

## HYDROGUARD® XP Master Tempering Valves Series LFMM430

### Technical Instructions

#### ⚠ WARNING



Read this Manual **BEFORE** using this equipment. Failure to read and follow all safety and use information can result in death, serious personal injury, property damage, or damage to the equipment. Keep this Manual for future reference.



#### ⚠ WARNING

**FAILURE TO COMPLY WITH PROPER INSTALLATION AND MAINTENANCE INSTRUCTIONS COULD CONTRIBUTE TO THE VALVE FAILURE.**

**This Hot Water Master Tempering Valves cannot be used for tempering water temperature at fixtures. Severe bodily injury (i.e., scalding or chilling) and/or death may result depending upon system water pressure changes and/or supply water temperature changes. ASSE standard 1016, 1069 or 1070 listed devices should be used at fixtures to prevent possible injury.**

These Hot Water Tempering Valves are designed to be installed at or near the boiler or water heater. They are not designed to compensate for system pressure fluctuations and should not be used where ASSE standard 1016, 1069 or 1070 devices are required. These valves should never be used to provide "anti-scald" or "anti-chill" service.

The components of the system must be of materials with a construction capable of withstanding the high limit output temperatures of the water heating source.

#### ⚠ WARNING

##### **Need for Periodic Inspection and Yearly Maintenance:**

Periodic inspection and yearly maintenance by a licensed contractor is required. Corrosive water conditions and/or unauthorized adjustments or repair could render the valve ineffective for service intended. Regular checking and cleaning of the valve's internal components and check stops helps assure maximum life and proper product function. Frequency of cleaning and inspection depends upon local water conditions.

#### ⚠ WARNING

You are required to consult the local building and plumbing codes prior to installation. If the information in this manual is not consistent with local building or plumbing codes, the local codes should be followed. Inquire with governing authorities for additional local requirements.

#### ⚠ WARNING

Flush all pipes thoroughly before installation. Installation and field adjustment are the responsibility of the installer.



Advanced Thermal Activation

#### Description ■

The Hydroguard® XP LFMM430 series is a temperature actuated mixing valve designed for use in hot water distribution systems, in compliance with ASSE 1017.

#### Specifications ■

- Maximum Operating Pressure ..... 125 psi (861 kPa)
- Maximum Hot Water Temperature .....200°F (93°C)
- Minimum Hot Water Supply Temp ..... 5°F (3°C) Above Set-Point\*
- Temp. Adjustment Ranges
  - \*\*Standard:..... 90 - 160°F (32 - 71°C)
  - Low: ..... 60 - 90°F (16 - 32 C)
- Hot Water Inlet Temperature Range .....120 -180°F (49 - 82°C)
- Cold Water Inlet Temperature Range ... 40 - 80°F (4 - 27°C)
- Listing..... ASSE 1017
- Certified ..... CSA B125

\* With Equal Pressure

#### \*\* **NOTICE**

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.

## Capacity ■

Table 1, Capacity Tables, present the Hydroguard discharge capacity in gpm and l/m for various pressure differentials (the difference between the lowest inlet pressure and the discharge pressure at the Hydroguard).

Flow Capacity at 50-50 mixed ratio										
			Pressure Drop Across Valve							
Model	Min. Flow Rate*	Min. Flow to ASSE 1017	Cv	5psi (34 kPa)	10psi (69 kPa)	20psi (138 kPa)	30psi (207 kPa)	45psi (310 kPa)	60psi (414 kPa)	70psi (517 kPa)
LFMM431	0.5 gpm 1.89 lpm	3 gpm 11 lpm	6.32	14 gpm 53 lpm	20 gpm 76 lpm	28 gpm 106 lpm	35 gpm 132 lpm	42 gpm 159 lpm	49 gpm 185 lpm	53 gpm 201 lpm
LFMM432	0.5 gpm 1.89 lpm	4 gpm 15 lpm	9.49	21 gpm 80 lpm	30 gpm 114 lpm	42 gpm 159 lpm	52 gpm 197 lpm	64 gpm 242 lpm	74 gpm 280 lpm	79 gpm 299 lpm
LFMM433	0.5 gpm 1.89 lpm	5 gpm 19 lpm	16.44	37 gpm 140 lpm	52 gpm 197 lpm	74 gpm 280 lpm	90 gpm 341 lpm	110 gpm 416 lpm	127 gpm 481 lpm	138 gpm 522 lpm
LFMM434	0.5 gpm 1.89 lpm	7 gpm 26 lpm	21.50	48 gpm 182 lpm	68 gpm 257 lpm	96 gpm 363 lpm	118 gpm 447 lpm	144 gpm 545 lpm	167 gpm 632 lpm	180 gpm 681 lpm
LFMM435	0.5 gpm 1.89 lpm	10 gpm 38 lpm	31.00	69 gpm 261 lpm	98 gpm 371 lpm	139 gpm 526 lpm	170 gpm 644 lpm	208 gpm 787 lpm	240 gpm 908 lpm	259 gpm 980 lpm

\* Minimum flow when Hydroguard is installed at or near hot water source with recirculated tempered water with continuously operating recirculating pump.

