



DynaFluid
2000[®]

**INSTALLATION/
OPERATION
MANUAL
MV-3000
Thermostatic
Hot and Cold Water
Mixing Valve**



GENERAL

GENERAL INSTRUCTIONS

These suggestions are designed to aid you in the installation of MV-3000 Thermostatic Hot & Cold Water Mixing Valves. Please read them carefully for proper installation. This will ensure your Dynafluid 2000 products will give long and dependable service, with minimum maintenance.

Use this instruction folder for installation and ordering parts from your dealer.

WARRANTY

All T&S products are warranted to be free from defects in material and workmanship for a period of one (1) year from the date of purchase. Liability is limited hereunder to factory repair and/or replacement of material found to be defective, after examination by the factory, during the warranty period. No claims for labor, shipping costs or consequential damages will be accepted or honored. The warranty does not cover damage caused by accidents, abuse or faulty installation.

All returns of merchandise which are claimed defective under this warranty must be sent to: T&S Brass and Bronze Works, Inc., 2 Saddleback Cove, P.O. Box 1088, Travelers Rest, SC 29690, clearly marked to the attention of the Warranty Repair Department. Shipping charges, both ways, shall be paid by the customer.

INSTALLATION/MAINTENANCE INSTRUCTIONS



GENERAL:

ALWAYS

- Install the valve in compliance with national and/or local water regulations and codes.
- Insure the valve is installed and maintained by qualified personnel.
- Use the valve within the specified conditions.

NEVER

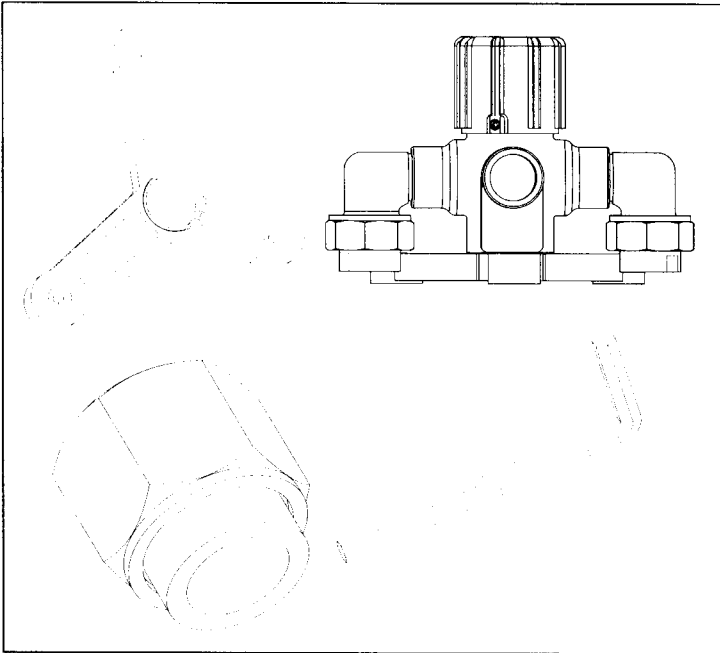
- Use the product with steam.
- Use this valve for ablutionary purposes e.g. showering, hand-washing.
- Use this valve with ancillary fittings which have not been recommended by T&S Brass or its representatives.





BEFORE INSTALLATION

Parts to be assembled for the MV-3000



Description

The MV-3000 is a point of use thermostatic mixing valve designed to provide hot or warm water instantaneously and economically by mixing high temperature hot water with cold water.

The temperature of the outlet hot water can be adjusted to suit particular application requirements. For example, hotter water can be obtained by turning the control knob counterclockwise. The integral thermostat ensures that the selected temperature remains constant, even in the event of fluctuating supply conditions.

Verify Operating Conditions:

For optimum performance, hot and cold water supply pressures should be equal.

