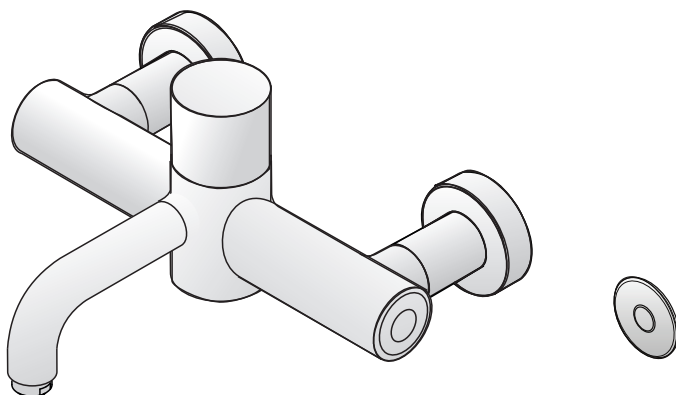




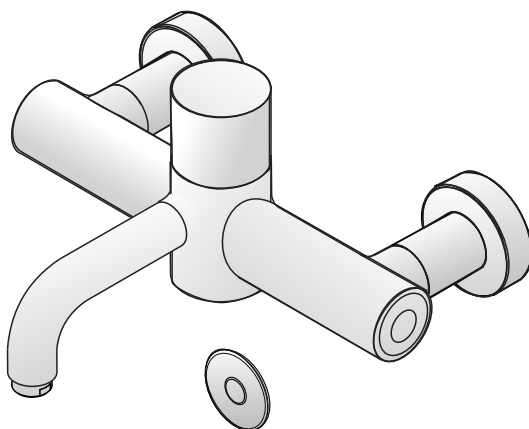
# MARKWIK 21

PROXIMITY OPERATED  
THERMOSTATIC MIXER TAPS



**A6062AA**

**Markwik Timed Flow, Proximity Operated Thermostatic  
Panel Mounted Mixer Tap with Armitage Bioguard outlet**



**A6061AA**

**Markwik Proximity Thermostatic  
Panel Mounted Mixer Tap  
with Armitage Bioguard outlet**

*Armitage  
Shanks*

**INSTALLER**

After installation please pass this instruction booklet to user

## 2 DESCRIPTION

**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) Fern Close, Pen-y-Fan Industrial Estate, Oakdale, Newport, NP11 3EH. ISBN 0-9539708-0-9

### FITTINGS COVERED

- |                |  |
|----------------|--|
| <b>A6061AA</b> | <b>Markwik Proximity Thermostatic Panel Mounted Mixer with Armitage Bioguard outlet</b>                      |
| <b>A6062AA</b> | <b>Markwik Timed Flow, Proximity Operated Thermostatic Panel Mounted Mixer with Armitage Bioguard outlet</b> |

### Description

This manual covers the Markwik range of proximity operated, panel mounted, thermostatically controlled mixers. These are designed to provide water at a preset temperature for hand washing. The proximity controls allow operation of the flow without the user having to touch the mixer.

These products are fitted with an Armitage Bioguard outlet which reduces the opportunity for bio film attachment and is lined with anti-microbial copper.

A hygiene flush (automatic) is an important optional feature of these products which can be enabled by the installer or maintenance staff using the optional remote programming unit. The hygiene flush is used to combat periods of low usage of the product. The program monitors and permits the fitting to be run automatically if it hasn't been used for a set time period. This feature ensures regular movement of water preventing stagnation, thus combating bio film growth and bacteria colonisation. See section 12.5 for more details.

Two models are covered.

The Proximity Mixer, where flow occurs only while the user's hands are in the detection zone.

The Timed Flow Mixer, where flow starts when the user's hand enters the detection zone and shuts off after a preset time. The preset time can be adjusted. Traditionally the sensor is mounted to the right of the fitting, but it can be mounted to the left if necessary.

They are both intended to be installed on duct panel walls.

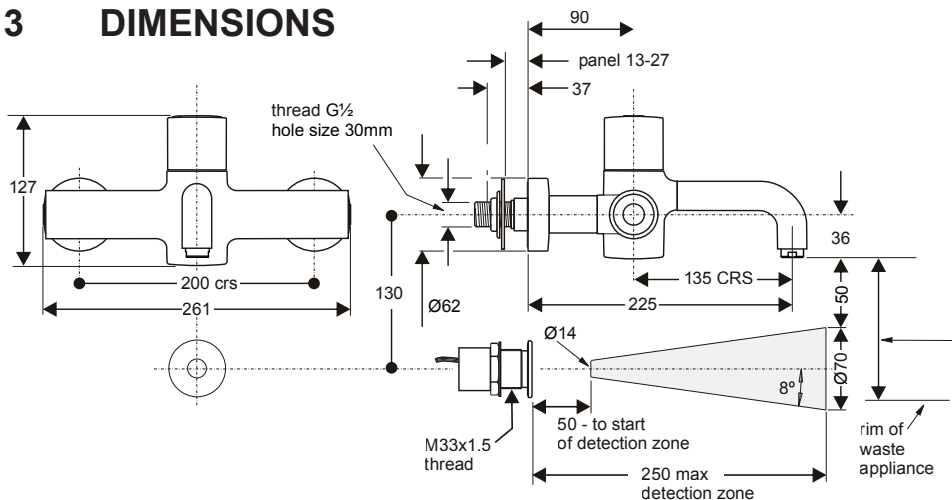
The panel thickness should be in the range 13 - 27 mm. Two holes, of diameter 30mm nominal and one at 35mm nominal, will need to be cut in the panel at centres defined in Figures 1 & 2

The hot side of the mixer is insulated to ensure the body surface is maintained at a safe temperature when the fitting is in operation.

These mixing valves are supplied complete with integral isolating valves, strainers, check valves and flow regulators and are provided with a facility for thermal disinfecting of the cold inlet side and mixed water outlet.

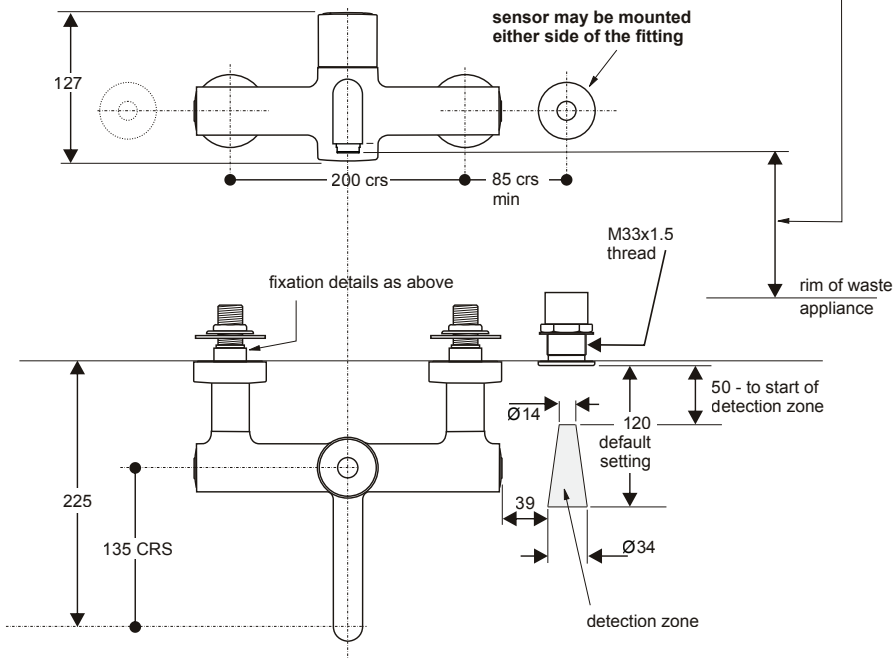
**Avoid using heat for soldering near the mixer inlets to prevent damage to internal components.**

### 3 DIMENSIONS



### Figure 1 Proximity Mixer Dimensions

In healthcare applications the height of the fixation holes above the “waste appliance” should be selected to create the recommended “activity space” as defined in HTM64



**Figure 2** Timed Flow Proximity Mixer Dimensions

# 4 WATER SUPPLY CONDITIONS

## 4.1 Introduction

This proximity operated thermostatically controlled mixers are manufactured to the highest standards and have approval to TMV3 which permits it to be installed in healthcare establishments such as hospitals, nursing homes and residential care homes. When installed in healthcare establishments the supply conditions detailed in Table 1 must be observed and the commissioning and servicing requirements detailed on section 9 & 10 must be followed.

For other installations this is not a requirement.

