

Technical Instructions

Description ■

PowerStation™ is a complete, fully assembled water tempering system, designed to provide safe water throughout commercial and institutional facilities. PowerStation™ features the HydroGuard® XP MM430 or LFMM430 and SH1430 or LFSH1430 master tempering series valves which utilize paraffin-based actuation technology to sense and adjust outlet temperature. Each PowerStation™ is mounted on heavy-duty, welded struts and factory tested as a complete system. Each PowerStation™ includes an engineer specified circulator, GFCI outlet, combination temperature/pressure gauges and Powers' triple-duty checkstops. Optional equipment includes an Aquastat.



Advanced Thermal Activation

Specifications ■

- Maximum Operating Pressure 125psi (861 kPa)
- Maximum Hot Water Temperature 200°F (93°C)
- Minimum Hot Water Supply Temp.* 5°F (3°C) above set point
- Hot Water Inlet Temperature Range 120 - 180°F (49 - 82°C)
- Cold Water Inlet Temperature Range 40 - 80°F (4 - 27°C)
- Minimum Flow** 0.5 gpm (1.89 lpm)
- Temperature Adjustment Range *** 90 - 160°F (32 - 71°C)
- Listing/Compliance (Valves only) ASSE 1017, CSA B125

* With Equal Pressure

** Minimum flow when Hi/Lo is installed at or near hot water source recirculating tempered water with a properly sized continuously operating recirculating pump.

*** Note: Low limit cannot be less than the cold water temperature. For best operation, hot water should be at least 5°F (3°C) above desired set point.



WARNING: TO ENSURE THE ACCURATE AND RELIABLE OPERATION OF THIS PRODUCT, IT IS ESSENTIAL TO:

- Properly size each valve based on the individual application.
- Properly design the recirculation system to minimize pressure and temperature variations.
- Conduct an annual maintenance program to ensure proper operation of all critical components.

THIS VALVE MUST BE USED IN CONJUNCTION WITH TEMPERATURE ACTUATED POINT-OF-USE DEVICES THAT COMPLY WITH ASSE 1016, 1069, OR 1070. FAILURE TO COMPLY WITH PROPER INSTALLATION INSTRUCTIONS COULD CONTRIBUTE TO VALVE FAILURE, RESULTING IN INJURY OR DEATH.

Capacity ■

Flow Capacity at 50-50 Mixed Ratio								
		Pressure Drop Across Valve						
Model	Min. Flow to ASSE 1017	Cv	5psi (34 kPa)	10psi (69 kPa)	20psi (138 kPa)	30psi (207 kPa)	45psi (310 kPa)	60psi (414 kPa)
SH1434TV and LFSH1434TV	1 gpm 4 lpm	62.00	139 gpm 526 lpm	196 gpm 742 lpm	277 gpm 1049 lpm	340 gpm 1287 lpm	416 gpm 1575 lpm	480 gpm 1817 lpm

Prior to Installation ■

1. Flush all piping thoroughly before installing.
2. Check for leaks.

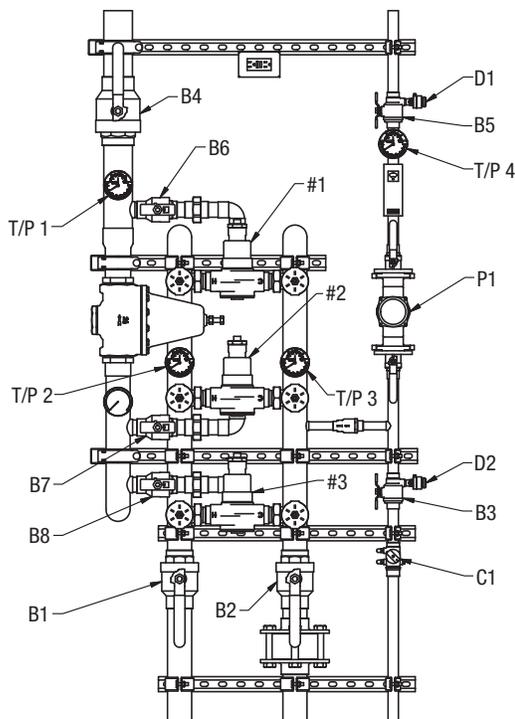
Set Up Procedure ■

1434TV and LF1434TV

NOTE: Perform all 15 steps before moving on to the next section.

