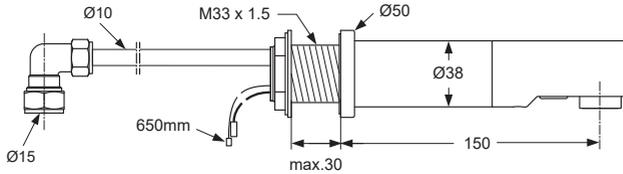


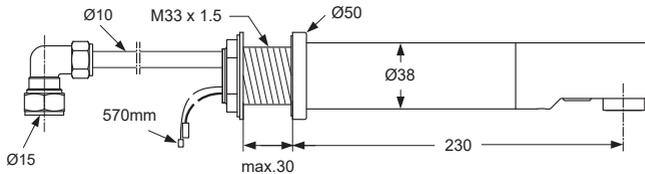
Armitage Shanks

Sensorflow 21 compact panel mounted 150 & 230 reach spouts

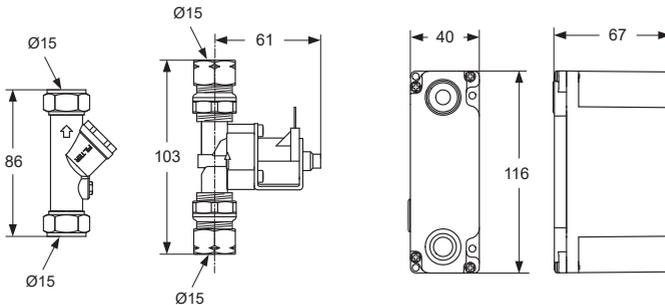
INSTALLATION INSTRUCTIONS



150 Reach:
A4845AA,
A4846AA/GN &
A4847AA/GN



230 Reach:
A4848AA,
A4849AA/GN &
A4850AA/GN



Important:

1. **Electrical connection:** mains electric powered versions of these products must be connected to a continuous permanent power supply.
2. **Sensor protector:** this black-out lens cover should only be removed from the sensor after completing installation & at least 10 seconds after powering up.

See page 3 for more details.



IMPORTANT
BEFORE CONNECTION, FLUSH WATER THROUGH PIPEWORK TO REMOVE
ALL DEBRIS ETC. WHICH COULD DAMAGE THE VALVE MECHANISM

INSTALLER: After installation please pass this instruction booklet to user

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Sensorflow 21 compact panel mount spout with integral sensor

These compact panel mount Sensorflow 21 electronic products are designed for water economy & hygienic “no-touch” operation.

The spout is operated by the integral infrared sensor which is triggered by hand movement in the sensing region. When the hands are moved away, the water will stop automatically within a couple of seconds.

These products are designed to be supplied with pre-mixed or cold water.

The two designs 150 & 230mm reach are each available in 3 versions: Mains powered (transformed) with option to link up to 5 link units & independent battery powered units:

A4845AA (150) & **A4848AA** (230) are supplied with **battery unit**

A4846AA/GN (150) & **A4849AA/GN** (230) are supplied with **mains power unit**

A4847AA/GN (150) & **A4850AA/GN** (230) are supplied with **link unit**

(Link up to 5 per A4846AA/GN or A4849AA/GN)

1 IMPORTANT PRE-INSTALLATION NOTES



MAINS ELECTRICAL POWER SUPPLY

Mains powered Sensor Operated Products must be connected to a (fused / switched) **continuous permanent power supply**. This can be by a fused spur or a fused & switched spur. Installing a switch will permit easier future maintenance of the electrical system.

Connection to an **interrupted power supply** intended to stop electrical consumption in an unused facility, may adversely affect this sensor product and is therefore not recommended.

Each time the power supply is reinstated the product briefly enters installation & then calibration phases.

During the calibration phase, any interaction (passive or active) with the product may alter the sensor settings in respect to range and / or run duration. So avoid activity in the detection zone.

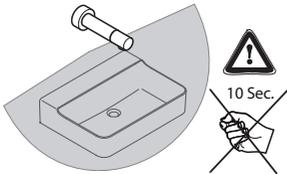
No significant savings will be achieved by connection to an interrupted supply. These products are intrinsically economical in terms of both water and electrical energy and will shut down in the event of a sensor being obstructed. In this case, the sensor will permit water to run for 55 secs max. Sensor settings are stored & automatically retrieved in the in the event of a power failure.

SENSOR LENS PROTECTIVE COVER (PEELABLE BLACK STICKER).

This product is supplied with the sensor lens covered over with a black-out material.

DO NOT REMOVE this lens cover until the product installation has been completed & then wait for at least 10 seconds after powering-up.

The lens cover prevents the sensor from unintentionally entering the calibration phase during the powering-up sequence. Calibration phase will only commence once the lens cover is removed. After the installation phase, the sensor enters a power-saving mode until the lens cover is removed



**DURING SETTING UP
PROCEDURE AVOID HIGH
VISIBILITY CLOTHING**

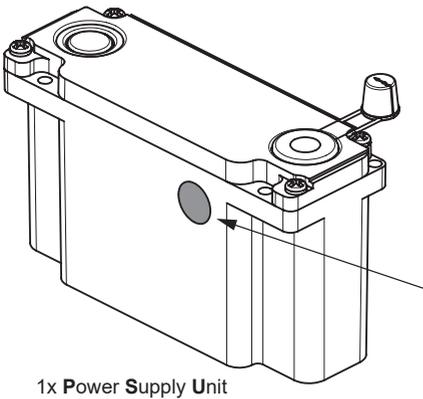
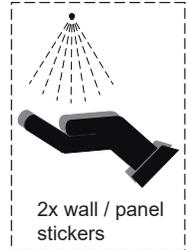
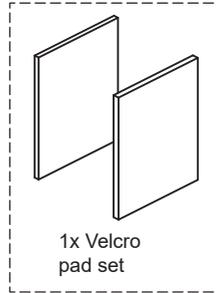
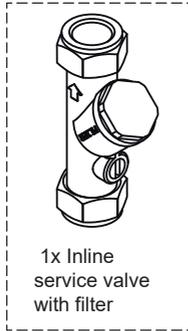
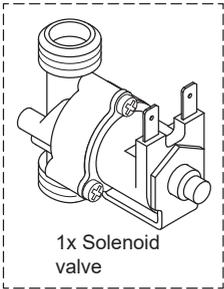
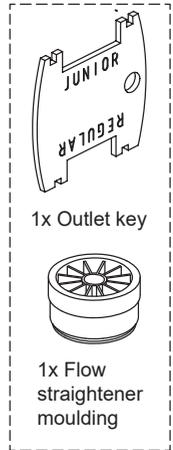
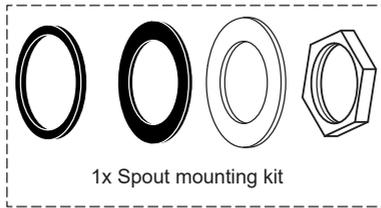
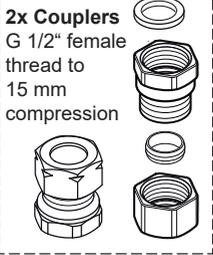
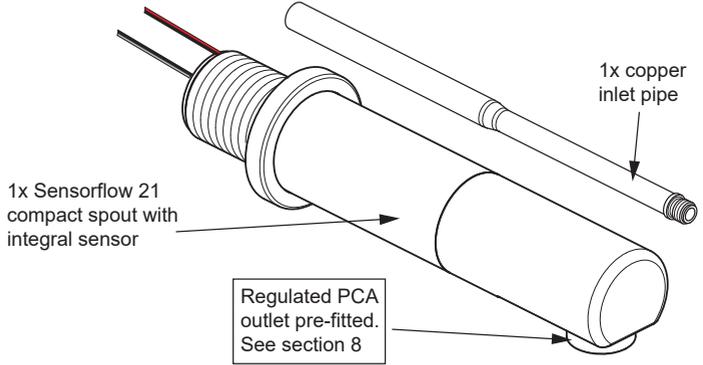


**SENSOR SHOULD NOT BE LOCATED DIRECTLY
OVER A CHROMED POP-UP WASTE**



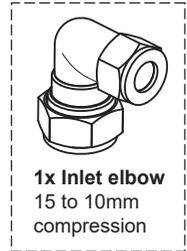
**Don't
remove, read
instruction 1st**

2 PRODUCT BOX CONTENTS



Each type of PSU is identified by this coloured dot system:

-  **REDDOT** MAINS
-  **BLUEDOT** LINK (Supplied with link cable)
-  **GREENDOT** BATTERY (Supplied with battery)





Abbreviations & terminology used

PSU: Power Supply Unit, either mains, battery or link versions.

