

FIGURE 1: LOW TEMP RECIRCULATION DIAGRAM A  
SEPARATE HIGH TEMP RECIRCULATION

## TROUBLE SHOOTING GUIDE

### ANSWER

#### PROBLEM / CAUSE

1. Fluctuating or variable hot water temperature.

A. Large demand for hot water.

Large demands for hot water will cause the mixing valve to operate incorrectly. The valve is not designed to compensate for large demands for hot water. The water temperature below the heating source can exhaust the water. The temperature will drop below the setting of the valve.

If the pressure differential between the hot and the cold water supply is too low, the valve will not be able to mix the water. The pressure may be needed on the cold water line to make up for the head loss in the heating source.

B. Unbalanced pressures

Integral check valves may need replacement.

2. Hot water backing up in cold water line.

A. City water pressure drops causing hot water pressure to back up into cold water line. The pressure differential may be pronounced by integral check valves.

3. Water temperature will not adjust to the desired temperature.

A. Unbalanced pressures

If the pressure differential between the hot and the cold water supply is too low, the valve will not be able to mix the water. The pressure may be needed on the cold water line to make up for the head loss in the heating source.

B. Heating source in sub-optimal

The heating source may not produce enough hot water to maintain the desired temperature.

4. Failure of thermostat

A. Thermostat is not set to excessively high water temperatures.

The thermostat heating source may be set to high heating temperatures to exceed 120° F. Reduce water supply temp to 120° F. The thermostat and integral shutters periodically removing the deposits will help prolong it's life.

B. Building of mineral deposits due to corrosive water conditions

Electrically ground the piping system or install dielectric unions.

C. Electrolysis

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4.

FRONT  
(OUTSIDE ONCE FOLDED)

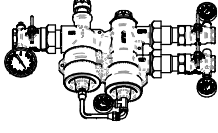
Ø 25-HOLE THRU TYP

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## MODEL MVHL (34HL SERIES) AUTOMATIC TEMPERATURE CONTROLLER US Patent 6,929,188

The Apollo MVHL is a precision engineered thermostatic mixing valve capable of maintaining stable, consistent temperature control of water at low and high flows to within ± 1°F. The MVHL will provide consistent temperature control at flow rates as high as 60 GPM and as low as 1.5 GPM. The MVHL is designed for use with recirculation pumps that offer a backflow prevention function without a need for recirculation pumps that other systems require in order to achieve comparable performance. Integral strainers and check valves are provided for greater reliability and performance. This valve is factory tested at the plant to deliver peak consistency and performance. Additional information:



Date	Maintenance Record				Repair or Clean
	Inlet PSI C	Low Flow H	High Flow Temp.	Knob Setting	

**▲ CALIFORNIA PROP 65: WARNING: Cancer and Reproductive Harm -**  
www.P65Warnings.ca.gov.

In accordance with the U.S. Safe Drinking Water Act (SDWA), it is illegal to use this valve in the United States or produce water services (water intended for human consumption).

1.

188200 REV G

## MAINTENANCE / INSPECTION

### SETTING THE MAX TEMPERATURE LIMIT STOP

The Apollo MVHL comes with maximum temperature limit stops. If use of the limit stops is desired, the limit stops must be set.

1. Turn the cold water supply on (turn it on first to avoid damage to the thermostatic element). Next, turn the hot water supply on.
2. Adjust the low rate set with the differential pressure (read on the pressure gauge) adjustment A and position B on the diagram is approximately 5 psi.
3. Turn the water run until the water temperature is approximately 100°F. Turn the yellow knob marked "LOW" on the mixed water outlet to check the water temperature.
4. Turn the water run until the pressure differential at the pressure gauges at point A and point B (shown on the diagram) is approximately 5 psi.
5. Remove the yellow adjusting knob marked "HIGH" on the valve. Adjust the mixed water temperature to max desired (which provides the maximum temperature the yellow knob can adjust to).
6. Once the mixed water temperature stabilizes at the max desired temperature, tighten the set screw using the allen wrench to provide the temperature the yellow knob can adjust to.
7. Remove the water and yellow temperature adjustment knob from the side of the valve marked "LOW" using a hex wrench (the hex wrench is included in the kit).
8. Tighten the top of the limit stop (final brass fix release) by hand or with a wrench until it bottoms out on the adjustment stem. It only needs to touch the top of the adjustment stem. **DO NOT OVERTIGHTEN THE STOP LIMIT STOP IN PLACE. DO NOT OVERTIGHTEN THE LOCKING RETAINER.**
9. Limit stop in place. **DO NOT OVERTIGHTEN THE LOCKING RETAINER.**
10. Turn the water run until the water temperature is approximately 110°F (the water temperature will be slightly above the limit stop in place).
11. Once assembled the low water restrictor and knob.
12. Once assembled the hot water restrictor and knob.