## Operation ■

### Typical Flow

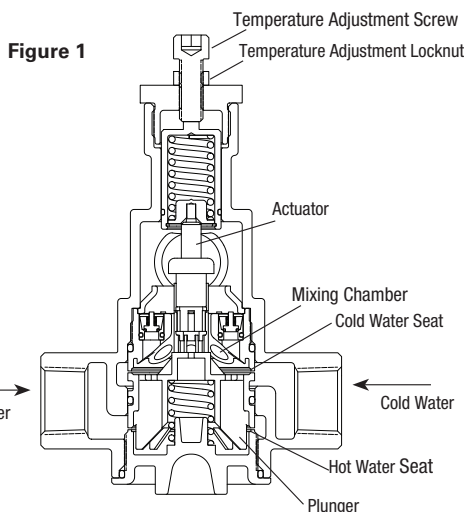
Hot and cold water supplies enter Hydroguard at indicated ports, (see Figure 1) then flow past their respective balanced poppet plug and seats. Next, hot and cold water flow is directed to the mixing chamber where the thermostatic actuator is located.

Temperature adjustment screw moves the actuator to determine the discharge temperature.

With a rise in discharge temperature due to pressure or temperature fluctuation on the inlet, the actuator expands, decreasing flow of hot water. The reverse occurs with a drop in discharge temperature.

- Cold water supply failure – causes actuator to expand allowing the motor to drastically reduce hot water flow.\*
- Hot water supply pressure failure – causes actuator to contract allowing return spring to close cold water port\*.

\*When tested in accordance to conditions described in ASSE 1017.



## Installation Instructions ■

### NOTICE

1. Installation should be in accordance with acceptable plumbing practices. Flush all piping thoroughly before installation. Installation and field adjustment are the responsibility of the installer.
2. Valves are to be installed as close to building inlet supply as possible to prevent/minimize pressure fluctuations.
3. Valve body can be rotated to install in multiple position due to union inlets (see Figure 2). Make sure that union nuts are tightened securely.
4. Connect inlets and outlet and check for leaks.

### CAUTION

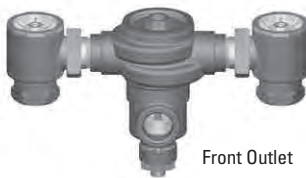
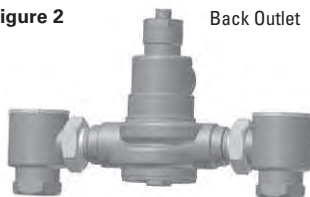
5. When the Hydroguard supplies tempered water to self-closing and/or solenoid valves, provide a shock absorber (Powers Part No. 460-353) on the discharge line.

6. Before use, check discharge temperature. Reset if necessary.

### Operation Check:

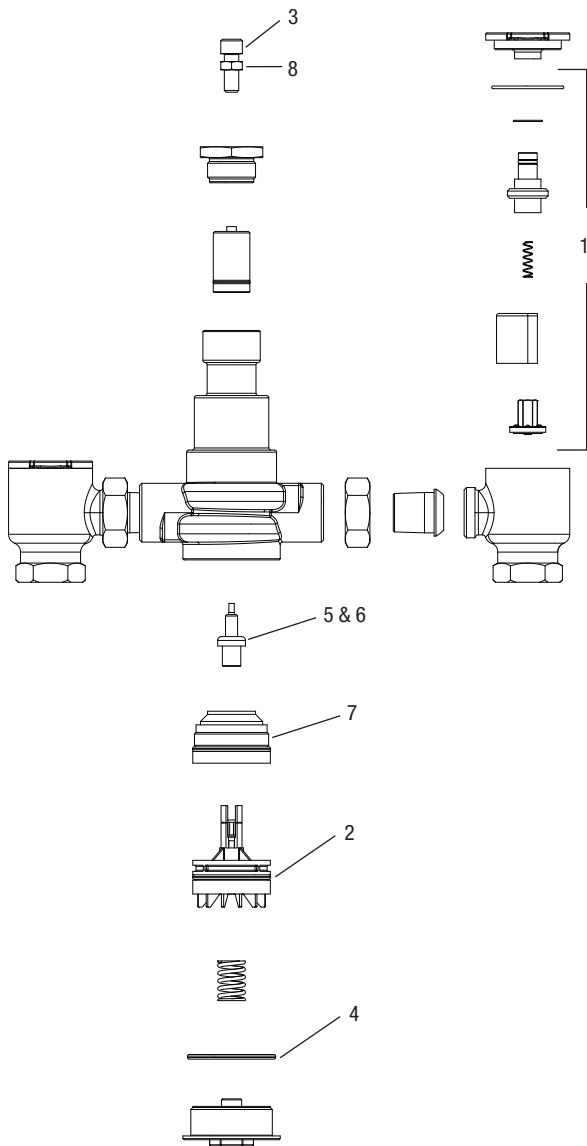
After Hydroguard is installed, make certain the supply stop valves and strainers are free and clean and ready for operation by disassembling checkstops as shown in servicing.

