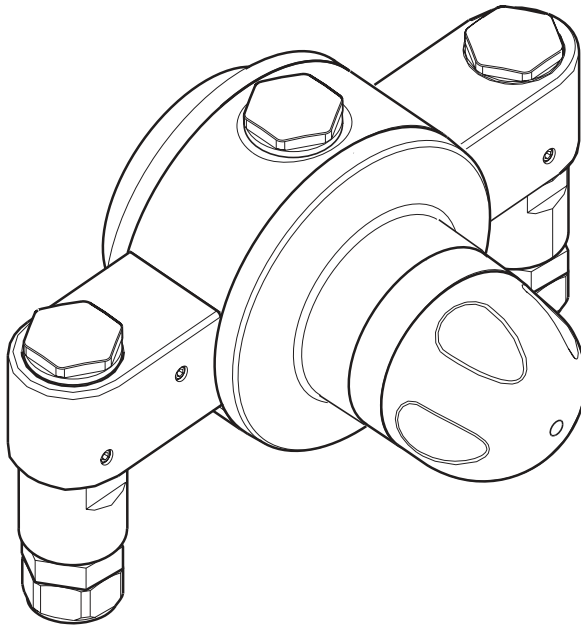


## 425-t3 Thermostatic Mixing Valve



**Important!** This Manual is the property of the customer and must be retained with the product for maintenance and operational purposes.

Product Manual

***rada***  
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If you experience any difficulty with the installation of your new mixing valve, then please refer to the **Fault Diagnosis** section, before contacting Kohler Mira Limited. Our telephone and fax numbers can be found on the back cover of this guide.

## SAFETY - WARNINGS

The function of this thermostatic mixing valve is to deliver water consistently at a safe temperature. This requires that:

1. It is installed, commissioned, operated and maintained in accordance with the recommendations given in this Manual.
2. Periodic attention is given, as necessary, to maintain the product in good functional order. Recommended guidelines are given in the **MAINTENANCE** section.
3. Continued use of this product in conditions outside the specification limits given in this Manual can present potential risk to users.

## ADVICE

The use of the word 'failsafe' to describe the function of a thermostatic mixing valve is both incorrect and misleading. In keeping with every other mechanism it cannot be considered as being functionally infallible.

Provided that the thermostatic mixing valve is installed, commissioned, operated within the specification limits and maintained according to this Manual, the risk of malfunction, if not eliminated, is considerably reduced.

Malfunction of thermostatic mixing valves is almost always progressive in nature and will be detected by the use of proper temperature checking and maintenance routines.

Certain types of system can result in the thermostatic mixing valve having excessive 'dead-legs' of pipework. Others allow an auxiliary cold water supply to be added to the mixed water from the mixing valve. Such systems can disguise the onset of thermostatic mixing valve malfunction.

Ultimately, the user or attendant must exercise due diligence to ensure that the delivery of warm water is at a stable, safe temperature. This is particularly important in such healthcare procedures as supervised bathing of patients unable to respond immediately to unsafe temperatures.

# INTRODUCTION

The Rada 425-t3 Thermostatic mixing valve is specified to meet the highest standards of safety, comfort and economy as demanded by today's users. The Rada 425-t3 is designed, manufactured and supported in accordance with accredited BS EN ISO 9001:1994 Quality Systems.

This Manual covers all Rada 425-t3 Thermostatic mixing valves manufactured from May 2001.

## Guarantee

We guarantee this product against any defect in materials or workmanship for a period of one year from the date of purchase. For terms and conditions refer to the back cover.

# DESCRIPTION

## Product Range

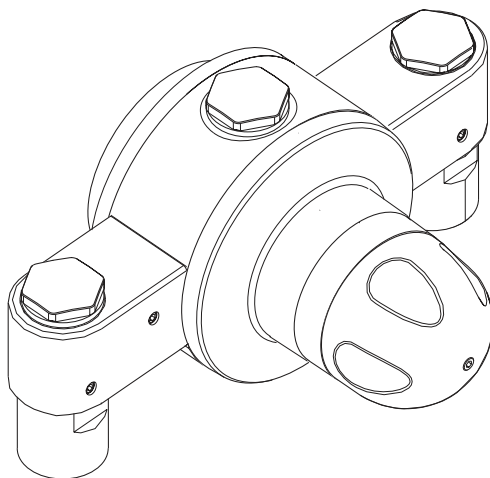
A 1" inlet / outlet thermostatic mixing valve employing the unique 'thermoscopic' temperature sensor to provide water at safe, accurate temperatures for ablutionary or process requirements.

**Rada 425-t3 c**      -      Exposed model, surface mounted. Angle inlet checkvalve elbows rotate to accept rising, falling or rear-fed supplies.

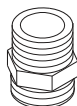
# PACK CONTENTS

☒ Tick the appropriate boxes to familiarize yourself with the part names and to confirm that the parts are included.

## Rada 425-t3 c



1 x 425-t3 Mixing Valve ☐



3 x Compression Fittings ☐



3 x Olives ☐



3 x Compression Nuts ☐



4 x Fixing Screws ☐



4 x Wall Plugs ☐



1 x Hexagonal Wrench ☐

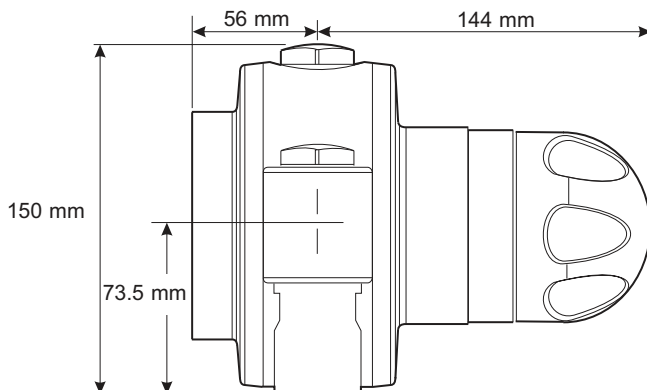
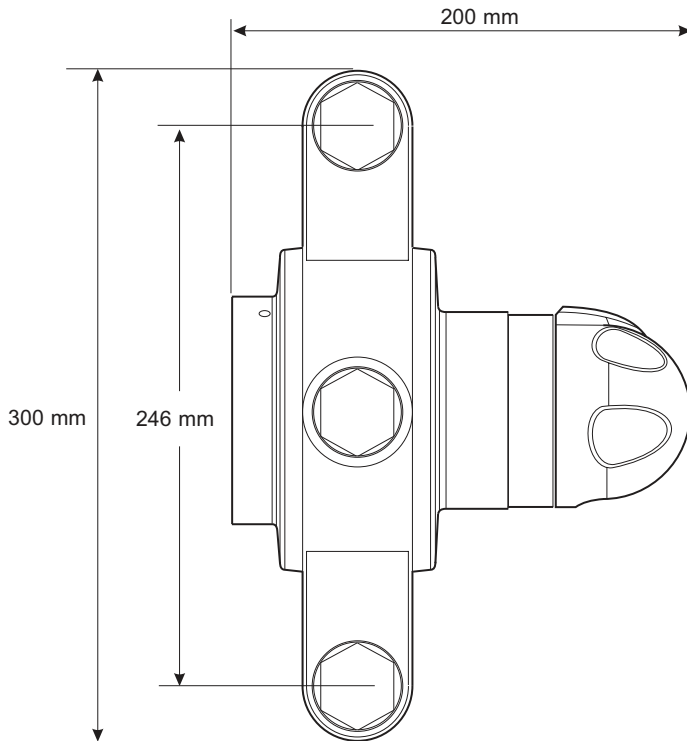
## Documentation

1x Product Manual



# DIMENSIONS

All dimensions are nominal and in mm



# SPECIFICATION

## Normal Operating Conditions are considered as:

- Inlet dynamic pressures nominally balanced to within 10% of each other during flow.
- A differential of approximately 50°C between the hot and cold inlet temperatures, and with differentials of 15 - 35°C between the blend setting and either supply.
- Daily usage of 1-6 hours.
- Installation and usage environment not subject to extremes of temperature, unauthorised tampering or wilful abuse.