PCB: Printed Circuit Board inside the PSU.

RCD: Residual Current Device

SELV: Safety Extra Low Voltage

LINK PSUs: (up to 5 max) can be connected in series to a single mains PSU. Permitting washroom with multiple products to be run from a single mains supply point.

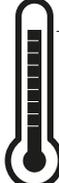
IR: Infrared (sensor technology)

LED: Light Emitting Diode



Factory settings

3 SUPPLY CONDITIONS

 <p>P bar</p>	<p>MIN. 0,5</p>  <p>UPTO 1,0</p>  <p>Unregulated full-flow flow straightener (SUPPLIED IN BOX)</p>	<p>OVER 1,0</p>  <p>MAX. 5,0</p>  <p>Regulated PCA outlet (> 1.0 bar) (FACTORY FITTED)</p>
 <p>T °C</p>	 <p>MAX. 80</p>	 <p>40</p>  <p>Recommended</p>

These products are factory fitted with a regulated PCA outlet, this outlet will function correctly at pressures greater than 1 bar. For lower pressure systems fit the unregulated flow straightener supplied. For more outlet details see section 9



This product should be supplied with cold or pre-mixed water. Avoid supplying scalding hot water to this product. Hot water temperature supply should be controlled to circa 40°C.

In order to maintain water quality, hot supply should be stored & distributed at a temperature greater than 55°C.

Use of an appropriate temperature reduction device (i.e. tee pattern thermostat) is recommended to ensure delivery of safe hot water from this product.

Armitage Shanks recommends the use of a under basin thermostatic valve A5900AA, to purchase please contact our customer care team.

4 WATER REGULATIONS

The fittings covered by this installation and maintenance instruction should be installed in accordance with the water regulations published in 1999*, therefore Armitage Shanks would strongly recommend that these fittings are installed by a professional installer

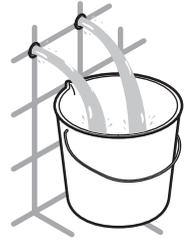
*A guide to the Water Supply (Water Fittings) Regulations 1999 and the Water Byelaws 2000, Scotland is published by WRAS (Water Regulations Advisory Scheme) Unit 13, Willow Road, Pen-y-Fan Industrial Estate, Crumlin, Gwent, NP11 4EG. ISBN 0-9539708-0-9

5 INSTALLATION GUIDE

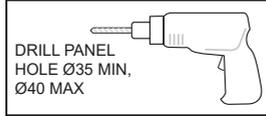


Before connection, flush water through pipe-work to remove all debris etc. to prevent damage to the valve mechanism.

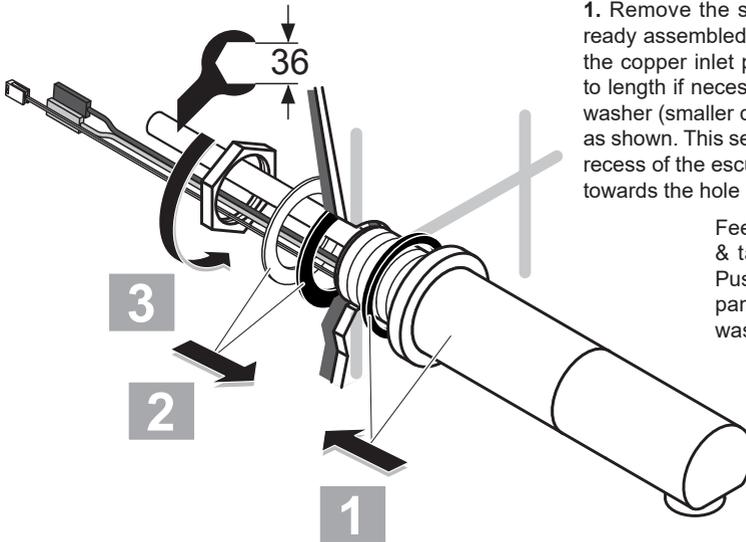
THEN ENSURE WATER SUPPLIES HAVE BEEN ISOLATED.



5.1 Mounting



INSTALLATION HEIGHT: we recommend the spout outlet be positioned approximately 150-200mm above the basin or worktop (which ever is higher). Greater height may cause users to splash water outside the basin whereas lower height may affect activity space. Consideration should also be given to the overall aesthetical appearance. Installations vary significantly, so use this dimension as a guideline only.



1. Remove the spout mounting kit if already assembled to the spout tail. Screw the copper inlet pipe into the spout, trim to length if necessary. Ensure the rubber washer (smaller diameter one) is in place as shown. This seal should locate into the recess of the escutcheon. Offer the spout towards the hole in the panel.

Feed the inlet pipe, cables & tail through panel hole. Push the spout against the panel & ensure the rubber washer makes contact.

2. Fit the larger rubber washer, brass washer & back-nut onto the spout tail as shown from behind the panel.

3. Hand tighten the nut against the brass washer until the rubber washer makes contact with the rear of the panel. Ensure the spout is positioned correctly, & then tighten the back-nut securely with a 36mm A/F spanner.

CABLE COLOURS:

The cables emerging from the spout are connected to the integral sensor.

BLACK & RED cables will connect to the solenoid valve.

GREY & BLACK cable will connect onto the PCB inside the PSU

Do not cut these cables.



DO NOT apply heat near this product. Heat generated by soldering could damage plastic parts and seals.

INSTALLATION GUIDE continued...

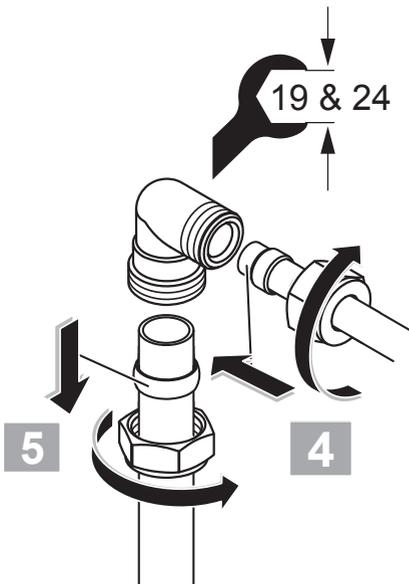
5.2 Plumbing Overview

Once the spout has been secured to the panel, consideration should be given to installing & positioning of the inline valves.

A typical plumbing installation example is shown here. The water is being supplied from below, but can be from any direction.

