

WATERWATCH INSTALLATION INSTRUCTIONS (BATTERY or MAINS)

Please read and follow these instructions carefully.

CONTENTS	PAGE
1. OVERVIEW & OPERATIONAL SUMMARY	1
2. INSTALLATION	1
3. ADDITIONAL INSTRUCTIONS FOR MAINS POWERED VERSION	1
4. CALIBRATION	2
5. CHANGING THE FLUSH SETTINGS	2
6. CHANGING THE BATTERY	3
7. PERIODICAL FUNCTION TESTING	3
8. WATERWATCH OPERATIONAL CYCLE EXPLAINED	3
9. TESTING THE SOLENOID VALVE	3
10. CLEANING & MAINTENANCE OF THE SOLENOID VALVE	4
11. WARRANTY	4

1. OVERVIEW & OPERATIONAL SUMMARY - Also see the "WaterWatch Operational Cycle Explained" at section 8 of these instructions.

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 Regulations and 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.

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 period set by the installer (20 min default) 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.

2. INSTALLATION

1. Isolate the water supply.
2. Cut the 15mm Water feed pipe and flush through with water (purging.)
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. **The unit is polarity sensitive, so 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.

3. ADDITIONAL INSTRUCTIONS FOR MAINS POWERED VERSION (refer to fig 4.)

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.

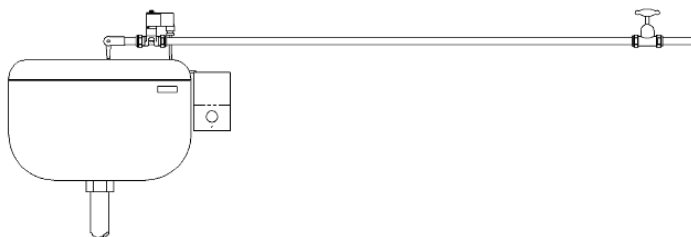


Fig 1

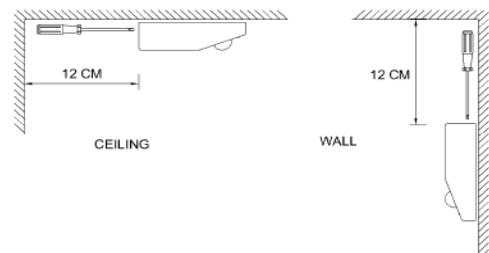


Fig 2

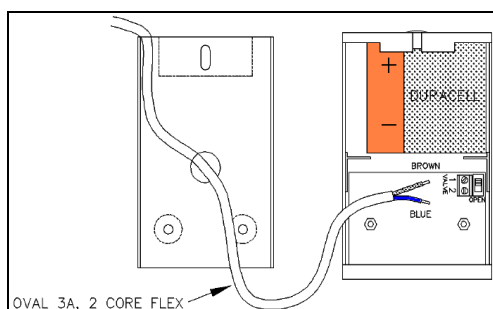


Fig 3 (battery powered model)

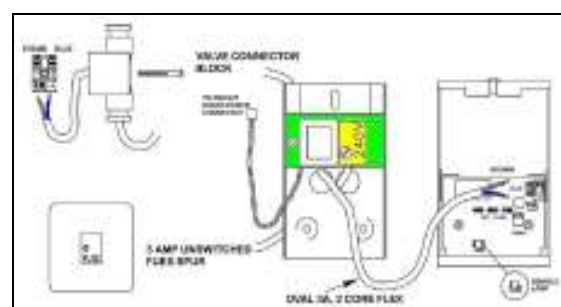


Fig 4 (mains powered model)

4. CALIBRATING THE FILL TIME

The time for the cistern to fill forms part of the overall flush cycle time and is stored on the PCB (Printed Circuit Board) and is used on all subsequent automatic flush cycles (also see Section 8 entitled **WATERWATCH OPERATIONAL CYCLE EXPLAINED**). The fill time is calibrated as follows:

1. Ensure that the cistern empty before starting. (If cistern is part full, fill manually and allow cistern to flush and drain).
2. Ensure that the service valve and any petcock or tap fitted to the end of the feed pipe are fully open.
3. With the cistern empty, push the Valve Control Switch (top right corner of the PCB) down to the OPEN position.
4. The valve will now open and allow water to enter the cistern. **The red LED will flash during calibration.**
5. When the cistern is full enough, the auto siphon will commence a flush. Once the flush has commenced allow 10-15 seconds for the flush to properly establish and then push the Valve Control Switch back up to the CLOSED position. This will record the cistern fill time on the PCB.
6. Leave the Valve Control Switch in the CLOSED position.
7. The WaterWatch should now be fully operational - CLOSE THE LID!