## Other Applications

For information on other specific applications or suitability, refer to Kohler Mira Ltd, or Local Agent.

## Disinfection

In applications where system chemical disinfection is practised, chlorine can be used (calculated chlorine concentration of 50 mg / l (ppm) maximum in water, per one hour dwell time, at service interval frequency). Such procedures must be conducted strictly in accordance with the information supplied with the disinfectant and with all relevant Guidelines / Approved Codes of Practice.

If in any doubt as to the suitability of chemical solutions, refer to Kohler Mira Ltd, or Local Agent.

## Operating Parameters

### Pressures and Flow Rates

For optimum performance, dynamic supply pressures should be nominally equal.

**Recommended Minimum Dynamic Supply Pressure: 0.15 bar.**

**Recommended Minimum Flow Rate: 8 l/min** at mid-blend with equal dynamic supply pressures.

**Recommended Maximum Flow Rate: 200 l/min** at mid-blend (which equates to maximum pressure loss of 3.5 bar).

**Maximum Pressure Loss Ratio\*:** should not exceed **10:1**, in favour of either supply, during flow.

**Maximum Static Pressure is 10 bar.**

Recommended maximum flow velocity in pipelines is 2 metres / second.

\* Pressure Loss Ratio is determined by subtracting the resistance of the outlet



pipework and outlet fittings from the dynamic pressures of the hot and cold water at the inlets of the mixing valve. This is at its extreme when the mixing valve is used at its lowest flow-rate and when the maximum inequality occurs in the pressure of the hot and cold water supplies.

### Hydraulic Restriction: Flow Rate Pressure Loss Graph

(mixing valve only, equal dynamic supply pressures and mid-blend temperature setting, rising or falling pressure loss).



### Temperatures

Optimum performance is obtained when **temperature differentials of 20°C** or more exist between blend and either supply. Blend control accuracy will begin to diminish at temperature differentials below **12°C**.

**Blend Temperature Range: between ambient cold and approximately 60°C**, according to hot water supply temperatures.

**Thermostatic Control Range: approximately 25-60°C.**

**Optimum Thermostatic Control Range: 35 - 46°C.**

**Recommended Minimum Cold Water Temperature: 1°C.**

**Recommended Maximum Hot Water Temperature: 85°C.**

**Note!** If the hot water supply system does not incorporate safety devices (e.g. non self resetting thermal cut out) to prevent this temperature being exceeded then the use of a tempering valve may be considered to limit the temperature of the water supplied to the mixing valve. The output temperature of this tempering valve must be set to a value not less than 60°C and it must not exceed 85°C if the hot water supplied to it reaches the maximum possible value which may occur under fault conditions in the hot water apparatus.

## Flow Control

The Rada 425-t3 mixing valve does not have integral flow control, appropriate provision must be made for this in the outlet pipework.

This can be in the form of basin / bath tap, stop-cock, mechanical timed-flow controller or solenoid.

The device chosen must be **non-concussive** in operation.

## Connections

Rada 425-t3 c      -      Inlets and Outlet: 1" BSP female / 28 mm compression.  
Angle inlet checkvalve elbows rotate to accept rising,  
falling or rear-fed supplies.

Standard connections are:	hot	-	left (marked red)
	cold	-	right (marked blue)
	outlet	-	top (can be altered to bottom outlet if required by repositioning the drain plug)

This model can operate in any plane, provided hot and cold pipework is connected to the appropriate inlets (hot - red, cold - blue).

# INSTALLATION

## General

Installation must be carried out in accordance with these instructions, and must be conducted by designated, qualified and competent personnel.

1. Before commencing, ensure that the installation conditions comply with the information given in **SPECIFICATION**.
2. Care must be taken during installation to prevent any risk of injury or damage.
3. The mixing valve should be positioned for easy access during use and maintenance. All routine maintenance procedures can be conducted with the mixing valve body in place (except for strainer and checkvalve access). For all models, allow a minimum 80 mm clearance in front of the temperature control to enable removal of the serviceable parts during maintenance.
4. The use of supply-line or zone strainers will reduce the need to remove debris at each mixing valve point. The recommended maximum mesh aperture dimension for such strainers is 0.5 mm.
5. Pipework must be rigidly supported.
6. Pipework dead-legs should be kept to a minimum. The mixed water outlet piping should not exceed 2 m and the overall length from the hot water circuit to the discharge point should not exceed 5 m.
7. Supply pipework layout should be arranged to minimise the effect of other outlet usage upon the dynamic pressures at the mixing valve inlets.
8. Inlet and outlet threaded joint connections should be made with PTFE tape or liquid sealant. Do not use oil-based, non-setting jointing compounds.
9. **To eliminate pipe debris it is essential that supply pipes are thoroughly flushed through before connection to the mixing valve.**

## Outlet Position / Reversed Inlets

The Rada 425-t3 c mixing valve is supplied with the inlet connections configured **hot - left, cold - right, and top outlet** as standard.