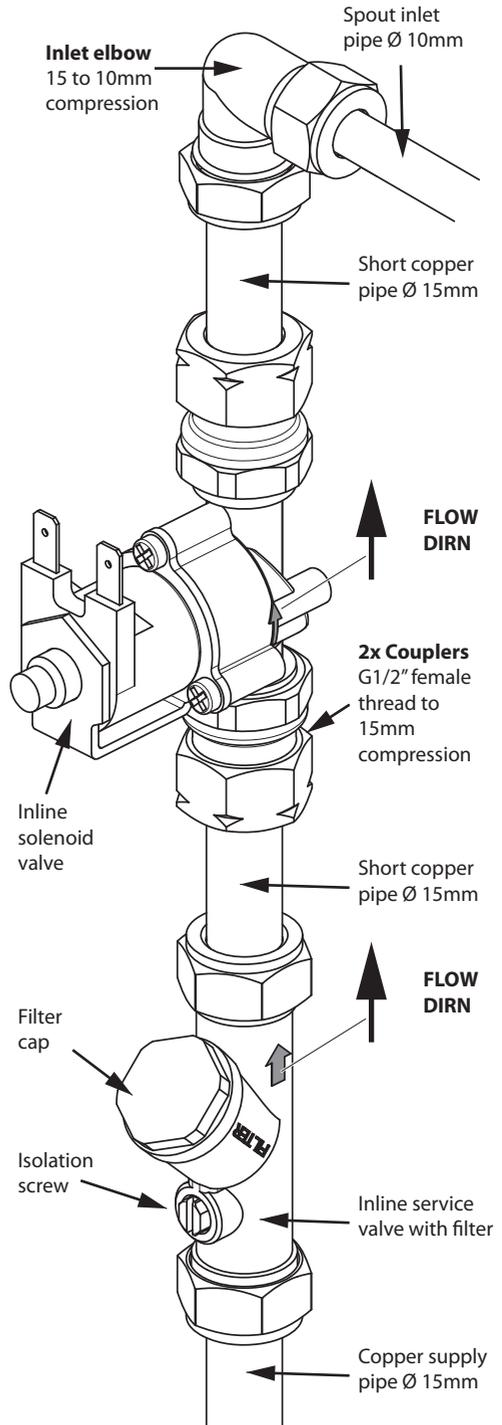
Short lengths of Ø15mm copper pipe (not supplied) have been used between the components. Copper pipe lengths should be cut to suit the installation. Note the Ø10mm inlet pipe (fitted to spout) can be trimmed if necessary.

Observe arrow markings on the valves as shown here. Ensure water flows in the direction indicated.



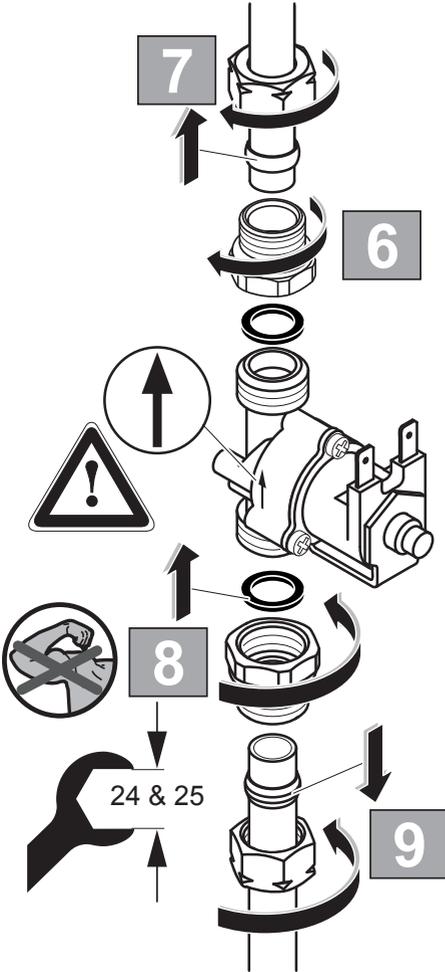
4. To fit inlet elbow: Slip the small compression nut & olive onto the Ø10mm inlet pipe. Push the elbow onto the inlet pipe up to the shoulder. Slide the olive up to the elbow & tighten the compression nut (19mm A/F) with a spanner. Hold the elbow steady with suitable grips.

ENSURE INLET PIPE REMAINS SECURELY SCREWED INTO SPOUT.



INSTALLATION GUIDE continued...

5. To fit inlet elbow cont: Slip the larger compression nut & olive onto a short length of Ø15mm supply pipe. Push the supply pipe into the elbow up to the shoulder. Slide the olive up to the elbow & tighten the compression nut with a 24mm A/F spanner. Hold the elbow steady with suitable grips.



10 & 11. To fit service valve:

Slip the compression nuts & olives onto the pipes. Fit the service valve into the pipe-work & make good the joints. Observe flow direction. Make sure the service valve is orientated such that the filter cap & isolating screw are easily accessible for future maintenance.

When the isolator screw slot is parallel to the valve body, the valve is open & permits water to flow. To close the valve, rotate the isolator screw 90°.

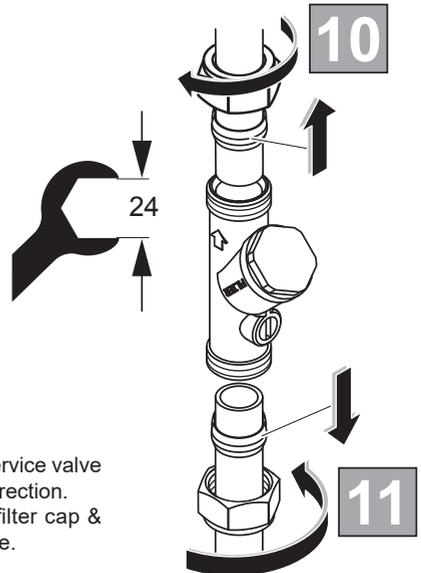
6 & 8. To fit solenoid valve:

The couplers can be screwed onto both sides of the in-line solenoid valve. Ensure the seals provided are fitted as shown. Make good the joints, taking care not to use excessive force. Tighten with an adjustable spanner (25mm A/F).

7 & 9. Slip the compression nuts & olives onto the pipes. Fit the solenoid valve into the pipe-work & make good the joints. Observe flow direction.

Make sure the solenoid valve is orientated such that the electrical connectors are easily accessible.

NOTE FOR IRELAND: 15mm olives are supplied with this product. Use 1/2" olives if 1/2" supply pipes are fitted.



Check that all joints are securely tightened, test for leaks.

INSTALLATION GUIDE ELECTRICAL...

ELECTRICAL SAFETY

IEE (BS 7671) In the interest of electrical safety, ensure all wiring conforms to the latest standard UK IEE Wiring Regulations.

Always ensure mains power supply is switched off before commencing any electrical connection work.

5.3 Electrical connection

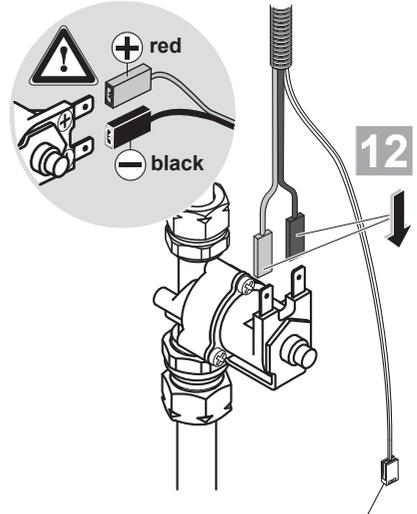
Connection of this product to mains power supply should be undertaken by a competent person and should conform to IEE Wiring Regulations

Orientation & position of solenoids, and PSU (Power Supply Unit) case can differ from installation to installation.