Steps 1-15 are to set temperature of thermostatic valves and to set differential across the PRV

1. Make sure all ball valves are open and leave pump off.
2. Open up enough fixtures to flow a minimum of 15 gpm.
3. Before continuing on to the next step, make sure the readings on inlet gauges T/P2 and T/P3 are steady.
4. Close the ball valve B6 and B7.
5. Adjust the temperature of mixing valve #3.
Refer to IS-P-MM430
6. Open the ball valve B7, and close the ball valve B8
7. Adjust the temperature of mixing valve #2. Refer to IS-P-MM430.
8. Set the PRV as follows for a 15psi differential
 - a) Loosen the locknut at the top of the PRV. This must be all the way out or you will be limiting the range of adjustment.
 - b) Adjust the PRV so the outlet pressure gauge (top) reads 15psi less than the supply pressure gauge (bottom). Turning the adjustment screw counterclockwise will increase the differential across the PRV (allowing the PRV to open later). After adjusting locknut turn fully clockwise.
9. Close the ball valve B7 and open the ball valve B6.
10. Adjust the temperature of mixing valve #1.
Refer to IS-P-SH1430.
11. Open the ball valves at the discharge of all three valves B6, B7 and B8 .
12. Open more fixtures to increase the total flow through valve system and verify outlet temperature is holding steady at set point, watch gauge T/P1.



13. Begin to close fixtures, leave enough open to have a flow of 2 gpm and verify outlet temperature is holding steady at set point, watch gauge T/P1.
14. Once valve system is operating properly, close all fixtures.
15. Skip to the type of recirculation you will be using below.

Aquastat ■

Adjust Aquastat with all fixtures downstream of the mixing valve closed.

1. Apply power to pump P1.
2. Set the Aquastat high set point temperature. As a recommendation, start with the high set point 5°F degrees below the mixing valve set point.
3. With the recirculation loop temperature at its maximum, the pump will remain off until the loop temperature drops below the high set point.
4. Wait until the recirculation line cools down, and verify the pump turns on at this point.
5. Verify recirculation line heats back up and turns pump off at the maximum setting from step 2.
6. The system is now set.

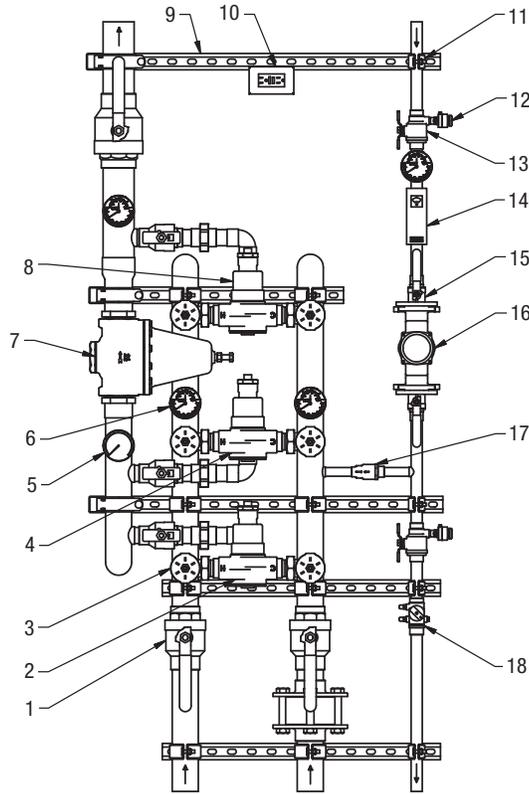
Continuous Recirculation ■

Use of a Circuit Setter to balance a closed loop.

1. Apply power to pump P1
2. Open C1 approximately 10%.
3. Allow time for recirculated water to travel around the loop.
4. If the temperature at gauge T/P4 begins falling too far below the set point of the mixing valve, you will need to open C1 another 10% and allow more water to return to the water heater.
5. If the temperature at gauge T/P4 begins to rise, you will need to close C1 5% and allow more water to flow in the cold inlet of mixing valve.
6. Repeat steps 4 and 5 until the temperature at T/P4 is stable (less than the set point of the mixing valve).
7. The system is now set.

NOTE: For any problem, refer to Troubleshooting section of the document or contact Powers' Technical Support Department at 1.800.669.5430 or info@powerscontrols.com.