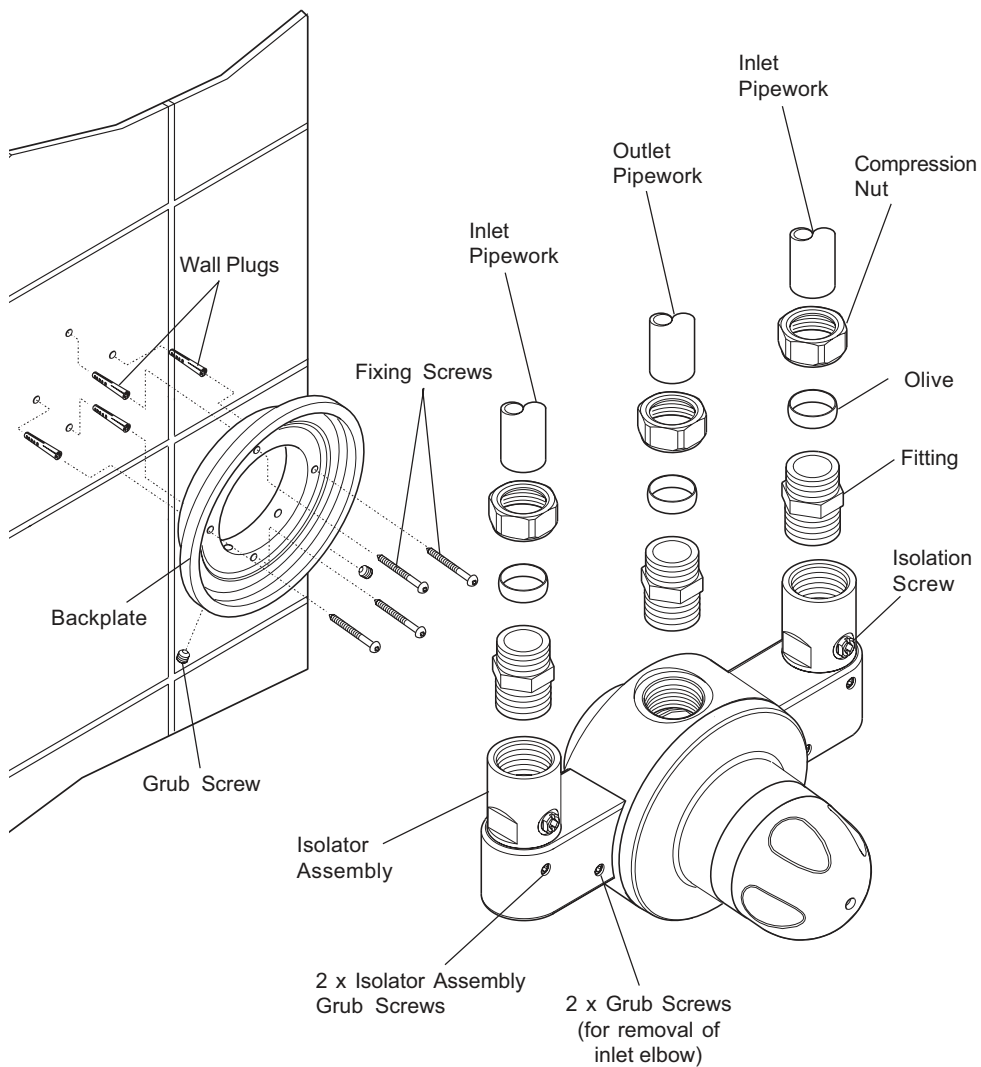
Should the existing hot and cold pipework make this configuration inconvenient then turn the whole valve through 180° (The internal components are **not** reversible).

If a bottom outlet position is required, remove the blanking cap from the bottom of the valve and replace it with the fitting from the top of the valve. Then fit the blanking cap to the top of the valve.

## Installation

The Rada 425-t3 has easily adjustable inlet elbows to accommodate rising or falling supplies.

1. When unpacked, the inlet elbows are positioned to accept falling supplies. Should the installation require rising supplies then the inlet elbows will need adjusting.
  - Loosen each inlet elbow grub screw using the 3 mm hexagonal wrench (supplied).  
**Note!** Each inlet elbow has four grub screws, two for removal of the isolator assembly and two for removal of the inlet elbow.
  - Pull the inlet elbow away from the valve body and refit in the desired position.
  - Loosen isolator assembly grub screws and position so that the isolator is accessible.
  - Tighten the grub screws.
2. Loosen the backplate grub screws (2 off) using the 3 mm hexagonal wrench (supplied) and remove the backplate.
3. Position the backplate on the wall and mark the position of the fixing holes (4 off). Remove the backplate and drill the fixing holes.
4. Fix the backplate securely to the wall surface using the fixing screws and wall plugs provided.
5. **Important!** Flush through the hot and cold supplies thoroughly before connection to the valve.
5. Fit the valve onto the backplate and tighten the grub screws (2 off).
6. Connect the hot, cold and outlet supplies using the fittings, olives and compression nuts supplied and check for any leaks.
7. The maximum temperature may now need resetting. Refer to **COMMISSIONING**.



**Installation  
Figure 1**

# COMMISSIONING

Commissioning must be carried out in accordance with these instructions, and must be conducted by designated, qualified and competent personnel.

## Exercising the Thermostat

Thermostatic mixing valves with wax thermostats are inclined to lose their responsiveness if not used. Valves which have been in storage, installed but not commissioned, or simply not used for some time should be exercised before setting the maximum temperature or carrying out any tests.

A simple way to provide this exercise is:

- (a) ensure that the hot and cold water are available at the valve inlets, and the outlet is open.
- (b) move the temperature control rapidly from cold to hot and hot back to cold several times, pausing at each extreme.

## Maximum Temperature

The maximum blend temperature obtainable by the user should be limited, to prevent accidental selection of a temperature which is too hot.

All Rada Thermostatic mixing valves are fully performance tested individually and the maximum temperature is pre-set to approximately 45°C under ideal installation conditions at the factory.

Site conditions and personal preference may dictate that the maximum temperature has to be re-set following installation.

## Maximum Temperature Setting

Check that an adequate supply of hot water is available at the hot inlet of the mixing valve.

The minimum temperature of the hot water must be at least 12 °C above the desired blend, however, during resetting this should be close to the typical storage maximum to offset the possibility of any blend shift due to fluctuating supply temperatures.

Check that both inlet isolating valves are fully open.

Temperatures should always be recorded using a thermometer with proven accuracy.

## For Adjustable Temperature

1. Remove the temperature knob concealing cap and then the screw using the 3mm hexagonal wrench.(refer to **Figure 2**).
2. Pull off the hub. **Note!** Leave the pressure washer in place on spindle.
3. Invert the hub and use to rotate the spindle until required maximum blend temperature is obtained at discharge point; turn clockwise to decrease, anticlockwise to increase temperature. Each graduation on the cover shroud equals an approximate change of temperature of 2°C.

**When resistance is felt do not use force to turn any further, as this can damage the internal parts.**

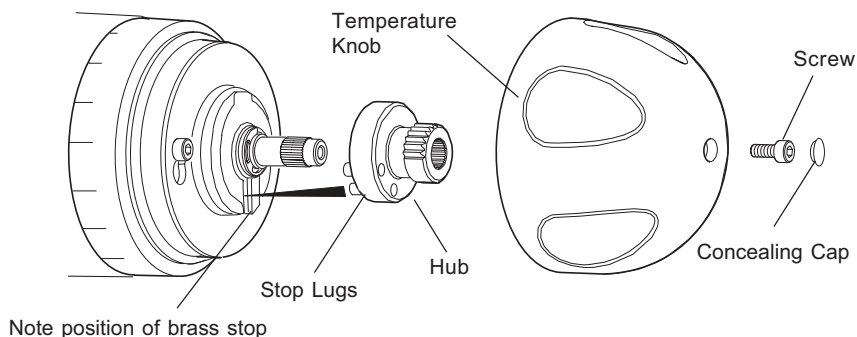
4. Once the desired maximum blend temperature is achieved, gently remove the hub and, without disturbing the spindle, reposition it so that the stop lug is against the brass stop on the valve cover, so preventing further anti-clockwise rotation. Ensure that the pressure washer is in place on spindle behind hub and that the circlip is secure. Check that blend temperature has not altered.
5. **Important!** rotate hub slowly clockwise until the minimum required cool (but not fully cold) water temperature is obtained, then fit temperature knob onto hub so that the indicator on the temperature knob aligns with the stop lugs on the hub (refer to **Figure 2**).
6. Replace the temperature knob and the screw.