Minimum Operating Pressure	8 PSI
Maximum Operating Pressure	90 PSI
Maximum Static Pressure	150 PSI

Pressure Loss Ratio is the ratio of hot water to cold water after the backpressure caused by outlet restrictions (such as water guns and hoses) has been deducted equally from the hot and cold water inlet pressures. Maximum pressure loss ratio is 10:1 in favor of either supply.

Example:

Cold water pressure (A)	60 PSI
Hot water pressure (B)	45 PSI
Back pressure (C)	30 PSI

$$\begin{aligned}
 \text{Pressure Loss Ratio} &= \frac{A - C}{B - C} \\
 &= \frac{60 - 30}{45 - 30} \\
 &= \frac{30}{15} \\
 &= 2:1
 \end{aligned}$$

The valve will operate satisfactorily under these conditions.

Example:

Cold water pressure (A)	140 PSI
Hot water pressure (B)	40 PSI
Back Pressure (C)	30 PSI

$$\begin{aligned}
 \text{Pressure Loss Ratio} &= \frac{A - C}{B - C} \\
 &= \frac{140 - 30}{40 - 30} \\
 &= \frac{110}{10} \\
 &= 11:1
 \end{aligned}$$

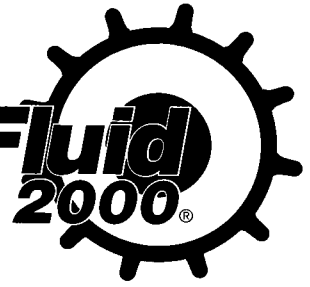
The valve may not operate satisfactorily under these conditions. The Pressure Loss Ratio exceeds 10:1.

Do not cause excessive restrictions at the outlet, e.g., waterguns with small orifices or very long hoses.



BEFORE INSTALLATION

DynaFluid 2000®



Temperature Range:

The temperature control knob enables the user to select any temperature from full cold to the set maximum. An integral temperature stop fitted at the factory limits the maximum temperature to 140°F. This can be adjusted on site to a higher temperature at the time of installation. See page 5 for instructions. The inlet hot water temperature must be at least 20°F higher than the desired outlet temperature. The optimum temperature control range for accurate control is between 105°F and 160°F.

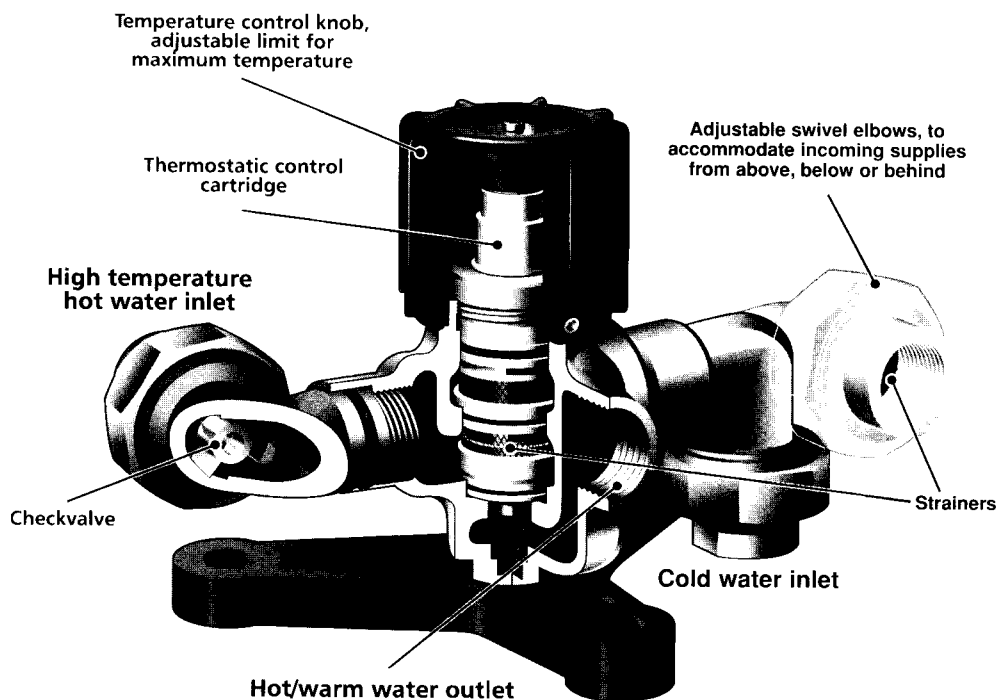
The thermostatic sensor compensates for fluctuations in the pressures or temperatures of the incoming hot and cold water supplies. Under normal conditions the set temperature will be held to within $\pm 5^\circ\text{F}$. In the event of failure of either inlet supply, the valve will shut down to a trickle within 5 seconds.