## 4.2 Supply Pressure Requirements

This mixers are designed to be installed on all types of plumbing systems.

Hot and cold water supply pressures should be reasonably balanced, however, the mixer will function within specification on unequal pressures up to 5 :1.

The mixers has integral isolating valves which permit servicing of the strainer, check valve/flow regulator & thermostatic cartridge. They are also used for thermal disinfection.

The minimum pressure for the correct thermal operation is 0.2 bar. However, in order to achieve an acceptable flow performance at very low pressures it may be necessary to remove the combined check valve and flow regulators (10) and replace them with simple check valves (19) to facilitate thermal disinfection. - see figure 24.

## 4.3 Healthcare Establishments

In accordance with the NHS model engineering specifications DO8 this valve has approval for the following applications:-

High Pressure	HP-	-WE
Low Pressure	LP-	-WE

For this type of application the following supply conditions must apply:

Operating pressure range:	High Pressure	Low Pressure
Maximum static pressure	10 bar	10 bar
Flow pressure hot and cold	1 to 5.0 bar	0.2 to 1.0 bar
Hot supply temperature	55 to 65 °C	55 to 65 °C
Cold supply temperature	5 to 20 °C	5 to 20 °C

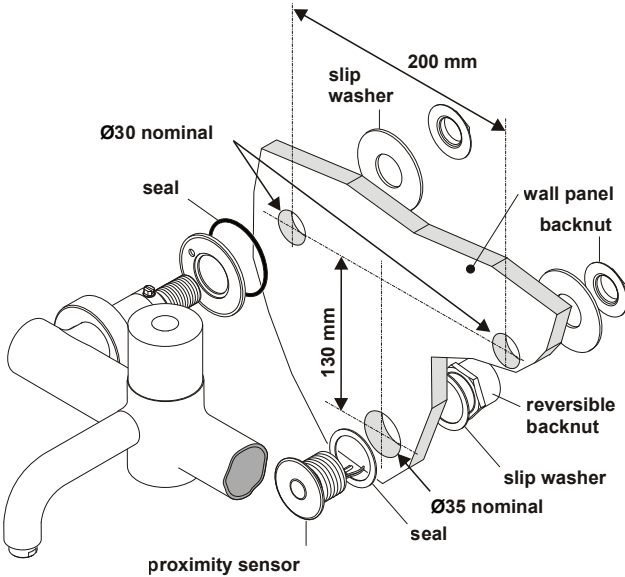
**Note:**  
Fittings operating outside these conditions cannot be guaranteed by the scheme to operate as **TMV3**.

← \*52°C absolute minimum can be used but not recommended

**Table 1 Supply conditions for healthcare establishments**

Effectively this means:  
Differential between HOT and COLD inlet temperatures (  $\Delta t$  ) must be 32C° min and 60C° max  
Differential between HOT inlet temperature and MIXED temperature (  $\Delta t$  ) must be 11C° absolute minimum but > 14C° preferred  
**See 9.3 Audit checks on TMV's.**

# 5      INSTALLATION: FIXATION



**Figure 3 Proximity mixer installation panel mounting**  
(RH inlet cut away for clarity)

These mixers are designed to be panel mounted on a duct wall of maximum panel thickness 27mm. For thicker panels the rear of the panel will require counter bores of 62mm or greater around the fixation holes.

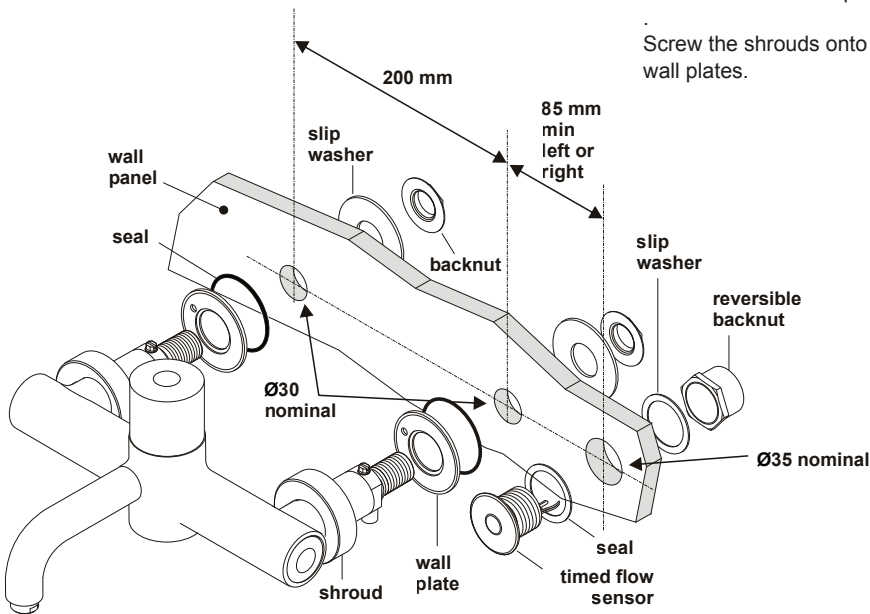
Cut two holes of 30mm diameter, horizontally aligned to 200mm centres in the wall.(See figure 1 for height positioning of the fitting body over a “waste appliance”)

The sensor will require a hole of 35mm positioned as indicated in either fig1 or fig2.

Loosen the chrome shrouds and insert the fitting as shown above with the wall plates and seals to the front of the wall.

Put on the slip washers and do up the backnuts to a torque of 25 Nm

Screw the shrouds onto the wall plates.



**Figure 4 Timed Flow mixer installation - panel mounting**

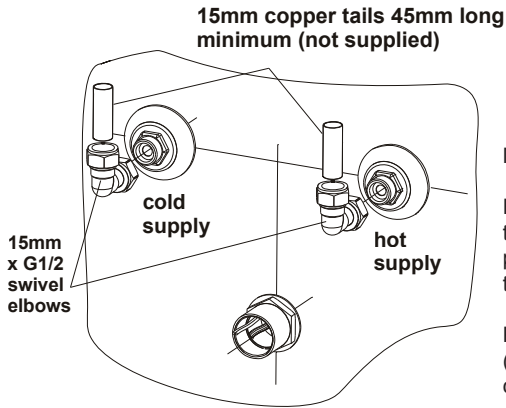
## 6 INSTALLATION: PLUMBING

First refer to section 4. Supply conditions.

A typical example of an installation of a proximity mixer is shown here as a guide. In this example, the water supply pipes are provided from above (this usually permits better drain down of pipes). Supplies can be from any direction.

This diagram shows the preferred method of assembling the plumbing components. Two of these assemblies are required per product. **OBSERVE ARROWS ON VALVE BODIES.**

**IMPORTANT: Avoid using heat for soldering near the product inlets to prevent damage to internal components**

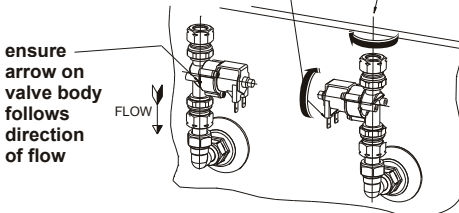


**Fig 6 View from rear of proximity product showing it fixed to panel with backnuts, swivel elbows & copper tails**

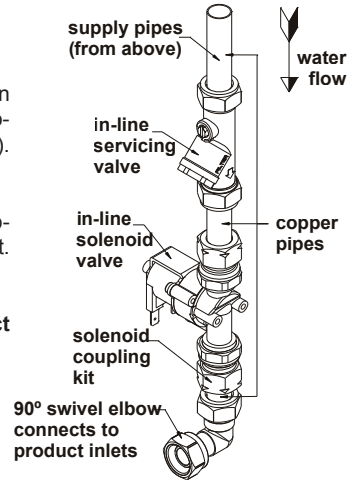
The coupling nuts (supplied) can now be screwed onto both sides of both in-line solenoid valves. Ensure the seals provided are fitted between the solenoids and the coupling nuts. Make good the joints, taking care not to use excessive force.

solenoid coil is on a ratchet - permitting rotation of up to 90 deg in either direction about the horizontal axis shown

solenoid valves can also be rotated about the vertical axis into a position that permits easy access to connectors



**Fig 8 View from rear showing solenoid valves fitted onto copper pipes**



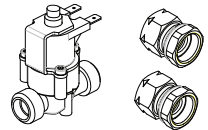
**Fig 5 Overview of plumbing installation**

Mount mixer to the panel and secure the backnuts.

