

# WATERWATCH INSTALLATION INSTRUCTIONS (BATTERY or MAINS)

Please read and follow these instructions carefully.

## **WATERWATCH OVERVIEW**

The WaterWatch 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/Building Regulations.

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

**OPERATIONAL SUMMARY** - Also see the "WaterWatch Operational Cycle Explained" section on the last page of these instructions.

The valve controls the water supply to the cistern and is electrically operated by the WaterWatch controller. The controller detects individuals using the urinals. A flush cycle starts with a detection followed by a delay (20min default) set by the installer and then followed by a flush. At the end of a cycle the controller waits for a further detection before the next flush cycle commences. If a period of 24 hours (or 12 hrs) elapses without detection a hygiene flush will occur.

## **INSTALLATION**

1. Isolate the water supply.
2. Cut the 15mm Water feed pipe and flush through with water.
3. Fit valve (horizontally or vertically) ensuring that water flow is in the direction of the ARROW moulded on the side of the solenoid. Leave any PETCOCK or other end feed control in place. NOTE: The valve actuator can be rotated by removing the plastic split washer.
4. Select a position for the WaterWatch near the urinals so that it can detect use. The base plate can be wall or ceiling mounted. The control box hooks under the bottom edge of the base plate and secured with the retaining screw. (See Figs 1 and 2 below)
5. Connect 2-core cable between the solenoid valve connector and the terminals on the circuit board in the Control Box. Ensure that the **brown wire is connected to terminal 1** and the **blue wire to terminal 2**, both in the solenoid connector and on the circuit board. Leave a small loop inside the control box so that the lid can be detached from the mounting plate. Alternatively, the cable can be fed through the top cable gland. (See figs 3 (battery) and 4 (mains) below).
6. When ready to calibrate the unit attach the small white plug on the leads from the battery (or mains transformer) to the power connector on the circuit board.

## **ADDITIONAL INSTRUCTIONS FOR MAINS POWERED VERSION** (refer to fig 4 below).

1. For the purposes of these instructions it is assumed that a suitable 3amp unswitched Fused Spur will already be in place. If not, then the services of a qualified electrician will be needed to install the required spur.
2. From the Fused Spur, run the MAINS cable to the WaterWatch through one of the cable entry holes in the back plate of the WaterWatch or alternatively through the top cable gland. To access the terminals for the Mains cable, remove the nylon screw securing the cover to the terminal block. This is identified with a yellow sticker marked "240V".
3. Connect the mains cable to the transformer terminal block in accordance with Wiring Regulations.
4. Once cable has been attached, refit the terminal block cover.

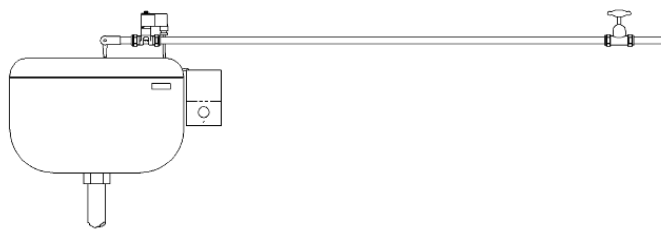


Fig 1

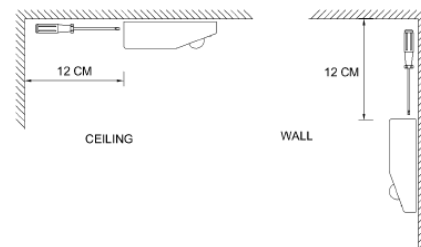


Fig 2

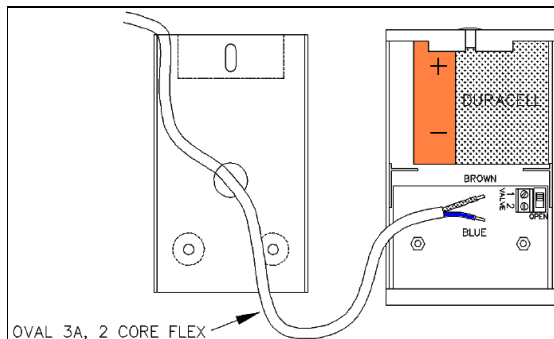


Fig 3 (battery powered model)

