

*Armitage
Shanks*

**Thermostatic two hole wall & rim
mounted bath /shower mixers**

INSTALLATION INSTRUCTIONS



CONTOUR 21+ SAFE

Wall mount: A6876AA/XG, A7005AA & A7004AA

Rim (deck) mount: A7006AA & A6877AA

PRODUCTS ARE TMV APPROVED

SEE PAGES 3 TO 5 FOR DETAILS

A6876AA/XG Contour 21+ SAFE

Thermostatic two hole wall mounted
shower mixer (without shower kit)



A7004AA Contour 21+ SAFE

Thermostatic two hole wall
mounted bath & shower mixer
(without shower kit)



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

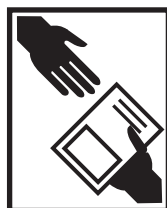


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Product List

This instruction manual provides details for the following range of exposed two hole Contour 21+ Safe thermostatic mixer products:

Wall mount versions:

A6876AA/XG Bar shower

A7005AA Bath filler

A7004AA Bath filler & shower

Rim (deck) mount versions:

A7006AA Bath filler

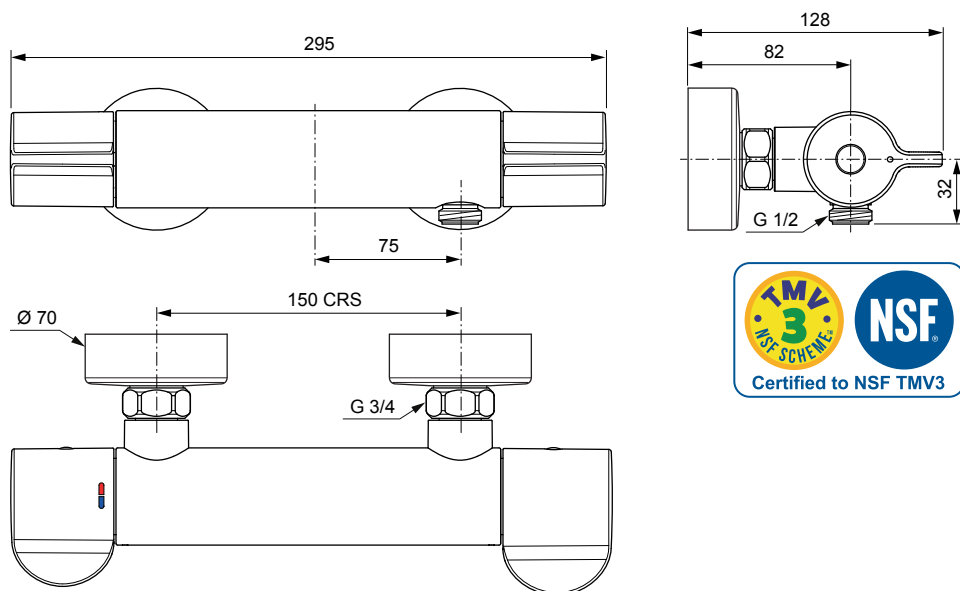
A6877AA Bath filler & shower

These products are certified either TMV2 or TMV3, see next pages for appropriate logo shown against each mixer.

1 PRODUCT DIMENSIONS

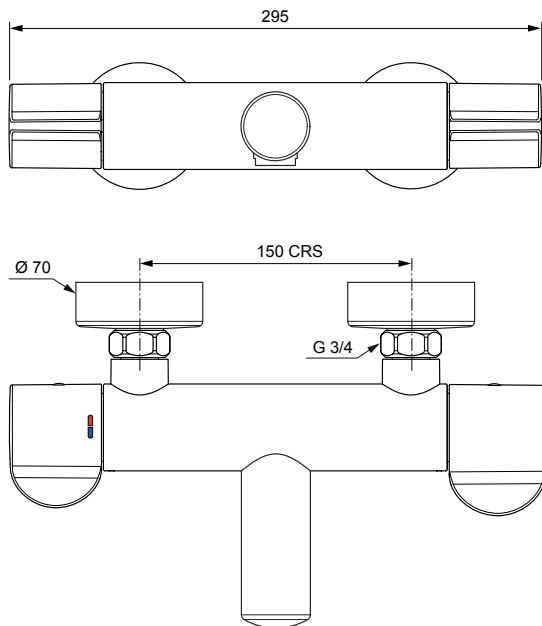
For wall mount versions

Dimensions are in millimetres & may vary within permitted tolerances

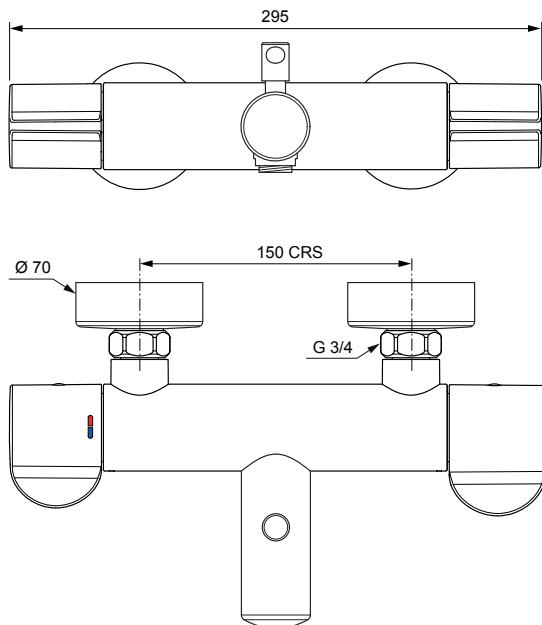


A6876AA/XG Contour 21+ Safe Thermostatic two hole wall mounted shower mixer.

Note: This Contour 21+ Safe shower mixer is supplied without a shower kit, therefore end user should select a suitable kit.

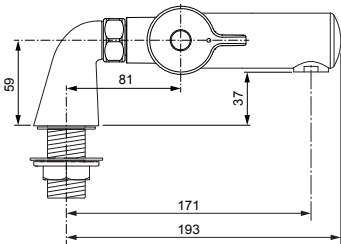
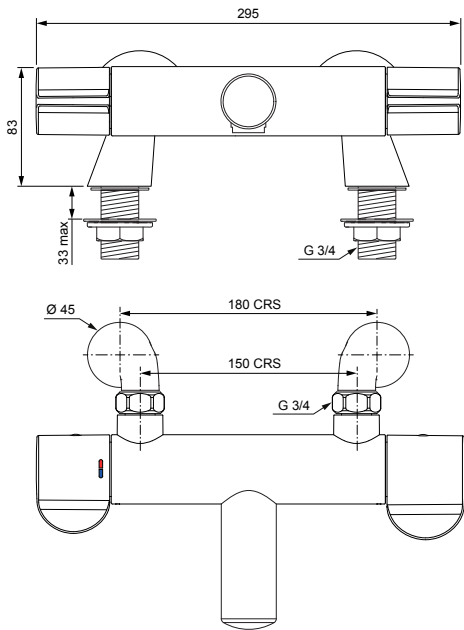


A7005AA Contour 21+ Safe Thermostatic two hole wall mounted bath filler.

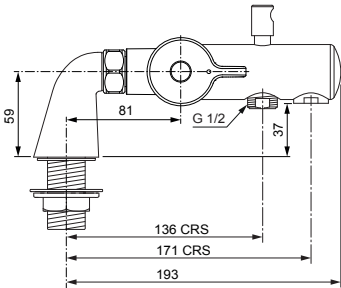
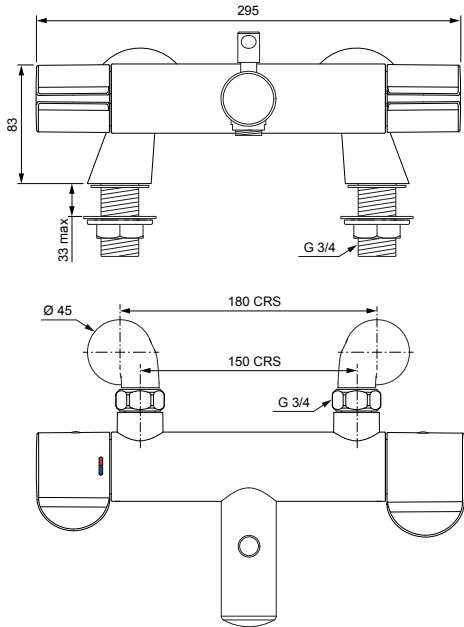


A7004AA Contour 21+ Safe Thermostatic two hole wall mounted bath filler and shower mixer.

Product Dimension for rim (deck) mount versions



A7006AA Contour 21+ Safe Thermostatic two hole rim (deck) mounted bath filler.



A6877AA Contour 21+ Safe Thermostatic two hole rim (deck) mounted bath filler & shower mixer.

Note: These Contour 21+ Safe mixers are supplied without shower kits, therefore end user should select a suitable kit (not applicable to bath fillers A7005/6AA).

2 PRODUCT BOX CONTENTS

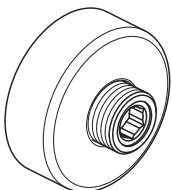
For wall mount versions

Parts common to all three wall mount products A6876AA/XG, A7005AA & A7004AA



**Thermal
override key
M3x30**

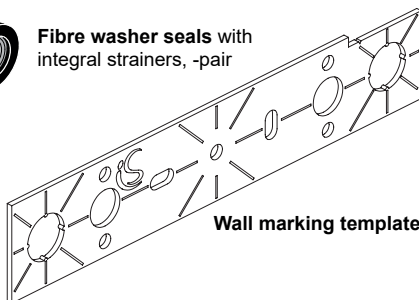
For products
A6876AA/XG &
A7004AA only



**Wall mounting bracket
assemblies -pair**

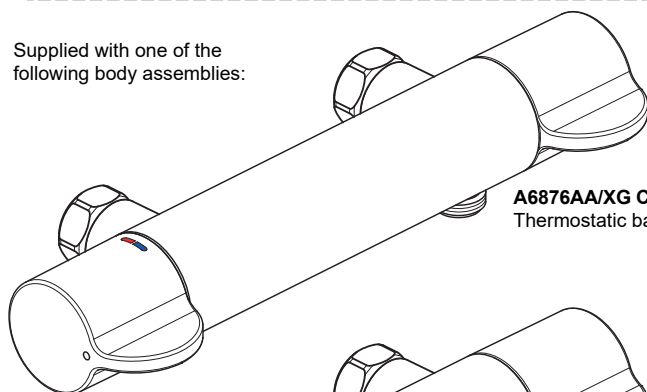


**Fibre washer seals with
integral strainers, -pair**



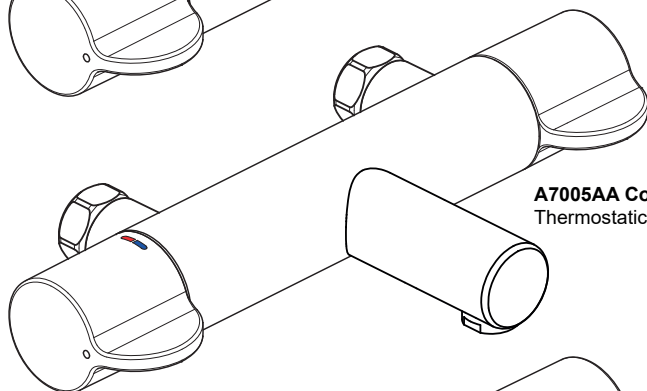
Wall marking template

Supplied with one of the
following body assemblies:



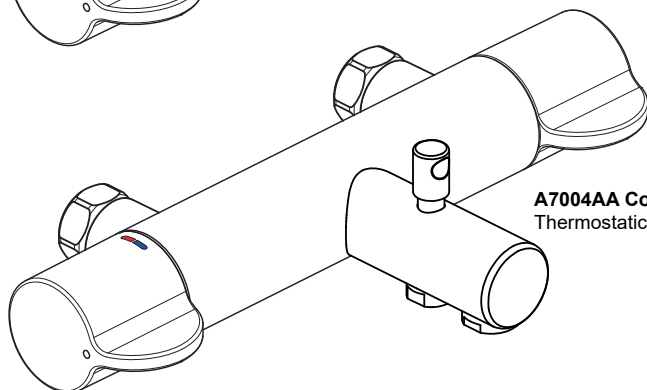
A6876AA/XG Contour 21+Safe body assembly,
Thermostatic bar shower mixer.