Fit swivel elbows (15mm x G1/2, not supplied) to the inlet tails as shown and ensure the seals supplied with them are fitted between the inlet tails & the elbows. Make good the joints.

Prepare two short lengths of 15mm copper pipe (minimum of 45mm long) and assemble to the compression side of elbows. Make good the joints

**IMPORTANT: When viewed from the REAR, the HOT supply should be connected to the RIGHT hand side.**



**Fig 7 Solenoid valve & coupling nuts**

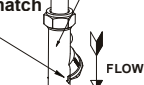
The solenoid valve assemblies can now be loosely fitted onto the copper pipes.

**IMPORTANT: Ensure directional arrow on valve body follows the direction of the water flow.**

Position solenoid valves as required and then make good the joints

**IMPORTANT:** Ensure the arrows on the valves bodies match the direction of the water flow.

in-line servicing valve should be orientated to permit easy access for maintenance



supply pipes (from above)

length of 15mm copper tails will define service valve position, ideally adjacent to an access panel

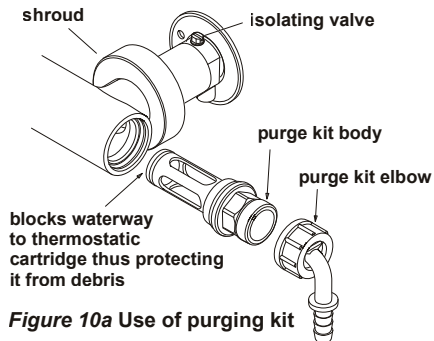
Connect water supply pipes to the service valves and make good all the joints. Check that all connections are water tight.

**Fig 9** view from rear showing service valves fitted to pipework

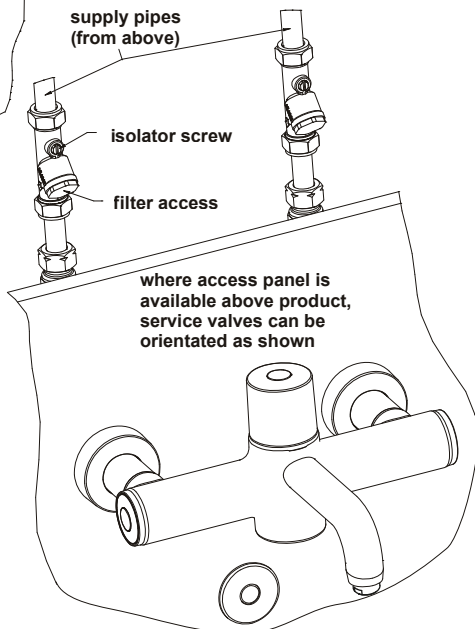
## PURGING KIT

### IMPORTANT NOTE:

Before operating the product, it is strongly recommended to flush the pipe work to remove any residues or debris remaining after installation. A purge kit is available for this purpose. See below



**Figure 10a** Use of purging kit



**Fig 10** View from front showing service valves fitted to pipework of proximity product

A purging kit - A4556AA (not included) designed to flush out debris from the pipe-work after installation is available from Customer Care (see section 15)

Sensor and solenoids must be connected and be operational before purging (see sections 7 & 8)

The following procedure should be used to flush the pipe work:

1. Unscrew and slide back shrouds, close both isolating valves.
2. Remove both maintenance carriers as described in section 13.1.
3. Screw the purge kit bodies into both sides of product. Screw elbows onto the ends of the purge kit bodies.
4. Open isolating valves then place a hand in the sensor detection zone (to operate the valve). Allow water to discharge into a receiving vessel.

**Note:** suitable tubing can be push fitted onto elbows if required.

5. Once system has been purged, reverse this procedure.

## 7 INSTALLATION: ELECTRICAL

### MAINS ELECTRICAL POWER SUPPLY

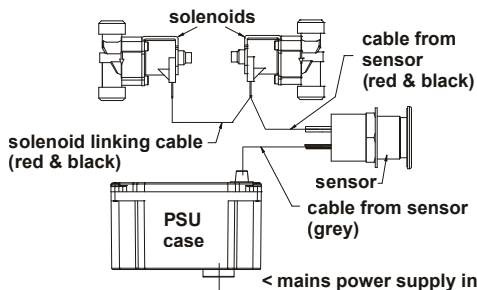
Mains powered Sensor Operated Products must be connected to a (fused / switched) **continuous permanent power supply**.

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

Each time the power supply is reinstated the product enters reprogramming mode.

During reprogramming mode, any interaction (passive or active) with the product may alter the sensor settings in respect to range and / or run duration.

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.



**Fig11 Showing overview of electrical installation**

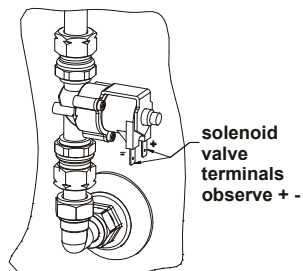
With the product securely mounted to the panel & plumbed-in, electrical work can commence.

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

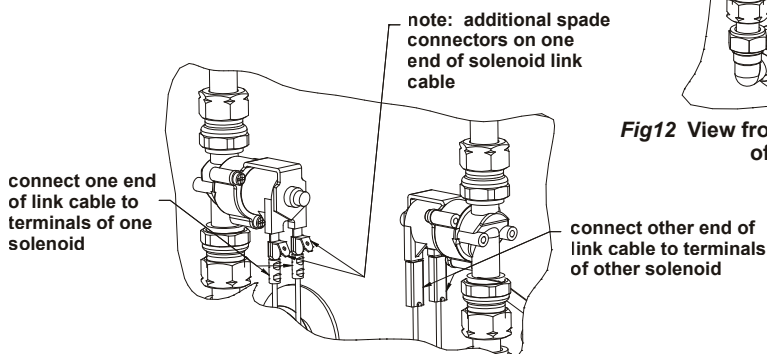
A typical example of an installation of a proximity mixer is shown here as a guide.

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

An overview of the electrical wiring is shown in Fig 11



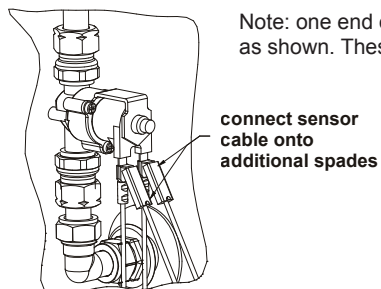
**Fig12 View from rear showing one of the solenoid valves**



**Fig13 View from rear showing solenoid valves link cable fitted**

First connect the two solenoid valves together using the separate link cable provided. The link cable is black & red with connectors fitted at both ends. Cable length is 500mm.

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



Note: one end of this link cable is fitted with additional spade connectors as shown. These connectors are for attaching the red & black sensor cable.

Locate the end of the red & black cable which is attached to the rear of the sensor. Cable length is 750mm.

Connect this cable to the spade connectors shown on the link cable. Observe + and – Ensure red is connected to red & black to black.

**Fig14 View from rear showing sensor cable fitted to one solenoid valve**

Next, open the PSU case by unscrewing 4x posi-drive screws; the lid & seal should separate from the PSU case. Slide out the PCB (Printed Circuit Board) from the case.

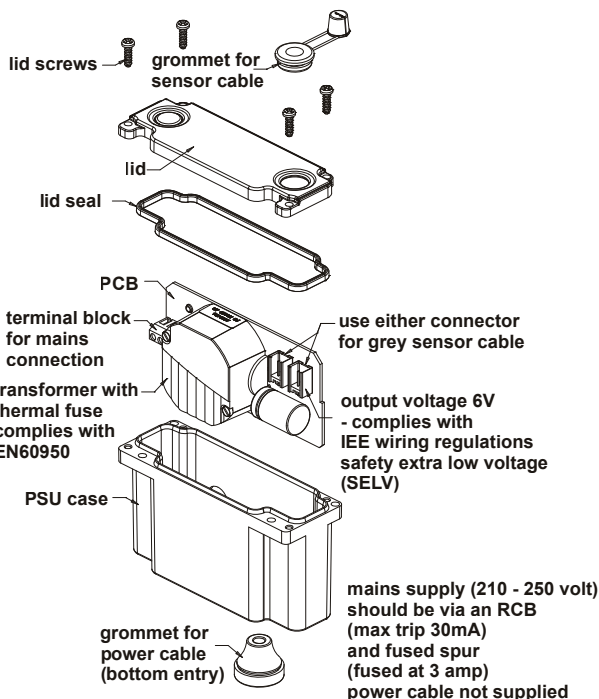
With the mains power switched off, prepare the mains power cable (not supplied). This should be flexible 3A rated 2 core cable. Carefully remove about 100mm of outer cable sheathing, strip the wire ends back by about 5mm.