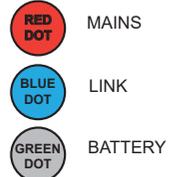
With the product securely mounted to the panel & plumbed-in, electrical work can commence.

12. Locate the end of the red & black cable which emerges from the sensor housing (attached to the rear of the sensor). This cable length is nominal 800mm.

Connect the cable to the solenoid valve terminals as shown. Observe the + and – symbols marked on the solenoid valves, connect the red cable to + & black to –.



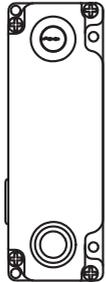
Each type of PSU is identified by this coloured dot system:



Refer to the diagram on the next page for PSU connection options.



Electrical information & approvals:



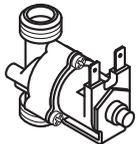
Power: **6W**

Input voltage: range **100V - 240V~ 50 - 60Hz**

Protection class: **II**

Approval EU: **EN 60950, EN 60335**

Approval UL: **UL 1310**



DIN EN 60730-1: Type 1



NOTE: Children must not be allowed to clean or maintain this product

INSTALLATION GUIDE ELECTRICAL...

INSTALLATION GUIDE continued...

Electrical connection continued...

ENSURE MAINS POWER SUPPLY IS SWITCHED OFF BEFORE COMPLETING

13. Open the PSU case by unscrewing 4x posi-drive screws.

14. The lid & seal should separate from the PSU case.

15. For battery version, orientate the battery correctly & slide it into the PSU as shown, until it clicks into position
For mains version, slide out Printed Circuit Board (PCB).

16. For mains version, press out the "knock-out" at the base of the PSU case for mains cable entry.

17. For link version, slice the grommets fitted in the side wall of the PSUs to allow entry for the link cable(s).

18. For mains version, fit a grommet into the hole in the base of the PSU. Feed the power supply flexible cable through this grommet & make connections to terminal block on the PCB. Refer to 28.

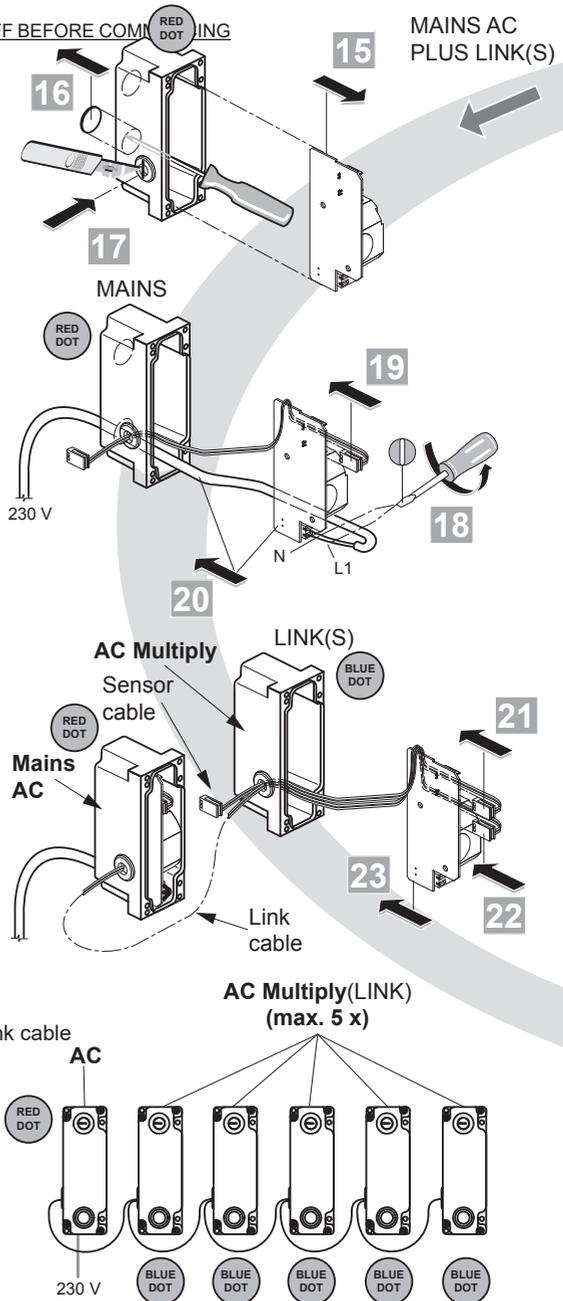
19. For link version, feed the link cable through the side wall grommet in the PSU & plug it onto one of the sockets on the PCB. Refer to 28.

20. Slide the PCB back into the PSU ensuring cables are not trapped.

21. For link version, plug the other end of the link cable into the socket on the link PCB.

22. For link versions, plug additional link cables into the sockets on the link PCB.

23. Slide the link PCB back into the PSU ensuring cables are not trapped.



INSTALLATION GUIDE ELECTRICAL...

Each type of PSU is identified by this coloured dot system:

	MAINS
	LINK
	BATTERY

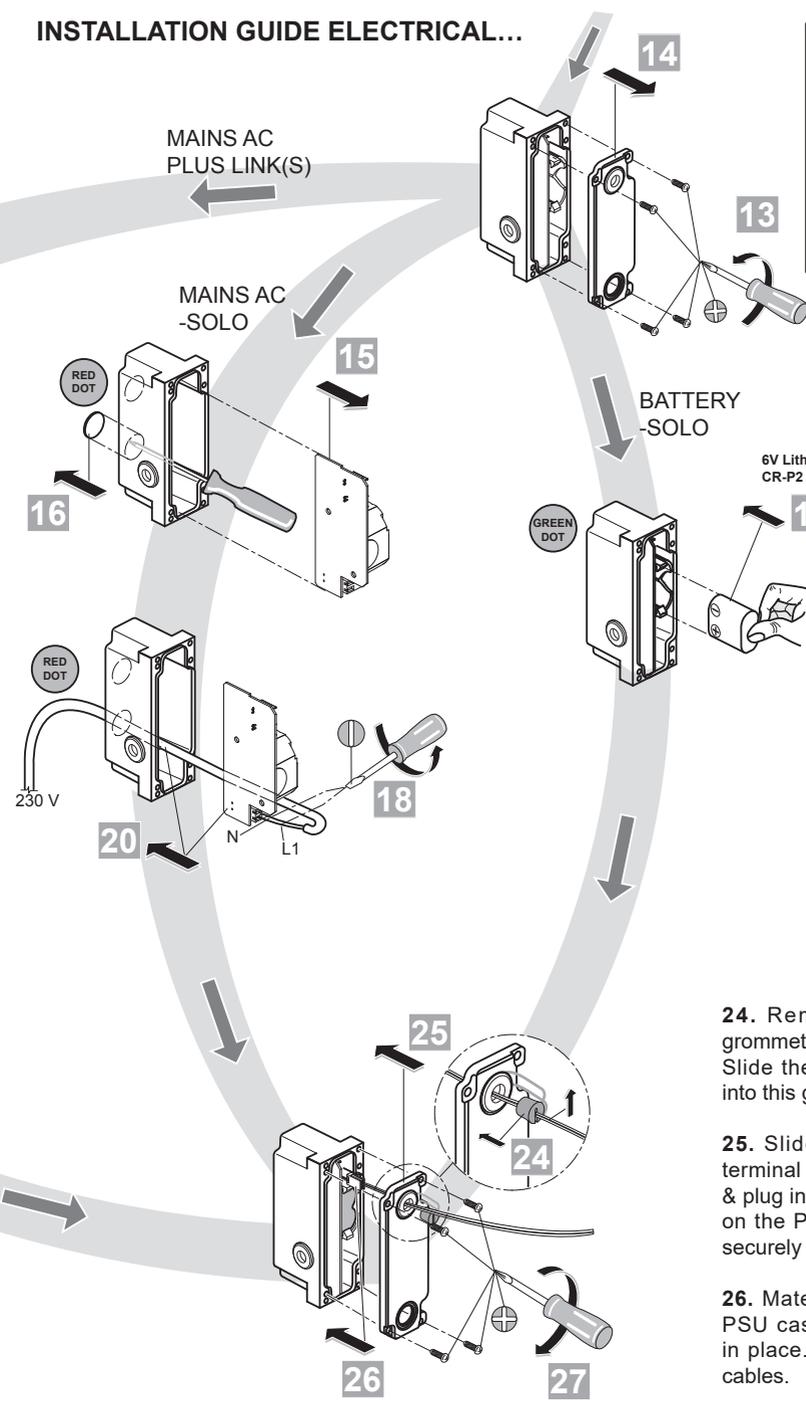
MAINS AC PLUS LINK(S)