## For Locked Temperature

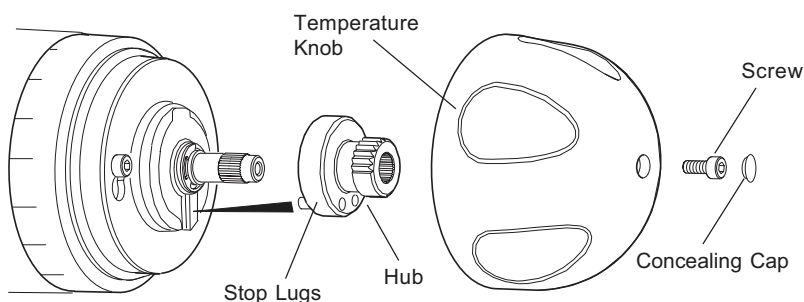
1. Remove the temperature knob concealing cap and then the screw using the 3mm hexagonal wrench (refer to **Figure 2**).
2. Pull off the hub
3. Rotate the spindle until required maximum blend temperature is obtained at discharge point (**clockwise = decrease temperature, anticlockwise = increase temperature**).

**When resistance is felt do not use force to turn any further, as this will damage the internal parts.**

4. Once the desired maximum blend temperature is achieved, refit the hub without disturbing the spindle, positioning it so that the stop lugs in the hub fit over the top of the cartridge stop (refer to **Figure 3**), preventing further rotation. Check that blend temperature has not altered.
5. Re-fit the temperature knob.



**Commissioning - Adjustable Temperature Setting**  
**Figure 2**



**Commissioning - Locked Temperature Setting**  
**Figure 3**

## Commissioning Checks

(Temperatures should always be recorded with a thermometer with proven accuracy).

1. Check inlet pipework temperatures for correct function of checkvalves i.e. that hot water does not cross flow into the cold supply and vice versa.
2. Check that the supply pressures are within the range of operating pressures for the valve.
  - (a) ensure that the hot and cold water are available at the valve inlets, and the outlet is open.
  - (b) move the temperature control rapidly from cold to hot and hot back to cold several times, pausing at each extreme.
3. All connections and the mixer body are water tight.
4. Exercise the thermostat.
5. Adjust the temperature of the mixed water in accordance with the instructions (refer to **Maximum Temperature Setting**). Operate the outlet flow control and check:

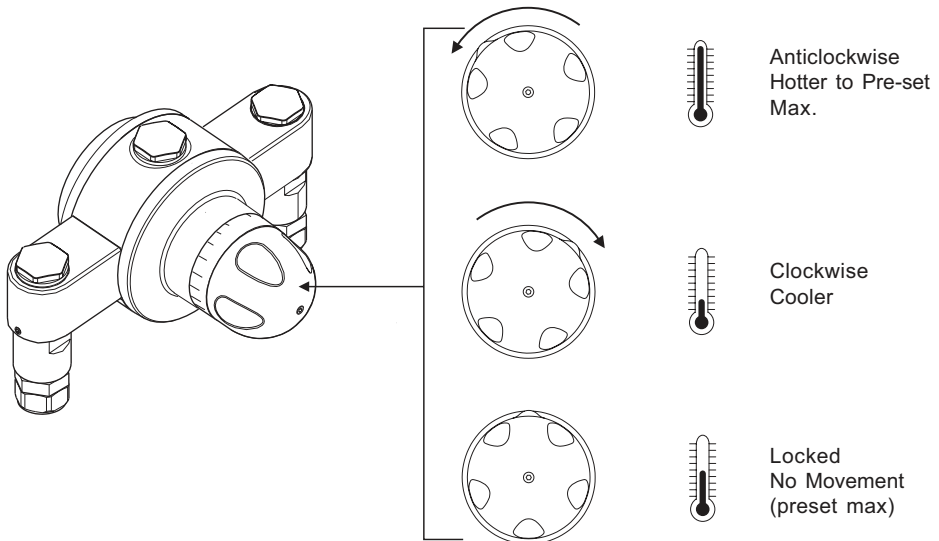


- (a) Flow rate is sufficient for the purpose
- (b) Temperature(s) obtainable are acceptable.

It is advisable to establish a performance check at this time, which should be noted for future reference as part of a Planned Maintenance Programme. The procedure should be chosen to imitate both typical and difficult operating conditions, such as any supply pressure fluctuations that may be likely. An ideal method is to locate another outlet on the common cold water supply close to the mixing valve (operating this outlet should cause a drop in supply pressure), and note the subsequent effect on blend temperature (should be no more than 2°C change).

## OPERATION

For models with a standard temperature knob fitted, adjustment of the blend temperature from preset maximum to cold is achieved by clockwise rotation of the knob. Each graduation on the cover shroud equals an approximate change of temperature of 2°C.



# FAULT DIAGNOSIS

Symptom	Cause / Rectification
Only hot or cold water from outlet.	<ul style="list-style-type: none"> <li>a. Inlet supplies reversed (i.e. hot supply to cold inlet). Check.</li> <li>b. No hot water reaching mixing valve. Check</li> <li>c. Check filters and inlet fittings for blockage.</li> <li>d. Refer to symptom <b>5</b> below.</li> <li>e. Installation conditions continuously outside operating parameters: refer to <b>SPECIFICATION</b> and <b>2e</b> below.</li> </ul>
Fluctuating or reduced flow rate.	<p>Normal function of mixing valve when operating conditions are unsatisfactory.</p> <ul style="list-style-type: none"> <li>a. Check filters and inlet / outlet fittings for flow restriction (check isolators are fully open).</li> <li>b. Ensure that minimum flow rate is sufficient for supply conditions.</li> <li>c. Ensure that dynamic inlet pressures are nominally balanced.</li> <li>d. Ensure that inlet temperature differentials are sufficient.</li> <li>e. (subsequent to rectification of supply conditions) Check thermostatic performance; renew the thermostat assembly if necessary.</li> </ul>
No flow from mixing valve outlet.	<p>Check inlet isolators are fully open.</p> <ul style="list-style-type: none"> <li>a. Check filters and inlet / outlet fittings for blockage.</li> <li>b. Hot or cold supply failure; thermostat holding correct shutdown function: rectify, and return to <b>2e</b> above.</li> </ul>
Blend temperature drift.	<p>Indicates operating conditions changed.</p> <ul style="list-style-type: none"> <li>a. Refer to symptom <b>2</b> above.</li> <li>b. Hot supply temperature fluctuation (rectify and refer to <b>COMMISSIONING</b>).</li> <li>c. Supply pressure fluctuation (refer to <b>INSTALLATION</b>; general).</li> <li>d. Valve requires servicing. Fit 'O' seal pack.</li> <li>e. Fit new thermostat pack.</li> </ul>
Hot water in cold supply or vice versa.	<p>Indicates check valves require maintenance, refer to <b>MAINTENANCE</b>.</p>
Maximum blend temperature setting too hot or too cool.	<ul style="list-style-type: none"> <li>a. Indicates incorrect <b>temperature setting</b>; refer to <b>COMMISSIONING</b>.</li> <li>b. As symptom <b>4</b> above.</li> <li>c. As symptom <b>5</b> above.</li> </ul>
Water leaking from valve body.	<p>Seal(s) worn or damaged.</p> <ul style="list-style-type: none"> <li>a. Obtain Seal Pack, and renew all seals.</li> <li>b. (If leak persists from around temperature spindle). Renew sleeve and shuttle assembly.</li> </ul>

# MAINTENANCE

## General

This Product is precision engineered and should give continued safe and controlled performance, provided:

1. It is installed, commissioned, operated and maintained in accordance with manufacturers recommendations.
2. Periodic attention is given, when necessary, to maintain the product in good functional order.

