

HydroGuard® XP SH1434 & LFSH1434 Triple, Quad & Six Valve Hi/Lo Supply Fixture

Technical Instructions

Description ■

Powers' HydroGuard® XP Series SH1434 & LFSH1434 Triple, Quad and Six Valve Hi/Lo's are fully assembled, factory tested systems, designed to provide safe water throughout commercial and institutional facilities. Each consists of MM434 or LFMM434 and SH1434 or LFSH1434 Master Tempering Valves which utilize paraffin-based actuation technology to sense and adjust outlet temperature. Each system includes a PRV, ball valves, pressure/temperature gauges and Powers' triple-duty check stops and are supported by heavy-duty welded struts. Optional equipment includes cabinets and/or Powers' AquaSentry® 2 high-temperature alarm system. (Not available with LFSH1434 Series).

Operation ■

The Triple, Quad and Six Valves Hi/Lo feature one low capacity valve that works in parallel with multiple high capacity valves. During low demand, the low capacity valve handles the load requirements. As the load demand increases, the pressure reducing valve, which is set at a certain pressure differential, will open and allow flow through the high capacity valves to assist the low capacity valve in meeting the increased load requirements.

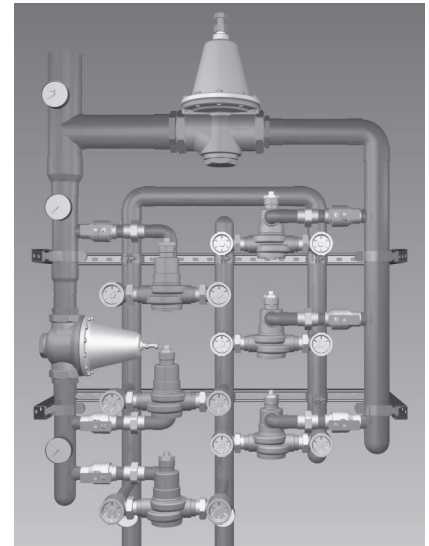
Specifications ■

- 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)
- Temp. Adjustment Range *** 90 - 160°F (32 - 71°C)
- Listing/Compliance (Valve Only)..... ASSE 1017, CSA B125

*With Equal Pressure

**Minimum flow when Hi/Lo valve 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.



Advanced Thermal Activation



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.

Table 1 Capacity ■

Flow Capacity at 50-50 Mixed Ratio								
Model	Min. Flow to ASSE 1017	C _v	Pressure Drop Across Valve					
			5psi (34 kPa)	10psi (69 kPa)	20psi (138 kPa)	30psi (207 kPa)	45psi (310 kPa)	60psi (414 kPa)
SH1434TV and LFSH1434TV	1 gpm	62.0	139 gpm	196 gpm	277 gpm	340 gpm	416 gpm	480 gpm
	4 lpm		526 lpm	742 lpm	1049 lpm	1287 lpm	1575 lpm	1817 lpm
SH1434QV and LFSH1434QV	1 gpm	83.3	186 gpm	263 gpm	373 gpm	456 gpm	559 gpm	645 gpm
	4 lpm		704 lpm	996 lpm	1412 lpm	1726 lpm	2116 lpm	2442 lpm
SH1434-6V and LFSH1434-6V	1 gpm	126.3	282 gpm	400 gpm	565 gpm	692 gpm	847 gpm	978 gpm
	4 lpm		1067 lpm	1514 lpm	2139 lpm	2620 lpm	3206 lpm	3702 lpm

Installation Instructions ■

Prior to Installation

1. Flush all piping thoroughly before installing.
2. Make sure all ball valve handles are in "OFF" position.
3. In order to make any temperature adjustment to the valves, you must open end-of-line fixtures to ensure you have adequate flow across the valve.
4. Use a thermometer at the showerhead or install an in-line thermometer at the point-of-use.

