



Rada[®] 425

Installation and Maintenance

Rada[®] Single Point & Zoned/Group Control Systems

This Rada 425 Valve has been supplied for this application based upon information provided to Armstrong at the time the order was placed.

This Rada 425 Valve is configured for use in a “dead-leg” piping configuration as indicated in the drawing on Page 6.

This Rada 425 Valve has **not** been configured for use in a central pumped re-circulation system.

This Rada 425 Valve is **not** designed to deliver tepid water to emergency fixtures.

For further information, please call our technical department Toll Free at 1-888-HOT-HOSE.

Model No. Rada 425 Rada 425D Rada 425DC

Serial No. _____

Ship Date _____



Rada® Single Point & Zoned/Group Control Systems

Rada 425

Rada Thermostatic Mixing Valve is suitable for safe, accurate water temperature control in single open outlet or “dead leg” multiple-point-of-use applications. Compact design and top or bottom blended water outlet make Rada 425 ideal for surface mount, recessed enclosure or plumbing chase installations. Rada 425 is capable of very close temperature control at full (49 gpm/185 lpm) and reduced (2 gpm/7.5 lpm) flow rates, which makes it an excellent selection for larger “group” fixture control.

Rada 425 is able to blend to within 5°F (2°C) of either inlet supply temperature because of “low seepage” across the internal proportioning mechanism, while still maintaining thermal correction/shutdown capability. This feature makes Rada 425 a superb selection for secondary or “zoned” fixture/building water temperature control.

Rada 425 Offers:

Safety. Dual thermostats provide redundancy in case of individual thermostat failure. Integral inlet check valves prevent cross connection. Maximum temperature limiting and single temperature locking features legislate control. Instant automatic shutdown will occur prior to a 5°F (2°C) temperature rise/fall in the event of an inlet supply failure.

Economy. New technology and state-of-the-art materials reduce cost. Design and functional simplicity reduce field maintenance and parts stocking requirements.

Comfort. Maintains a steady outlet temperature by constant internal monitoring and correcting of inlet supply temperature and pressure fluctuations.

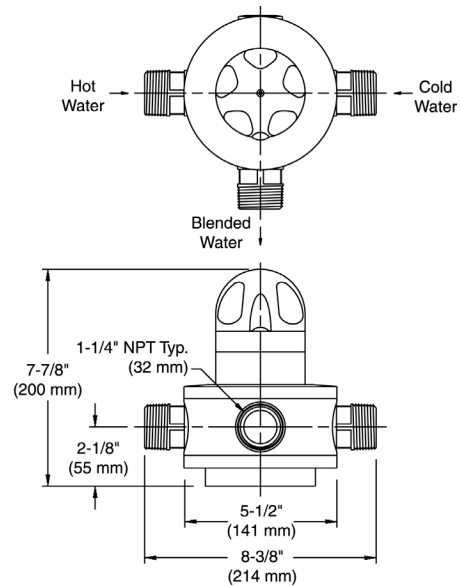
Rada 425 supersedes Rada 25.

Technical Specifications

- 1-1/4" NPT (32 mm) inlets and 1-1/4" outlet
- Chrome-plated DZR brass/polymer construction
- Operating pressures
 - Maximum: 150 psi (10 bar)
 - Minimum: 10 psi (.7 bar)
- Maximum flow rate at 9 ft/sec (2.7 m/sec): 26 gpm (98 lpm)
- Minimum flow rate 2 gpm (7.5 lpm)
- ASSE 1017 and CSA B125 certified
- Maximum pressure loss ratio: 10 to 1*
- Flow coefficient (Cv) 6.9
- Integral inlet check valves and strainers
- Dual thermostatic elements
- Shipping weight 18 lbs (8.1 kg)

* Ratio of inlet pressures accounting for restrictions on valve outlet (minus back pressure)

For a fully detailed certified drawing, refer to CDLW #1065.



Rada Thermostatic Mixing Valves (gpm)												
Model	Pressure Drop (psi)										Min. Flow	CV
	5	10	15	20	25	30	35	40	45	50		
110	—	.75	—	1.25	—	1.75	—	2.25	—	2.5	.5	.25
215	4	5	7	8	9	9	10	11	11	12	.5	1.7
320	8	11	13	15	17	19	20	22	23	24	1	3.4
425	15	22	27	31	35	38	41	44	46	49	2	6.9
40	36	51	62	72	—	—	—	—	—	—	2	16.0
50	49	70	85	98	—	—	—	—	—	—	2	22.0

Rada® Single Point & Zoned/Group Control Systems

Rada 425D

A derivative of the standard Rada 425 Thermostatic Mixing Valve, the Rada 425D is suitable for safe and accurate water temperature control in single open outlet or "dead leg" multiple-point-of-use applications. This assembly is ideal for surface mount, recessed enclosure, plumbing chase and mechanical room installations.

Factory supplied pre-plumbed and pressure-tested, Rada 425D has standard combination inlet check stop/union/strainers, thermometer and outlet stop valve.*

** Rada 425D is supplied with top outlet and can be site reconfigured for bottom outlet application.*

Rada 425D is supplied as a polished chrome Thermostatic Mixing Valve with self-finish brass/bronze fittings and connections.

Rada 425DC is supplied as a polished chrome Thermostatic Mixing Valve with nickel-plated fittings and connections.

Rada 425 Offers:

Safety. Dual thermostats provide redundancy in case of individual thermostat failure. Integral inlet check valves prevent cross connection. Maximum temperature limiting and single temperature locking features legislate control. Instant automatic shutdown will occur prior to a 5°F (2°C) temperature rise/fall in the event of an inlet supply failure.