If you require a Rada trained engineer or agent, refer to section: '**Customer Service**'.

## Planned Maintenance

### In Service Testing

#### Purpose

The purpose of in-service tests is to regularly monitor and record the performance of the thermostatic mixing valve. Deterioration in performance can indicate the need for service work on the valve and/or water supplies.

#### Procedure

Using the same measuring equipment or equipment to the same specification as used in the commissioning of the valve, adjust the temperature of the mixed water in accordance with the instructions in section: 'Operation' and the requirement of the application. Carry out the following sequence:

- a) record the temperature of the hot and cold water supplies.
- b) record the temperature of the mixed water at the largest draw-off flow rate.
- c) record the temperature of the mixed water at the smaller draw-off flow rate, which shall be measured.

If the mixed water temperature has changed significantly from the previous test results (e.g. 1°C) record the change and before re-adjusting the mixed water temperature check:

- a) that any in-line or integral filters are clean.
- b) that any in-line or integral non return valves or other anti-back siphonage devices are in good working order.
- c) that any isolating valves are fully open.

With an acceptable mixed water temperature, complete the following procedure:

- a) record the temperature of the hot and cold water supplies.
- b) record the temperature of the mixed water at the largest draw-off flow rate.
- c) record the temperature of the mixed water at the smaller draw-off flow rate, which shall be measured.
- d) isolate the cold supply to the mixing valve and monitor the mixed water temperature.

e) record the maximum temperature as a result of (d) and the final stabilised temperature.

f) record the equipment, thermometer etc. used for the measurements.

If at step (e) the final mixed water temperature is greater than the values in the table below and/or the maximum temperature exceeds the corresponding value from the previous results by more than about 2°C, the need for service work is indicated.

**Table 3: Guide to maximum stabilised temperatures recorded during site tests**

Application	Mixed Water Temperature °C
Bidet	40
Shower	43
Washbasin	43
Bath (44°C fill)	46
Bath (46°C fill)	48

**Note!** In-service tests should be carried out with a frequency, which identifies a need for service work before an unsafe water temperature can result.

### Critical Components

Irrespective of supply and usage conditions or the evidence of in-service tests, critical components should be replaced at intervals of no more than 5 years.

Pack Number	Description
523. 06	Thermoscopic Unit
523. 09	Shuttle
	Shuttle Seat
	Overload Spring
	Return Spring
523. 12	Seal - Shuttle Separator
	Seal - Retaining Cap

**Note!** During the replacement of critical components, it may be necessary to replace other non-critical components.

## **Lubricants**

Silicone based lubricants must only be used on the rubber seals.

**Caution!** Oil based or other lubricant types may cause rapid deterioration of seals.

## **Cleaning**

The chrome plated parts should be cleaned using a mild washing up detergent or soap solution, rinsed and then wiped dry with a soft cloth.

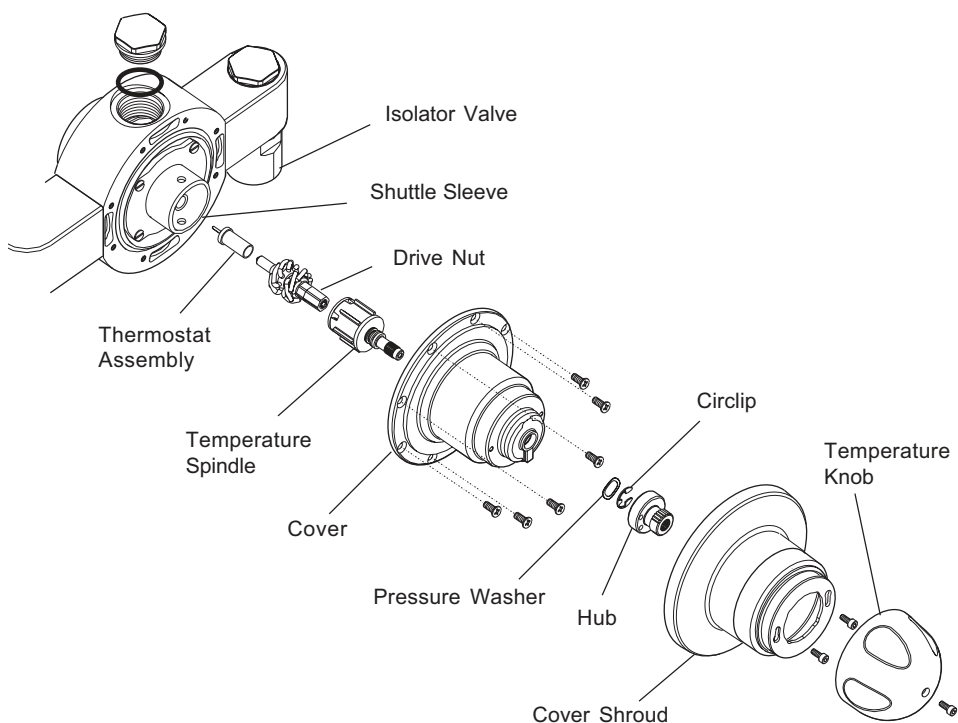
**Warning!** Many household cleaners contain abrasive and chemical substances, and should not be used for cleaning plated or plastic fittings.

**Do Not** use descalents on this product.

## Thermostat Assembly

### Removal (refer to Figure 5)

1. Turn the isolation screw on the isolator valves through 90° to isolate the water supplies to the mixing valve . Open an outlet fitting to release pressure and to assist the draining of residual water.
2. Remove the temperature knob concealing cap and then the screw using the 3 mm hexagonal wrench (supplied). Remove the temperature knob.
3. Remove the two screws holding the cover shroud in position and remove the cover shroud.
4. Remove the hub, the circlip and the pressure washer.
5. Remove the eight screws and remove the cover. Note the position of the stop on the cover, so that it can be re-assembled in the same position.
6. Remove the temperature spindle and drive nut.
7. Remove the thermostat assembly and the pinned actuator.



**Thermostat Assembly**

**Figure 5**

## **Cleaning / Renewal of Parts**

8. The interior surface of the mixing valve body must be clean before refitting the thermostat assembly. Rinse the valve interior thoroughly in clean water to remove any debris before refitting the thermostat assembly.  
**Note!** The body interior must be cleaned carefully and not damaged in any way.  
Do not use any abrasive material.
9. Examine all accessible seals for signs of deformation or damage, and renew as necessary, taking care not to damage the seal grooves.

## **Re-assembly**

10. Install the pinned actuator into the shuttle assembly.
11. Install the drive nut and the temperature spindle into the cover.  
**Note!** The drive nut will need to be aligned with the grooves inside the cover.
12. Install the thermostat into the drive nut. Install the cover, lining up the pinned actuator with the thermostat. Rotate the cover so that it is positioned in the same position as it was when you removed it. Secure the cover in position with the eight screws.
13. Fit the pressure washer and secure the spindle in position with the circlip. Make sure that the circlip locates correctly in the groove in the temperature spindle.
14. Before fitting the hub, the temperature will need resetting; refer to **COMMISSIONING**.
15. Fit the cover shroud and secure in position with the two screws.
16. Re-fit the temperature knob.