SH1434TV & LFSH1434TV

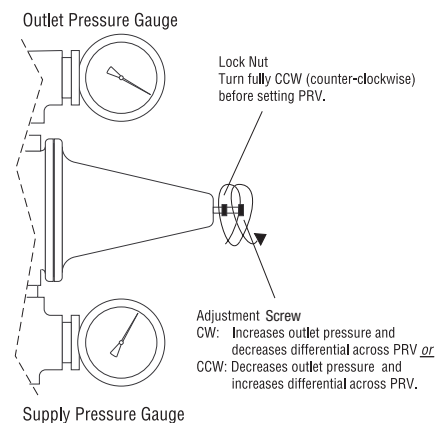
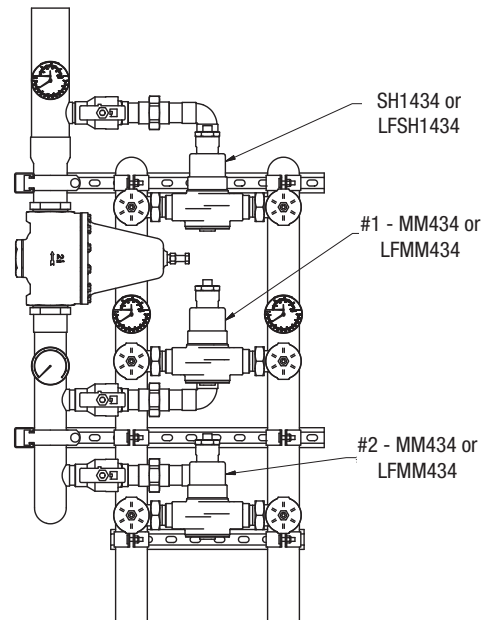
1. Close the ball valve at the outlet of the SH1434 or LFSH1434 and MM434 or LFMM434 valve #2.
2. Open the ball valve at the outlet of the MM434 or LFMM434 valve #1.
3. Open enough fixtures to meet the minimum flow requirement of the MM434 or LFMM434 valve #1 as per table 2.
4. Set MM434 or LFMM434 valve #1 temperature (refer to IS-P-MM430 if required).
5. Close ball valve at the outlet of the MM434 or LFMM434 valve #1 and open the ball valve at the outlet of the MM434 or LFMM434 valve #2. Repeat steps 3 and 4.
6. Loosen the locknut at the top of the PRV. This must be all the way out or you will be limiting range of the adjustment.
7. 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).
8. Close the ball valve at the discharge of the MM434 or LFMM434 valve #2.
9. Open the ball valve on the outlet of the SH1434 or LFSH1434 valve.
10. Open enough fixtures to meet the minimum flow requirement of SH1434 or LFSH1434 as per table 2.
11. Set SH1434 or LFSH1434 temperature (refer to IS-P-SH1430 if required).
12. Open all the ball valves at the outlets.
13. Verify outlet temperature remains at the set point.
14. 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.

Table 2

Model	Min. Flow to ASSE 1017
MM434 and LFMM434	7 gpm (26 lpm)
SH1434 and LFSH1434	1 gpm (4 lpm)

Set Up Procedure ■

You must follow these procedures in order to properly adjust your Hi/Lo System. You need flow greater than the minimum shown in the capacity table across the valve in order to set a maximum temperature.

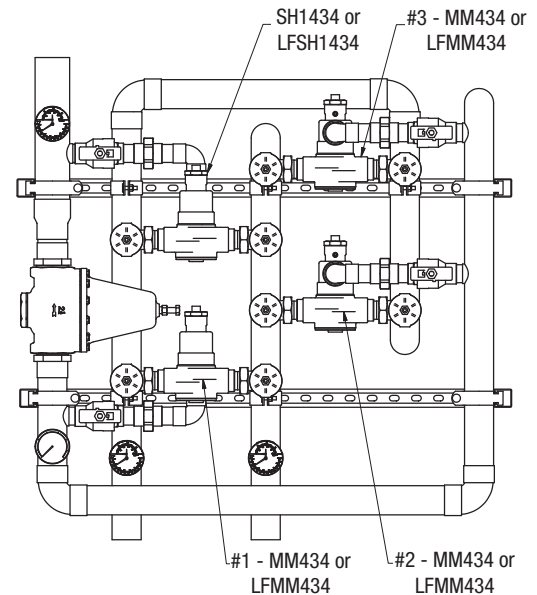


SH1434QV or LFSH1434QV

1. Close the ball valve at the outlet of the SH1434 or LFSH1434 and MM434 or LFMM434 valve #2 & #3.
2. Open the ball valve at the outlet of the MM434 valve #1.
3. Open enough fixtures to meet the minimum flow requirement of the MM434 or LFMM434 valve #1 as per table 2.
4. Set MM434 or LFMM434 valve #1 temperature (refer to IS-P-MM430 if required).
5. Close ball valve at the outlet of the MM434 or LFMM434 valve #1 and open the ball valve at the outlet of the MM434 or LFMM434 valve #2. Repeat steps 3 and 4.
6. Close ball valve at the outlet of the MM434 or LFMM434 valve #2 and open the ball valve at the outlet of the MM434 or LFMM434 valve #3. Repeat steps 3 and 4.
7. Loosen the locknut at the top of the PRV. This must be all the way out or you will be limiting range of the adjustment.