„OR“



A7005AA Contour 21+Safe body assembly,
Thermostatic bath filler.

„OR“



A7004AA Contour 21+Safe body assembly,
Thermostatic bath filler & shower mixer.

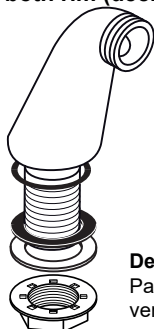
Product box contents for rim (deck) mount versions

Parts common to both rim (deck) mount products A7006AA & A6877AA.



**Thermal
override key**
M3x30

For product
A6877AA only

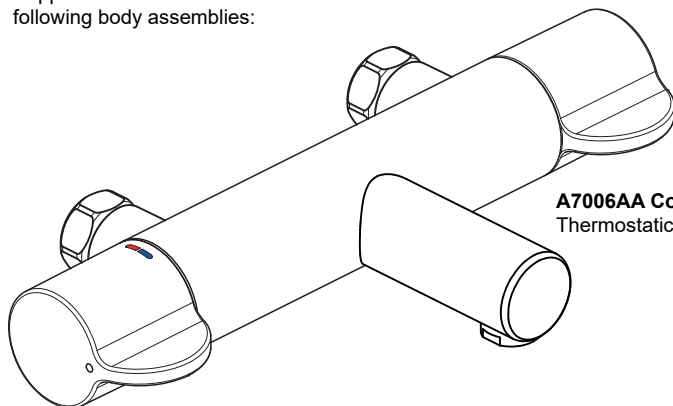


Deck bath legs kit,
Paired: left and right handed
versions with washers & nuts



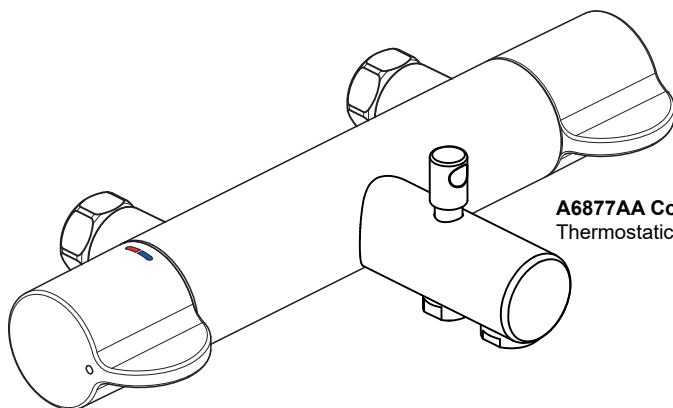
**Fibre washer seals with
integral strainers, -pair**

Supplied with one of the
following body assemblies:



A7006AA Contour 21+Safe body assembly,
Thermostatic bath filler.

„OR“



A6877AA Contour 21+Safe body assembly,
Thermostatic bath filler & shower mixer.

**For guidance on how to install the shower kit, please refer to the
separate instructions provided with the kit.**

3 INTRODUCTION

The fittings covered by these instructions should be installed in accordance with the Water Regulations published in 1999*.
Armitage Shanks strongly recommends that these fittings are installed by a professional fitter.

*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

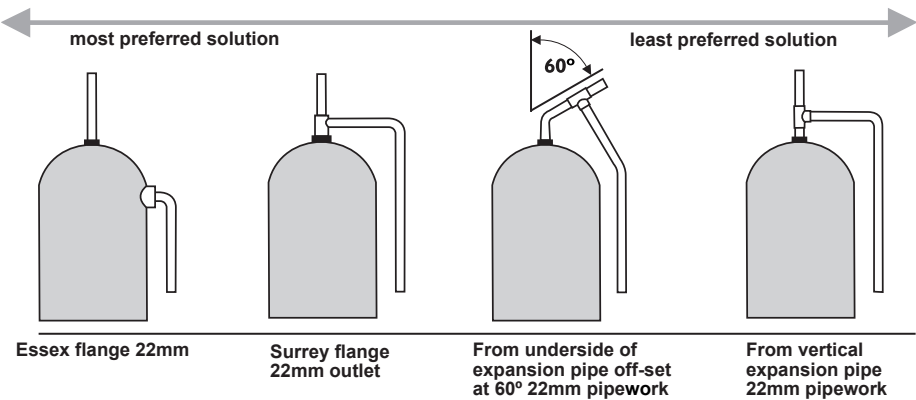
WATER REGULATIONS

Hot and cold water supply pressures must be reasonably balanced and from a common source - both from storage or both from a supply pipe. (IRN 101). The mixers will function within specification on unequal pressures up to a ratio of 5 : 1, but it is not recommended that the cold supply be connected to the rising main and hot to the tank fed supply as the pressure differential is likely to exceed the 5:1 ratio. **(See table 1)** The minimum pressure for correct operation is 1.0 bar. Pressure head is measured as the vertical distance between the bottom of the cold water storage tank which feeds the hot water system and the highest point on the shower spray plate. When installing with a shower pump the use of a secondary tapping from the cylinder is highly recommended.

The picture below shows the various methods of connecting the hot water pipe to the cylinder - the most preferred on the left and the least preferred on the right.

The fitting should be so installed as to be readily accessible for examination, repair, replacement or operation. (IRN 111).

The temperature of the hot water must not exceed 85°C but the installer's attention is drawn to code of practice BS 6700 which recommends that stored hot water should normally never exceed 65°C. For correct operation of the valve, a minimum of 55°C is required.



Preferred arrangements for cylinder tapping

Note: If water supply is fed by gravity then supply pressures should be verified to ensure the conditions of use are appropriate for the valve.

4 WATER SUPPLY CONDITIONS

4.1 Introduction

These thermostatic bath filler & shower mixers are manufactured to the highest standards. Two products A7004AA & A6877AA have approval to TMV2. Three products A6876AA/XG, A7005AA & A7006AA have approval to TMV3, see logos in section 1. Approval to TMV3 permits these products 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 11 & 12 must be followed. For other installations this is not a requirement.

Two products A7004AA & A6877AA have approval to TMV2:

In accordance to BSEN1111 the valve has approval for the following applications:
High Pressure HP-S (showers) and High Pressure HP-T 44 (diverter products with tub fill):

4.2 Healthcare Establishments

Three products A6876AA/XG, A7005AA & A7006AA have approval to TMV3:

In accordance with the NHS model engineering specifications DO8 these valves have approval for the following applications: (as applicable)
High Pressure HP-S (showers) and High Pressure HP-T 44

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

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

Note:
Fittings operating outside these conditions cannot be guaranteed by the scheme to operate as **TMV2 or TMV3**.

Table 1 Supply conditions for healthcare establishments

Effectively this means:
Differential between HOT and COLD inlet temperatures (Δt) must be 32C° min and 60C° max
Differential between HOT inlet temperature and MIXED temperature (Δt) must be 11C° absolute minimum but > 14C° preferred
See 11.3 Audit checks on TMV's.

MODULATING COMBI BOILER

These thermostatic mixers are designed for use with modulating combination boilers.

When installing on a modulating combination boiler it is sometimes possible for the interaction of a thermostatic valve with the combi to cause the boiler to cut out and cut in again, with the result that the water will become alternatively cold and hot. To overcome this, a 4 L/min flow regulator should be fitted upstream of the thermostatic valve. It should be fitted in any 15mm compression fitting in the dedicated cold supply pipe.



**flow direction
through
flow regulator**

It is important to choose a compression fitting located in a position which is accessible after installation and it must be fitted the correct way round for the direction of flow. The regulator can be fitted in either the inlet or outlet side of the compression fitting. If fitting in an outlet side, ensure the o-ring is seated fully in the visible rebate around the edge of the regulator. Use the tip of a small screwdriver or similar to achieve this. Ensure the tail of the pipe is not fouling the regulator (shorten if required) and do up the compression fitting as normal. In a minority of cases, where the boiler is of a type which stores a small quantity of very hot water, it may also be necessary to fit a 4 l/min flow regulator in the hot supply.



These regulators (code A962570NU) can be obtained by contacting fastpart:

For more information on spare parts why not visit our spare website
www.fastpart-spares.co.uk

Excessive flowrate

To remedy an excessive flowrate issue, where the above inlet regulators have not been fitted, we recommend the use of a “shower outlet flow regulator”. This is suitable for installations which exceed 2 bar dynamic pressure.

A 9 litres per minute outlet regulator is available, quote spares code L6749AA.

This regulator can be easily fitted between the shower valve outlet and the shower hose

- A pair of service valves (for isolating both water supplies) **MUST** be fitted below the bath to permit future maintenance of this product, see sect 20. These should be fitted as close as practicable to the water supply inlets of the mixer & in an easily accessible location.
- Mesh filters (strainers) and check valves are fitted inside the inlets of this product, see section 17.

5 WATER REGULATIONS

CATEGORIES OF RISK

The water regulations published in 1999* take a new approach to backflow in that they look at different categories of risk. The installer must assess the risk from the various categories of fluid in adjacent appliances before determining the level of backflow protection required for a particular installation.

Figures 3 & 4 describe the protection required in various installations.

CATEGORY 3 RISK

Water in a shower tray, basin or bathtub is considered to be a fluid category 3 risk which is a fluid which represents a slight health hazard if it were to find it's way back into the supply pipe. For this reason it must not be possible for any flexible shower head to be able to enter any adjacent washbasin, bath or shower tray unless appropriate protection is employed. (**See Figure 3**). If it is desired to allow the hand spray to be used inside say a bathtub or a basin it is essential that double check valves be fitted to the inlet on both hot and cold supplies to the thermostatic valve. Alternatively single check

valves can be fitted at the inlets and an additional check valve should be fitted in the valve outlet.

No check valves need be fitted if the hand spray is prevented from reaching closer than 25mm of the spill over level of any such fixture.

CATEGORY 5 RISK

Water in a Sink, WC or Bidet is considered to be a fluid category 5 risk which is a fluid which represents a serious health hazard if it were to find its way back into the supply pipe. For this reason it must not be possible for any flexible shower head to be able to enter any adjacent Sink, WC or Bidet. If the flexible hose to be fitted could reach into any such vessel, the requirements to the system design are so onerous it is better not to fit a flexible. Rather, a fixed overhead showerhead should be considered. (See Figure 4).

It will also be seen that this risk could change should the hose be taken out of the restraining device or should a longer replacement hose be fitted at a later date. Installers and householders are advised to take account of these factors when fitting replacement hoses. For pumped applications the pipe supplying the pump must not in addition supply an ascending spray bidet.