### ADJUSTING THE DESIRED MIXED WATER OUTLET TEMP

- The Apollo MVHL is designed to provide safe, reliable hot water to multiple fixtures without the need for a separate hot water tank. The valve is designed to provide consistent performance with these instructions and local plumbing codes. The desired mixed water outlet temperature of the valve can be adjusted as follows:
- 1) Adjust the low rate of the valve until the differential pressure as on the pressure gauges at position A and position B on the diagram is approximately 5 psi.
  - 2) Set the desired mixed water outlet temperature by adjusting the yellow knob marked "LOW" on the valve. Press the yellow knob marked "LOW" on the valve.
  - 3) Read the outlet temperature on the gauge downstream of the mixed water outlet (marked "T" on the diagram).
  - 4) Let the water run until the outlet temperature is stable at the desired value.
  - 5) Turn the water run until the pressure differential at the pressure gauges at point A and point B is approximately 15psi by turning down the pressure gauges or using the throttle port.
  - 6) Set the desired mix. water temperature by adjusting the yellow knob marked "HIGH" on the valve, using temperature gauge marked "T" on the diagram.

### INSPECTION / CLEANING

1. Valve should be inspected/cleaned periodically to ensure optimum performance.
2. Close the hot water inlet shut-off valve, the cold water inlet shut-off valve, and the mixed water outlet shut-off valve in order to completely isolate the valve.
3. Remove the cap and clean the pressure gauges and the threads of each check valve assembly. Remove both check valves and assemblies and both screens. (See Figure 2)
4. Clean the check valve assemblies with fresh water only.
5. Remove bypass line with adjustable wrench being careful not to damage the line.
6. **INNER SPRINGS ARE BEING COMPRESSED BY THE RETAINERS - THE INNER SPRINGS ARE BEING COMPRESSED BY THE RETAINERS.**
7. Clean the piston and the mixing chambers with water and a clean towel.
8. Clean the piston and the mixing chamber with water and a clean towel.
9. Reassemble the valve by turning "T" (pressure gauges/piston/brass) and re-assemble the piston, springs and retainers.
10. Ensure the cold shut-off valve is opened first to avoid thermostatic element damage.

2.

BACK  
(INSIDE ONCE FOLDED)

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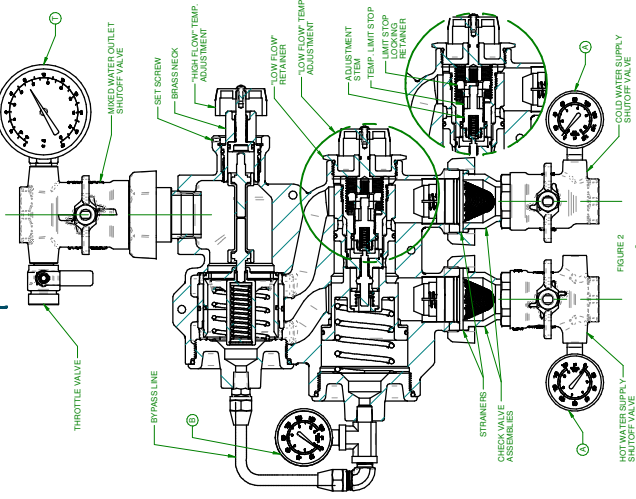


FIGURE 2

3.