Economy. New technology and state-of-the-art materials reduce cost. Design and functional simplicity reduce field maintenance and parts stocking requirements.

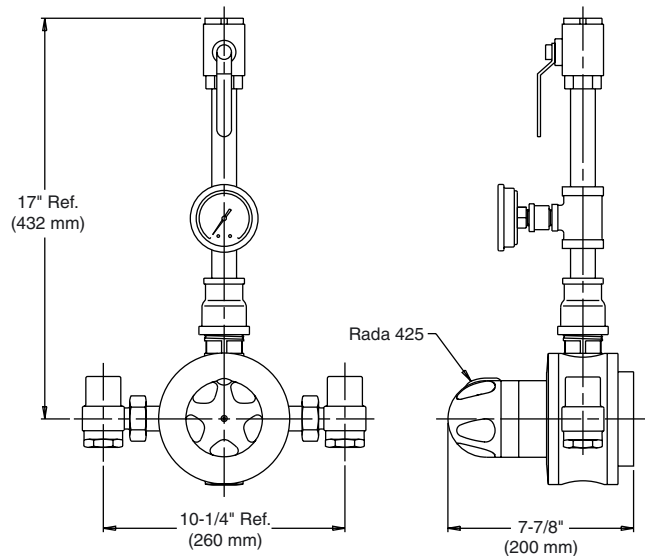
Comfort. Maintains a steady outlet temperature by constant internal monitoring and correcting of inlet supply temperature and pressure fluctuations.

Rada 425 supersedes Rada 25.

Technical Specifications

- 1" (25 mm) NPT inlets and 1" NPT outlet
- Chrome-plated DZR brass/polymer construction with self-finish brass and bronze components (425D) or with nickel-plated components (425DC)
- Operating pressures
 - Maximum: 150 psi (10 bar)
 - Minimum: 10 psi (.7 bar)
- Maximum flow rate at 9 ft/sec (2.7 m/sec): 26 gpm (98 lpm)
- Maximum pressure loss ratio: 10 to 1**
- ASSE 1017 and CSA B125 certified
- Flow coefficient (Cv) 6.9
- Integral combination inlet check stop/union/strainers
- Fitted with thermometer and outlet stop valve
- Dual thermostatic elements
- Shipping weight 26 lbs (10 kg)

Photo Coming from Howard



Rada Thermostatic Mixing Valves (gpm)												
Model	Pressure Drop (psi)										Min. Flow	CV
	5	10	15	20	25	30	35	40	45	50		
110	—	.75	—	1.25	—	1.75	—	2.25	—	2.5	.5	.25
215	4	5	7	8	9	9	10	11	11	12	.5	1.7
320	8	11	13	15	17	19	20	22	23	24	1	3.4
425	15	22	27	31	35	38	41	44	46	49	2	6.9
40	36	51	62	72	—	—	—	—	—	—	2	16.0
50	49	70	85	98	—	—	—	—	—	—	2	22.0

For a fully detailed certified drawing, refer to CDLW #1103.

Safety Warnings

The function of a Thermostatic Mixing Valve is to deliver water consistently at a pre-designated temperature.

Rada Thermostatic Mixing Valves are precision engineered to give continued superior and safe performance provided:

1. They are installed, commissioned, operated and maintained in accordance with the recommendations provided and accepted plumbing practices.
2. Periodic attention is given, as necessary, to maintain the product, the accessory fittings and the plumbing system in good functional order.

In keeping with every other mechanical product, Rada Mixing Valves should not be considered as functionally infallible and, as such will never totally replace the vigilance and attention of facility nursing/bathing or other institutional supervisory or industrial safety staff.

Provided that they are installed, commissioned, operated and maintained, the risk of product failure and its associated consequences, if not eliminated, are reduced to the minimum achievable.

Rada 425 Operating Specifications

Maximum Hot Water Supply Temperature	185°F (85°C)*
Minimum Cold Water Supply Temperature	33°F (1°C)
Optimum Minimum Inlet to Outlet Temperature Differential	21°F (12°C)**
Optimum Thermostatic Control Range	86 - 122°F (30 - 50°C)
Flow Rate at 45 psi	46 gpm (174 lpm)
Maximum Flow Rate at 9' per second	26 gpm (98 lpm)
Minimum Flow Rate	2 gpm (7.5 lpm)
Maximum Inlet Supply Pressure	150 psi (10 bar)
Minimum Inlet Supply Pressure	10 psi (0.7 bar)

*Rada 425 can accept temporary excursions above 185°F (85°C) and maintain control without sustaining internal damage. (ASSE 1017 certification requires exposure to 200°F (93°C) for a period of 30 minutes). Prolonged operation of the Mixing Valve at such elevated temperatures is not recommended.

** Under laboratory test conditions Rada 425 has displayed a repeatable capability to blend within 5°F (2°C) of each inlet supply temperature. 21°F (12°C) is the optimum published minimum differential required to achieve full thermal performance.

Rada 425 Installation

The Rada 425 Thermostatic Mixing Valve must be installed per the piping schematic provided on Page 6. Failure to follow this directive will compromise valve/system performance, void all warranties and may create a user comfort issue and safety concern.

Armstrong has Rada technical support personnel available from 8:00 a.m. to 5:00 p.m. EST. Call Toll Free 1-888-HOT-HOSE.