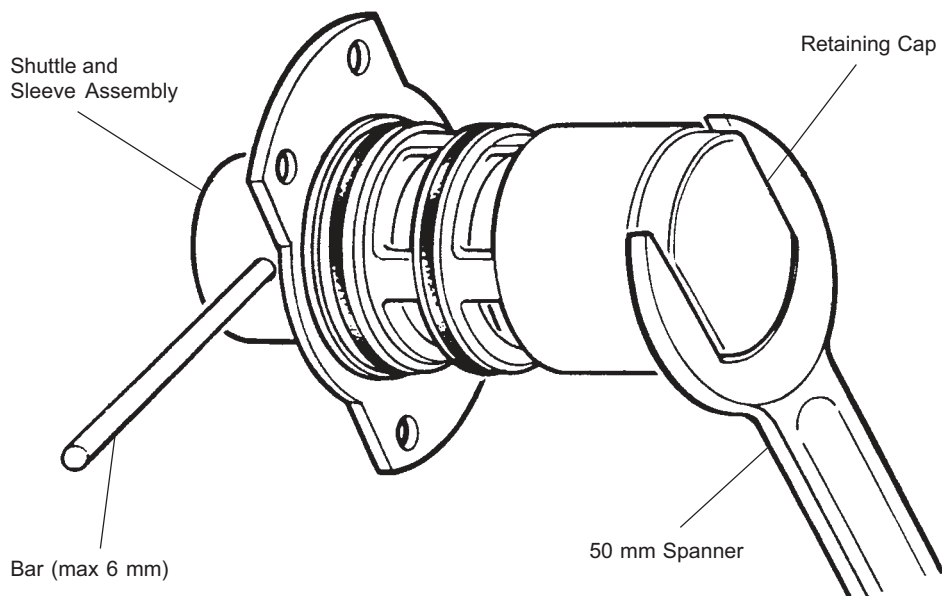
## **Port Sleeve / Shuttle Assembly**

### **Removal (refer to Figures 6 and 7)**

1. Turn the isolation screw on the isolator valves through 90° to isolate the water supplies to the valve. Open an outlet fitting to release pressure and to assist the draining of residual water.
2. Remove the temperature knob concealing cap and then the screw using the 3 mm hexagonal wrench (supplied). Remove the temperature knob.
3. Remove the two screws holding the cover shroud in position and remove the cover shroud.
4. Remove the hub, the circlip and the pressure washer.
5. Remove the eight screws and remove the cover. Note the position of the stop on the cover, so that it can be re-assembled in the same position.
6. Remove the temperature spindle and drive nut.

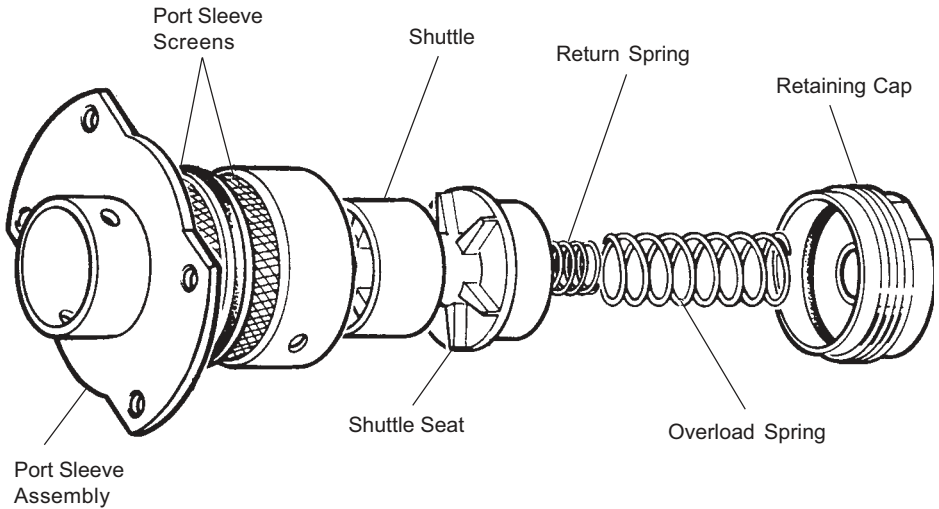
7. Remove the thermostat assembly
8. Remove the four screws.
9. Insert a bar (maximum 6 mm diameter) through the holes provided at the front of the port sleeve and use this with a slight twisting action to carefully pull the shuttle and sleeve assembly out of the valve body.
10. Remove both port sleeve screens by releasing the folded tabs.
11. To dismantle the shuttle and sleeve assembly, again insert the bar through the holes at the front of the port sleeve to hold the assembly whilst the retaining cap is loosened only using a spanner (50 mm) across the flats. There is spring tension behind the retaining cap, so complete the unscrewing and removal by hand.
12. Lift out the overload spring and return spring and carefully push out the shuttle seat and shuttle (refer to **Figure 7**).

### **Cleaning / Renewal of Parts**



**Shuttle and Sleeve Assembly (Assembled)**  
**Figure 6**



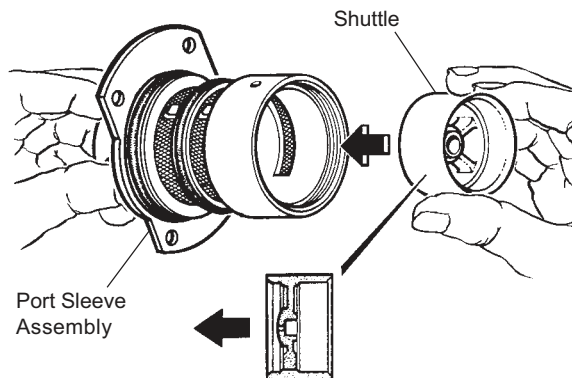


**Shuttle and Sleeve Assembly (Disassembled)**  
**Figure 7**

13. Internal parts (with the exception of the Thermostat Assembly) can be cleaned using a mild proprietary inhibited scale solvent e.g. domestic kettle descaler. After descaling, always rinse parts thoroughly in clean water before refitting. **Note!** The body interior must be cleaned carefully and not damaged in any way. Do not use any abrasive material.
14. Examine all accessible seals for signs of deformation or damage, and renew as necessary, taking care not to damage the seal grooves.
15. Lightly smear all seals and threads with a silicone-only based lubricant to assist re-assembling.
16. Inspect the thermostat assembly for signs of damage. **Note!** This component cannot be tested individually, its service condition should be assessed as part of the performance check; refer to Commissioning Checks.
17. Examine the shuttle seat, the shuttle and the port sleeve for signs of damage or corrosion; renew as necessary.