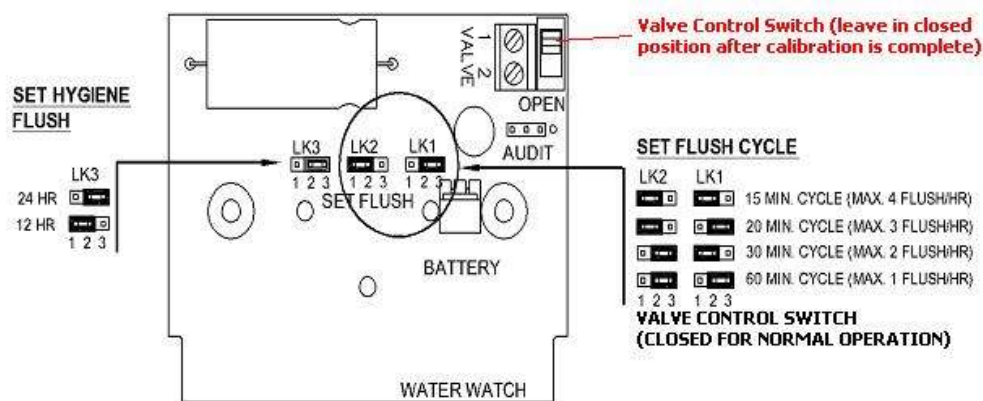
NB: After calibration has been completed, the LED on the battery operated model will only flash when the battery needs changing.

On the MAINS powered version, the lamp will flash when occupancy is detected. This can be disabled by moving the additional shorting link marked 'Lamp'). If the LED continues to flash after initial calibration check that the Valve Control Switch is in the CLOSED 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 point 7 "PERIODIC FUNCTIONAL TESTING" below.

5. SETTING OR 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.



6. CHANGING THE BATTERY

It is recommended that the battery is replaced every two to three years. The red LED is a 'Low Battery Indicator' and does not flash under normal operating conditions. The lamp will only flash when the battery needs changing (or when the fill time is being calibrated).

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.

7. 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, confirming operation of the occupancy detector (This only happens with the Battery Operated Version – see below for additional information relating to the Mains Powered version). After 5-10 seconds return the switch to the closed position to shut off the valve. 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. This link serves no other purpose.

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. If the switch is left in the open position for longer than 60 seconds, the WaterWatch will assume the switch is being used to set or reset the cistern fill time and a full recalibration will be required.

8. 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)

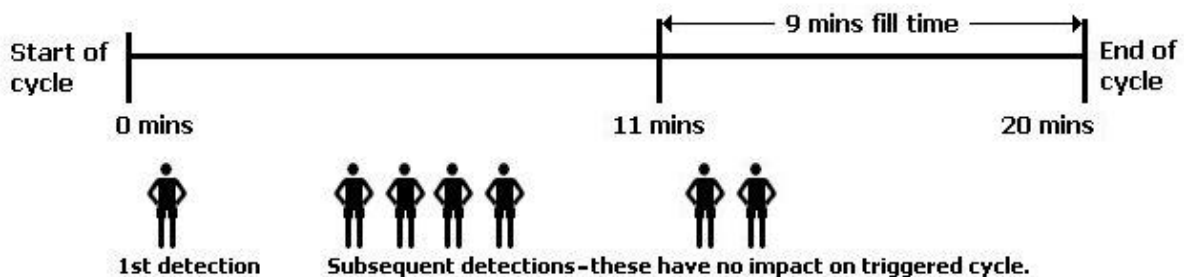
A flush will only be triggered when occupancy is detected. If there is no occupancy in any given cycle then no flush will occur. (e.g. if a WaterWatch is set to flush up to 3 times per hour, it will only do 3 flushes if occupancy is detected in each 20 minute period.)

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 will 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.

9. TESTING THE SOLENOID VALVE

If the WaterWatch stops working this could be for any of the following reasons.

1. The battery needs to be changed. Batteries should be changed as a matter of course every 3 years or sooner if the battery low indicator (the red LED on the front of the casing) flashes.
2. The Solenoid may be sticking due to limescale or other waterborne debris.
3. Wires have come adrift.
4. The circuit board may be "dead" (least likely).

The first test should be to determine if the battery needs changing. If the battery low indicator flashes then the battery should be changed immediately (NB, the LED will not flash if the battery is dead!) Battery life can be tested with a volt meter.