Notes:

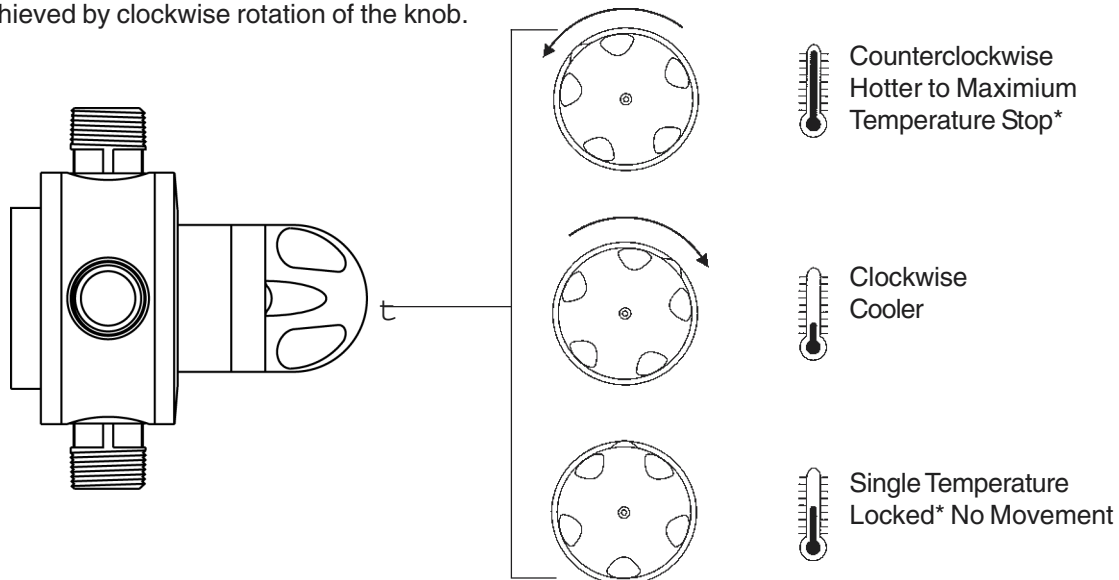
1. Rada 425 may be installed in a vertical or horizontal position.
2. Rada 425 must be installed in a standard **HOT-LEFT/COLD-RIGHT** inlet supply configuration. There are red (hot) and blue (cold) markings on each valve. Rada 425 is provided as standard with a bottom outlet and a plugged top outlet. This configuration can be reversed by simply switching the outlet plug and fittings. The inlet supplies must always match the corresponding inlet ports on the valve. Rada 425D/DC is provided as standard with a top outlet which can also be reversed.
3. Install flat faced union connections ** at each inlet and the outlet as close to the Mixing Valve as feasible to facilitate Check Valve and Inlet Strainer Screen service and replacement.
4. Be sure to thoroughly flush the pipework before fitting the Rada 425.
5. Be sure to make-up all "sweat" or "soldered" fittings ahead of time. Do not expose Rada 425 or any of its fittings to extreme temperatures (such as a acetylene or propane torch).
6. Rada 425 is serviced from the front of the valve as you face it. A minimum 18" clearance in front of the Temperature Control Handle is suggested for internal parts access.
7. Rada 425 is pre-set at the factory to a fixed outlet temperature of 110°F (43°C). It is highly unlikely that the installation site conditions will match the test conditions. As such:

RADA 425 MUST BE RE-SET ON SITE BY QUALIFIED PERSONNEL.

Rada 425 set up (**commissioning the Rada 425 and the system**) protocol is included on Page 6.