MAINS AC -SOLO

BATTERY -SOLO

6V Lithium CR-P2

230 V



24. Remove the pre-split grommet from the PSU lid. Slide the grey sensor cable into this grommet.

25. Slide the sensor cable terminal through the PSU lid & plug into one of the sockets on the PCB. Press grommet securely into the lid.

26. Mate the PSU lid to the PSU case, ensuring seal is in place. Avoid trapping any cables.

27. Refit the 4 lid screws securely.

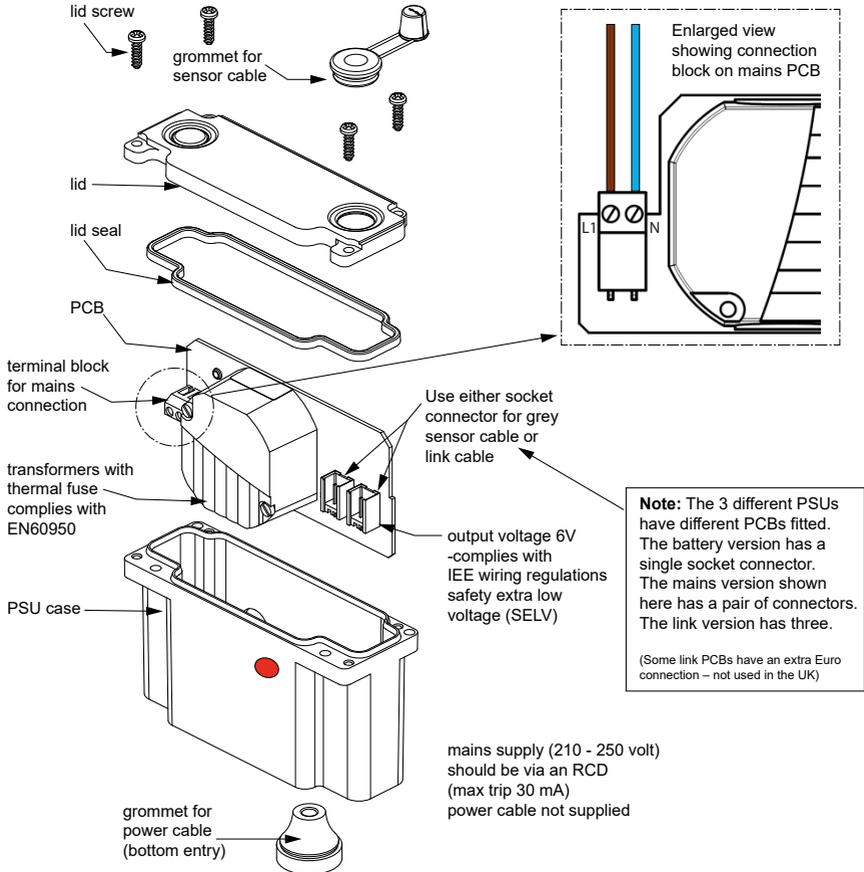
INSTALLATION GUIDE continued...

Electrical connection continued...

28. Mains power cable (not supplied) should be flexible 3A rated (multi-strand) 2 core cable. Prepare the cable for connection into the PCB by carefully stripping back the outer sheath by about 100mm. Strip the wire ends back by about 5mm.

PCB connection: the appropriate wires of the mains cable should be connected to the appropriate terminal on the block. The PCB is marked L1 for the live wire & N for the neutral wire. Earth connection is not required.

IMPORTANT: Ensure terminal block screws are firmly tightened & clamp the wires securely.



Shown above: Mains Power Supply Unit (PSU)

Other cable information:

Two cables emerge from the spout tail these are connected to the integral sensor. Both cables have nominal lengths of 800 mm. For 150 spouts, cable length is 650mm, for 230 spouts it's 570mm.

BLACK & RED cable will plug onto the terminals on the solenoid valve.

GREY & BLACK cable will plug into one of the sockets on the PCB inside the PSU.

Link cable is also GREY (with black line), length is 1.5M (supplied with link product only)
SEE SECTION 7 FOR CABLE EXTENSION DETAILS & FURTHER CABLE NOTES

INSTALLATION GUIDE continued...

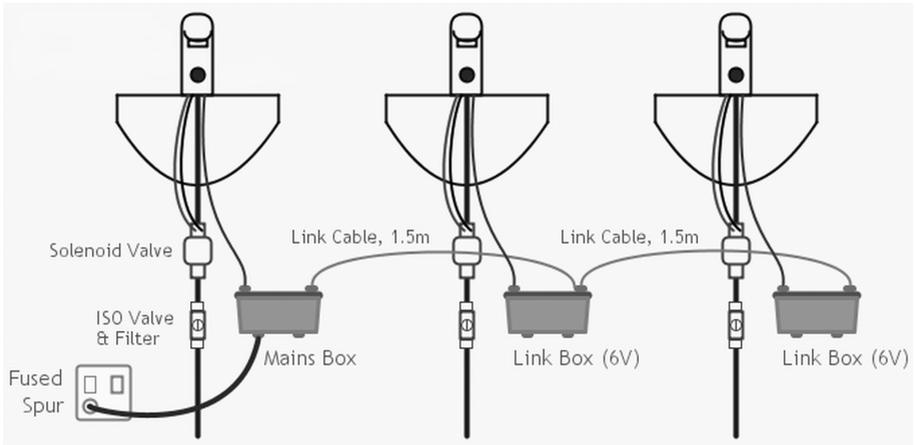
Electrical connection continued...

A pair of self-adhesive Velcro-type pads are provided. Attach one to the side of the PSU case & the other to a suitable location on the rear of the mounting panel.

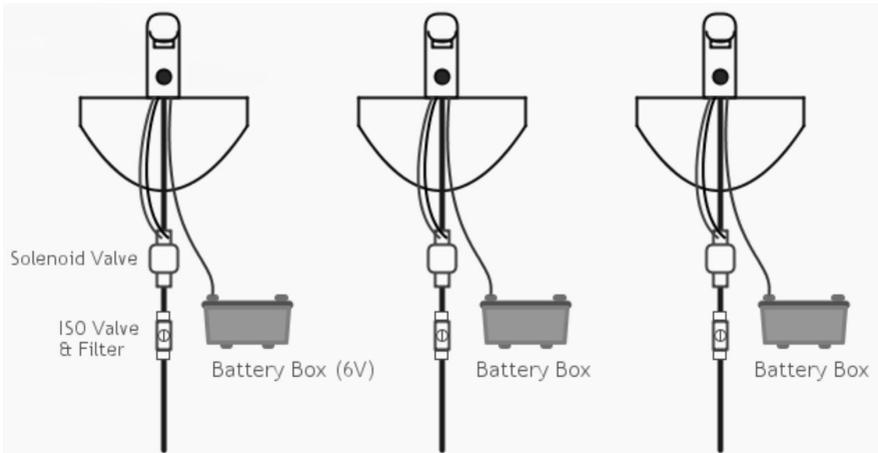
Ensure the selected location does not stretch/stress the cables. Consideration should also be given to keeping the PSU case within easy reach/access for maintenance staff.