## Re-assembly

18. Insert the shuttle fully into the port sleeve (wider open end) with radius centre face inwards (refer to **Figure 8**), ensuring that the separator seal remains in place and is not damaged.
19. Insert shuttle seat into the port sleeve, ensuring that the cut-outs locate into the webs in the shuttle.
20. Insert the return spring through the centre of the overload spring. Insert both springs into the shuttle seat rear face.
21. Locate the retaining cap over the springs, compress and screw the cap fully into the port sleeve, ensuring that the threads are correctly engaged.
22. Replace the port sleeve screens, positioning the joint against one of the two solid sections. This will prevent debris entering through the slot in the screen.
23. Insert the shuttle and sleeve assembly into the valve body and secure in position with the four screws.
24. Install the actuator sleeve and the thermostat assembly into the shuttle assembly.
25. Install the drive nut and the temperature spindle into the cover. **Note!** The drive nut will need to be aligned with the grooves inside the cover
26. Fit the cover. Rotate the cover so that it is positioned in the same position as it was when you removed it. Secure the cover in position with the eight screws
27. Fit the pressure washer and secure the spindle in position with the circlip. Make sure that the circlip locates correctly in the groove in the temperature spindle.
28. Before fitting the hub, the temperature will need resetting; refer to **COMMISSIONING**.
29. Fit the cover shroud and secure in position with the two screws.
30. Re-fit the temperature knob and secure with the screw.

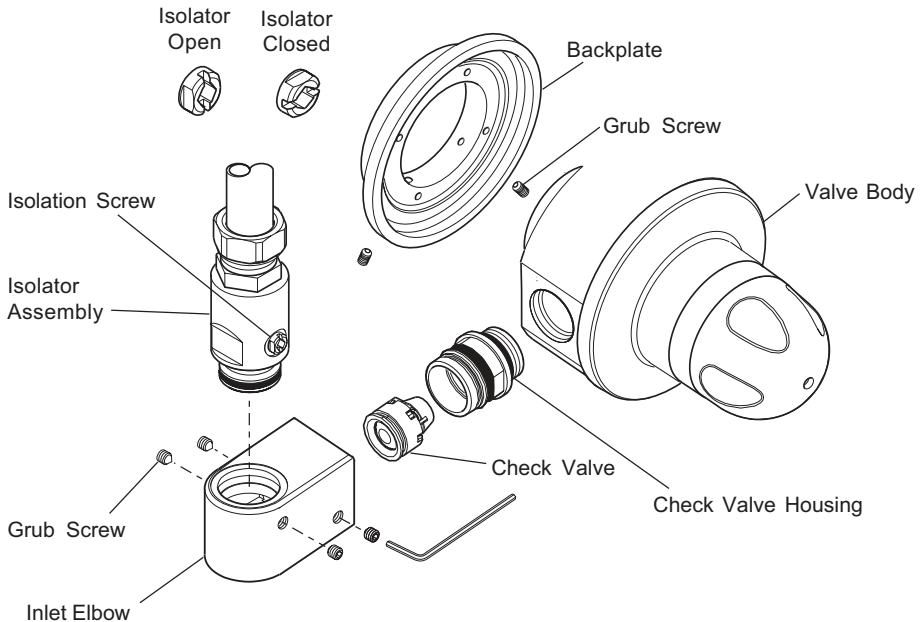


**Shuttle and Sleeve Assembly**  
**Figure 8**

## Check Valve Cartridges

Hot water entering the cold supply, or vice versa, indicates that immediate attention is necessary. This is carried out by removing and cleaning, or renewing as necessary, the two check valves.

1. Turn the isolation screw on the isolator assemblies through 90° (refer to **Figure 9**) to isolate the water supplies to the valve. Open an outlet fitting to release pressure and to assist the draining of residual water.
2. Loosen the isolator grub screws and remove the isolator assemblies from the inlet elbows. **Note!** If necessary, loosen the two grub screws that hold the valve body onto the backplate and undo the outlet compression fitting. This is so that you can lower the body away from the backplate. This will give enough clearance to remove the isolator assemblies from the inlet elbows.
3. Remove the inlet elbow grub screws and remove the inlet elbows.
4. Unscrew and remove the check valve housings.
5. Push out the check valves. **The check valve is not a serviceable item, so any apparent wear or damage will require its renewal.**
6. Re-assembly into the valve is a reversal of the above procedures.
7. Turn the isolation screw on the isolator assemblies through 90° (refer to **Figure 9**) to restore the water supplies to the valve and check for leaks.



**Check Valve Cartridges**  
**Figure 9**

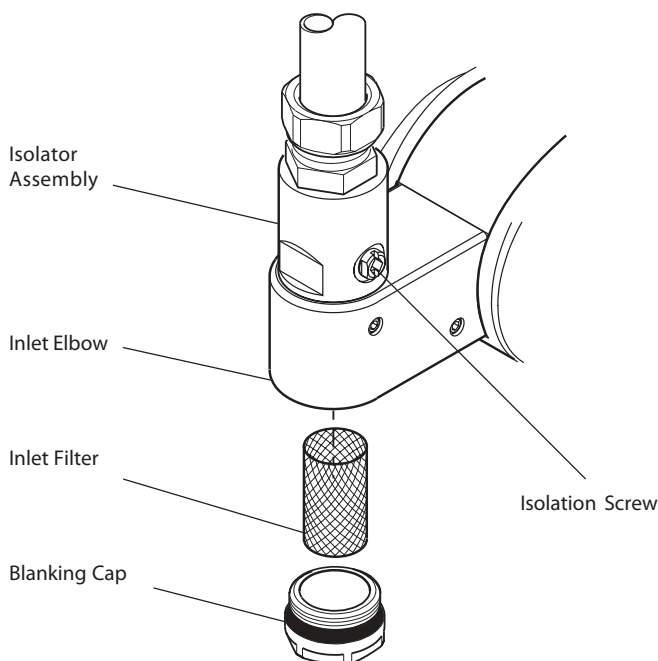
## Inlet Filters

Blockage of the inlet filters can lead to poor flow performance and reduced temperature control. It is essential that the inlet filters are cleaned or, if necessary, renewed as part of the six-monthly maintenance operations.

**Caution!** Do not operate the Rada 425-t3 c without filters. Product damage may occur.

A filter pack is available containing two strainer screens and all the seals which may be needed during filter inspection.

1. Turn the isolation screw on the isolator assemblies through 90° (refer to **Figure 10**) to isolate the water supplies to the valve. Open an outlet fitting to release pressure and to assist the draining of residual water.
2. Unscrew and remove the blanking cap.
3. The inlet filters are a push-fit into the blanking cap.
4. The inlet filters may be cleaned under a jet of water, or renewed.
5. Re-assembly into the inlet elbows is a reversal of the above procedures.
6. Restore the water supplies and check for leaks.
7. Operate the valve at full hot and full cold. The maximum temperature may require resetting (refer to **COMMISSIONING**).