Operation

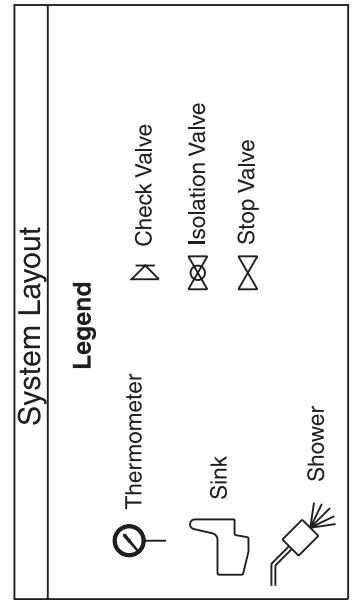
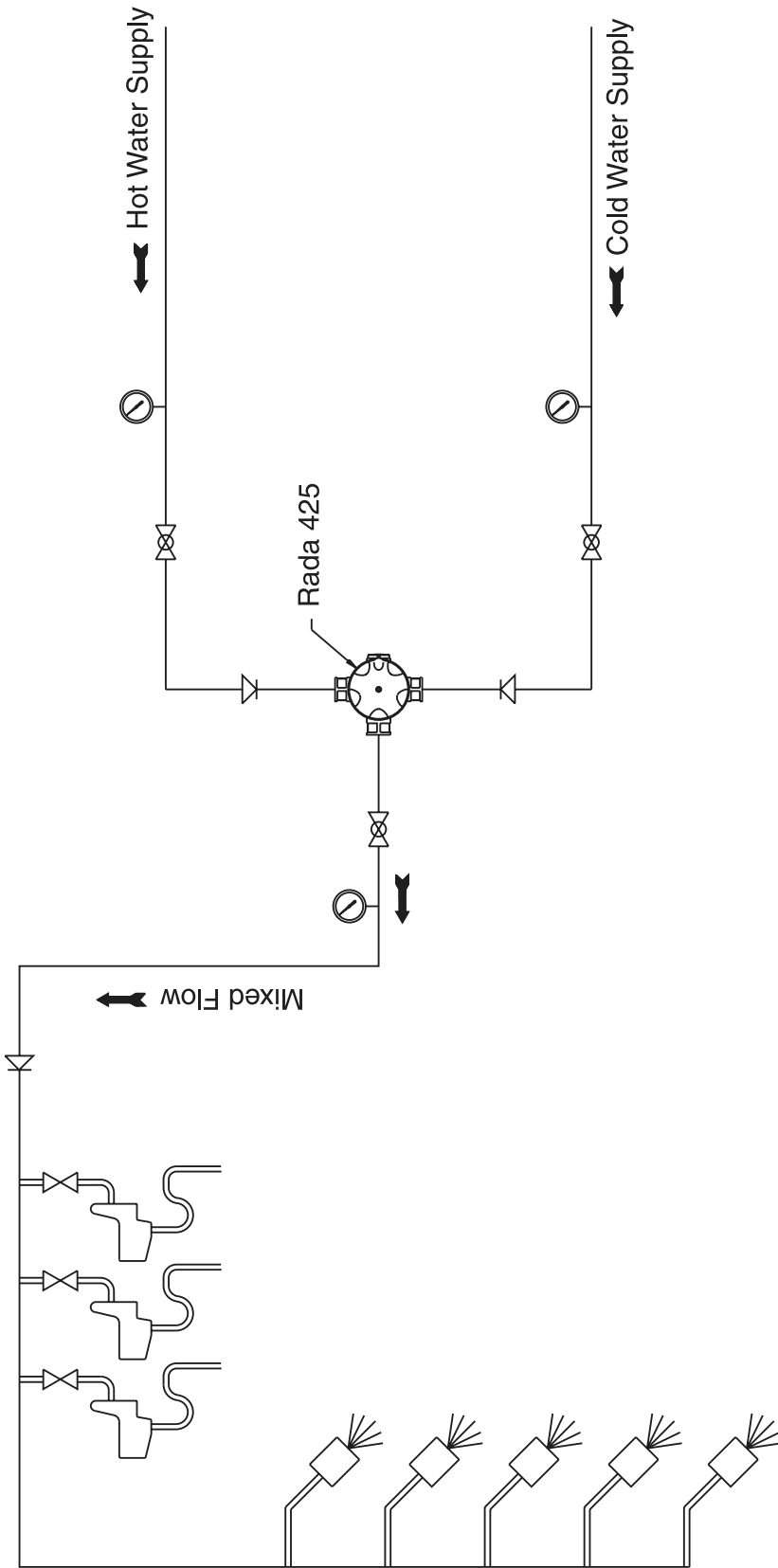
For models with a standard temperature knob fitted, adjustment of the blend temperature from preset maximum to cold is achieved by clockwise rotation of the knob.



*Maximum temperature stop or single temperature locking feature is established during the on-site commissioning protocol referenced on page 7.

**Factory supplied on Rada 425D/DC and when Rada 425 is installed in a cabinet assembly (425-FMC/SMC)

Rada 425 Piping Schematic



Commissioning the Rada 425

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

Ensure that the hot and cold supplies are at their designated pressures and temperatures. Open mixed water outlet(s) and wait until the hot and cold inlet temperatures are stable. Note the mixed water temperature.

If the mixed water temperature requires adjustment, turn the temperature control handle clockwise to reduce the temperature or counterclockwise to increase it. Allow a few seconds for the temperature to stabilize.

If the blend temperature required is not obtainable (not hot enough) it is likely that the mixing valve has reached the factory set maximum temperature set point. To re-set see **Maximum Temperature** below.

Exercising the Thermostat

Thermostatic mixing valves with 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:

1. Ensure that the hot and cold water are available at the valve inlets, and the outlet is open.
2. 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 through the mixing valve should be limited to prevent selection of a water temperature that is too hot for the application.

Rada 425 is fully performance tested and the maximum temperature is pre-set to approximately 110°F (43°C) under ideal installation conditions at the factory.

Site conditions and design 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 to the hot inlet of the mixing valve.

For optimum performance the minimum temperature of the hot water must be at least 21°F (12°C) above the desired blend, however during resetting this should be close to the typical storage maximum to reduce the possibility of any blend shift due to fluctuating supply temperatures.

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

For Adjustable Temperature (Refer to Figure 8-1)