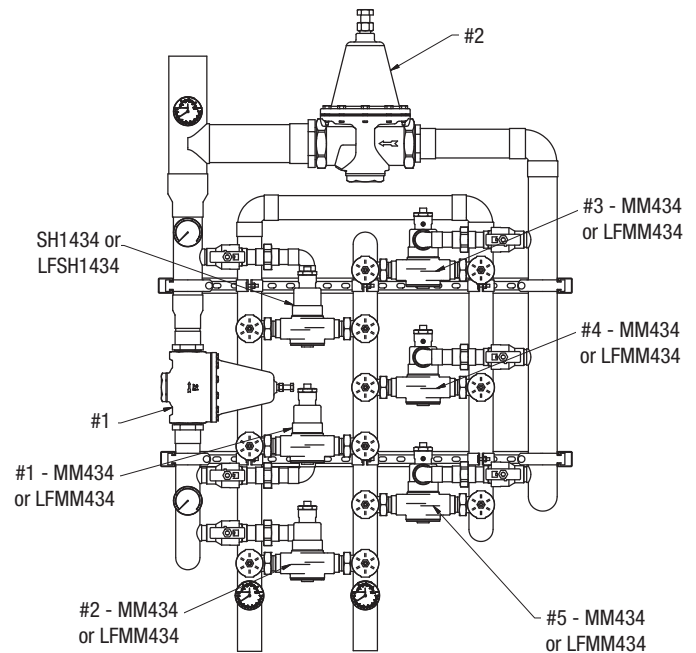
SH1434QV Continued

8. 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).
9. Close the ball valve at the discharge of the MM434 or LFMM434 valve #3.
10. Open the ball valve on the outlet of the SH1434 or LFSH1434 valve.
11. Open enough fixtures to meet the minimum flow requirement of SH1434 or LFSH1434 as per table.
12. Set SH1434 or LFSH1434 temperature (refer to IS-P- SH1430 if required).
13. Open all the ball valves at the outlets.
14. Verify outlet temperature remains at the set point.
15. 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.



SH1434-6V

1. Close the ball valve at the outlet of the SH1434 or LFSH1434 and MM434 or LFMM434 valve #2, #3, #4 and #5.
2. Open the ball valve at the outlet of the MM434 or LFMM434 valve #1.
3. Open enough fixtures to meet the minimum flow requirement of the MM434 or LFMM434 valve #1 as per table 2.
4. Set MM434 or LFMM434 valve #1 temperature (refer to IS-P-MM430 if required).
5. Close ball valve at the outlet of the MM434 or LFMM434 valve #1 and open the ball valve at the outlet of the MM434 or LFMM434 valve #2. Repeat steps 3 and 4.
6. Close ball valve at the outlet of the MM434 or LFMM434 valve #2 and open the ball valve at the outlet of the MM434 or LFMM434 valve #3. Repeat steps 3 and 4.
7. Close ball valve at the outlet of the MM434 or LFMM434 valve #3 and open the ball valve at the outlet of the MM434 or LFMM434 valve #4. Repeat steps 3 and 4.
8. Close ball valve at the outlet of the MM434 or LFMM434 valve #4 and open the ball valve at the outlet of the MM434 or LFMM434 valve #5. Repeat steps 3 and 4.
9. Loosen the locknut at the top of the PRV #2. This must be all the way out or you will be limiting range of the adjustment.
10. Adjust the PRV #2 so the outlet pressure gauge (top) reads 20psi 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).
11. Open the ball valve on the outlet of the MM434 or LFMM434 valve #1.
12. Close the ball valve at the discharge of the MM434 or LFMM434 valve #5.
13. Loosen the locknut at the top of the PRV #1. This must be all the way out or you will be limiting range of the adjustment.
14. Adjust the PRV #1 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).



15. Open the ball valve on the outlet of the SH1434 or LFSH1434 valve.
16. Close the ball valve of MM434 or LFMM434 valve #1.
17. Open enough fixtures to meet the minimum flow requirement of SH1434 or LFSH1434 as per table 2.
18. Set SH1434 temperature (refer to IS-P-SH1430 if required).
19. Open ball valves at the outlets of SH1434 or LFSH1434 and all 5 MM434 or LFMM434 valves.
20. Verify outlet temperature remains at the set point with all valves open at a 15psi and 20psi differential.
21. 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.

Troubleshooting ■

What to look for if:

- **Outlet temperature is too hot with low flow:**
 1. The maximum temperature of the low flow valve was not properly set. Refer to Set Up Procedure and reset the maximum temperature of the low flow valve.
 2. The thermal actuator of the low flow valve is not working properly. Replace thermal actuator.
- **Outlet temperature is too hot with a high flow:**
 1. The maximum temperature of a high flow valve was not properly set. Refer to Set Up Procedure and reset the maximum temperature of the high flow valve.
 2. The thermal actuator of the high flow valve is not working properly. Replace accordingly, see IS-P-MM430 enclosed.
- **Outlet temperature too low with low and 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 check stops.
 3. The temperature has not been set properly on the small and/or large valve. Refer to Set Up Procedure and reset the valves.
- **Outlet flow drops off:**
 1. The differential across the PRV is set too high, so the high flow valve begins controlling the system too late, and starves the system. Refer the Set Up Procedure and decrease the differential across PRV.
 2. The checkstops on the high flow valves are not fully open or are stuck due to liming. Open and clean checkstops
 3. The system pressure varies by more than 50% of the inlet supply pressure.
- **Outlet temperature cycles between hot and cold:**
 1. The differential across the PRV is set too low, so the high flow valve begins controlling the system too early, and therefore cycles (hunt for the set point). Refer to the Set Up Procedure and increase the differential across PRV.
 2. The system pressure varies by more than 50% of the inlet supply pressure.

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.

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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, turn adjusting screw counterclockwise to fully open position. Then turn adjusting screw 1/2 turn clockwise for final setting.
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.