IMPORTANT:

Leave the sensor protective sticker in place for at least 10 seconds after powering-on the product. See section 7 regarding sensor configuration.



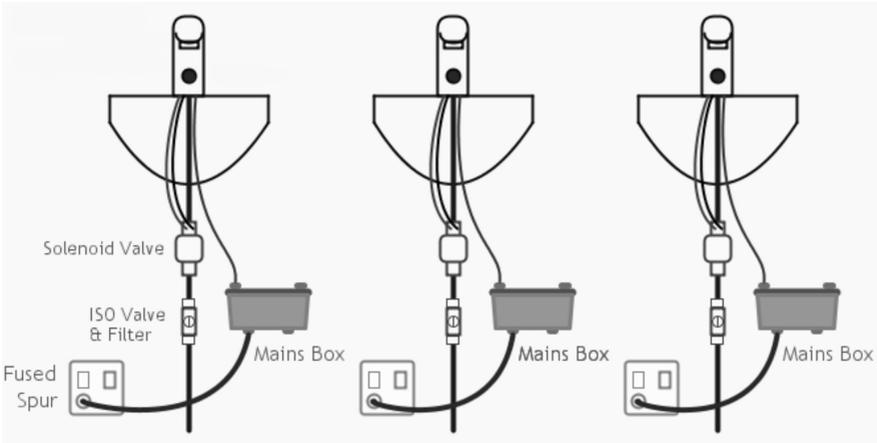
Example of an installation where 1st PSU is mains plus 2x link PSUs.



Example above of an installation where PSUs are all battery versions..

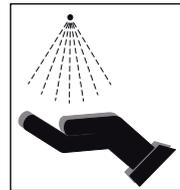
INSTALLATION GUIDE continued...

Electrical connection continued...



Example above of an installation where PSUs are all mains versions.

Sensor taps stickers: To complete the installation, 2 stickers are provided which can be stuck onto a wall or panel in close proximity to this product to advise the end user that this product sensor operated.



6 TAP OPERATION



Sensorflow 21 products use an Infrared Sensor to activate the system. The sensor is triggered by something reflective (normally hand movement) in the Sensing Region.

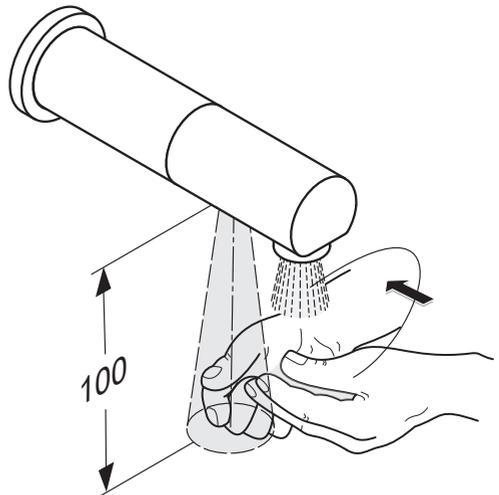
Move hands towards the spout: Water will flow.

Move hands away from the spout: Water will continue to flow for one to three seconds, and then turn off.

Sensor is factory set to **Proximity Mode**, & is designed to trigger the water flow **only when a hand (or similar) is in the Sensing Region** – just in front of the sensor / outlet.

For this range of products, the sensor is located near the flow outlet and faces downwards, towards the basin.

For cleaning operation see section 11, & for quick flush operation see section 8.2



7 SENSOR CONFIGURATION

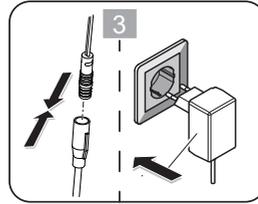
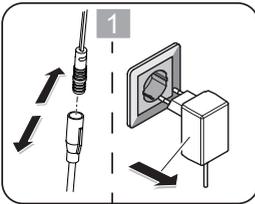


Upon completion of installation, both plumbing & electrical, the product can be powered up. The product is designed as “plug & play” system. So to get the product up & running quickly, follow these simple steps:

- Switch on power supply
- Wait 10 seconds
- Peel off protective sticky sensor cover (first time power-up)
- Keep the detection area clear of any objects for at least 10 seconds.
- The sensor will enter **NORMAL OPERATION**, the product is now ready to be used

**DURING SETTING UP
PROCEDURE AVOID HIGH
VISIBILITY CLOTHING**

To enter the **CONFIGURATION MENU**, power off for 10 sec & power on, wait another 10 sec as follows:



By covering the sensor with a finger for a given time, this will trigger one of the menus shown below. Each time 5 sec segment of time has elapsed, the product will provide a 2 sec confirmation flush. So, at 15 sec, the tap will be at the third confirmation flush, removing the finger immediately, will enter run time adjustment menu.

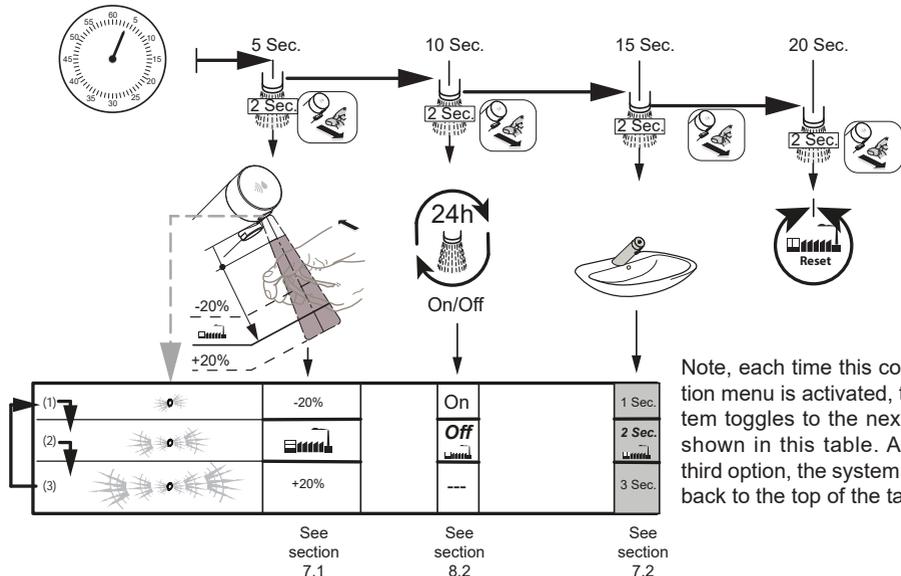
1st flush @ 5 sec DETECTION RANGE: permits adjustment of $\pm 20\%$.

2nd flush @ 10 sec 24H HYGIENE FLUSH: toggle on or off.

3rd flush @ 15 sec RUN TIME: 1, 2, or 3 sec overrun time.

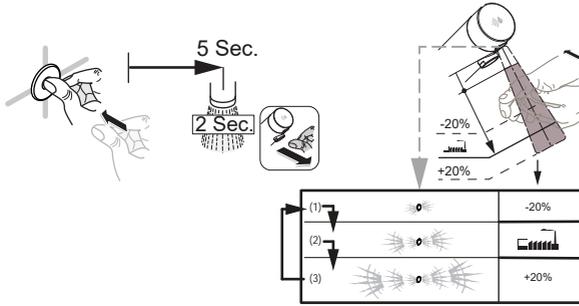
4th flush @ 20 sec RESET: all values returned to original factory settings

Once invoked, the configuration menu remains active for 3 minutes (180 sec).