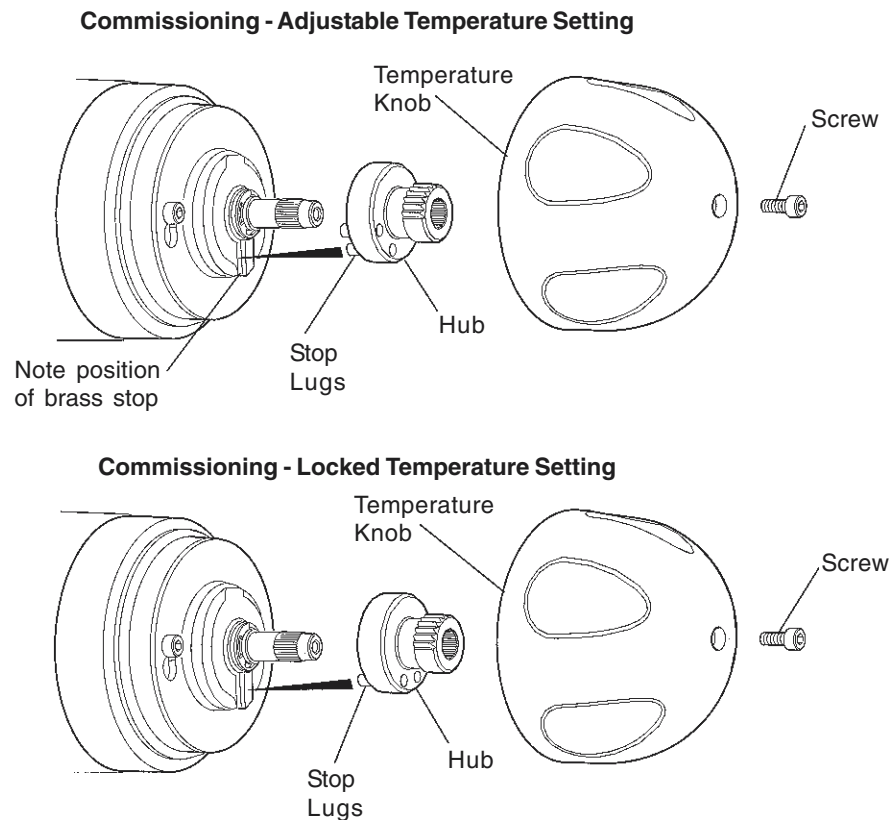
1. Remove the temperature control handle screw using a 3 mm hexagonal wrench (supplied). Pull off the temperature knob.
2. Remove the brass hub assembly.
3. Invert the hub 180° and use it to rotate the spindle until the desired maximum temperature is obtained at outlet point (clockwise=decrease temperature, counterclockwise=increase temperature). When resistance is felt do not use force to turn any further, as this can damage the internal components.
4. Once the desired maximum blend temperature is achieved, gently remove the hub without disturbing the spindle. Invert hub 180°, and re-position over the spindle so that the left stop lug on the hub rests against the right side of the stop on the valve body thus preventing any further counterclockwise rotation.
5. Re-fit the Temperature Control Handle.

Commissioning the Rada 425

For Locked Temperature (Refer to Figure 8-1)

1. Remove the temperature control handle screw using a 3 mm hexagonal wrench (supplied). Pull off the temperature knob.
2. Remove the brass hub assembly.
3. Invert the hub 180° and use it to rotate the spindle until the desired maximum temperature is obtained at outlet point (clockwise=decrease temperature, counterclockwise=increase temperature). When resistance is felt do not use force to turn any further, as this can damage the internal components.
4. Gently remove the hub without disturbing the spindle. Invert hub 180° and re-position over the spindle so that the two stop lugs on the brass hub “straddle” the stop on the valve body thus preventing any further rotation in either direction.
5. Re-fit the Temperature Control Handle.

Figure 8-1.



Rada 425 Servicing and Maintenance

Rada 425 Thermostatic Mixing Valves should be inspected annually, or more frequently where acknowledged site conditions such as high mineral content water dictate.

Rada 425 can be completely serviced from the front/top and all of the internal components are replaceable. To access the valves internal components for inspection, cleaning or replacement proceed as follows.

Maintenance must be carried out in accordance with these instructions, and must be conducted by designated, qualified and competent personnel. This mixing valve is designed for minimal maintenance under conditions of normal use. External surfaces may be wiped clean with a soft cloth, and if necessary, a mild detergent or soap solution can be used.

Warning! Many household and industrial cleaning products contain mild abrasives and chemical concentrates, and should not be used on polished, chromed or plastic surfaces.

Components are precision-made, so care must be taken while servicing to avoid damage.

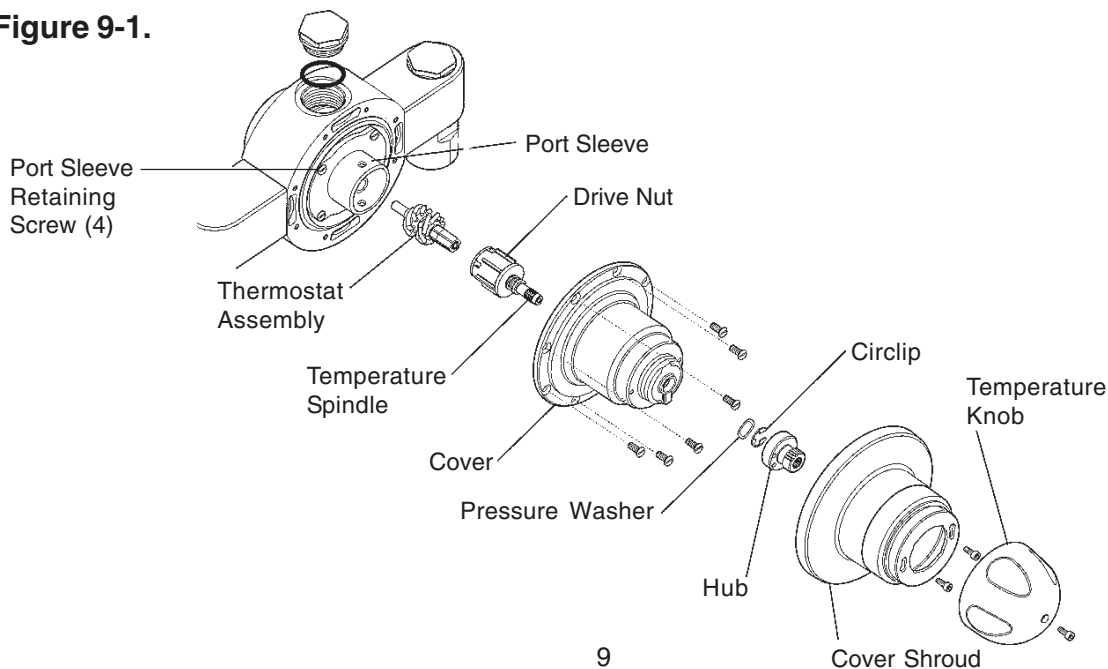
Lubricant

Important! All seals are pre-lubricated. If you need to further lubricate the seals, use only a small amount of silicone-only based lubricants on this product. Do not use oil-based or other lubricant types as these may cause rapid deterioration of seals.