Feed the cable through the grommet at the base of the case (cut small slot in grommet first).

Connect the appropriate mains wires to the L (Live) & N (Neutral) marked on the terminal block on the PCB.

Slide the PCB back into the case (note guide slots), allowing the mains wires to rest in-front of the transformer.

DO NOT leave wires on top of the transformer as this may prevent the lid from closing completely



**Fig15 Power Supply Unit (PSU)**

Locate the end of the second cable (grey with black line) which is attached to the rear of the sensor (cable end has connector fitted, length is 750mm). The cable can be slid into the upper grommet (which is pre-slitted) & fed through the lid.

Plug this cable into either one of the two connectors on the PCB. The lid can now be closed, ensure the grommet is pressed into the lid. Check that no cables are trapped under the lid, make sure the lid seal is in place, and then refit the 4 retaining screws.

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.

Note: 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. Fasten the PSU case to the mounting panel.

This completes the behind-panel installation work.

#### **IMPORTANT:**

**Leave the sensor protective sticker in place for one minute after powering-on the product. See section 8 regarding sensor adjustment**

# 8 OPERATION & SENSOR ADJUSTMENT

## Operation

Both mixers are operated when the user places a hand in the detection zone.

With the proximity version, flow starts when a hand is placed in the detection zone and will continue until it is removed.

The other version gives a timed flow which is started by placing a hand in the detection zone. Flow will then continue for a preset time of 60 seconds and then stop automatically. The preset time can be adjusted by following the procedure outlined in the section on programming the sensor below.

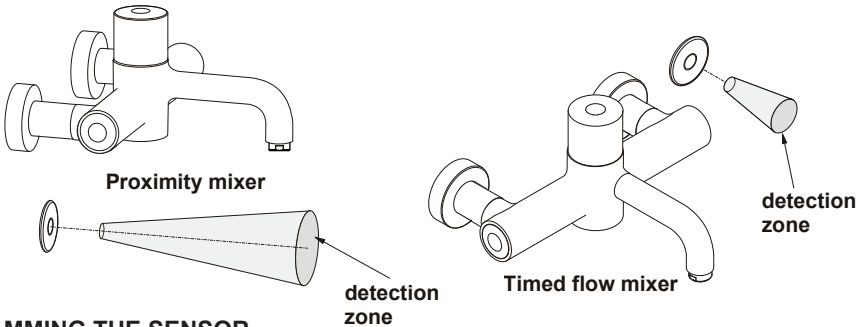


Figure 16

## PROGRAMMING THE SENSOR

Follow this procedure to change the Detection Range and the Run Time for timed flow product  
**PLEASE NOTE:** Only the detection range can be changed on proximity product. The run time is determined by the presence of a hand in the detection zone, or the anti-vandal max run time.

### Step 1a Detection Range Adjustment

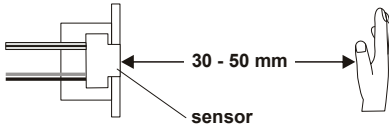


Figure 17

**NOTE:** Ensure there is no obstruction in the detection range during 'Power -Up' as this may cause the range to be changed.



**Before programming remove sticky label over sensor face.**

The sensor can only be programmed just after power-up.  
Disconnect power supply from the mains, wait 30 seconds.  
Reconnect sensor to power supply - note LED in sensor flashes slowly for about 5 seconds.  
During this time, place hand 30 to 50 mm from sensor while LED flashes slowly.

### Step 1b

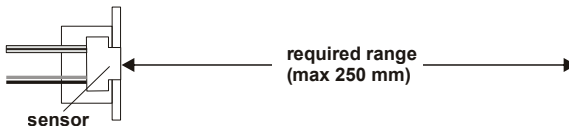
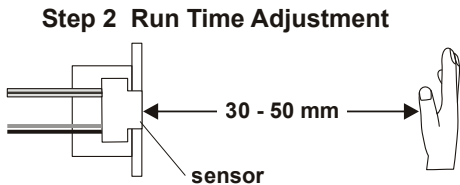


Figure 18

After the initial 5 secs, the LED will stop flashing and will stay fully on for about 5 more secs.  
During this time, move hand to required range (up to a maximum of 250mm),  
Leave hand at this position for 5 seconds, the LED will start to flash again.  
If it is necessary to change the run time, go to Step 2 below, otherwise move hand away from detection range. The sensor now works normally and is no longer in programming mode.  
If an error is made in programming the detection range, it is necessary to start again from Step 1a.

## PROGRAMMING THE SENSOR CONTINUED



**Figure 19**

While the sensor LED is flashing, hold hand near to sensor (30 - 50mm),

The sensor LED turns off and starts to flash very slowly (once every 2 seconds),

Each flash will give a different time period, after 7 flashes take the hand away from the detection range. The run time is now set for 60 seconds.

For other run times, see the table below. The sensor now works normally, and is no longer in programming mode. If an error has been made in programming the run time, it is necessary to start from Step 1.

No of LED Flashes	1	2	3	4	5	6	7	8	9
Run Time (Seconds)	1	2	3.25	7.5	15	30	60	120	240

## 9 COMMISSIONING AND AUDITS

The following procedure should be conducted after installation to ensure the product is functioning correctly.

### 9.1 The Purpose of Commissioning:

- To confirm the correct designation of product versus application.
- To confirm the correct supply water conditions for the product / installation.
- To adjust the mixed temperature if necessary to suit the water supply conditions of the installation.
- To check the product is performing properly.
- To start an audit log and record appropriate data.

**This product is factory set at 40 - 41°C with supplies of circa; 3 bar balanced pressure and temperatures of 17°C cold & 57°C hot (i.e. an inlet  $\Delta t$  of 40 & a hot / mix  $\Delta t$  of 17 )**  
**For supply requirements, see 4.0 Water supply conditions.**

### 9.2 Commissioning Process (see decision tree FC1)

- Establish that the supply conditions are within the requirements of HTM 04 and the supply conditions outlined above. If not investigate.
- When conditions are acceptable record them, together with hot and cold temperatures. Establish  $\Delta t$ .

Check the outlet mix temperature is within 41°C + / - 2°C, if not (probably due to  $\Delta t > 5$  difference to factory setting) adjust appropriately. **(See 12.1)**

- If mixed water temperature is correct undertake an 'in field' cold water isolation (CWI) test **(See 9.5)**.  
Pass – restore supply and record mixed temperature,  
Fail – **See 9.5 in field 'Cold Water Isolation' test.**