Plumbing Connections:

Inlet and outlet connections are $\frac{3}{4}$ " NPT. Inlets incorporate swivel elbows to facilitate incoming supplies from above, below or behind the valve. The inlet elbows have integral strainers and check valves.

Flow Control:

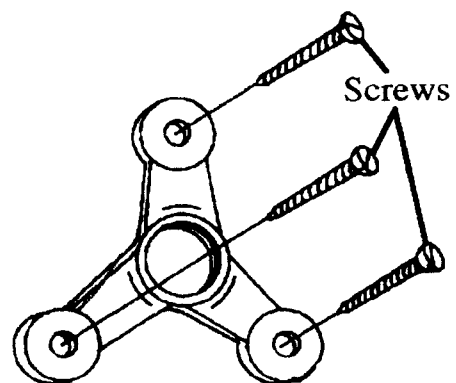
On/off control of the mixed water should be on the outlet of the mixing valve. A shut-off valve would typically provide this or trigger operated water gun.





INSTALLATION

- The MV-3000 can be installed in any position. Ensure that hot water and cold water connections are made to the appropriately marked inlets. Installation alignment is hot water on the left, cold water on the right. Supply pipework should be at least $\frac{3}{4}$ " in diameter.
- Select a location for the mixing valve that is accessible for routine maintenance.
- Fit isolation valves near each inlet of the MV-3000 to allow shut-off of the water supplies during installation and maintenance.
- Install inlet and outlet pipework to suit the orientation of the valve. The inlet elbows rotate 360° to allow supply pipes to come from above, below or behind the valve. Flat-faced unions on each elbow facilitate connection to the incoming pipework, and allow the valve to be removed easily for off-site maintenance work.
- Flush the supply pipework thoroughly to remove debris immediately before the installation of the MV-3000 valve.
- The mixing valve is supplied with a mounting bracket with three fixing points. Once the valve has been correctly aligned with the supply pipework, use the mounting bracket to secure the valve to a wall surface or mounting plate.
- Determine where the valve will be installed. Screw the valve body snugly into the mounting bracket. Align hot water side left, cold water side right, and mark where the three holes of the bracket are on the wall (see illustration.)
- Remove the valve body from the bracket. Drill holes in the wall and insert shields. Place the bracket in position and install it with the three screws provided. Replace the valve onto the bracket.
- Connect the pipework to the valve and tighten the connection union nuts, ensuring that the seal washer/strainers are in position between the elbows and the incoming pipework.
- Turn on water supplies and check for leaks.
- Turn the outlet on and allow water to flow for several minutes. Measure the hot water temperature using a thermometer on the outlet. If the temperature needs to be adjusted, turn the control knob counter-clockwise to increase the temperature, clockwise to decrease the temperature.



INSTALLATION



The control knob is fitted with a Maximum Temperature Stop (factory pre-set at 140°F) to prevent excessive temperatures being selected. It is possible to override this stop and obtain higher temperatures (up to 160°F maximum.)

- Loosen the control knob positioning screw until it is clear of the lug on the valve body. Turn the control knob counter-clockwise until the desired maximum temperature is obtained.