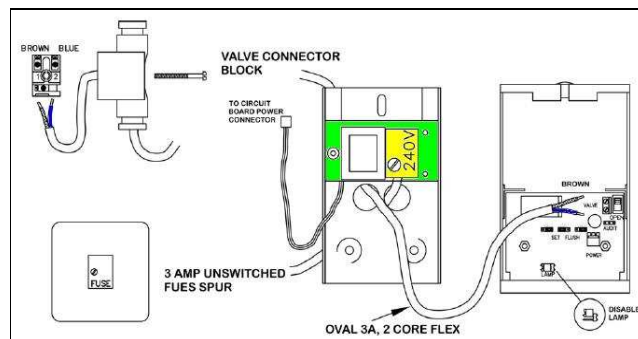
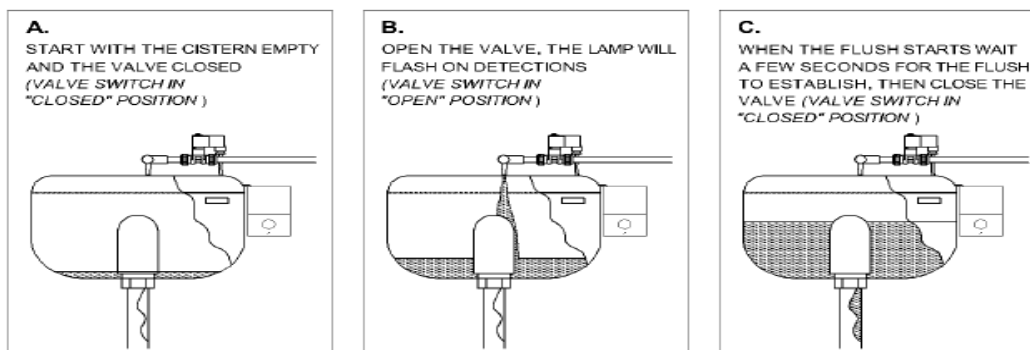


Fig 4 (mains powered model)

## CALIBRATION



The time taken for the cistern to fill forms part of the overall flush cycle time and is stored and used on all subsequent automatic flush cycles (see the "WaterWatch Operation Explained" section on the last page of these instructions). The WaterWatch should now be fully operational - CLOSE THE LID!

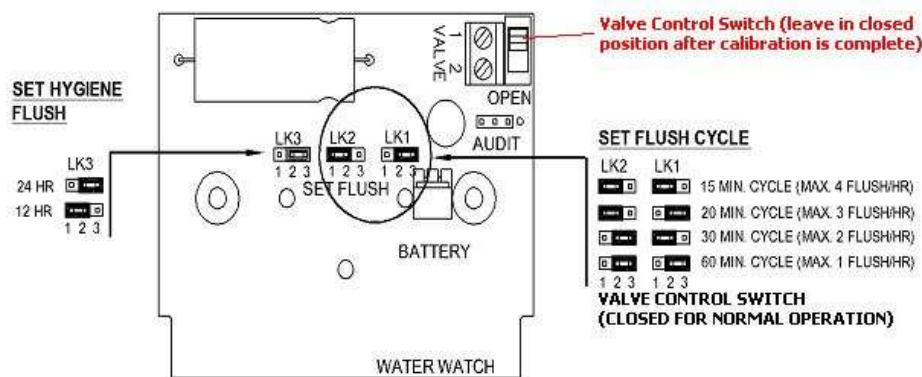
While the WaterWatch is being calibrated, the red LED on the front of the case will flash. After calibration has been completed, the LED will only flash when the battery needs changing, or in the case of the MAINS powered version when occupancy is detected (this function can be disabled on the MAINS version if required, by moving the additional shorting link marked 'Lamp'). If the LED continues to flash after initial calibration CHECK THAT THE VALVE CONTROL SWITCH (SLIDER SWITCH) IS IN THE "CLOSED" POSITION. THE SWITCH MUST NEVER BE LEFT IN THE "OPEN" POSITION.

With the battery model it is recommended that the battery be replaced every three years. Each battery is stamped with a replacement date, which should not be exceeded.

Also refer to "Periodic Functional Testing" heading in the MAINTENANCE section below.

## CHANGING THE FLUSH SETTINGS

The maximum flush rate and hygiene flush period can be adjusted by setting the position of three moveable shorting links on the printed circuit board. Below is a diagram of the circuit board showing the three sets of pins in the centre and a table of settings.

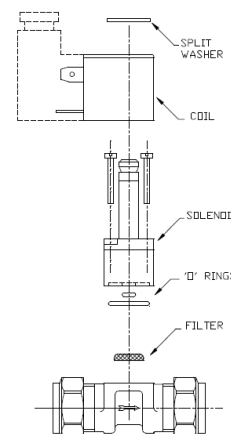


## MAINTENANCE

**Cleaning Control Unit** - The control unit may periodically be wiped with a damp cloth and mild detergent. As with all electronic / electrical devices it should not be sprayed with water or steam cleaned.

### Cleaning the Valve

1. Isolate the water supply.
2. The control valve should be cleaned annually together with any associated dirt collectors or filters if fitted.
3. Carefully study the diagram of the valve opposite to familiarise your self with the valve's component parts.
4. It is generally not necessary to remove the valve from the pipe.
5. Remove the valve coil by slipping the plastic split washer off. The valve actuating coil can then be removed. The two black raised screws can then be removed. **Do not remove the sunken screws.**
6. It is then possible to separate the two parts of the valve taking care to not loose the rubber 'O' ring water seals.
7. A small stainless steel filter is then visible in the brass valve body. This may be carefully removed and flushed with clean water to remove any accumulated debris.
8. Flush clean water through the solenoid body to clean thoroughly.
9. Reassemble the valve and valve actuator carefully. The valve can be tested by operating the circuit board switch (see section on functional testing). The switch must be returned to the closed position **within one minute** otherwise the flush fill time will be affected.