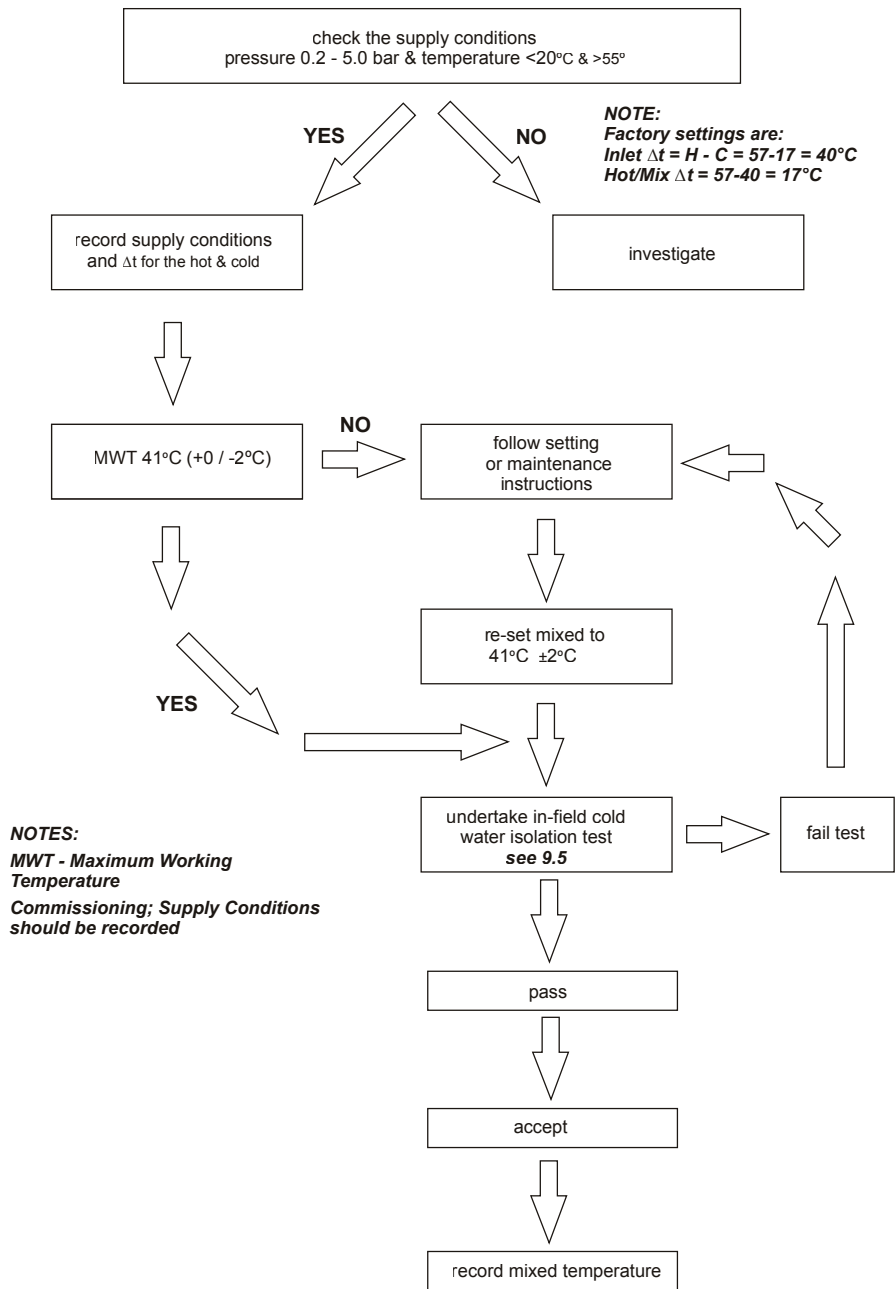
### 9.3 Audit Checks on TMV's

The purpose of a performance audit of a product is:

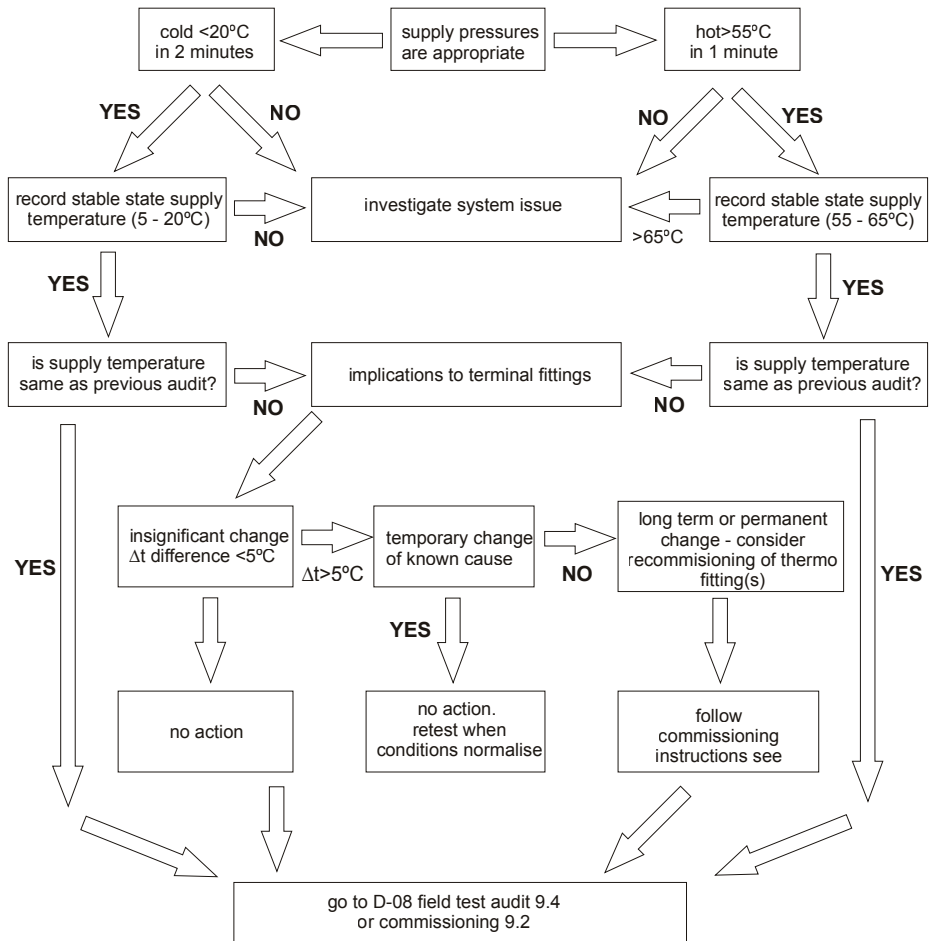
- To check the product continues to perform properly.
- To flag the need for the product to be adjusted due to supply condition changes or mechanism ageing.
- To ultimately identify the need for product maintenance.

Note - Additionally these audits facilitate regular verification of the supply conditions in accordance with HTM 04 requirements. (See decision tree FC3)

9.2 cont. Commissioning process (decision tree FC1)



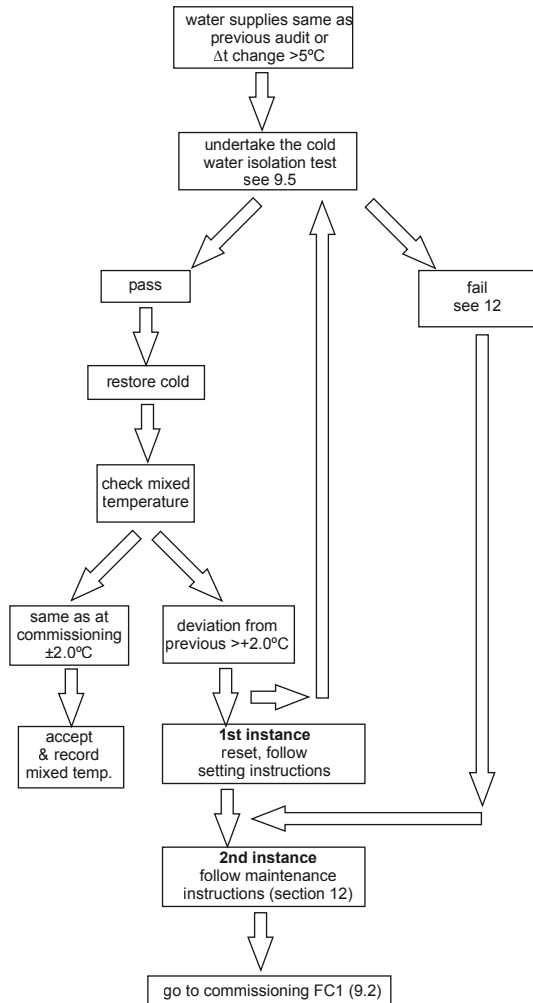
## Audit of Supplies To Fittings (FC3)



## 9.4 Audit procedure (see decision tree FC2)

- Verify the water supplies conditions are similar to when the product was commissioned i.e. inlet  $\Delta t$  as previous  $\pm 5^\circ\text{C}$   
 Note: If inlet  $\Delta t$  change is  $> 5^\circ\text{C}$  consider the cause of the change, If it is seen as a long term or permanent change, re-commission the product. If however, it is only a temporary change, retest when normal conditions resume.
- If inlet  $\Delta t$  differs from the commissioning  $\Delta t$  by  $< 5^\circ\text{C}$  carry out field 'cold water isolation' (CWI) test as D-08: 2009. **See 9.5 in field Cold Water Isolation test failure.**
- Pass - restore the cold supply and move on to check the mix temperature.  
 Note: If the product fails CWI test, refer to 9.5 and then re-commission the valve.
- Mixed Temperature is as commissioned  $\pm 2^\circ\text{C}$ , Accept and record the temperature.  
 Note: If mixed Deviation  $> \pm 2^\circ\text{C}$  (1st instance) reset mix as instructions and redo the test from start.  
**See 12.1 Adjustment of the mix temperature.**
- 2nd & subsequent instances follow maintenance instructions.

## Fitting Field Test Audit (FC2)



### 9.5 In-field 'Cold Water Isolation' (CWI) test.

Note: To gain access to the cold water isolating valve, unscrew the right hand shroud (42) & slide forward to expose the isolating screw on top of the cold inlet leg (see fig 24, section 13). Using a flat-blade screw driver, the screw can be rotated 90° anti-clockwise to isolate the cold water supply.