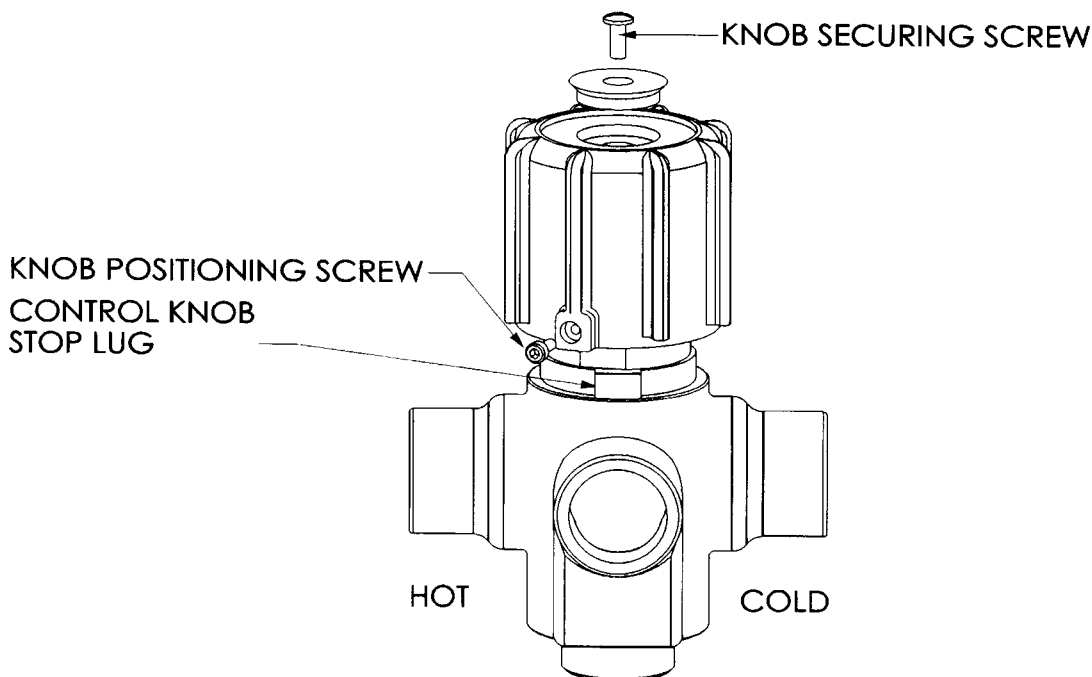
The setting of the Maximum Temperature Stop can be adjusted to a higher or lower temperature as required.

- Lift off the control knob bezel using a flat head screwdriver. Remove the knob screw and pull the knob away from the valve.
- Select the required maximum temperature by turning the spindle on the control cartridge (counter-clockwise for hotter, clockwise for cooler.)

- Reset the control knob onto the spindle, ensuring that the knob positioning screw is against the lug on the valve body and preventing further counter-clockwise rotation.

The setting of the minimum temperature can be adjusted to a lower temperature as required.

- Lift off the control knob bezel using a flat head screwdriver. Remove the knob screw and pull the knob away from the valve.
- Select the required minimum temperature by turning the spindle clockwise. DO NOT attempt to turn any further when the spindle becomes finger tight. This will damage the internal mechanism.
- Reset the control knob onto the spindle, ensuring the lug on the knob is against the lug on the valve body and preventing further clockwise rotation.





MAINTENANCE

MAINTENANCE:

Regular Maintenance Program

Regular cleaning and maintenance of the MV-3000 mixing valve is essential to prevent the build up of pipeline debris and limescale on critical moving parts. We recommend that the valve be inspected and routinely maintained at least once every six months. In particularly hard water areas the frequency should be increased to once every two or three months.