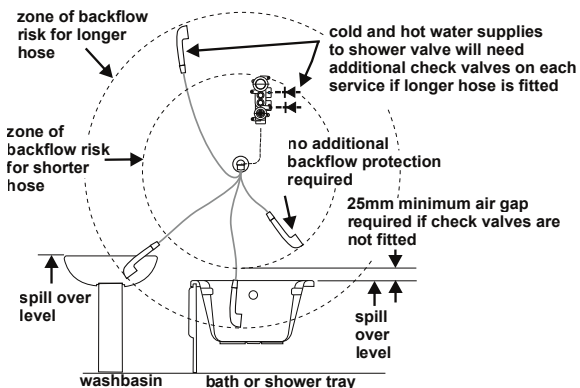


Fig. 3 Backflow risk from a fluid category 3

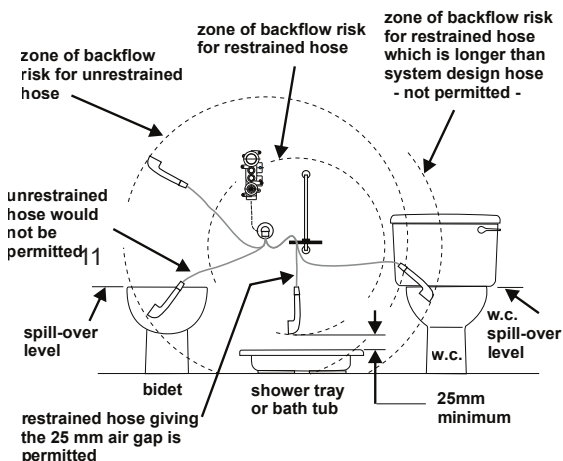


Fig. 4 Backflow risk from a fluid category 5

6 PRE-INSTALLATION NOTES

Contour 21+ Safe is a range of exposed two hole thermostatically controlled bath & shower mixers. These products are designed to provide water from ambient cold up to a safe maximum temperature for bathing.

Mounting options. Products are supplied with either a pair of wall mount escutcheons or a pair of bath legs. Mixers are intended to be installed on a wall or on the rim of a bath.

Flow regulation. There are no flow regulators fitted inside these products. The outlet is a plain flow straightener, see sect 18).

Mesh filters (strainers) integral to the inlet seals are intended to protect the check valves from water borne debris. These are fitted inside the inlets of these products.

Thermostatic cartridge. Additional mesh filters (strainers) are fitted to the thermostatic cartridge to protect it from water borne debris. These products have a feature permitting thermal disinfection of the mixed water chamber & outlet.

Product dimensions. Check the dimensions shown in section 1, ensuring the mixer will fit on the intended bath or wall. Plan position of proposed shower kit.

Product box contents. Ensure you have all the parts shown in section 2.

Bath Holes for rim (deck) mount products. The two holes in the bath should be in a suitable location, drilled Ø30 (Ø35 max) at 180 centres. Allow sufficient space around the mixer to permit easy operation of the handles and facilitate easy cleaning.

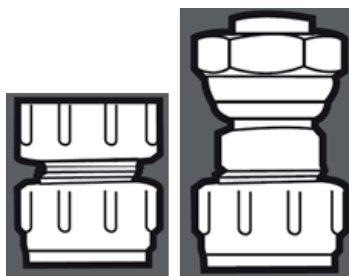
Service Valves. A pair of service valves (for isolating both water supplies) **MUST** be fitted to permit future maintenance of this product. These should be fitted as close as practicable to the water supply inlets of the mixer & in an easily accessible location. Service valves are not supplied with this product, see section 20.

Shower Kit. These products (excluding bath fillers) are not supplied with a shower kit, a suitable kit should be purchased. The flexible shower hose from this kit can be screwed onto the G1/2" shower outlet nipple located on the underside of the mixer body or spout. Ensure adequate steps are taken to secure the shower hand set and the arrangements comply with water regulations.

Mixer Controls. The mixers have dual control handles, the left handle allows temperature adjustment of the water, the right handle permits flow control of the mixed water. The two bath fill & shower mixers have a diverter control in the bath spout allowing the user to direct the mixed water between "bath fill" and "shower" outlet, see section 8.

Water Supply Pipes. Both hot & cold water supply pipes should be securely attached to a wall (or floor) using suitable fixing clips. Supply pipes can be either Ø15 or Ø22 for the rim (deck) mount products. The wall mount brackets accept only Ø15.

Pipe Connectors. For Rim (deck) mount products, the installer will need a pair of suitable straight tap connectors threaded G3/4" female (fixed or swivel). These are available from all good plumbers' merchants (not supplied with product).



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



IMPORTANT: Ensure that any old / existing thermostatic mixing valves (TMVs) that may be fitted in the supply pipes are removed

7 INSTALLATION



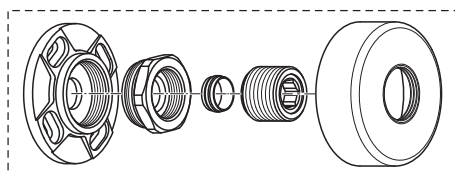
The thermostatic mixing valve must be installed in such a position that maintenance of the TMV and its valves and the commissioning and testing of the TMV can be undertaken.



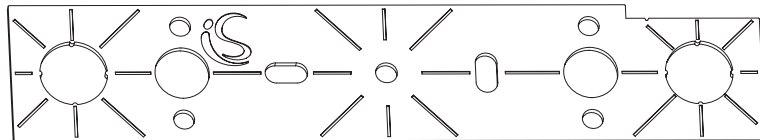
IMPORTANT
BEFORE CONNECTION, FLUSH WATER
THROUGH PIPEWORK TO REMOVE
ALL DEBRIS ETC. WHICH COULD DAM-
AGE THE VALVE MECHANISM

7.1 Installing Wall mount products: A6876AA/XG, A7005AA & A7004AA

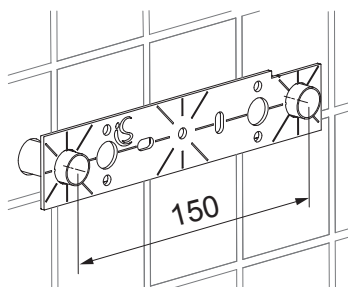
Kit Contents



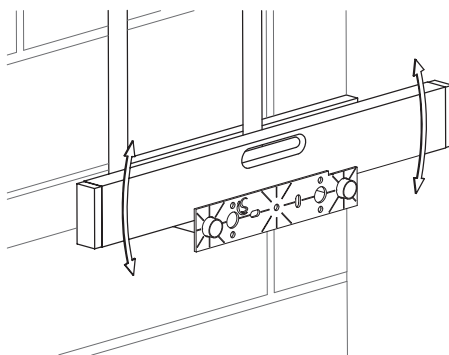
Bracket with Adaptor x2



Template x1

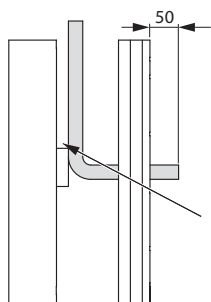


1



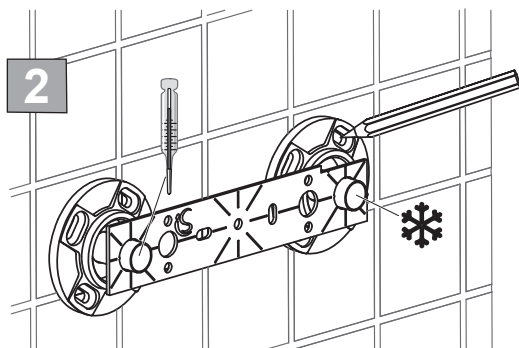
Ø15mm copper supply pipes should be run within the wall cavity.
Hot supply pipe should be on the left hand side and the cold on the right.

Ensure that the hot and cold pipes are positioned 150mm apart and are level.
Use the template provided to obtain the correct spacing.



We recommend leaving 50mm of pipe protruding at this stage.

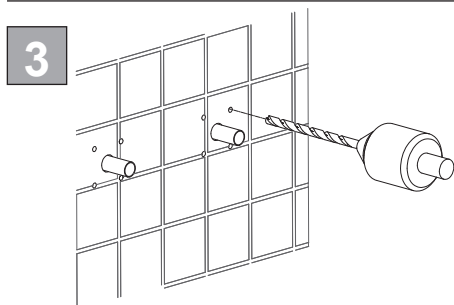
Pipework should be supported in the cavity



Place the brackets over the exposed pipes and use the template provided to position them 150mm apart.

Mark the hole positions for the fixings onto the mounting surface.

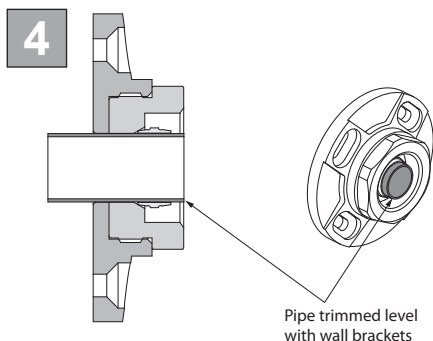
Ensure that the positions of the holes will not result in damage to the pipework inside the wall cavity during drilling.



Drill holes appropriate for your choice of fixings into the wall.

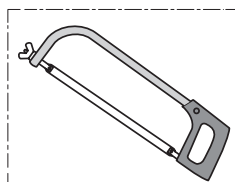
We recommend a minimum of two fixings per bracket diametrically opposed.

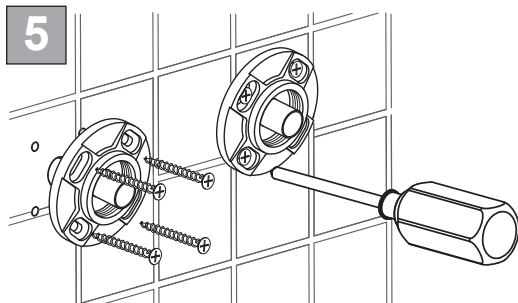
Drill carefully to avoid damaging concealed pipework.



Pipe trimmed level with wall brackets

The pipes should be trimmed level to the wall bracket. If using a pipe cutter it will be necessary to mark the pipes and then remove the bracket before trimming to its correct length.



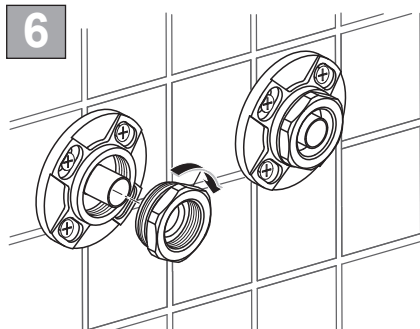


Apply a smear of silicone sealant to the rear of the assembled brackets and push them over the pipework.

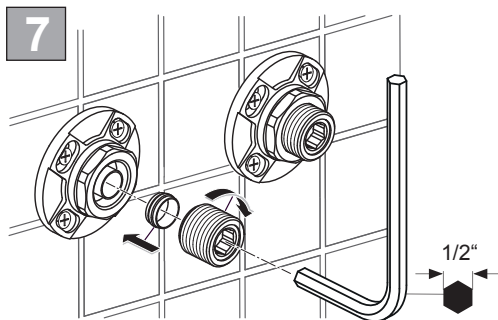
Screw both brackets to the wall.

The template can be used to check that the correct pipe spacing of 150mm has been maintained.

Clean off excess sealant and flush the pipes to remove any trapped debris.

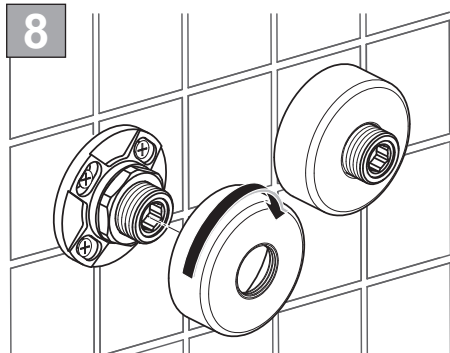


Screw the brass adaptors over the pipes into the plastic brackets. 36mm A/F Spanner flats are provided, hand tightness is adequate.