Maintenance Procedure

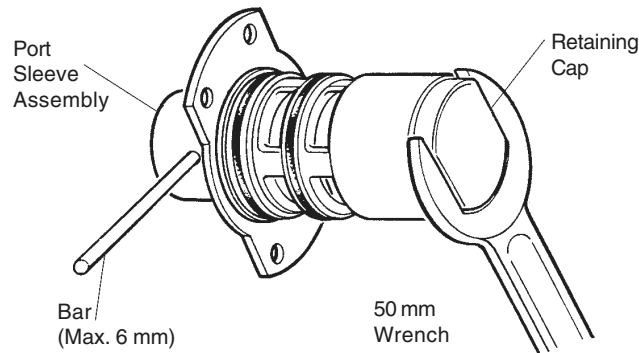
1. Isolate the water supplies to the mixing valve. Open an outlet fitting to release pressure and to assist the draining of residual water.
2. Use the 3 mm hexagonal wrench (supplied) to remove the temperature knob screw. Remove the temperature knob.
3. Loosen the two screws (3 mm) holding the cover shroud in position, turn clockwise 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 from cover.
7. Remove the thermostat assembly and actuator (inside port sleeve).

Figure 9-1.



8. Remove the four retaining screws located on the flange around the port sleeve (see Figure 9-1).
 9. Insert a bar (maximum of 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 assembly out of the body. (See Figure 10-1)
 10. Remove both port sleeve screens by releasing the folded tabs. (See Figure 10-2)
 11. To dismantle the port sleeve assembly, again insert the bar through the holes at the front of the port sleeve to hold the assembly while the retaining cap is loosened using a wrench (50 mm) across the flats. (See Figure 10-1)
- There is spring tension behind the retaining cap, so completely unscrew and remove by hand.**
12. Lift out the overload spring and return spring and carefully push out the shuttle seat and shuttle (refer to Figure 10-2).

Figure 10-1.



Cleaning/Replacement of Parts

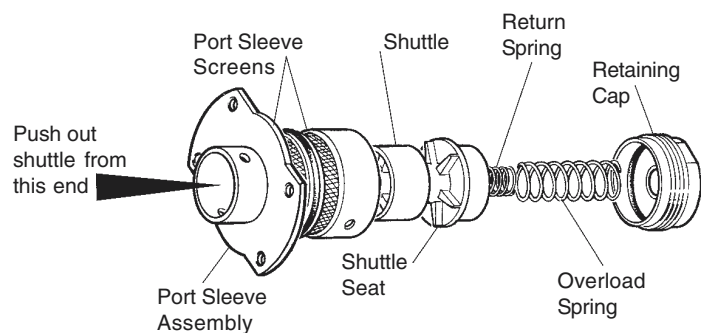
13. The interior surface of the mixing valve body must be clean before refitting any parts. Rinse the valve interior thoroughly in clean water to remove any debris.

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. Internal parts (with the exception of the Thermostat Assembly) can be cleaned using a mild proprietary inhibited scale solvent. 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.

Figure 10-2.



16. Lightly smear all seals and threads with a **silicone-only based lubricant** to assist re-assembling.
17. Inspect the thermostat assembly for signs of damage.
18. Examine the shuttle seat, the shuttle and the port sleeve for signs of damage or corrosion; renew as necessary.

Re-Assembly

19. Insert the shuttle fully into the port sleeve (wider open end) with radius centre facing inwards (refer to Figure 11-1), ensuring that the separator seal remains in place and is not damaged.

Reference Figure 10-2

20. Insert shuttle seat into the port sleeve, ensuring that the cut-outs locate into the webs in the shuttle.

21. Insert the return spring through the center of the overload spring. Insert both springs into the shuttle seat rear face.

22. Locate the retaining cap over the springs, compress and screw the cap fully into the port sleeve, ensuring that the threads are correctly engaged.

23. Replace the port sleeve screens, positioning the joint against one of the two solid sections. This will prevent debris from entering through the slot in the screen.

Reference Figure 9-1

24. Insert the port sleeve assembly into the valve body and secure in position with the four screws.

25. Install the actuator and the thermostat assembly into the shuttle assembly.

26. 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. Install new cover.

27. Fit the cover, ensuring the end of the thermostat locates correctly into the drive nut. 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.

28. Fit the pressure washer and secure in position with the circlip. Make sure that the circlip locates correctly in the groove in the temperature spindle.

29. Before fitting the hub, the temperature will need resetting; refer to **Commissioning** on page 7.

30. Fit the cover shroud and secure in position with the two screws.

31. Fit the temperature knob and secure with the screw.

Check Valve and Inlet Strainer Screen Cleaning/Replacement*

Please refer to Page 12 for Parts identification.