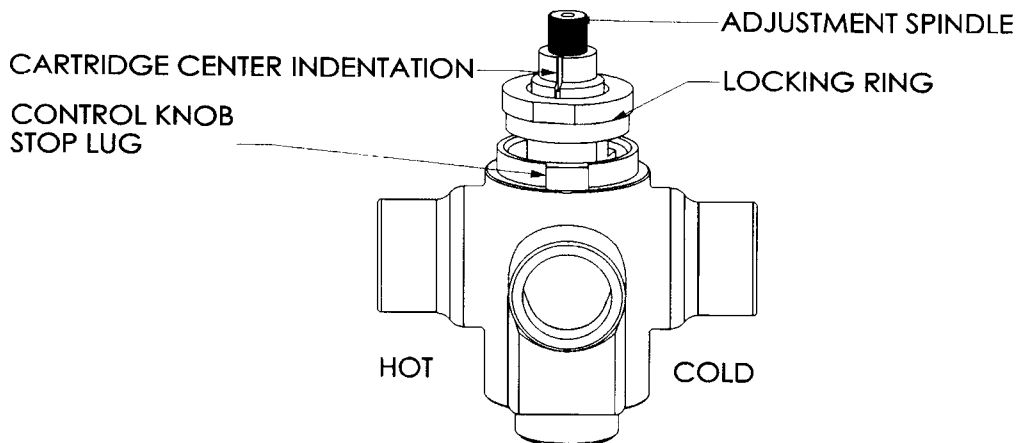
Pre-Maintenance Safety Procedure

- Before carrying out any maintenance procedures, isolate the incoming services by closing the hot and cold water inlet valves.
- Discharge the contents of the valve by opening the outlet until the water flow stops. Wait for the valve to cool down.

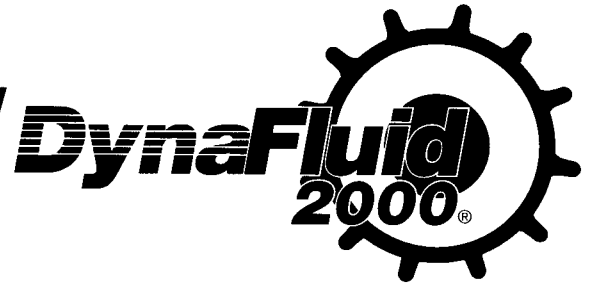
Maintenance Procedure

- Maintenance can be carried out on site using standard plumbing tools.

- Alternately loosen the two inlet union joints and the outlet fittings.
- Remove the mixing valve from its fittings and move it to a maintenance area.
- Lift off the control knob bezel using a flat head screwdriver. Remove the knob screw and pull the knob away from the valve.
- Release the locking ring and pull the thermostatic cartridge from the valve body.
- Clean the cartridge with warm water, taking care to clear the two strainer bands. If necessary remove limescale with descalent. If the cartridge is not working replace it with a new cartridge.
- Reset the cartridge into the valve body.
- The cartridge center indentation near the adjustment spindle must be in line with the edge of the lug on the valve body which is nearest to the hot water inlet (see diagram below.) The line on the adjustment spindle should be aligned with the indentation.