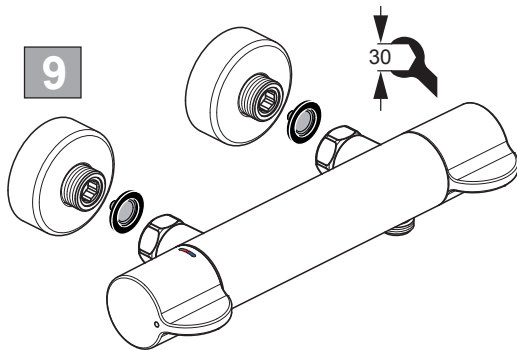
Fit the olives to the pipes prior to screwing the two 3/4" connectors into the wall mount plate using a 1/2" allen key. The connectors will have to be securely screwed in to form the necessary compression joint between the olive, wall plate and connector. Retain the brass adaptors with a spanner when making the compression joints.

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

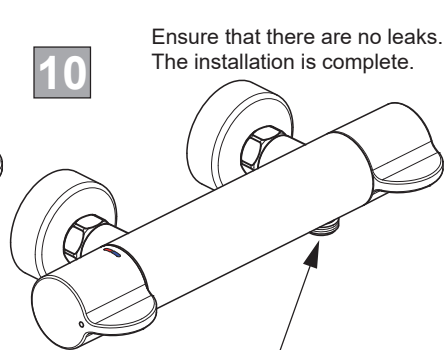


When the sealant has set, fit the covers by screwing them onto the adaptors until they are flush with the wall.

The covers only need to be hand tight.

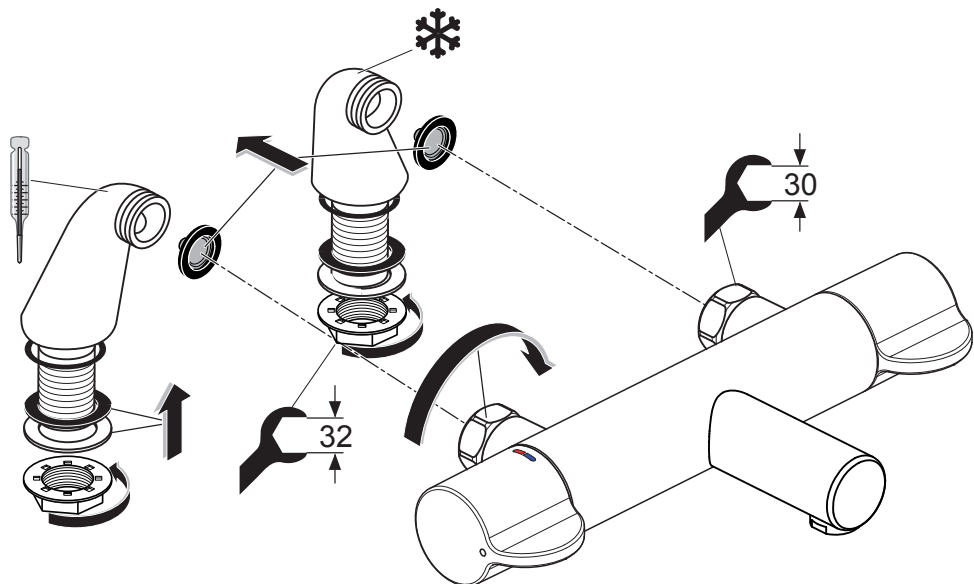


Assemble the shower valve to the adaptors remembering to ensure that the sealing washers or filters are inserted between the adaptors and the shower valve inlets.



For product A6876AA/XG the hose from the shower kit should be connected to the shower outlet located on the underside mixer body, or on the underside of the bath spout for A7004AA. Ensure hose seal is in place.

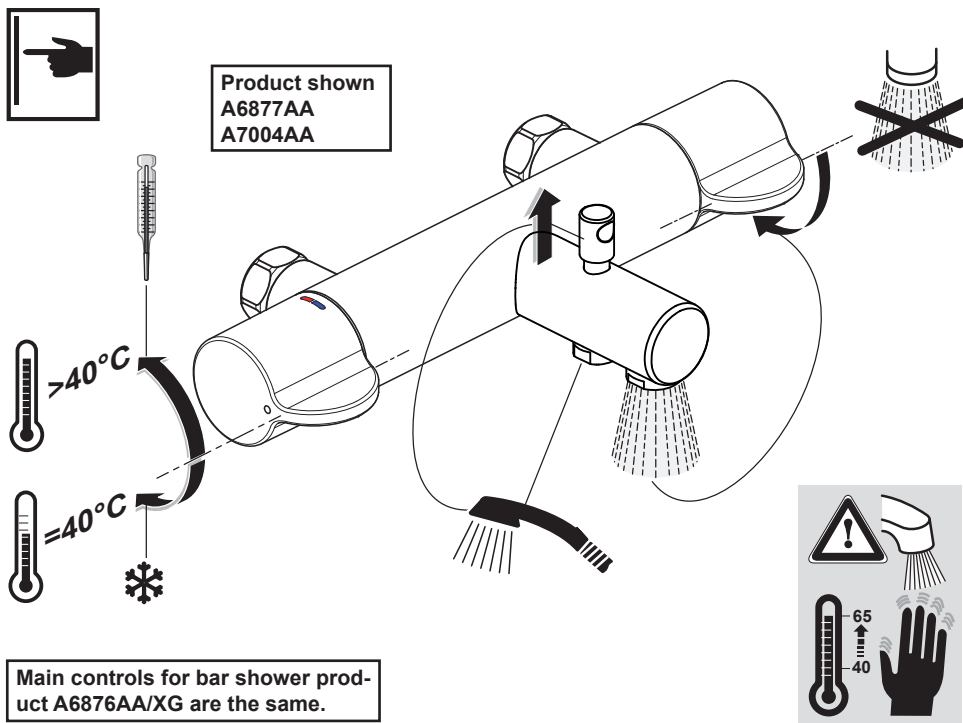
7.2 Rim (deck) mount products: A7006AA & A6877AA



- Loosely assemble both of the bath legs to the main body of the mixer, ensuring the fibre-mesh seals shown are located within the captive nuts. Hand tighten both captive nuts sufficiently to hold the assembly securely together.
- Make sure that deck seals are located in the recesses in the bottom face of both bath legs. The back-nuts & washers will be fitted from the underside of the bath. If they are already assembled to the legs, they should be removed.
- Offer the tails of the legs into the two holes in the bath. Align the legs and gently lower the mixer onto the rim of the bath. **IMPORTANT:** make sure the deck seals are still correctly located in the recesses of the bath legs, otherwise splashed water may seep pass the legs and onto the floor under the bath.

- The back-nuts & washers can be fitted to the tails from under the bath. Keeping the tails central in the bath holes, check that the mixer is still positioned correctly on the bath rim, and then tighten the back-nuts. Use 32mm A/F spanner.
- The captive nuts connecting the mixer to the legs can also be tightened, use a strap wrench or 30mm A/F spanner, taking care not to damage the chromed surfaces.
- Connect the water supply pipes to the inlet tails of the mixer using straight tap connectors. Connect HOT supply pipe to the left inlet leg and COLD supply pipe to the right inlet leg,
- Check all joints are tight, turn on the water supplies and check for any water leaks.
- For product A6877AA the hose from the shower kit should be connected to the shower outlet located on the underside of the bath spout. Ensure hose seal is in place.

8 OPERATING PRODUCTS



NOTE: BATHING OR SHOWERING IN WATER TEMPERATURES EXCEEDING 40°C CAN BE HARMFUL TO YOUR HEALTH.



DO NOT FORCE HANDLES BEYOND THE DESCRIBED MOVEMENT RANGES OTHERWISE THIS MAY RESULT IN DAMAGE TO BOTH VALVES AND HANDLES.

Left handle controls water temperature

- This handle is shown parked in the 40°C temperature “stop” position.
- At this temperature “stop” position mixed water is delivered up-to about 40°C.
- To obtain cooler water rotate handle downwards.
- To obtain higher water temperature, rotate this handle upwards.

Right handle controls water flow

- This handle is shown parked in the off position.
- Rotating this handle downwards commences water flow by default to the bath fill spout.
On the bar shower product, water will flow to the shower outlet.
- Further rotation of this handle increases the flow. Maximum is reached at 90° from the off position.

Diverter knob

- The diverter knob is shown parked in the off position (down is the default).
- Whilst water is flowing to the bath fill spout, it can be diverted to the shower outlet device.
This is done by lifting the diverter knob upwards, the knob will be held in this position while water is flowing. When the water flow is closed, the diverter knob will fall back to its normal bath fill position.
- The diverter permits one outlet to be opened at any one time, the second outlet will be closed.

When installed as a TMV3 application it is requirement that the commissioning and maintenance procedures detailed here be carried out. For non-healthcare installations these checks are not required.

8.1 Thermal shock

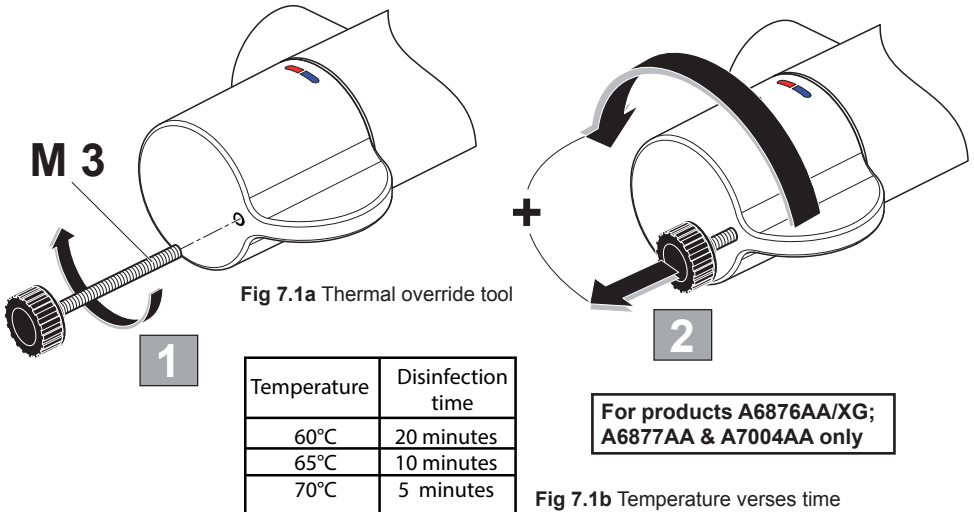
Safety Note: Care should be taken when carrying out the following procedure to avoid contact with hot water and hot surfaces. Inform all users to keep away from the products whilst thermal shock is in progress.

For thermal disinfection, products A6876AA/XG, A6877AA & A7004AA are equipped with a built in thermal shock feature. The tool supplied allows the maximum blend stop to be overridden. This allows hot water at “supply temperature” to flow through the mixer cartridge and permits thermal disinfection of the mixed water chambers.

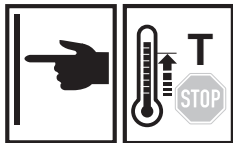
Products with shower outlet: The shower products can be thermally shocked with or without the shower hand set fitted. Water discharged from the mixer should be directed safely & securely into the shower tray or bath. Both outlets should be disinfected on appropriate mixers.

1. To activate, screw the override tool fully into the threaded port on top of the temperature handle, see fig 7.1a.
2. Carefully lift the override tool and turn the temperature handle fully anti-clockwise. Then open the flow control valve which allows hot water to flow.