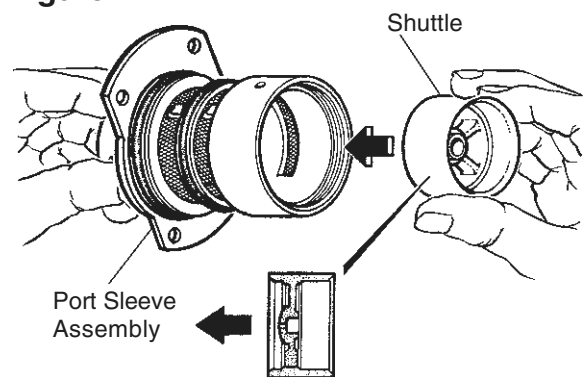
There are spring loaded check valves inserted into each inlet adapter (Part 036-523-20). These check valves are retained by a tension clip and protected by a strainer screen.

The check valves are a low maintenance design and should not require regular servicing.

If the system is correctly flushed prior to fitting the Rada 425 the strainer should not require a high level of cleaning or replacement.

The check valves are non-serviceable and if a service requirement beyond cleaning and flushing is determined then complete adapter replacement will be required. The complete check valve and strainer assembly can be supplied under part number 036-523-20.

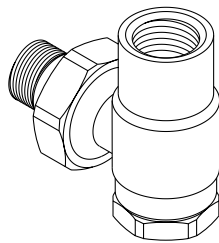
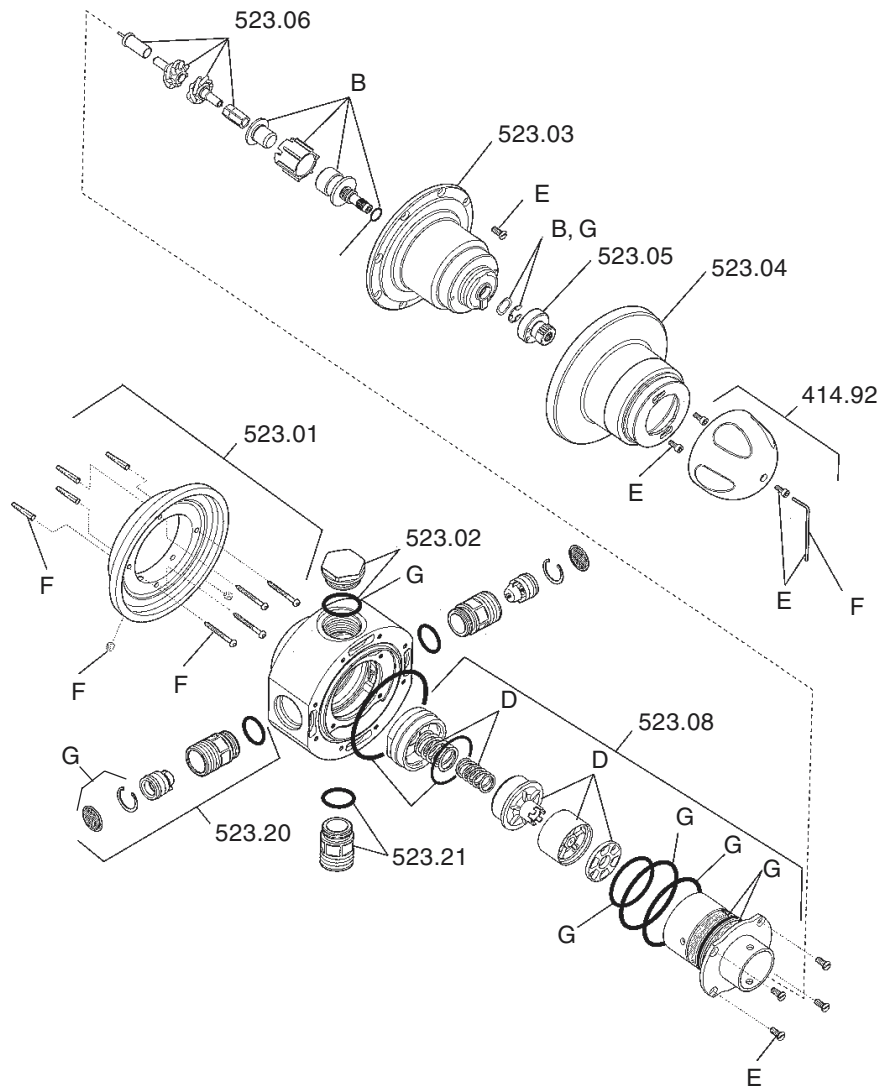
Figure 11-1.



The check valve and strainer inlet assembly cannot be serviced or replaced “in line”. The Rada 425 must be temporarily disconnected from the pipe work to access the check valve and inlet strainer assembly. The check valve and strainer assembly is an O-Seal fitting which will easily unscrew from the valve body. This procedure will be much simpler to perform if Rada 425 has been installed with flat faced union connections at the inlets as recommended in the **Installation** section of this I&M.