Note, each time this configuration menu is activated, the system toggles to the next option shown in this table. After the third option, the system toggles back to the top of the table

7.1 DETECTION RANGE ADJUSTMENT



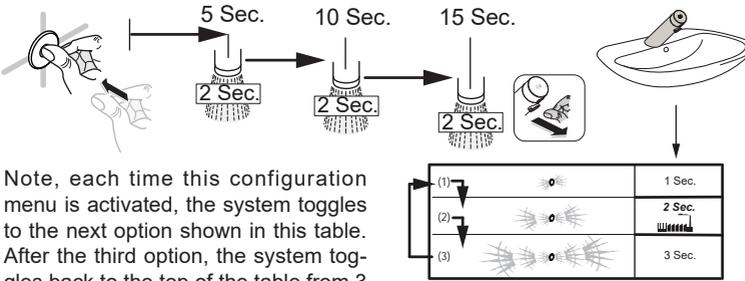
Follow steps 1 to 4, cover the sensor with a finger for 5 sec. Remove finger after the first confirmation flush.

Assuming previous setting was factory set, the next option will be set at the range plus 20%, LED will give 3 flashes.

For example, the factory set range of the "150 spout" is 100, this will increase to 120. To reduce the detection range, (to 80) enter this menu again..

7.2 RUN TIME ADJUSTMENT

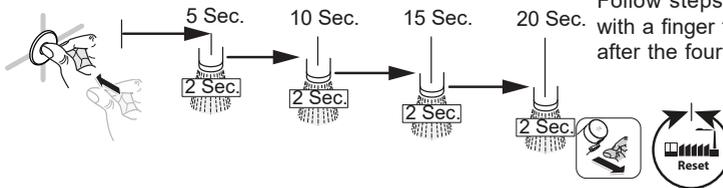
This run time sets how many seconds the water overruns after hands have moved out of the detection zone.



Note, each time this configuration menu is activated, the system toggles to the next option shown in this table. After the third option, the system toggles back to the top of the table from 3 sec to 1 sec.

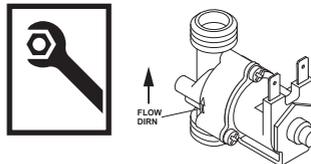
Follow steps 1 to 4, cover the sensor with a finger for 15 sec. Remove finger after the third confirmation flush. Assuming previous setting was factory setting of 2 sec, the next option will be set at 3 sec, & the LED will give 3 flashes.

7.3 FACTORY RESET



Follow steps 1 to 4, cover the sensor with a finger for 20 sec. Remove finger after the fourth confirmation flush. This will restore all configurations back to factory settings.

8 MAINTENANCE



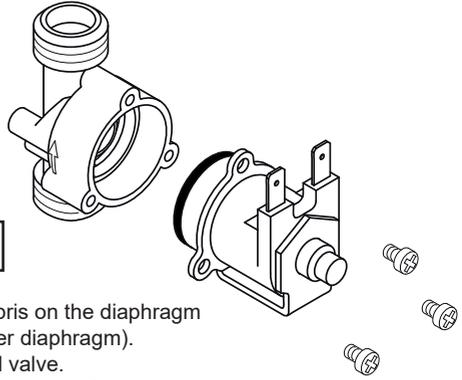
8.1 SOLENOID VALVE

If **water continues to flow** when the tap should be off, and if the sensor is correctly ranged, then the solenoid valve may have debris lodged in the diaphragm pilot hole or on the valve seat:

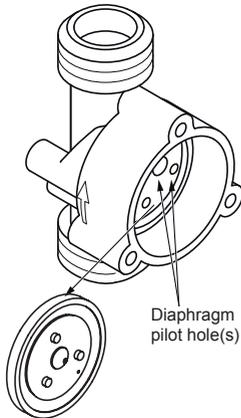
- Locate the solenoid valve.
- Isolate the water supplies.

Maintenance continued...

- Disconnect the solenoid valve cables
- Remove the 3 screws holding the coil.
- Lift off the coil assembly.
- Locate the diaphragm (inside the valve body).
- Clean out the pilot hole(s) – use a thin gauge fuse wire (or similar).



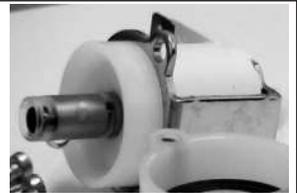
If diaphragm is damaged it should be replaced.



- Ensure there is no debris on the diaphragm or the valve seat (under diaphragm).
- Re-assemble solenoid valve.
- Reconnect water supply, check there are no leaks.
- Reconnect the solenoid valve cables.
- Test the solenoid valve & ensure it is working correctly.

If the solenoid plunger becomes dislodged from its bore, **ensure it is refitted correctly. The end with the small black insert should face towards the diaphragm.**

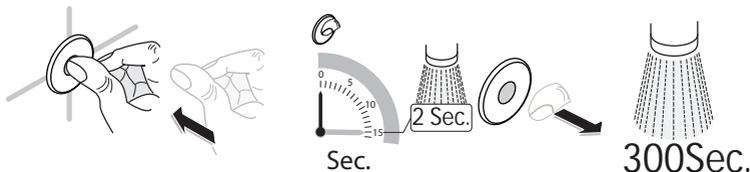
Incorrect assembly will cause continual running.



8.2 Hygiene flush (Automatic)

This hygiene flush is an important optional function of these products which can be enabled by the installer or maintenance staff.

The hygiene flush is used to combat periods of stagnation due to low usage of the product. The function activates the spout automatically if it hasn't been used for a set time period. This function ensures regular movement of water combating bio film growth and bacteria colonisation.



This product has a one-off flush function which allows the water to flow from the spout for 5mins (300 sec.). To activate, cover the sensor with a finger for 15 seconds, water runs continuously for 300 sec. (This can be done when the product is in normal operation mode).



On/Off

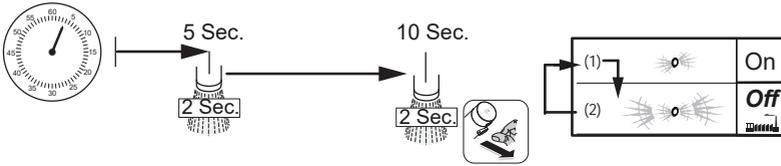
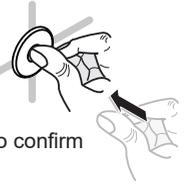
Alternatively, the product can be set to automatically flush once every 24 hours. At the factory, this function is switched off, & would have to be activated if required. Run time is 15 sec. If activated at 2pm for example, flush will occur 24 hours later at 2pm next day (± 30 minutes).

To activate this 24 hour flushing cycle, enter configuration mode by powering off & on, see details in section 7.

Maintenance continued...

Once in the configuration menu, cover the sensor with a finger for 10 sec. There will be a first 2 sec confirmation flush at 5 sec & a second flush at 10 sec. Remove finger immediately, observe the sensor, a LED will flash once to indicate 24-hour flush is activated (ON)

To switch off the 24 hour flushing cycle, repeat this sequence, LED will flash twice to confirm OFF.



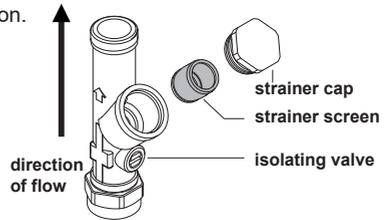
8.3 Service valve

Service valve (supplied with this product) **MUST** be fitted to permit future maintenance of the product. A strainer (filter) is built into this valve.