3. See table below for a guide to disinfection temperatures verses time. Allow hot water to discharge from the mixer for appropriate period for each outlet.
4. Once the thermal shock is complete, return the flow handle to the off position. Remove the override tool from the temperature handle and turn this handle back to the nominal 40° position. Check the mixer for normal operation to ensure it is functioning correctly.

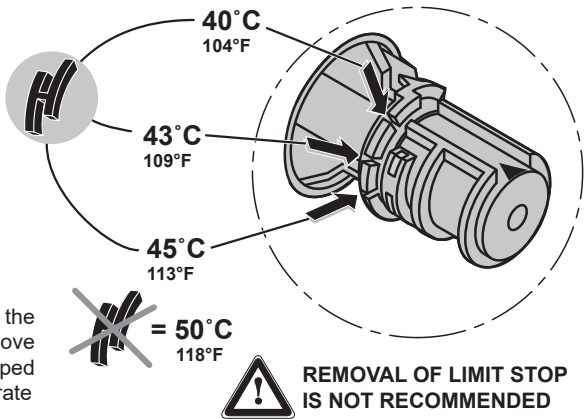


9 **MAXIMUM TEMPERATURE STOP**



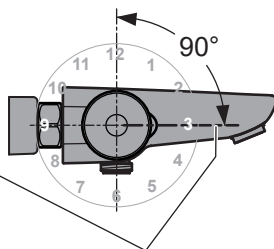
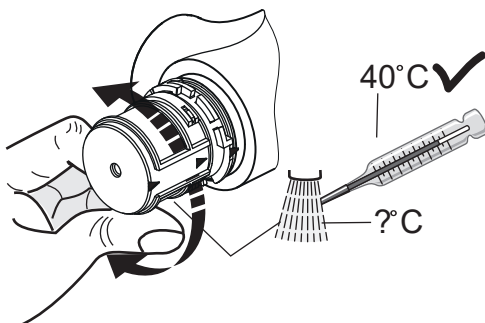
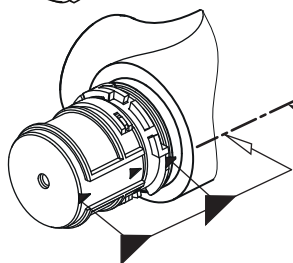
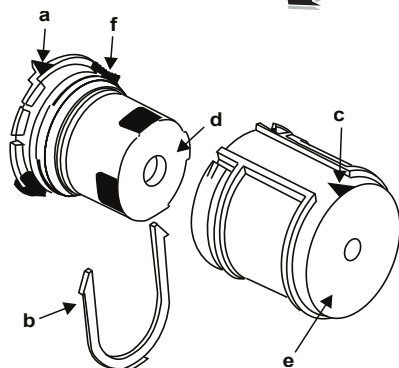
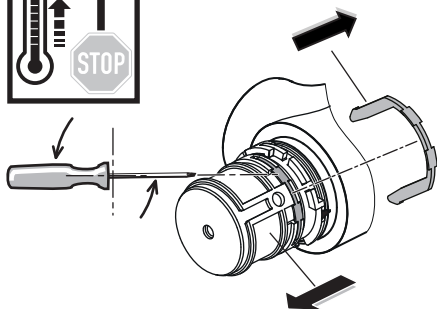
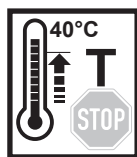
The water temperature up to the parked position on the handle is set at 40°C.
The maxium mixed water temperature is factory set at 43°C.

To change this temperature remove the temperature control handle see 14. Remove the temperature limit stop (black H-shaped plastic part) and reinsert it in the appropriate recess on the handle carrier.
Four different settings are possible:
40°C, 43°C, 45°C & 50°C
At last refit the temperature handle again.



IMPORTANT NOTE: Settings of 45°C & 50°C are not recommended for showering.
See section 12 for safe & comfortable bathing temperatures.

10 CALIBRATION OF THERMOSTAT



In the event of the thermostatic cartridge requiring re-calibration the following procedure should be undertaken:

1. Remove temperature control handle, see 14.
2. Slide out the red "U" piece (b) exposing temperature control mechanism (d).
3. Turn on the shower, position a thermometer in the running water and when the temperature settles rotate the temperature control mechanism until 40°C is achieved.
4. Reconnect the handle carrier (e) ensuring the arrow guide (c) is at 3 o'clock position and aligned to marker (a) see below for details.
5. Refit the red "U" piece (b).
6. Reconnect the handle to the carrier.

11 COMMISSIONING & AUDITS - TMV3

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

11.1 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.

These products are factory set at 40°C ± 1°C with supplies of circa; 3 bar balanced pressure and temperatures of 15°C cold & 65°C hot (i.e. an inlet Δt of 50°C & hot / mix Δt of 24°C)

For supply requirements, see 4 Water Supply Conditions.

11.2 Commissioning Process (see decision tree FC1) - TMV3

- Establish that the supply conditions are within the requirements outlined in 11.1. If not investigate.
- When conditions are acceptable record them, together with hot and cold temperatures. Establish Δt.

Check the outlet mix temperature is within 41°C ± 2°C, if not (probably due to Δt > 5°C difference to factory setting) adjust appropriately. (see section 10)

- If mixed temperature is correct undertake an ‘in field’ cold water isolation (CWI) test: (see section 11.5)
 - Pass - restore supply and record mixed temperature,
 - Fail - See 11.5 in-field ‘Cold Water Isolation’ test.

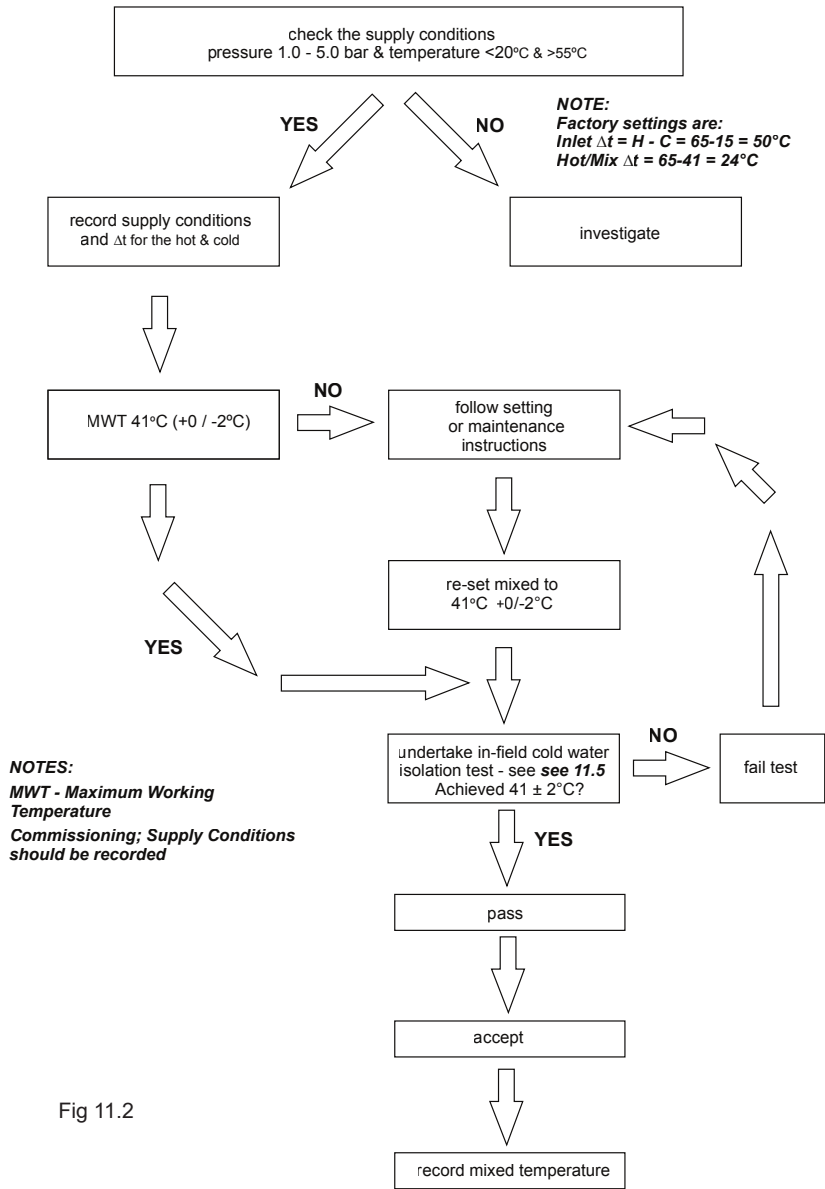


Fig 11.2

11.3 **Audit Checks on TMV 3**

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)

Audit of Supplies To Fittings (FC3)

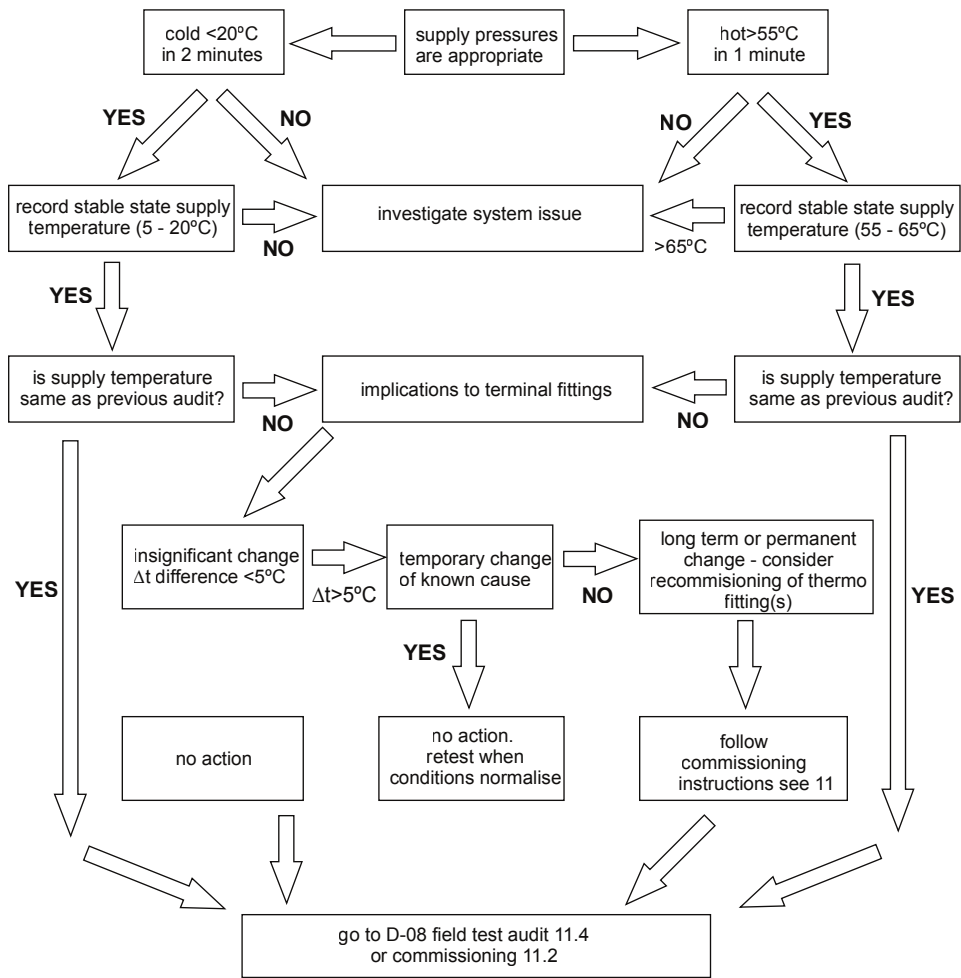


Fig 11.3

11.4 Audit procedure (see decision tree FC2) - TMV3

- Verify the water supplies conditions are similar to when the product was commissioned i.e. inlet Δt as previous $\pm 5^\circ\text{C}$

Note: If inlet Δt 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 Δt differs from the commissioning Δt by $< 5^\circ\text{C}$ carry out field 'cold water isolation' (CWI) test as D-08: 2009. (**see 11.5 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 11.5 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 10 Adjustment of the mix temperature.
- 2nd & subsequent instances follow maintenance instructions.