Rada 425 Parts List

Part Number	Description
036-414-92	Knob Pack
036-523-01	Backplate Pack
036-523-02	Drain Plug
036-523-03	Cover (Brass)
036-523-04	Cover Shroud
036-523-05	Hub Pack
036-523-06	Thermostat Pack
036-523-07	Drive Mechanism Pack - components identified 'B'
036-523-08	Port Sleeve Pack
036-523-09	Shuttle Pack - components identified 'D'
036-523-10	Cover Screw Pack - components identified 'E'
036-523-11	Fixing Screw Pack - components identified 'F'
036-523-12	Rada 425 Service Pack - components identified 'G'
036-523-20	Check Valve and Strainer Assembly Pack (1)
036-523-21	Outlet Connector (1)
036-523-22	Critical Component Pack - consists of: 036-523-06 Thermostat Pack 036-523-09 Shuttle Pack 036-523-12 Rada 425 Service Pack - components identified as 'G'
036-425-025	Stopcheck 1" Brass for Rada 425D (each)
036-425-030	Stopcheck 1" Chrome for Rada 425DC (each)
036-425-029	Stopcheck Repair Kit Rada 425D/DC



Stopcheck 036-425-025/030

Fault Diagnosis

Symptom	Cause	Action
1. Only hot or cold water from outlet.	a. Inlet supplies reversed (i.e.: hot to cold or vice-versa)	Check - Rectify. Tip: check rear of valve under polymer mounting plate for raised "H" (hot) on appropriate inlet. If sight evaluation is not possible consult factory Technical Support for additional diagnostic tips.
	b. No hot water available from hot water source.	Check-Rectify.
	c. Screens/filters occluded or inlet supply fittings plugged.	Refer to Servicing/Maintenance on Pages 8 and 9. Figure 10-2 Rectify.
	d. Refer to Symptom 4 below.	Refer to Symptom 4 below.
	e. Proportioning mechanism (shuttle) trapped against hot/cold seat.	Refer to Servicing/Maintenance on Page 9. At figure 9-1 place thumb into port sleeve and depress. Shuttle should move and spring back when pressure is relieved.
2. No flow from Mixing Valve outlet.	a. Hot or Cold inlet supply failure; Thermostat holding correct shutdown function.	Check-Rectify.
	b. Screens/filters blocked or inlet supply fittings plugged.	Refer to Servicing/Maintenance on Pages 9 and 10. Figure 10-2 Rectify.
3. Mixed water temperature at TMV outlet fluctuates and does not respond to adjustment.	a. Thermostat not operating correctly.	Refer to Servicing/Maintenance on Page 9 - Rectify.
	b. Mixing Valve operating below minimum required flow rate.	Check that at least 2 GPM is flowing through valve.
	c. Static inlet supply pressures beyond valves capability to correct.	Check-Rectify
	d. Inlet supply pressures fluctuating beyond valves capability to correct.	Check-Rectify
	e. Hot water supply temperature fluctuating beyond valves capability to correct.	Check by carefully sensing inlet hot supply pipe work - rectify.
	f. Partially occluded screens/filters or partially blocked inlet fittings.	Refer to Servicing/Maintenance on Pages 9 and 10. Figure 10-2 Rectify.
4. Hot water in cold supply and vice-versa.	a. Indicates non-functioning check valve(s)	Diagnose by turning off mixed water outlet flow and check to see if inlet hot pipe work becomes cold and vice-versa.
5. Mixed water temperature too high.	a. Mixing Valve has not been commissioned correctly and set too high.	Refer to Commissioning on Page 7 - Rectify
	b. Mixing Valve has not been commissioned correctly and was set when the hot supply temperature was too low.	Refer to Commissioning on Page 7 - Rectify
	c. Hot water is migrating into cold supply.	See Item 4 above.
	d. Thermostat not operating correctly.	Refer to Servicing/Maintenance on Page 9 - Rectify.
6. Mixed water temperature too low.	a. Mixing Valve has not been commissioned correctly and is set too low.	Refer to Commissioning on Page 7 - Rectify
	b. Hot water heater is not keeping up with demand.	Check-Rectify
7. Mixed water flow rate is reduced.	a. Partially occluded inlet screens/filters or partially blocked inlet fittings.	Refer to Servicing/Maintenance on Page 9 - Rectify.
	b. Inlet supply pressure has fallen.	Check-Rectify
	c. Accumulated pressure losses within the system are too high.	Refer to a trained and appropriate authority for system sizing assistance.
8. Water leaking from valve body.	a. Seals worn or damaged.	Obtain Seal Pack (036-523-12) and renew all seals. Note: If leak from around temperature spindle persists renew Drive Mechanism Pack (036-523-07).

Limited Warranty and Remedy

Armstrong-Lynnwood, Inc. ("Armstrong") warrants to the original user of those products supplied by it and used in the service and in the manner for which they are intended, that such products shall be free from defects in material and workmanship for a period of one (1) year from the date of installation, but not longer than 15 months from the date of shipment from the factory. This warranty does not extend to any product that has been subject to misuse, neglect or alteration after shipment from the Armstrong factory. Except as may be expressly provided in a written agreement between Armstrong and the user, which is signed by both parties, Armstrong **DOES NOT MAKE ANY OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

The sole and exclusive remedy with respect to the above limited warranty or with respect to any other claim relating to the products or to defects or any condition or use of the products supplied by Armstrong, however caused, and whether such claim is based upon warranty, contract, negligence, strict liability, or any other basis or theory, is limited to Armstrong's repair or replacement of the part or product, excluding any labor or any other cost to remove or install said part or product, or at Armstrong's option, to repayment of the purchase price. As a condition of enforcing any rights or remedies relating to Armstrong products, notice of any warranty or other claim relating to the products must be given in writing to Armstrong: (i) within 30 days of last day of the applicable warranty period, or (ii) within 30 days of the date of the manifestation of the condition or occurrence giving rise to the claim, whichever is earlier. **IN NO EVENT SHALL ARMSTRONG BE LIABLE FOR SPECIAL, DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOSS OF USE OR PROFITS OR INTERRUPTION OF BUSINESS.** The Limited Warranty and Remedy terms herein apply notwithstanding any contrary terms in any purchase order or form submitted or issued by any user, purchaser, or third party and all such contrary terms shall be deemed rejected by Armstrong.