On occasion, the solenoid control valve together with in line filters (if fitted to the water feed pipe) may need to be cleaned to remove limescale and other waterborne debris. This is particularly important in hard water areas or where the water supply is from a gravity fed tank rather than from a mains pressure supply. Ideally, cleaning should be conducted at least annually.

The following instructions will guide you through the testing, maintenance and cleaning process. Carefully study the accompanying diagram of the valve to familiarise your self with the component parts.

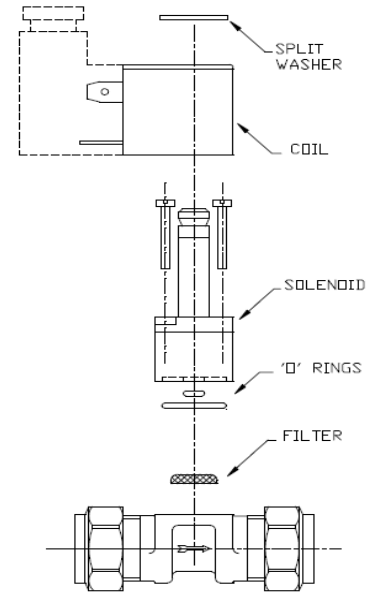
1. Remove battery from inside the WaterWatch case.
2. Wrap a small length of wire around the base each battery terminal. DO NOT remove the red and black battery wires.
3. At the solenoid end, remove the cable assembly from the coil to reveal the spade connectors.
4. Using the wires you have attached to the battery, touch one wire to each of the vertical spade connectors.
5. If the valve does not react, reverse the wire polarity and try again.
6. To close the valve, reverse the polarity to the spade terminals.
7. If the valve opens and closes using this method but not when fully reconnected the problem is likely to be with the circuit board. Please contact Gentworks.

10. CLEANING AND MAINTENANCE OF THE SOLENOID VALVE

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 - It is generally not necessary to remove the valve from the pipe, but control valve should be cleaned annually together with any associated dirt collectors or filters if fitted.

1. Isolate the water supply.
2. Carefully study the diagram of the valve to familiarise yourself with the valve's component parts.
3. Remove the valve coil by slipping the plastic split washer off.
4. The valve actuating coil can then be removed by lifting off.
5. The two dome headed screws (in the cut outs) can then be removed. **Before removing check whether the screws require a HEX-KEY or Cross head screwdriver as either could be present. Firm pressure is usually required to undo them. Do not remove the two countersunk screws at this stage.**
6. It is then possible to separate the two parts of the valve taking care to not loose the two rubber 'O' ring water seals (**note** - the seals often stay in situ).
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 brass solenoid body to clean thoroughly.
9. Reassemble the valve and valve actuator carefully.
10. Restore your water supply.
11. The valve can be tested by operating the circuit board slider switch, which **MUST** be returned to the closed position within one minute otherwise the flush fill time will be affected necessitating full recalibration of the cistern fill time.



VALVE STILL FAILS TO OPEN or CLOSE

In the event that the valve fails to open or close then the spring-loaded plunger inside the solenoid "pin" may be stuck. Use the following additional steps to clean the plunger.

Follow instructions 1-6 as above.

1. Once the solenoid has been separated from the body, the two small countersunk screws can be removed carefully and the plunger assembly lifted from the black plastic component. **Take care not to lose the two screws, internal plunger and spring or the thin sealing washer.**
2. Flush the plunger assembly through with clean water.
3. BEFORE reassembling, manually test operation of plunger & spring inside housing.
4. Once satisfied that plunger is operation smoothly, reassemble carefully.
5. Restore water supply and retest as per item 10 above.

If the valve still fails to operate after solenoid has been reconnected to the circuit board, check the following:

1. That the wires are properly connected both on the circuit board and to the terminals in the coil assembly.
2. Is the solenoid mounted in an area which suffers from condensation? If so, then check the following
 - a. corrosion to the spade connector terminals in the coil assembly. Clean terminals if necessary.
 - b. Corrosion to the terminals on the circuit board. Clean as necessary.
3. Reassemble and test again.

11. WARRANTY

The WaterWatch control box and solenoid valve are guaranteed against manufacturing defects for a period of 12 months. The warranty does not cover failures caused by poor installation, vandalism, limescale or poor water quality.

Provided that the WaterWatch was purchased from Gentworks and is under 12 months old, units may be returned to Gentworks for repair or replacement. This is a "Return to Base" service only and unless otherwise agreed Gentworks will not send replacement products until the faulty unit is returned for inspection. Please contact Gentworks on 0845 202 4535 or by e-mail to obtain a Return Authorisation Number BEFORE returning goods.

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

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