Fitting Field Test Audit (FC2)

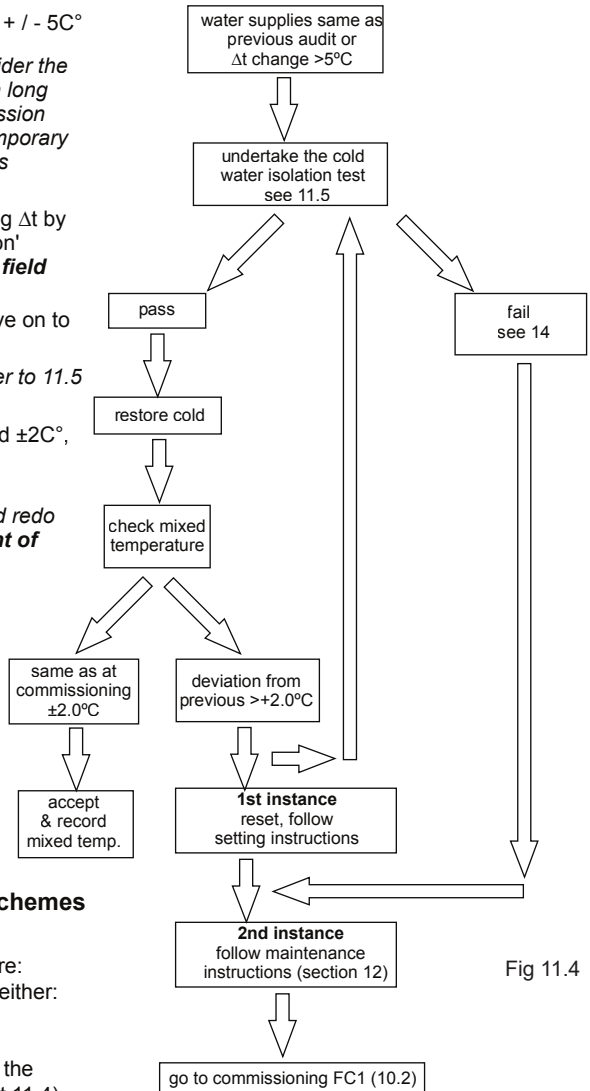


Fig 11.4

11.5 In-field 'Cold Water Isolation' (CWI) test. For both TMV2 & TMV3 schemes

Before commencing the CWI test, ensure:

- The water supply conditions are met either:
 - For commissioning a new product (See table 1, section 4)
 - Or the inlet Δt is within $\pm 5^\circ\text{C}$ to when the product was commissioned (see sect 11.4).

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

- Mixed water outlet temperature is correct (**see table 2, section 12**).

CWI test is a guide to showing the performance of the thermostat.

Prior to CWI test:

- Make sure that the black H-clip is positioned in the 40°C slot on the temperature adjustment carrier (see section 9). Remove temperature handle to check. If this has been removed then the fail-safe will not work.
- Make sure the supply temperatures are within the ranges 55 to 65°C for hot, & 5 to 20°C for cold.

To perform a CWI test:

- Turn the product on using the flow handle, rotate handle to max, giving 100% flow.
- The temperature handle button should be positioned at the front (parked at the 40°C nominal stop).

1. Record the steady state temperature of both hot and cold water supplies. Note the Δt .
2. Record the temperature of the mixed water at the outlet.
3. Isolate the cold water supply, using the isolating screw on the service valve.

► If the flow ceases:

1. Product has passed the CWI test.
2. Restore the cold supply by rotating the isolating screw on the service valve.
3. Recheck the temperature at the stabilised mixed water at the outlet to ensure it is still correct.
4. Accept & record the mixed temperature.

► If the flow reduces: **(For TMV3 scheme)**

If there is an ongoing reduced fine flow of water (pencil stream) from the mixed water outlet, this may also be acceptable as a pass, confirm by checking the water volume: 5 seconds after CWI test, 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 flow reduces: **(For TMV2 scheme)**

If there is an ongoing reduced fine flow of water (pencil stream) from the mixed water outlet, this may also be acceptable as a pass.

► If the flow has not reduced: **(For both TMV2 & TMV3 schemes)**

The product has failed the CWI test. Product requires maintenance, cartridge should be removed, cleaned & retested.

Additionally, clean all filters, ensure check valves are working, and make sure all isolating valves are fully open. See FC2 (see section 11.4). Follow product maintenance (see section 14) and servicing (see section 12) instructions.

12 SERVICING - FOR BOTH TMV2 & TMV3 SCHEMES

For TMV3 scheme:

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

For TMV2 scheme:

The following procedures should be carried out after installation and every 12 months after to ensure that the valve is functioning correctly.

For both TMV2 & TMV3 schemes:

Check that:

1. The application of the thermostatic valve matches the approved designation.
2. The supply pressures are within the recommended range for the application.
3. The supply temperatures are within the permitted range for the application and comply with the guidance for prevention of Legionella.
4. The mixed temperature is as required for the application.

Record:

5. Each hot and cold supply. (Make a note of the measuring device used).
6. The mixed water temperature at the outlet device.

Isolate:

7. The cold supply to the mixing valve and record the mixed water temperature after about 5 seconds. The temperature should not exceed the value given in table (2) below.

Table 2 A guide to maximum temperature sets

Application	Mixed water temperature	Permitted maximum stabilised temperature recorded during site testing - excluding transient spikes
Shower	41°C	43°C
Bath (tub fill)	43°C	45°C

The mixed water temperature at terminal fitting should never exceed 46°C.

Note: 46°C is the maximum mixed water temperature from a bath tap. The maximum temperature takes account of the allowable temperature tolerances inherent thermostatic mixing valves and temperature loss in metal baths. **It is not a safe bathing temperature for adults and children.**

The British Burns Association recommends 37°C-37.5°C as a comfortable bathing temperature for adults as well as children.

In premises covered by the Care Standards Act 2000, the maximum mixed water temperature is 43°C

12.1 FREQUENCY OF REGULAR SERVICING For both TMV2 & TMV3 schemes

The purpose of servicing regularly is to monitor any changes in performance due to changes in either the system or the product.

For TMV3 scheme:

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 the product passes the audit tests three consecutive times (demonstrating good stability of system & product) then a 12 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 11 & 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 valves, 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. All isolating valves (integral to service valve) are fully open.
 - d. The thermostat is free of debris

3. When satisfied with the mixed outlet temperatures re-record the temperatures.

For TMV2 scheme:

The product should be checked and tested 12 months after commissioning.

Firstly measure the water temperature at one of the outlets (bath fill or shower).

Carry out the cold water supply isolation test by isolating the cold water supply to the TMV, wait for 5 seconds if water is still flowing check that the temperature is below 45°C. If there is no significant change to the set outlet temperature (+/-2°C or less change from the original settings) and the fail-safe shut off is functioning, then the valve is working correctly and no further service work is required.

Notes:

A residual flow is permitted during the commissioning or the annual verification (cold water supply isolation test), then this is acceptable providing the water temperature is no more than 2°C above the designated outlet temperature.

Temperature readings should be taken at the normal flow rate after allowing for the system to stabilize.

The sensing part of the thermometer probe must be fully submerged in the water that is to be tested.

Any TMV that has been adjusted or serviced must be re-commissioned and retested in accordance with the instructions detailed above.

13 HANDY MAINTENANCE TIPS

Here are a few handy tips which may be helpful when dismantling the mixer for maintenance or repair:

- Isolate both HOT & COLD water supplies first. Use service valves fitted.
- Fully open the flow handle. Unscrew the shower hose (if fitted) from the underside of the product. This will permit water drain down & release water pressure from the outlet(s) .
- Use correct size tools. Take care not to damage chromed surfaces.
- When unscrewing cartridges, expect some trapped water to escape from the mixer.
- Ensure parts are re-assembled in the correct 'reverse' sequence.
- Observe torque settings, where specified.
- Restore both water supplies. Refit shower hose.
- Check all joints for leaks upon completion.

Run water through the mixer for a few seconds to purge-out any trapped air.

14 THERMOSTATIC CARTRIDGE INSPECTION OR REPLACEMENT



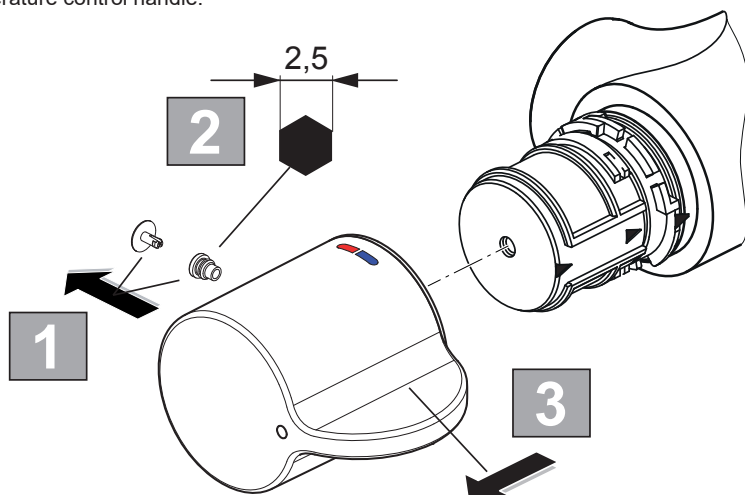
This thermostatic cartridge is protected from water borne debris by mesh filter screens. These should be checked and cleaned before contemplating replacing the cartridge.

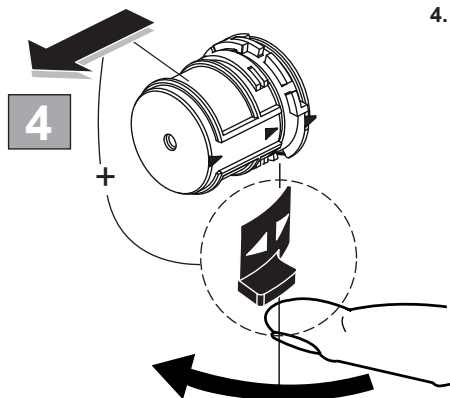
After checking that supply conditions are within the specified parameters (see table 1, section 4), and if the mixer malfunctions or should the test results fail to fall within the specified limits consider replacing the cartridge with a new one. See 14.1 **Important notes on debris**.

To replace the thermostatic cartridge:

1ST SEE SECT 13: HANDY TIPS

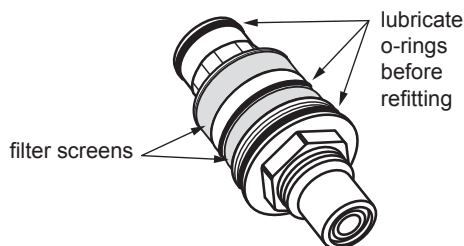
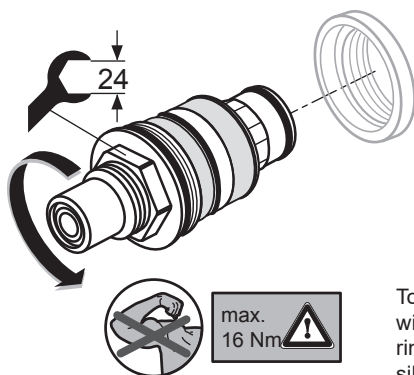
1. Prise out the screw cover cap insert.
2. Remove handle screw.
3. Pull off the temperature control handle.