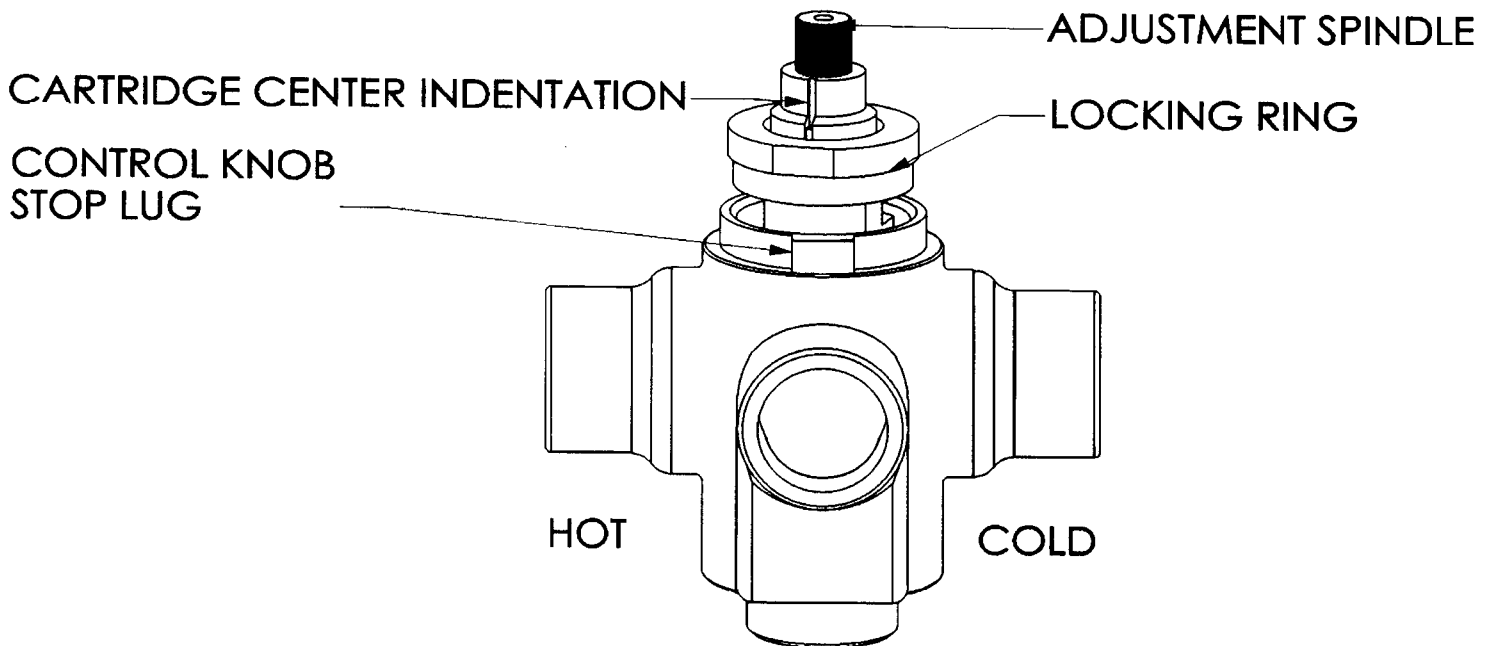
MAINTENANCE

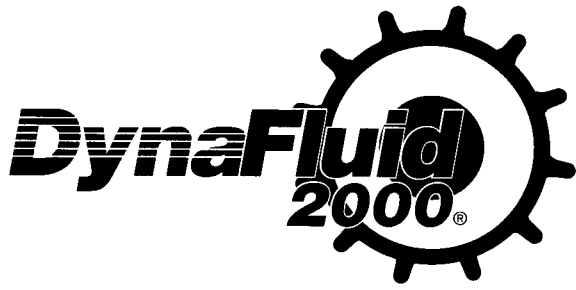


- Replace the locking ring and tighten.
- Loosen the union nuts and swivel the inlet elbows to an accessible position. Remove the seal washer/strainer and check valves from each inlet.
- Clean parts with warm water, paying particular care to clean the strainer elements. If necessary, remove limescale with descalent. Any damaged parts should be replaced with new replacement parts (see page 9.)
- Replace the check valves into the elbows ensuring they are facing in the right direction. The

stem of the check valve must be pointing toward the valve so that the face of the check valve can be pushed in the direction of the inlet water flow.

- Place the seal washer/strainers in the union nuts and reconnect the elbows to the pipework. Tighten the union nuts
- Turn on the water supplies and check for leaks. It may be necessary to reset the outlet water temperature. See instructions on page 5.



