartridges used are almost identical for both waterless and low-flushing. The microbiological cartridges are unable to break down hair and other debris and therefore this must be flushed away by some means. The low-flushing approach uses an automatic regular flush of cold water to accomplish this, whereas waterless urinals rely upon weekly manual dosing with a combination of chemical and warm water.

Relative Water Savings

Low-flushing usually saves almost as much water as waterless. Quarterly water consumption for a typical 9 litre cistern (typically feeding 2 or 3 urinals) is shown in the table below. As an indication of the relative monetary savings, the cost is calculated at an 'average' UK rate of £2.20 per cubic metre, including both the supply and waste charges. Note that UK water charges range widely from £1.37 to £4.26 per cubic metre, depending upon region and supplier.

Frequency of flush	Cubic metres of water used per quarter	Water cost per quarter
Every 10 minutes	118.3	£260
Every 20 minutes	59.1	£130
Every 4 hours (low-flushing)	4.9	£11
Every 6 hours (low-flushing)	3.3	£7
Every 12 hours (low-flushing)	1.6	£4
Waterless	0	£0

Based on a 9 litre cistern with combined water and waste charge of £2.20 per cubic metre.

Choosing the Best Flush Frequency

As the difference in water saving and related cost between flushing every 4 hours and not at all is so small, this factor is seldom important in deciding how much, if any, water should be used. Once an appropriate Urinal Maintenance Device (UMD) has been inserted, the urine will be treated by microbes and other ingredients to avoid the problems of odours and blockages it would otherwise cause. The flushing is merely to remove from the waste pipes the hair and other debris that the contents of the UMDs are unable to break down. It takes about 2 hours for the microbes to become active and begin to multiply. The more regular the flushing, the less opportunity the microbes have to establish themselves before being washed away so the longer the interval between flushes, the more effective they become. The main cause of urinal blockages is limescale in the water combining with urine to form a hard scale. The microbes will convert the urine into a form that is highly soluble in water and there is less tendency to lay down scale. However, the more regular the flushing, the more limescale is present in the waste pipes and the less time the microbes have to do their good work. So, it is best to reduce flushing to once every 12 hours, if this is acceptable to the users. Another benefit of using as little water as possible is that less limescale coats the urinal bowls, making cleaning easier and reducing the chances of urine 'clinging' to a limescale coating.

When low-flushing was first introduced, the conventional wisdom was that flushing every 4 to 6 hours should be the norm. The vast majority of sites using the low-flushing approach apply these flush frequencies. Gentworks believes that this 'standard' has primarily been created by the desire of system providers not to lose sales by challenging many potential customers' perception that flushing less frequently (or not at all) presents more risks of odours and blockages. In fact, the converse is true. However, there is a benefit to more frequent flushing in that the bowl is rinsed more regularly, removing debris and hair from sight. Moreover, some sites find it problematic to reliably carry out the weekly dosing required for waterless urinals. Indeed, many of Gentworks' larger clients use the low-flushing method to save water rather than waterless. There is no weekly dosing regime required for low-flushing because the hair and other debris in the waste pipes is flushed away regularly.

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How to Convert to Low-Flushing
The steps are straightforward:

1) Install Urinal Maintenance Device (UMD) into the Urinal Bowl
We recommend that conversion to low flushing is carried out by Gentworks engineers, or those similarly qualified. For guidance on installation, please click here. The waste pipework should be clear of scale and debris before Urinal Maintenance Devices (UMDs) are installed. For example, when Gentworks engineers carry out installations, they mechanically clear the urinal pipework to ensure good drainage and install a customised waste outlet ro recieve the UMD cartridge. The UMD cartridge is then inserted to begin its work of dispensing microbes and other beneficial ingredients into the pipework. These combat the odours and build up of uric acid salts that would otherwise result from not flushing.
It is important to ensure that each urinal in a run receives a greatly reduced, but sufficient, volume of water. The down and sparge pipes delivering water to the urinals need to be clear of scale and debris.

2) Reduce Flushing to approximately once every 4 to 12 hours
It is recommended that a Gentworks Low-Flush controller is installed and calibrated to flush approximate once every 4 to 12 hours. There are other models available with this capability but we can only vouch for the reliability of this unit, as used by Gentworks engineers in all "low flushing" installations. The control box is connected by 2 core electrical cable to a solenoid valve. Every 4 hours, the valve is set to open allowing water into the cistern for the period it takes to fill it, resulting in a flush. Battery and mains models are available but it is worth noting that the batteries typically last for 5 years. Most PIR sensor flush controllers, including those from DVS, Cistermiser and Marnic, can be set to flush once every 12 hours by taping over the sensor so that only the hygiene/janitorial flush is performed. The standard hygiene flush setting is 12 hours if the sensor is not activated.

3) Implement a compatible cleaning regime
The microbes dispensed by the Urinal Maintenance Device (UMD) are living organisms and therefore are intolerant of cleaning products containing chlorine (e.g. bleach), strong acids or strong alkalis. It is satisfactory to use neutral cleaning products (pH=7) but microbiological cleaners, including Gentworks Bio-Blue, Zybax Odourmaster and Q-Bio Odourblaster have been found to give additional benefits as they perfectly complement the action of the UMD ingredients. We strongly recommend their use. Gentworks Bactericidal Cleaner is also excellent when used in 10:1 dilution.

4) Change the Urinal Maintenance Device Cartridge
Standard UMD cartridges that fit most urinal bowls should be changed every 3 months because the active ingredients deplete and degrade. In many areas of the UK, Gentworks offers a service which includes the change of UMD cartridges and servicing of the urinal pipework. We recommend that low-flushing urinals are serviced by experienced engineers because, whilst they are usually more reliable than traditionally flushed urinals, they are typically more problematic than waterless urinals and will usually need some maintenance.