4. To remove the temperature handle carrier (grey plastic moulding), slide the black serrated lever clockwise and pull off. This will expose the thermostatic cartridge.

5. Unscrew cartridge with a 24mm A/F deep socket, expect some trapped water to escape. Replace the cartridge if necessary. When refitting cartridge, do not over tighten, hand tighten the first few threads, maximum torque 16Nm.



To clean the screens remove the o-rings shown. The screens will then slide off. When clean replace the screens then the o-rings which should be lightly greased with a WRAS approved silicone grease (eg Kluber Unisilikon GBU2)

After fitting the new cartridge start the test procedure from the section on commissioning.

- Conduct the Cold Water Isolation (CWI) test (See section 11.5).
- Once satisfied with the CWI test, re-check and if necessary, adjust the maximum mix temperature, see (See section 9).
- Record the mix temperature

NOTE: Replacement O-rings & strainers are available for this cartridge. See sections 21 & 22

14.1 Important notes on debris

Although this product is protected by multiple strainers, debris can still find its way to the thermostat housing area. This can happen during servicing for example. Remove cartridge (see section 14) and carry out an inspection. The thermostatic cartridge has built-in strainers, these should be inspected & if necessary washed in clean water or replaced.

14.2 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.

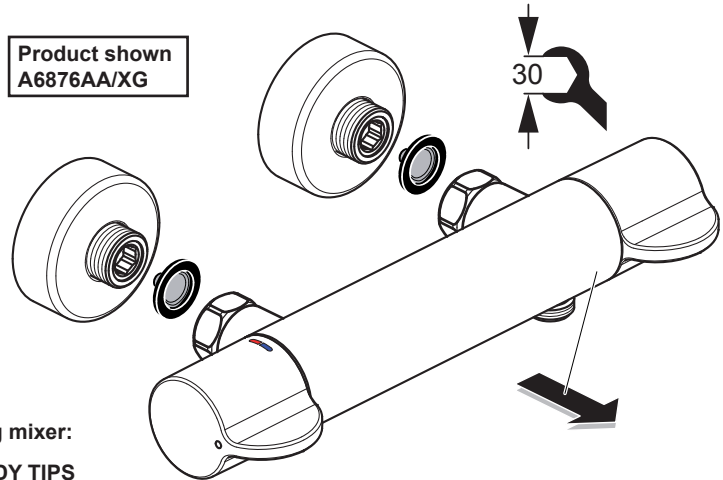
These are the principle objectives of testing, as they serve to indicate to maintenance staff the declining performance capability of the thermostatic cartridge.

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 Δt 's, is potentially the first indication of the need to replace the cartridge.

15 DEMOUNTING MIXER

In response to the new requirements of HTM 04-01 Addendum, the design of this product permits easy demounting of the mixer from the inlets.

This design permits quick & easy removal of the mixer for cleaning, disinfection and maintenance purposes.



Method for demounting mixer:

1ST SEE SECT 13: HANDY TIPS

1. Isolate the hot and cold water supplies using the inline isolation valves (see section 20). Operate flow handle to confirm water supplies are closed off.
2. Undo the two securing nuts located at the rear of the mixer (see fig above). (Take care not to lose the two mesh washers).
3. Lift the mixer body off from the wall mount brackets or deck mount legs, by gently pulling away as shown. Expect a little trapped water to escape.
4. The mixer body can be further dismantled for cleaning protocols. Do not leave the wall mount brackets or deck mount legs uncovered for long periods, protect from environmental contamination.
5. To refit the mixer body; reverse this procedure. Tighten the nuts at the rear of the mixer securely.

Take care to avoid damaging the inlet seals. See section 21 & 22 for replacements mesh seals.

Disinfection by full immersion in an appropriate bactericidal solution is recommended for this assembly. Prior to immersion, the mixer body should be clean and dismantled to a level that prevents air locking.

The level of dismantling should be established as a result of practice and will be largely dependent upon the water quality and service life. As a minimum we recommend removal both handle, thermostatic cartridge & flow-control cartridge (plus diverter cartridge if fitted). Cleaning the cartridge strainer screens is important. All components can be immersed together unassembled.

Disinfected mixers should be promptly replaced or stored using an appropriate method until required. For disinfection solution see section 15.1

15.1 Disinfection solution

We recommend parts be immersed in an appropriate bactericidal solution

The frequency of such disinfection actions will be derived from regular sampling carried out under the regime of the Responsible Person (Water). We would not expect to need greater than 6 monthly frequencies, hopefully considerably less.

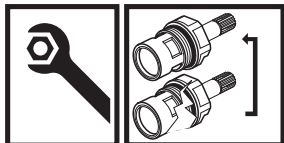
The need for excessive use of this procedure would be indicative of the need for some root cause analysis as there could be some system or behavioural problems that need addressing.

Recommended Disinfection Solutions

For immersion we recommend the use of a 70% Ethanol solution for 10 minutes.

NB: counter intuitively, **greater than recommended concentrations are less effective** not more effective; take care to get the recommended concentration in line with the manufactures recommendation

16 FLOW CARTRIDGE REPLACEMENT



To replace the flow cartridge:

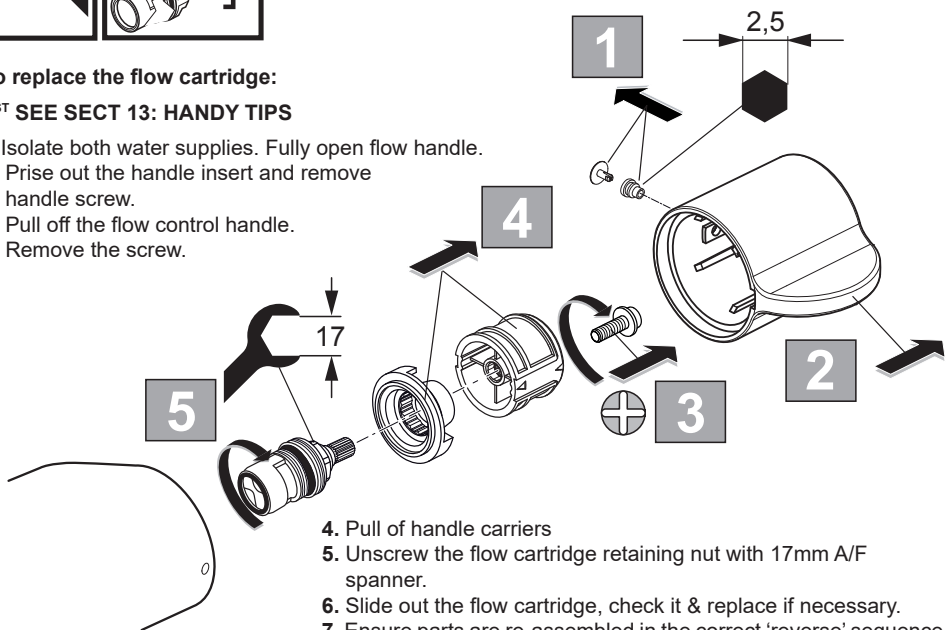
1ST SEE SECT 13: HANDY TIPS

• Isolate both water supplies. Fully open flow handle.

1. Prise out the handle insert and remove handle screw.

2. Pull off the flow control handle.

3. Remove the screw.



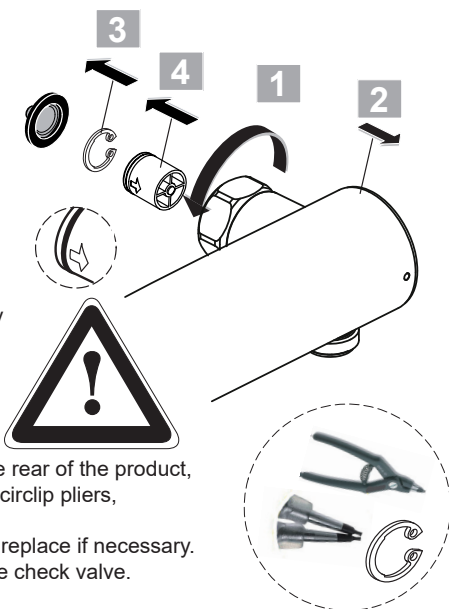
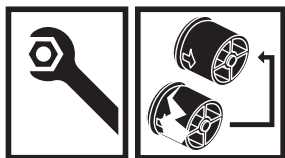
4. Pull of handle carriers

5. Unscrew the flow cartridge retaining nut with 17mm A/F spanner.

6. Slide out the flow cartridge, check it & replace if necessary.

7. Ensure parts are re-assembled in the correct 'reverse' sequence.

17 CHECK-VALVE REPLACEMENT



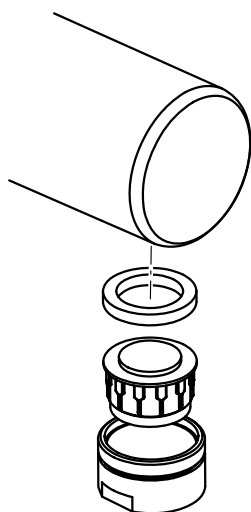
To replace the check-valve cartridge:

1ST SEE SECT 13: HANDY TIPS

1. Separate the shower valve from the wall bracket by undoing the captive nuts. See sect.7 step 9. Use 30mm A/F spanner.
2. Remove shower valve from wall, and keep sealing washers safe.
3. The check valves are housed inside the retaining inserts within the inlet bores. Looking closely at the rear of the product, note circlips hold the check valves in place. Using circlip pliers, squeeze the circlip & lift it away from the bore.
4. Gently pull out the check valves: check & clean or replace if necessary. Observe the flow direction arrow on the body of the check valve. Refit the circlips.

IMPORTANT: Although the check valves can be replaced, they must not be removed completely. Do not operate the mixer without all the check valves correctly fitted.

18 CLEANING ANTISPLASH NOZZLE



On a regular basis the anti-splash nozzle on the bath mixer should be inspected and cleaned if necessary (not applicable to bar shower A6876AA/XG).

In areas where lime scale build-up is prevalent this 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.

To remove the outlet, use a 22mm spanner to unscrew it. Locate the spanner onto the two flats on the outlet diameter and unscrew (anti-clockwise). Remove the outlet complete with flat seal.

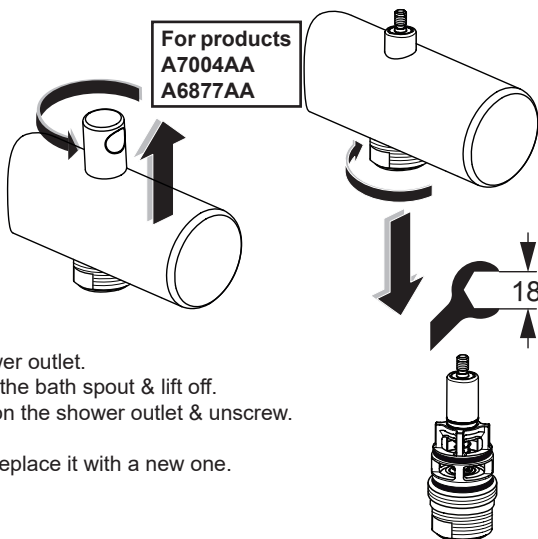
19 DIVERTER CARTRIDGE REPLACEMENT



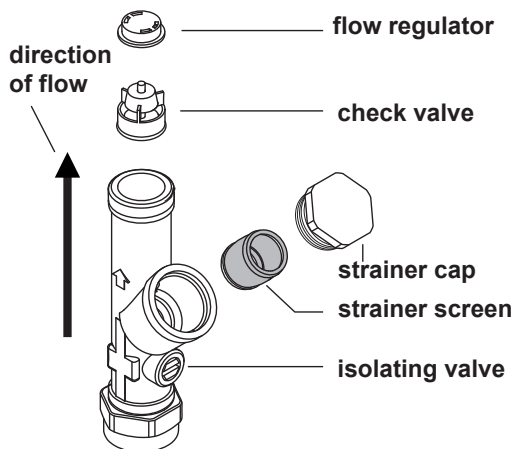
The diverter mechanism is available as a cartridge unit.