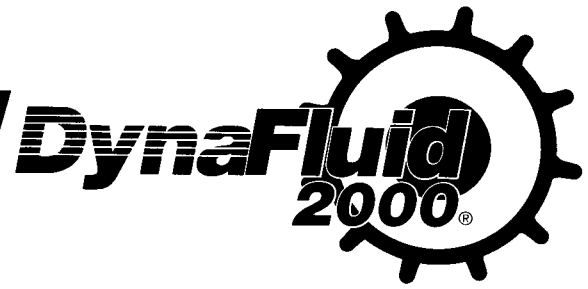


TROUBLESHOOTING

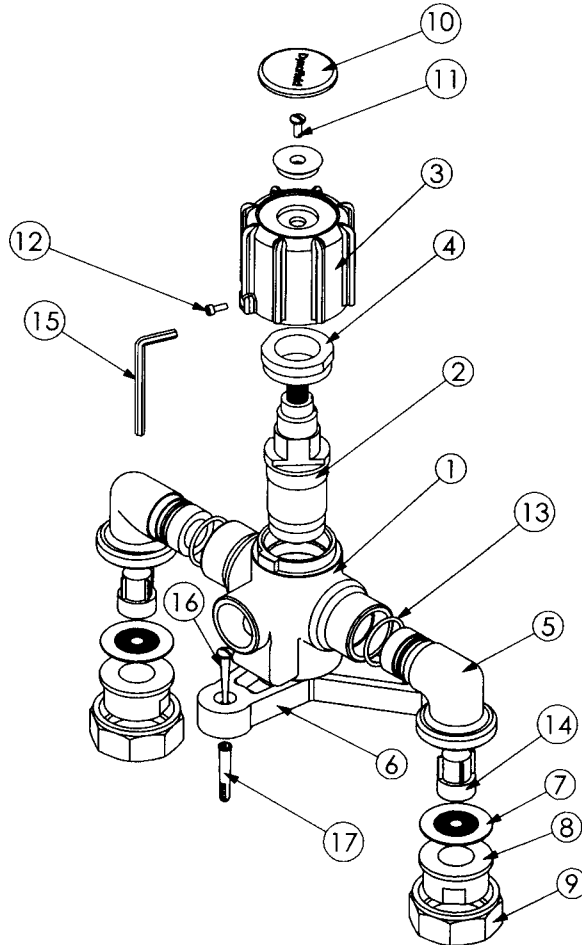
TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTIVE ACTION
Water leaking from valve and/or joints	Seal Damage Connections not water tight	Replace the seal washer/strainer and elbow O-rings. Check inlet and outlet connections, ensuring unions are correctly threaded and seals are in place.
No flow from valve	Strainers and/or fittings blocked Hot or cold water supply failure	Clean strainers around the temperature control cartridge and in the inlet elbows. Remove obstructions from inlet and outlet fittings. Check incoming supply pipework for blockages, bursts, major leaks, etc.
Fluctuating flow rates and/or temperatures	Operating conditions have changed or are outside valves limits Thermostat damaged or strained	Check inlet piping for blockages and clear. Ensure inlet pressures are normally equal and within limits. Ensure temperature differentials are sufficient. Replace temperature control cartridge. Check that operating conditions are within limits.
Flow rate too high	Supply pressure too high	Reduce supply pressures using inlet pressure regulators, or increase restriction on the outlet (e.g., select water gun with smaller orifice.)
Flow rate too low	Supply pressure too low	Increase supply pressures, or reduce restriction to the outlet (e.g., use shorter hose, select water gun with larger orifice.)

REPLACEMENT PARTS



REPLACEMENT PARTS



No.	Part No.	Description
1	089-013242-45	Valve Body
2	089-013181-45	Thermostatic Cartridge
3	089-013182-45	Control Knob
4	089-013243-45	Lock Ring
5	089-013183-45	90 Degree Elbow
6	089-013184-45	Mounting Bracket
7	089-013185-45	Sealing Washer & Screen
8	089-013186-45	Union Tailpiece
9	089-013187-45	Union Nut
10	089-013188-45	Nameplate
11	089-013189-45	Control Knob Screw
12	089-013190-45	Stop Screw
13	089-013191-45	Elbow O-Ring
14	089-013192-45	Check Valve
15	089-013244-45	Allen Wrench
16	089-013245-45	Mounting Bracket Wood Screw
17	089-013246-45	Mounting Bracket Screw Shield