OPERATION OF THE WATER WATCH

Operation of the Syphonic Urinal Cistern

Virtually all WC urinals in the UK operate using an automatic syphonic cistern. This mechanism has no moving parts. It consists of a cistern mounted above the urinal basins. Inside the cistern is a syphon valve. The cistern is supplied with a continuous steady stream of water; the water flow rate is set by a petcock. When the level of water gets to a fixed point in the cistern, syphonic action starts and the contents of the cistern are rapidly "dumped" though the urinal basin feed pipe, causing a flush. This flush cycle repeats continuously 24 hours a day. The number of flushes per hour is set by the flow rate of water to the cistern.

Water Watch Overview

The Water Watch intelligent flush control system comprises of a simple retrofit kit that can be installed to existing urinal toilets in 30 - 40 minutes or can be used in the construction of new urinal facilities conforming to the latest Water Bye Laws (soon to be integrated in building regulation).

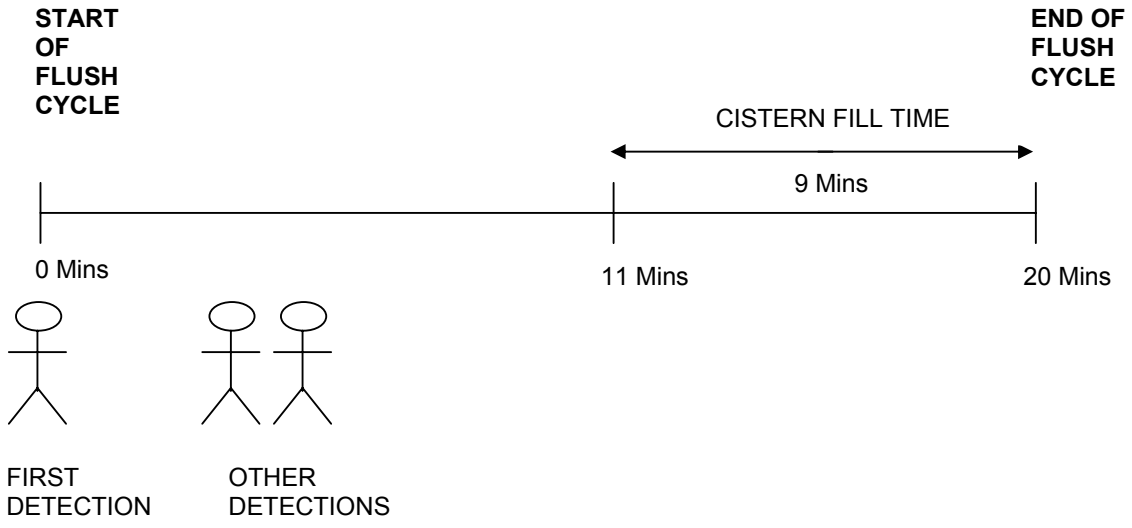
The Water Watch system consists of a water control valve fitted to the water inlet pipe prior to the petcock. This valve is electrically operated by the Water Watch sensor. The sensor detects individuals using the urinals using a PIR (Passive Infra Red) detector.

The Flush Cycle

Consider the first flush cycle of the day (see diagram below).

On first detecting occupancy within the detection zone an internal timer is started. This timer sets the delay between use of the toilet facility and the flush commencing. One of four time delays can be selected; 15, 20, 30 or 60 minutes. The Water Watch is normally installed with a default delay of 20 minutes. At some point during this delay period the water control valve will be opened to start filling of the cistern. The valve will be opened early enough so that when the timer has finished the cistern will have been filled from an initial empty state and so a flush will commence. The valve will then be closed.

WATER WATCH 20 MINUTE FLUSH CYCLE



The cistern fill time is the time for which the valve is open during a flush cycle and is set once by the installation engineer. This fill time will vary from one cistern to the other depending on its size and the rate at which the cistern fills. By setting up the fill time for each individual cistern, optimum water savings can be achieved.

When a flush cycle has finished the Water Watch sensor is immediately ready to commence a new flush cycle on detection of the next occupancy within the detection zone.

Note, this implementation of a flush cycle is guaranteed to provide a flush no later than 20 minutes (or other flush setting) after use of the facility. Generally during normal hours of use the time for most users will be shorter as the probability is high that the toilet facility will be used during a flush cycle that has already started.

Because the sensor relies on detection of use, there will be extended periods when no flushing is required. For example no flushing is required during evenings, weekends and holidays when the building is not occupied. However the Water Watch will do a single hygiene flush after 24 hours (12 hours) has elapsed without detecting occupancy. This hygiene flush will be repeated every 24 hours of non-occupancy.

Extensive documented research has shown that savings in water consumption between 50 - 95% are achieved while maintaining a rate of 3 flushes per hour during normal working hours of use.