Prior to commencing the CWI test, ensure:

1. The water supply conditions are met either:

- A. For commissioning a new product (see table 1, section 4).
- B. Or the inlet  $\Delta t$  is within  $\pm 5^\circ\text{C}$  to when the product was commissioned (see 9.4).

**NOTE It is important that the hot temperature is greater than 55°C**

2. Mixed water outlet temperature is correct (see table 2, section 10).

To perform a CWI test, operate the product using the sensor. Then conduct the following procedure:

1. Record the steady state temperature of both hot and cold water supplies. Note the  $\Delta t$ .
2. Record the temperature of the mixed water at the outlet.
3. Isolate the cold water supply (by rotating the isolating screw 90°) & monitor the flow of water from the outlet.

If the flow ceases, CWI test passed:

1. Restore the cold water supply by rotating the isolator screw 90° clockwise.
2. Slide the shroud back & screw onto the wall plate.
3. Re-check the temperature of the stabilised mixed water at the outlet to ensure it is still correct.

Accept & record mixed temperature.

If there is an ongoing flow of water from the mixed water outlet, then 5 seconds after CWI collect the discharging water into a measuring vessel for 60 seconds. To pass the CWI test the volume of collected water should be less than 120ml.

If the product fails CWI test, see FC2 (section 9). Follow product maintenance (see section 12) and servicing (see section 10) instructions.

## 10 SERVICING - TVM3 SCHEME

The need for servicing is normally identified as a result of the regular performance auditing.

Application	Maximum mixed water temperature during normal operation	Permitted maximum temperature rise recorded during site testing
Washbasin	41°C	43°C

**Table 2 A guide to maximum temperature sets**

### 10.1 FREQUENCY OF REGULAR SERVICING

The purpose of servicing regularly is to monitor any changes in performance due to changes in either the system or the product. This may highlight the need to adjust either the supply system or the product. These products should be audited 6 to 8 weeks and again 12 to 15 weeks after commissioning. The results are to be compared against original commissioning settings. If there are no significant changes at the mixed temperature outlet then a 6 monthly servicing cycle may be adopted. Otherwise, servicing checks should be carried out more frequently (e.g. every 4 months).

Follow the recommended auditing and maintenance procedures detailed in sections 9 & 12. During servicing, note the following:

1. Repeat the procedure of recording and checking supply temperatures. (The same type of measuring equipment should be used)
2. If the temperature has changed significantly from the previously recorded values, the following should be checked:
  - a. All in-line or integral valve filters are clear of obstruction.
  - b. All in-line or integral check valves are clean and working properly to prevent backflow.
  - c. Any isolating valves are fully open.
  - d. The thermostat is free of debris
3. When satisfied with the mixed outlet temperatures re-record the temperatures.

## 11 ARMITAGE BIOGUARD OUTLET

Traditional “flow straightener” type outlets have recently been identified by extensive research as an area most likely to harbour bacteria. This product uses an Armitage Bioguard outlet which replaces this traditional flow straightener with a fully open copper-lined waterway. This greatly reduces the risk of bacteria build-up whilst the copper lining has natural anti-microbial properties.

Outlet is suitable for autoclaving (remove o-ring if exceeding 80°C).

In the interests of infection control and health hygiene, the Armitage Bioguard Outlet is a supplement to, not a substitute for, standard infection control practices. Continue to follow all current protocols, including those practices related to cleaning and disinfection of surfaces. Refer to HTM04-01 for more details.

*Patent pending for Armitage Bioguard antibacterial outlet, application No: 10 2012 107 243.4*

### 11.1 Maintenance cleaning

On a regular basis the outlet should be inspected and cleaned.

To unscrew and remove the outlet, use an adjustable spanner on the flats (20mm). To refit, hand tighten and then use the spanner until the outlet has bottomed in the bore. Take care not to over tighten.

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 a kettle descaling solvent but it is important to follow the manufacturer's guidelines. After descaling it is important to rinse the parts thoroughly in clean water. Clean carefully and do not use abrasive materials or scrapers

Note: Lime scale deposits should be removed prior to using any disinfection treatments.

## 12 MAINTENANCE

When installed as a TMV3 application it is a requirement that the commissioning and maintenance procedures, detailed under 9 & 10, be carried out.

### 12.1 Adjustment of the mix temperature:

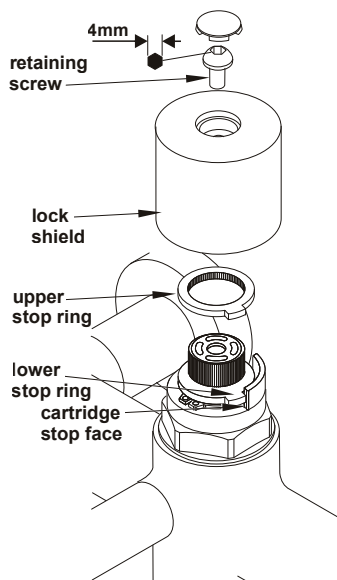
• **Note: Cartridge is factory pre-set at 40 - 41°C.**

- Prise out the cover button, then use a 4mm Allen key to remove the screw.
- Lift off the lock shield.
- Remove both rotational stops from the spindle.
- Turn the spindle to achieve a 40 - 41°C mixed. (Clockwise to reduce and anti-clockwise to increase).
- Refit both stop rings against the anti-clockwise rotation stop face.

Note: 1. This is the normal maximum temperature range for the product and as such there is a wide zone of spindle movement that gives this mix temperature. For best performance you should refit the stop at the first point of anticlockwise rotation that achieves the desired setting.

2. If you are unable to achieve 40 - 41°C Max and you have the correct ?'t's it may be due to fine debris. **See 12.2 Removal and inspection of cartridge.**

- Upon successful completion of the temperature adjustment, conduct the **Cold Water Isolation (CWI) test (See 9.5)** to ensure product is working properly.
- Refit the lock shield and record the mix temperature.



**Figure 20** Adjusting the pre-set temperature

### 12.2 Removal and inspection of cartridge

After checking that supply conditions are within the specified parameters (see table 1), if the fitting malfunctions or should the test results fail to fall within the specified limits consider replacing the cartridge with a new one. **See 12.3 Important notes on debris.**

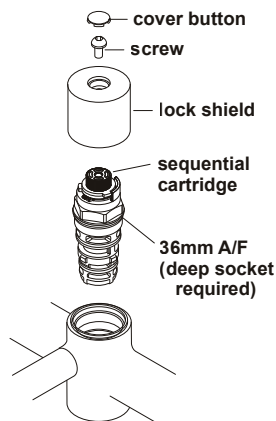
Isolate the fitting by turning the isolating valves 90 anti-clockwise (viewed facing the iso-valve).

Remove the lock shield as described in 12.1. Unscrew the cartridge from the body with a 36mm a/f deep socket. Inspect cartridge for damage.

Replace cartridge if necessary and reassemble cartridge into body

The replacement cartridge should be tightened to a torque of 15Nm. (To re-secure the cartridge we recommend the use of PermaBond A011 or equivalent applied to the thread of the cartridge)  
Replace the lock shield and reinstate the supplies.

- **Redo the Cold Water Isolation (CWI) test (See 9.5).**
- Once satisfied with the CWI test, re-check and if necessary, adjust the maximum mix temperature, see (See 12.1).
- Record the mix temperature.



**Figure 21** Exploded view showing sequential cartridge

## 12.3 Important notes on debris

Although this product is protected by built-in filters, debris can still find its way to the thermostat housing area. This can happen during servicing for example. Remove cartridge (see section 12.2) and carry out an inspection.

## 12.4 Thermostatic Cartridge Ageing

Following many years of normal service you may notice the following:

1. The need to carry out more frequent adjustment of mixed temperature.
2. The thermostatic element may not pass the CWI test.

These issues could be due to the ageing of the thermostat which loses some expansion capability over time.

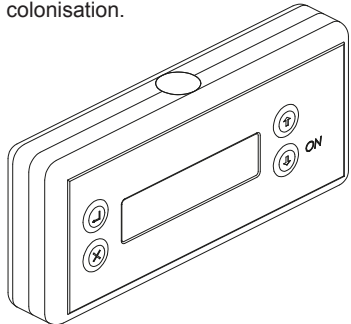
These are the principle objectives of testing, as they serve to indicate to maintenance staff the declining performance capability of the thermostatic cartridge.

For this reason the audit testing flow chart highlights that 2nd Instance CWI test failure or 2nd instance mixed deviation even with stable 'as commissioned' supply conditions and correct inlet supply  $\Delta t$ 's, is potentially the first indication of the need to replace the cartridge.