**Changing the Battery** - It is recommended that the battery be replaced every three years. Under normal operating conditions the red lamp on the control box will flash when the battery requires changing and each battery is stamped with a replacement date, which should not be exceeded.

The controller cover is removed from the back mounting plate by inserting a screwdriver into the hole on the controller top edge and screwing down the retaining screw. The electronics and battery are contained in the controller cover and care must be taken not to disturb the inter-connecting cable.

A Velcro pad retains the battery and the expired battery is easily removed. New batteries are available from Gentworks Ltd. Install the replacement battery and follow the setting up procedure below before replacing the control unit cover and carefully screw up the retaining screw.

**Periodic Functional Testing** - Correct operation of the valve and occupancy detector can be checked at any time without affecting normal operation of the WaterWatch by following the procedure described below.

Remove the lid as described in the section on changing the battery. Move the slide switch in the top right hand corner of the circuit board down into the "OPEN" position. If the valve was previously closed the WaterWatch will force the valve to open. While the switch is in this position the red lamp on the front panel will flash in response to movement in front of the plastic dome lens (Battery Version Only), confirming operation of the occupancy detector. After 5 - 10 seconds return the switch to the closed position, causing the valve to shut. If the valve does not respond clean is as described above.

MAINS POWERED VERSION - A separate shorting link is provided on the mains powered version for conducting a "walk test". When this link is shorted the red lamp will flash in response to occupancy detection. This link can be left in the "walk test" position if desired.

Operation of the switch as described above can be carried out repeatedly without affecting normal operation PROVIDED that the switch is not left in the open position for longer than 60 seconds. Otherwise the WaterWatch will assume the switch is being used to set the cistern fill time used during its automatic flushes and a full recalibration will be required.

## WATERWATCH OPERATIONAL CYCLE EXPLAINED

**The Flush Cycle** - On first detecting occupancy within the detection zone the WaterWatch internal timer is started. This timer sets the delay between use of the toilet facility and the flush commencing.

The WaterWatch is normally installed with a default delay of 20 minutes, but any one of four time delays can be selected;

- Up to 1 flush per hour (60 min cycle)
- Up to 2 flushes per hour (30 min cycle)
- Up to 3 flushes per hour (20 min cycle)
- Up to 4 flushes per hour (15 min cycle)

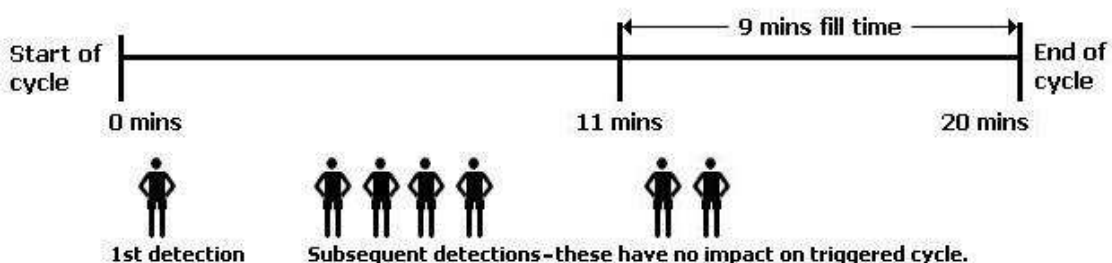
A flush will only be triggered when occupancy is detected. If there is no occupancy in any given cycle then no flush will occur. (e.g. if a WaterWatch is set to flush up to 3 times per hour, it will only do 3 flushes if occupancy is detected in each 20 minute period.)

NB: It is important to note that the valve will not open immediately the first occupancy is detected. This is because the cistern fill time forms part of the flush cycle. The principle is illustrated in the diagram below. This depicts a 20 minute cycle with a cistern fill time of 9 minutes.

- At 0 minutes, 1st occupancy is detected and the cycle commences. Any subsequent occupancy in the same cycle is ignored.
- After 11 minutes the valve will open and the cistern will start to fill. The valve will stay open for the remainder of the cycle.
- After 20 minutes, the cistern should have filled sufficiently to allow the cistern to flush and the valve will close.
- The cycle will commence again only when further occupancy is detected.

### EXAMPLE OF HOW THE WATERWATCH CYCLE WORKS

Example for a WaterWatch set to flush upto 3 times per hour where the cistern take 9 minutes to fill.



The cistern fill time is the time for which the valve is open during a flush cycle and is set 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** - the flush cycle above is guaranteed to provide a flush no later than 20 minutes after use of the facility. Because the sensor relies on detection of use, there will be extended periods when no flushing is required. For example no flushing is required when the building is unoccupied during evenings, weekends and holidays. The WaterWatch is factory set to provide a single hygiene flush after 24 hours for periods where no occupancy is detected. This period can be reduced to 12 hours by changing the shorting link LK3. This chosen hygiene flush will be repeated every 12 or 24 hours of non-occupancy.

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

WaterWatch is Designed & Manufactured in the UK by: **Marnic Technology Ltd**, Stockport, Cheshire.

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