Legends ■



Item Number	Item Description	Options	Quantity Required
1	Ball Valve	Std	4
2	Thermostatic Valve	See Order Code	1
3	Triple Duty Check Stop	Std	6
4	Thermostatic Valve	See Order Code	1
5	Pressure Gauges	Std	2
6	Temperature/Pressure Gauge	Std	4
7	Pressure Reducing Valve	Std	1
8	Thermostatic Valve	See Order Code	1
9	Welded Mounting Struts	Std	Typical
10	GFCI Outlet	Std	1
11	Pipe Straps	Std	Typical
12	Vacuum Breaker	Std	2
13	Ball Valve w/Drain	Std	2
14	Aquastat	Optional	1
15	Isolation Flange	Std	2
16	Circulator	Application Specific	1
17	Check Valve	Std	2
18	Circuit Setter	Optional	1

Troubleshooting ■

What to look for if:

- **Recirculation temperature rises when there is no demand on the system:**
 1. Refer to Aquastat or Continuous Recirculation Instructions
- **Outlet temperature is too hot with low flow (#1):**
 1. The thermal actuator of the valve is not working properly. Test and replace accordingly to the appropriate installation instructions, IS-P-SH1430 enclosed.
- **Outlet temperature is too hot with a high flow (#2 or #3):**
 1. The thermal actuator of the valve is not working properly. Test and replace accordingly, IS-P-MM430.
- **Outlet temperature too low with low or high flow:**
 1. The hot water temperature is too low. You must have a supply temperature of at least 5°F (3°C) higher than the set temperature. Readjust the hot water supply.
 2. The checkstops on the hot side of the valve are not fully open, or may be stuck due to liming. Open and clean checkstops.
 3. The temperature has not been set properly on the low and/or high valve. Refer to set up procedure and reset the valves.
- **Outlet flow drops off:**
 1. The checkstops are not fully open or stuck. Open and clean checkstops.
 2. The system pressure varies by more than 50% of the inlet supply pressure.
- **Outlet temperature cycles between hot and cold:**
 1. The system pressure varies by more than 50% of the inlet supply pressure.
 2. The valve system may be oversized for application. Check system sizing to verify.
 3. Recirculation may not be balanced properly. Refer to Aquastat or Continuous Recirculation instructions.

Preventative Maintenance ■

Thermostatic water mixing valves are control devices which must be cleaned and maintained on a regular basis.

1. Before servicing checkstops or piping, turn off the water upstream. At least every twelve (12) months, open up the checkstops and check for the free movement of the poppet.
2. Before servicing the valve, turn off the water supply upstream or close the checkstops. To close the checkstops, turn the adjusting screw clockwise.
3. When opening checkstops after servicing, do not over adjust; turn adjusting screw fully counterclockwise and then 1/2 turn clockwise.
4. Every three (3) months, check the maximum temperature adjustments.
5. Every twelve (12) months, remove the valve bonnets and check the internal components for freedom of movement.

CAUTION:

Any changes in supply condition could effect the outlet water temperature. Check and adjust the valves accordingly to prevent injury to the users.

Part List For Valve ■

See enclosed IS-P-MM430 and IS-P-SH1430.

CALIFORNIA PROPOSITION 65 WARNING

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. (California law requires this warning to be given to customers in the State of California.)

For more information: www.watts.com/prop65



NOTE: AFTER COMPLETING REPAIRS, CHECK DISCHARGE TEMPERATURE. RESET IF NECESSARY.

WARNING: FAILURE TO PERFORM THIS OPERATION COULD RESULT IN UNSAFE DISCHARGE TEMPERATURE, WHICH MAY CAUSE INJURY OR DEATH.

Warranty ■

The Seller warrants that the equipment manufactured by it and covered by this order or contract is free from defects in material and workmanship and, without charge, equipment found to be defective in material or workmanship will be repaired, or at Seller's option replaced F.O.B. original point of shipment, if written notice of failure is received by Seller within one (1) year after date of shipment (unless specifically noted elsewhere), provided said equipment has been properly installed, operated in accordance with the Seller's instructions, and provided such defects are not due to abuse or decomposition by chemical or galvanic action. THIS EXPRESS WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, GUARANTEES, OR REPRESENTATIONS, EXPRESS OR IMPLIED. THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. The Seller assumes no responsibility for repairs made on the Seller's equipment unless done by the Seller's authorized personnel, or by written authority from the Seller. The Seller makes no guarantee with respect to material not manufactured by it.

POWERS™

A Watts Water Technologies Company

**ISO 9001-2000
CERTIFIED**