## 12.5 Hygiene Flush (automatic)

This hygiene flush is an important optional function of these products which can be enabled by the installer or maintenance staff using the optional remote programming unit (for part number see sect.15).

The hygiene flush is used to combat periods of low usage of the product. The function monitors and permits the fitting to be run automatically if it hasn't been used for a set time period. This function ensures regular movement of water preventing stagnation, thus combating bio film growth and bacteria colonisation.



The programming unit should be held pointing towards the sensor at distance of approx. 100mm, see below.

Once enabled, this function will automatically turn the water on for a duration of 1 to 60 seconds if the product has not been used for a period of 6, 12, 24, 48, or 72 hours.

For full details on how to enable this function, refer to the programming instructions supplied with programming unit.

**A brief summary of how to navigate the programming unit is as follows:**

- a) Handunit ON
- b) Navigate to Menu **4 PARAMETER**
- c) **SENSOR 2008** (Enter)
- d) **MENU 4.1 HAND-WASH** (Enter)
- e) **AUTO-RINSE FREQUENCY: OFF**  
ARROW UP (To required Delay time) (Enter). Recommended: 6 or 12 hours.
- f) **AUTO-RINSE DURATION: (15 sec default)**  
ARROW UP or DOWN (To required Run Time). Recommended: 60sec (max).
- g) Point towards Sensor (approximate distance 100mm)
- h) Press ENTER
- i) **TRANSMISSION OK** - if successfully programmed; **ERROR COM** – if programming failed
- j) Press ESCAPE (X) to get **BACKUP FUNCTION**
- k) With BACKUP FUNCTION, previous settings are 'Remembered' –  
- just point at next Tap / Sensor and press ENTER to repeat.
- l) Handunit turns itself off after 2 minutes of non-use.

## 13 ISOLATING VALVES

### 13.1 ISOLATING VALVES

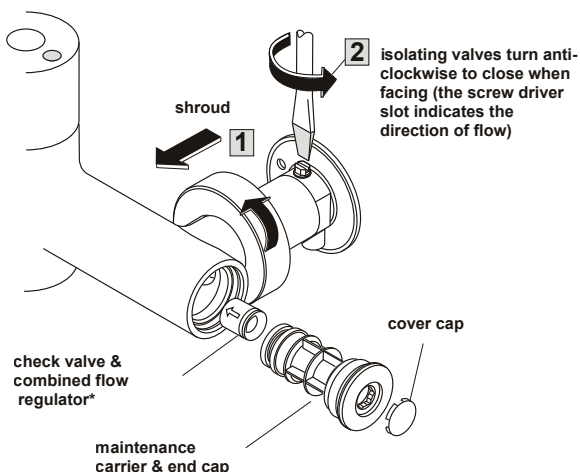
Isolation valves facilitate 4 activities:

- 1) Cleaning strainers & check valves
- 2) Servicing the cartridge
- 3) Disinfection
- 4) Audit cold water isolation test

#### Strainers

To ensure trouble free operation of the fitting, the strainer elements should be checked and cleaned in accordance with the commissioning and servicing guide. **(see section 9)**

To access the strainer element, first unscrew and slide back the shrouds and close the isolation valves. Prise out the cover cap then unscrew the end cap using a 10 mm Allen key and withdraw the maintenance carrier. The strainer element should be washed with clean water and refitted.



**Figure 24** Exploded view showing strainers check valve and flow regulator

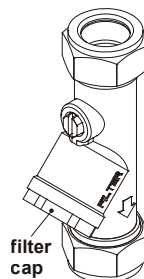
\*To achieve a suitable flow rate where supply pressures are very low it may be necessary to remove the combined flow regulator (**item 10 figure 15**) and replace with a single check valve (**Item 19 figure 10**) to facilitate thermal disinfection.

### 13.2 MAINTENANCE OF IN-LINE COMPONENTS

In this example, (see figure 25) the isolator screw slot is shown in the vertical position. This indicates the valve is open.

To close this valve, rotate the isolator screw by 90° into the horizontal position. By operating the product, this will drain down the water from the pipes below the service valve. Once the product has been isolated, this will permit maintenance staff to:

1. Check & clean the filters by unscrewing the filter cap.
2. Replace the in-line solenoid valves if necessary.
3. Completely remove the product from the panel if necessary.



**Figure 25** In-line isolating valve with filter

# 14 THERMAL-DISINFECTION

This fitting is equipped with a disinfecting feature, which allows an engineer to feed water from the hot inlet via a temporary by-pass hose\* into the cold inlet. This hot water then passes through the cold inlet, the thermostatic mixing chamber and out through the mixed water outlet. The temporary bypass hose is inserted into special valve connectors in the inlet tails normally concealed by the shrouds.

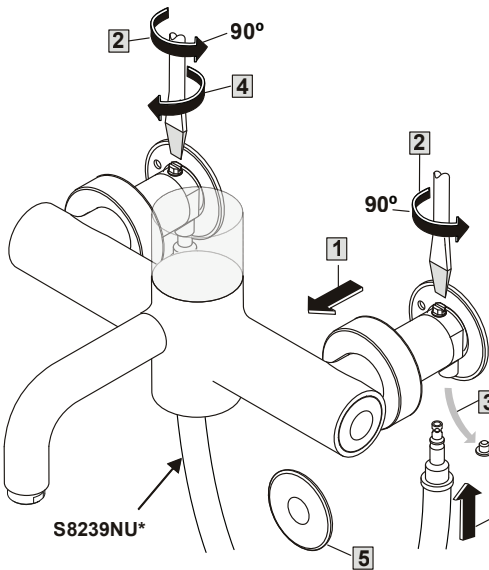
**Safety Note:** Care should be taken when carrying out the following procedure to avoid contact with hot water and hot surfaces. We recommend the use of protective hand wear.

To disinfect the fitting proceed as follows:

- 1. Unscrew the wall shrouds (42) and slide forward
- 2. Isolate both inlets by turning the isolation valves through 90 anti-clockwise.
- 3. Remove dust covers from the exposed nipples and push-fit the temporary flexible hose inserting the cold side first and then the hot.
- 4. Now turn hot side isolating valve 90 deg clockwise.

When the fitting is operated hot water will now be able to pass from the hot inlet, through the by-pass hose into the cold inlet and thence into the thermostatic mixing chamber and spout. Here, by the nature of the thermostatic element, it will fully open the cold port. The hot water will then discharge to waste via the fitting's outlet.

5. Operate the fitting using the proximity sensor. (As flow will stop after 60 secs it will be necessary to start the flow using the sensor a number of times to produce flow time indicated in Table 3.)



Temperature	Disinfection time
60°C	20 minutes
65°C	10 minutes
70°C	5 minutes

**Table 3 Guide to disinfection temperatures v/s time**

*\*The temporary bypass hose is available as an optional extra Part No. S8239NU)*

**Figure 26 Fitting the Temporary by-pass hose**

Following the recommended disinfection period, turn the hot isolation valve back to the isolation position, turn off the fitting and remove the bypass hose - hot side first then the cold. Turn both isolation valves back to the normal flow position. Check for normal operation of the fitting and replace dust caps and shrouds.