To replace the diverter cartridge:

1. Remove the shower hose from the shower outlet.
2. Unscrew the diverter knob on the top of the bath spout & lift off.
3. Use an 18mm spanner on the two flats on the shower outlet & unscrew.
4. Slide out the cartridge downwards.
5. Check & clean the diverter cartridge or replace it with a new one.



20 SERVICE VALVES



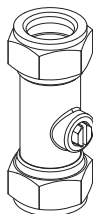
Isolation valves (not supplied with this product) **MUST** be fitted to permit future maintenance. Fitting of strainers (filters) is also recommended.

These should be fitted as close as is practicable to the watersupply inlets of the thermostatic shower mixer.

Both isolation valves & strainers should be installed in an easily accessible location

An in-line combined isolating and filter valve (shown here) can be purchased by contacting Fastpart. Spares code E960613NU contains a pair of these valves.

This valve also contains a flow regulator and check valve (which can be removed if not required).

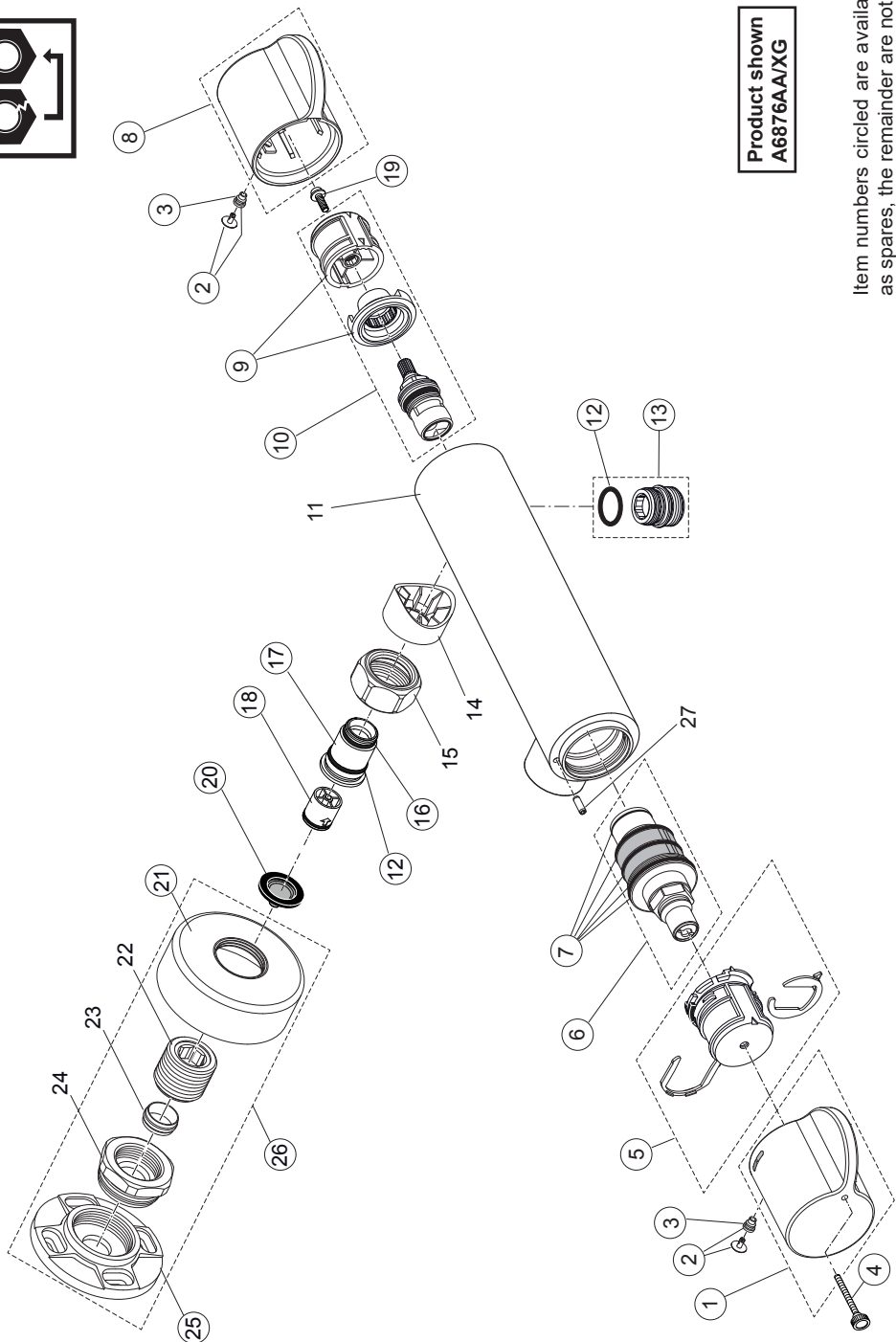


Alternatively, basic in-line service valves with "isolating only" feature (shown here) are available under spares code S9005AA.



For more information on spare parts why not visit our spare website
www.fastpart-spares.co.uk

21 SPARE PARTS

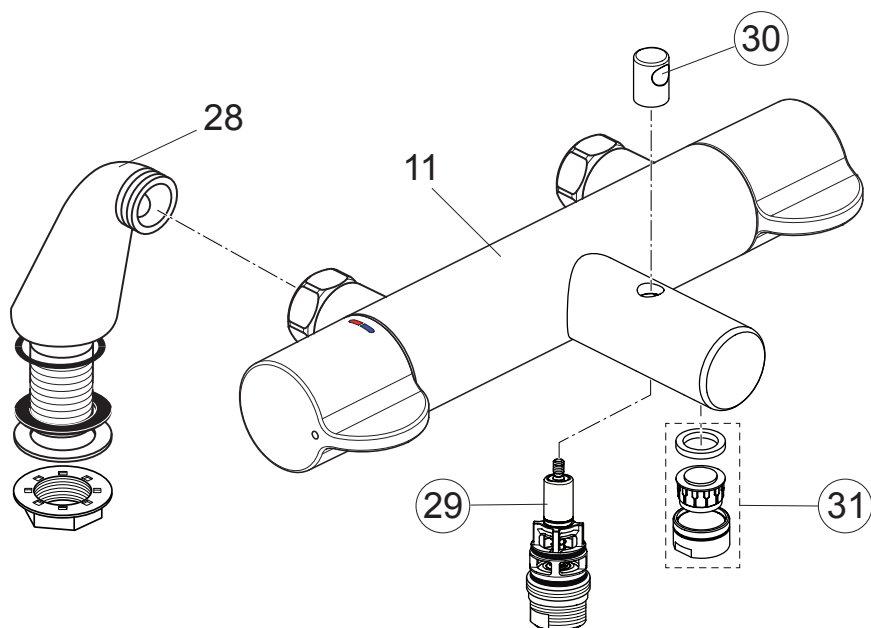


Product shown
A6876AA/XG

Item numbers circled are available
as spares, the remainder are not.



Product shown
A6877AA



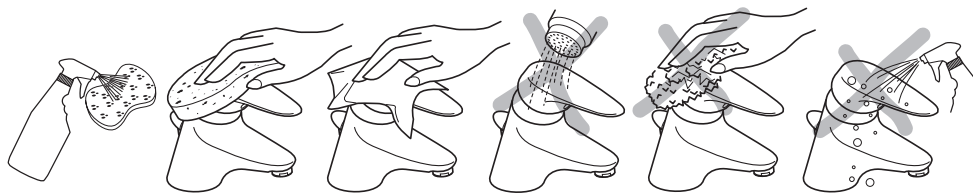
22 SPARE PARTS LIST



Many of the spare parts are shared across all the products described in this manual. Some spare parts are specific to products, therefore use the spare parts list below to check.

Pos.	Description	Product (s)	Part No.	Qty.
1	Handle Temperature Control A/ S Logo	All Products	A861300AA/XG	1 Set
2	Handle Screw M5X5 & Cover Cap		A962149AA/XG	1 pcs
3	Handle Screw M5X5 & Cover Cap		A961095NU	1 pcs
4	Thermal Override Screw M3X30	A6876, A6877 & A7004 only	A860888NU	1 pcs
5A	Handle Carrier for Temperature		A963427NU	1 Set
5B		A7005 & A7006 only	A861301NU	
6A	Thermostatic Cartridge	A6876 only	A861303NU	1 pcs
6B		A6877 & A7004 only	A962229NU	
6C		A7005 & A7006 only	A861302NU	
7A	Cart Repair Kit: O-Rings & Strainers	A6876, A7005 & A7006 only	A861304NU	1 Set
7B		A6877 & A7004 only	A962230NU	
8	Handle Flow (Volume) Control	All Products	A861196AA/XG	1 Set
9	Handle Carrier Flow Control		A963432NU	1 Set
10	Cartridge Flow GI/2 CD 180°	A6876 only	A861245NU	1 pcs
	Cartridge Flow GI/2 CD 90°	A6877, A7004, A7005 & 7006	A861243NU	1 pcs
11	Mixerbody	N/A	N/A	N/A
12	O-Ring 17 X 2 (SHWR Outlet & Cv Housing)	All Products	A961810NU	2 pcs
13	Shower Outlet Nipple 1/2" with O-Ring	A6876 only	A861498NU	1 pcs
14	Inlet Shroud	All Products	N/A	N/A
15	Coupling Nut G3/4"			
16	O-Ring 14 X 1.78	All Products	A962605NU	2 pcs
17	Check Valve Housing	All Products	N/A	N/A
18	Check Valve DW 15	All Products	A962594NU	2 pcs
19	Screw for Flow Control Carrier	All Products	A963647NU	1 pcs
20	Flat Seal 3/ 4 " with Integral Strainer	All Products	A962595NU	1 pcs
21	Estucheon Chrome (Wall Bracket)	A6876, A7004 & A7005 only	B960242AA/XG	1 pcs
22	Connector G3/4" (Wall Bracket)		N/A	N/A
23	15 mm Compression Ring (Wall Bracket)			
24	Adaptor (Wall Bracket)			
25	Bracket Base (Wall Bracket)			
26	Wall Bracket Chrome, complete		B961042AA/XG	1 pcs
27	Spira Clamping Pin	All Products	N/A	N/A
28	Deck Elbow Complete	A6877 & A7006 only	N/A	N/A
29	Diverter Cartridge Complete	A6877 & A7004 only	B960167AA	1 pcs
30	Diverter Knob		B960486AA	1 pcs
31	Aerator M24X1	A6877, A7004, A7005 & A7006	A963181NU	1 pcs

23 CLEANING CHROME SURFACES



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.

For more information about our products visit our websites:

www.armitage-shanks.co.uk

www.idealspec.co.uk

www.fastpart-spares.co.uk



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Armitage Shanks pursues a policy of continuing improvement in design and performance of its products.

This right is therefore reserved to vary specification without notice.

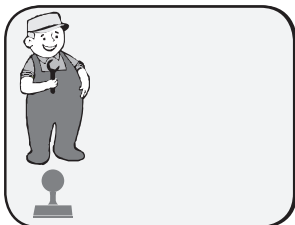
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