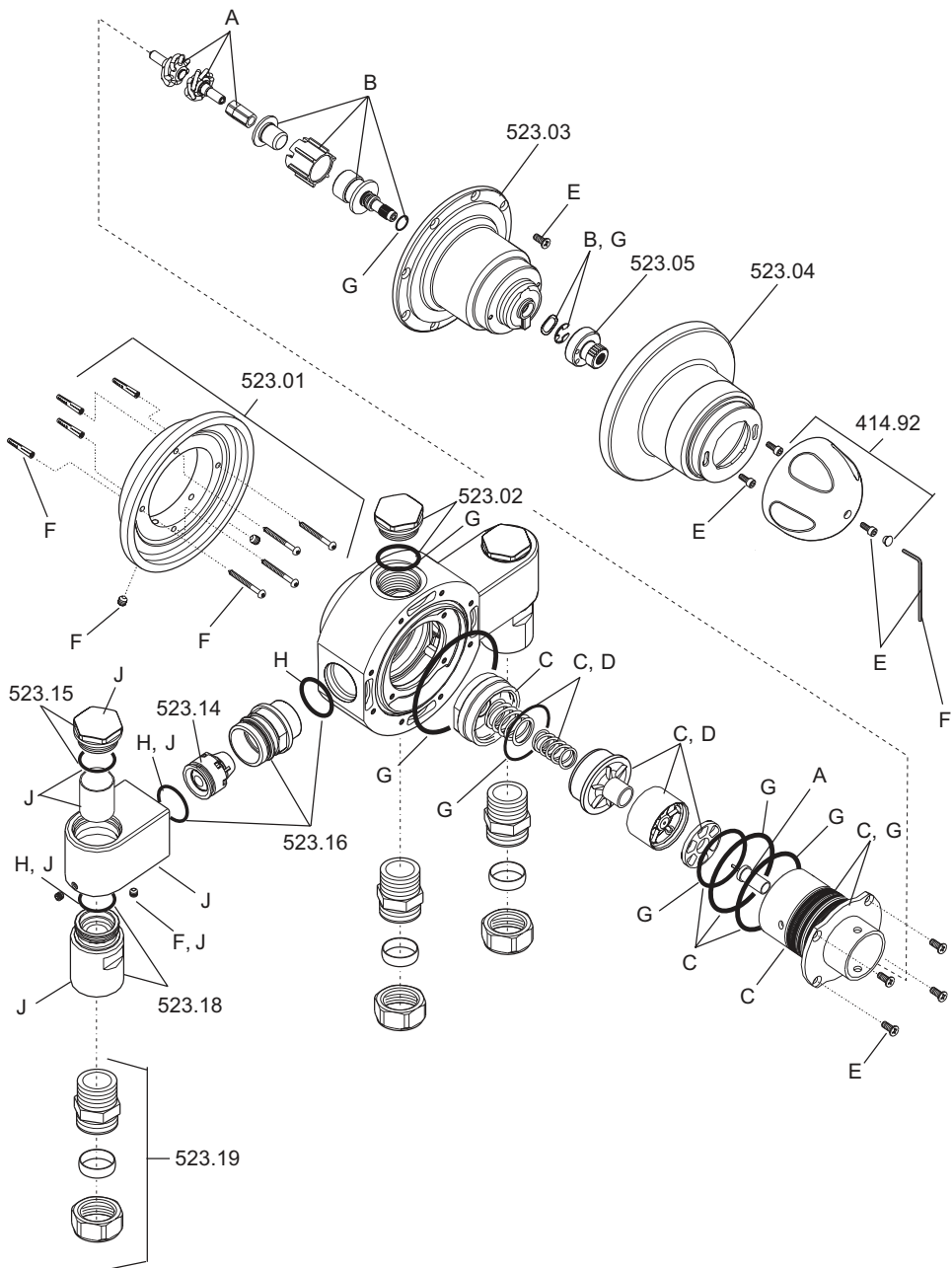
**Inlet Filters**  
**Figure 10**

# SPARE PARTS

## Spare Parts List

414.92	Knob Pack
523.01	Backplate Pack
523.02	Drain Plug
523.03	Cover
523.04	Cover Shroud
523.05	Hub Pack
523.06	Thermostat Pack - components identified 'A'
523.07	Drive Mechanism Pack - components identified 'B'
523.08	Port Sleeve Pack - components identified 'C'
523.09	Shuttle Pack - components identified 'D'
523.10	Cover Screw Pack - components identified 'E'
523.11	Fixing Screw Pack - components identified 'F'
523.12	'O' Seal Pack - components identified 'G'
523.13	Filter / Elbow 'O' Seal Pack - components identified 'H'
523.14	1 1/4" Check Valve Pack
523.15	Filter Cap Pack
523.16	Inlet Adaptor Pack
523.17	Elbow Pack - components identified 'J'
523.18	Ball Valve Pack
523.19	Compression Fittings
523.22	Critical Component Pack - consists of:
	523.06 Thermostat Pack
	523.09 Shuttle Pack
	523.12 'O' Seal Pack

# Spare Parts Diagram



## NOTES

# CUSTOMER SERVICE

## Guarantee

Your product has the benefit of our one year manufacturer's guarantee which starts from the date of purchase.

Within the guarantee period we will resolve defects in materials or workmanship, free of charge, by repairing or replacing parts or product as we may choose.

**This guarantee is in addition to your statutory rights and is subject to the following conditions:**

- The product must be installed and maintained in accordance with the instructions given in this user guide.
- Servicing must only be undertaken by us or our appointed representative. **Note!** if a service visit is required the product must be fully installed and connected to services.
- Repair under this guarantee does not extend the original expiry date. The guarantee on any replacement parts or product ends at the original expiry date.
- For shower fittings or consumable items we reserve the right to supply replacement parts only.

**This guarantee does not cover:**

- Call out charges for non product faults (such as damage or performance issues arising from incorrect installation, improper use, inappropriate cleaning, lack of maintenance, build up of limescale, frost damage, corrosion, system debris or blocked filters) or where no fault has been found with the product.
- Water or electrical supply, waste and isolation issues.
- Compensation for loss of use of the product or consequential loss of any kind.
- Damage or defects caused if the product is repaired or modified by persons not authorised by us or our appointed representative.
- Routine maintenance or replacement parts to comply with the requirements of the TMV2 or TMV3 healthcare schemes.
- Accidental or wilful damage.
- Products purchased ex-showroom display.

## What to do if something goes wrong

If your product does not function correctly when you first use it, contact your installer to check that it is installed and commissioned in accordance with the instructions in this manual.

If this does not resolve the issue, contact our Customer Services Team who will offer you or your installer help and advice.

If the performance of your product declines, check in this manual to see if simple home maintenance is required. If you require further assistance call our Customer Services Team.

## Technical Helpdesk Service

Our Customer Services Team is comprehensively trained and can offer help and advice, spare parts, accessories or a service visit.

We will need you to have your model name or number, power rating (if applicable) and date of purchase.

As part of our quality and training programme calls may be recorded or monitored.

**Rada Website ([www.radacontrols.com](http://www.radacontrols.com))**

From our website you can view our full product catalogue or download a brochure.

## Spares and Accessories

We maintain extensive stocks of genuine spares and accessories and aim to provide support throughout the product's expected life.

Payment can be made by phone at time of order using most major Credit or Debit cards and we aim to despatch orders within two working days.

Items purchased from us are guaranteed for 12 months from date of purchase.

For safety reasons spares exposed to mains voltages should only be fitted by competent persons.

**Returns** – items can be returned within one month of date of purchase, providing that they are in good condition and the packaging is unopened. If you wish to return any items please notify us in writing with seven days of receipt.

## Service / Repairs

Our nationwide team of Service Technicians can carry out all service or repair work to your product within the guarantee period and beyond.

You have the assurance of a fully trained Technician, genuine Rada spare parts and a 12 month guarantee on any chargeable work done.

## Service Contracts

A regular service visit ensures your product continues to perform at the peak of performance. We offer annual or bi-annual servicing carried out by our fully trained technicians subject to site survey.

## To Contact Us - Customer Service and Specification Enquiries UK

Telephone: 0844 571 1777

E-mail: [rada\\_technical@mirashowers.com](mailto:rada_technical@mirashowers.com)

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