# 15 SPARE PARTS - MIXER

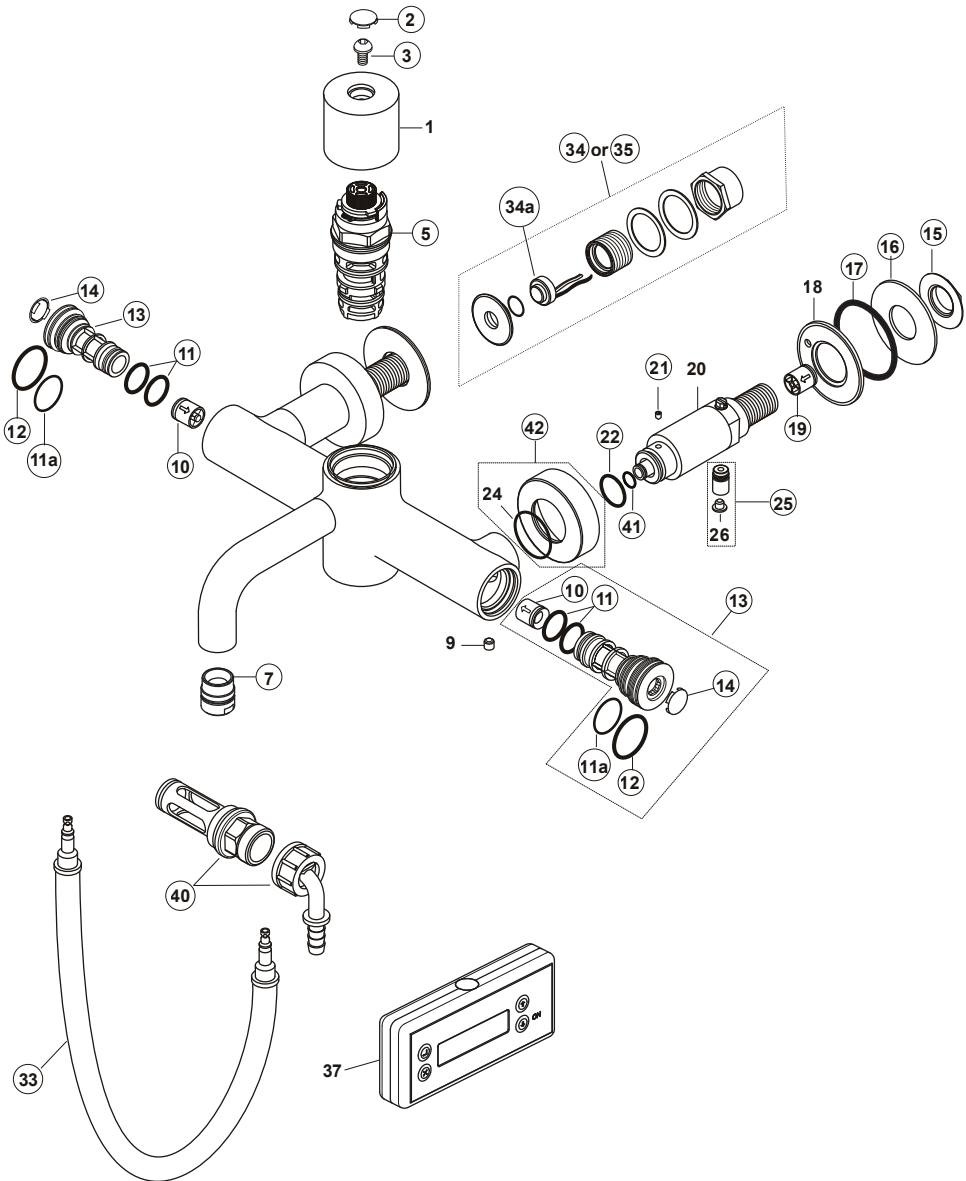


Figure 27

## SPARE PARTS - MIXER LIST

Ref.	Description	Part No.
1	Lock shield	-
2	Cover cap	E960615AA
3	Handle screw	A961950NU
5	Sequential, thermostatic cartridge	A962280NU
7	Armitage Bioguard outlet	F960847AA
9	Grub screw M6 x 6	-
10	Combined check valve & flow regulator CV15FR	A962689NU
11	O-ring dia 17.6 x 2.4	A962497NU
11a	O-ring 25.0 x 1.5	A962496NU
12	O-ring dia 34.0 x 2.0	A960183NU
13	End cap, maintenance carrier & filter (complete with o-rings)	A962343AA
14	Index button	E960641AA
15	Backnut	E960112NU
16	Slip washer dia 60 x 25 x 2	E960631NU
17	O-ring 51.6 x 2.4	E960632NU
18	Wall plate	E960633NU
19	Check valve DW15	A962594NU
20	Straight inlet tail with maintenance / disinfecting valve	-
21	Grub screw M4 x 6	A963667NU
22	O-ring dia 17 x 2.5 (set of 4)	A963143NU
24	O-ring dia 34.1 x 1.6	-
25	Thermal disinfection nipple assembly (fit hand tight only)	A962498AA
26	Dust cover	-
34	Momentary action proximity sensor & housing (A4554)	E960619AA
34a	Sensor IR complete with wire	A960219NU
35	Timed flow proximity sensor & housing (A4555)	E960620AA
41	O-ring dia 8.1 x 1.6 (single)	-
42	Shroud	A962346AA

### Optional accessories

33	Disinfection kit (available separately)	S8239NU
37	Remote programming unit (available separately)	A961765NU
41	Purging kit (available separately)	A4556AA

# 16 SPARE PARTS - ELECTRICAL

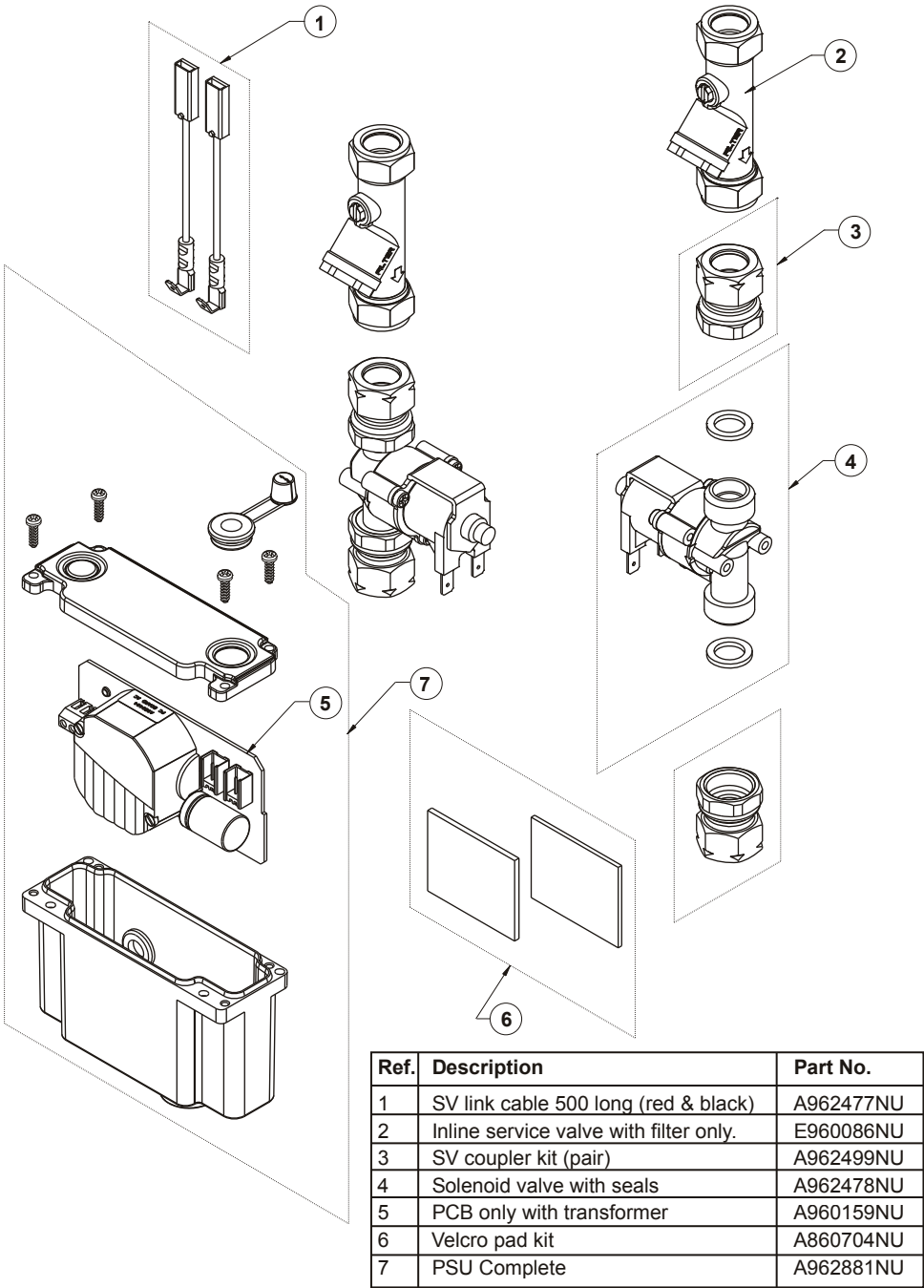


Figure 28 Behind Panel Spares



For more information on spare parts why not visit our spare website  
**[www.fastpart-spares.co.uk](http://www.fastpart-spares.co.uk)**



***CUSTOMER CARE HELP LINE***

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***CUSTOMER CARE FAX***

**01482 499611**

***E-MAIL***

**[UKcustcare@idealstandard.com](mailto:UKcustcare@idealstandard.com)**

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Ideal Standard (UK) Ltd

Ideal Standard International BVBA  
Corporate Village - Gent Building  
Da Vincilaan 2  
1935 Zaventem  
Belgium

[www.idealstandardinternational.com](http://www.idealstandardinternational.com)

0213 / A 866 628  
+A 865 708  
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