Service valve should be installed in an easily accessible location.

When the isolator screw slot is parallel to the valve body, the valve is open & permits water to flow. To close the valve, rotate the isolator screw 90°.

The filter can be checked & cleaned by unscrewing the cap using a 22mm A/F spanner. Expect some water to escape. The service valve can be closed to permit servicing of the solenoid valve, or to remove the product completely.

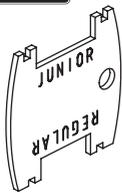


9 OUTLET OPTIONS



This product comes with two outlets one fitted & the second supplied in a bag.

The product is factory fitted with a laminar PCA regulated outlet which is secured within an anti-vandal (AV) housing.



Unregulated full-flow flow straightener (SUPPLIED LOOSE)	P 0.5 bar	Q 4.2 l/min	
Regulated PCA outlet (> 1.0 bar) (FACTORY FITTED)	P 3.0 bar	Q 4.7 l/min	

To replace/clean/service the outlet, use the outlet key supplied with the product to unscrew the AV housing. Using the side of the key marked "junior" locate the key into the inner ring of the housing and unscrew. Change the outlet & re-secure the housing with the key, ensuring the seal is in place. Ensure the outlet housing is adequately tightened to prevent leaks & run back.

Extension cables

If the installer wishes to position the PSU in the ceiling area for example, then cable extensions are available:

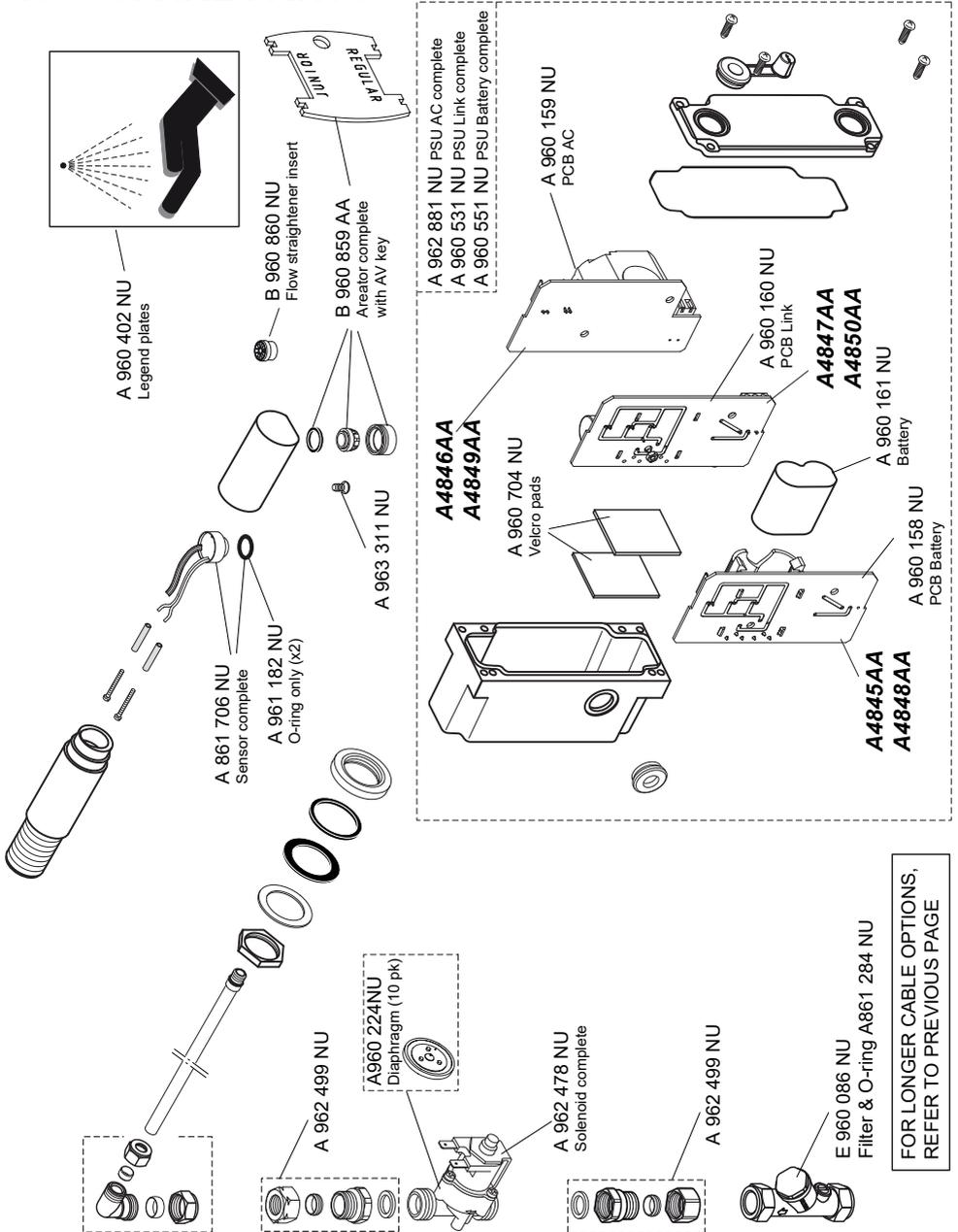
SENSOR & SOLENOID EXTENSION LEADS: A963703NU: (Pair, 2M long).
Containing grey/black power lead for sensor & black/red lead for solenoid.

LINK CABLES: A962281NU (1.5M), A962282NU (3M) & A960707NU (10M).



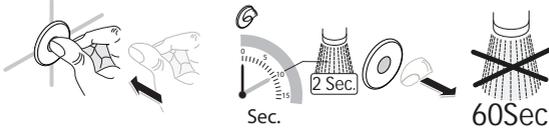
CABLES SHOULD NOT BE CUT (OR SHORTENED), AS THIS WILL INVALIDATE WARRANTY.

10 SPARE PARTS

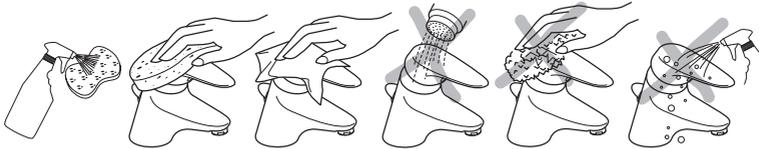


For more information on spare parts why not visit our spare website:
www.fastpart-spares.co.uk. Or contact customer care

11 CLEANING CHROME SURFACES

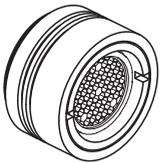


Whilst cleaning this product, the water flow from the spout can be temporarily switched off. To activate, cover the sensor with a finger for 10 seconds, this will switch off the water for 60 sec. (This can be done when the product is in normal operation mode).



When cleaning chromed products use only a mild detergent, rinse & wipe dry with a soft cloth. Ideally clean after each use to maintain appearance.

Never use abrasive, scouring powders or scrapers. Never use cleaning agents containing alcohol, ammonia, hydrochloric acid, sulphuric acid, nitric acid, phosphoric acid or organic solvents. Use of incorrect cleaning products / methods may result in chrome damage which is not covered by the manufacturer's guarantee.



Outlet cleaning. On a regular basis the outlet should be inspected & cleaned. To unscrew and remove the outlet, see section 8.

In areas where lime scale build-up is prevalent this should be avoided by regular cleaning. If it should build up, it will have to be removed. An inhibited proprietary scale solvent can be used such as a kettle de-scaling solvent but it is important to follow the manufacturer's guidelines. After de-scaling it is important to rinse the parts thoroughly in clean water.

Clean carefully and do not use abrasive materials or scrapers.



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