Figure 2 Back Outlet



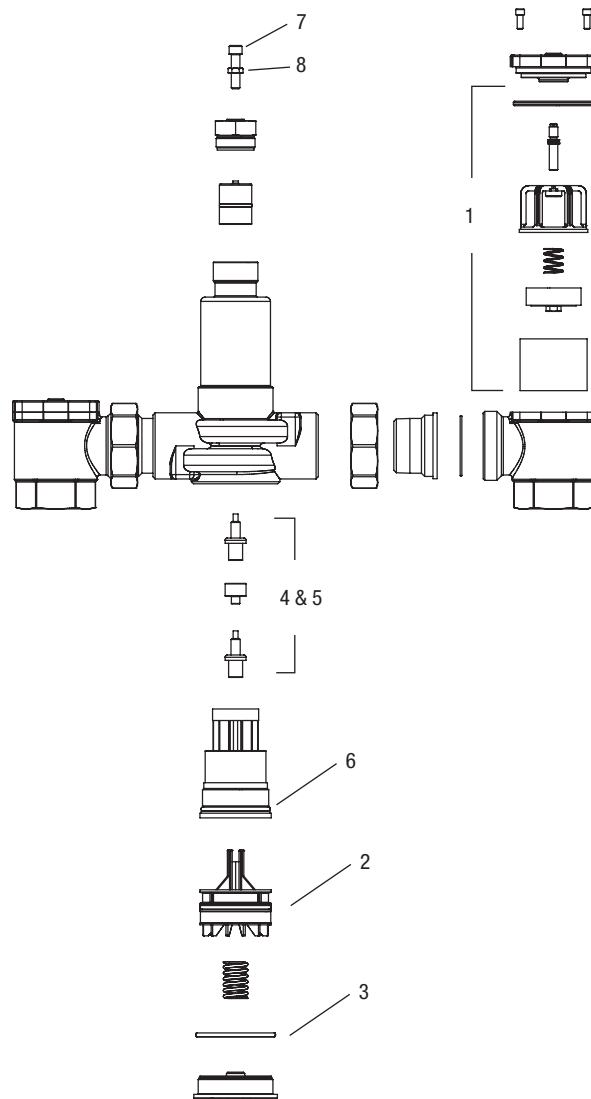
**Parts List - LFMM431, LFMM432, LFMM433, LFMM434 ■**

Index	Description				
		LFMM431	LFMM432	LFMM433	LFMM434
1	Checkstop Rebuild Kit	LF390 800	LF390 800	LF390 801	LF390 801
2	Plunger Kit	390 802	390 802	390 803	390 803
3	Adjusting Screw	390 688	390 688	390 688	390 688
4	O-Ring	390 805	390 805	390 806	390 806
5	Actuator - Standard Temperature	390 807	390 807	390 809	390 809
6	Actuator - Low Temperature	390 808	390 808	390 810	390 810
7	Funnel Kit	390 826	390 826	390 827	390 827
8	Locknut	1051117	1051117	1051117	1051117



**Parts List - LFMM435 ■**

Index	Description	
		LFMM435
1	Checkstop Rebuild Kit	LF390 811
2	Plunger Kit	390 812
3	O-Ring	390 813
4	Actuator - Standard Temperature	390 814
5	Actuator - Low Temperature	390 815
6	Funnel Kit	390 828
7	Adjusting Screw	390 688
8	Locknut	1051117



## Maintenance and Troubleshooting ■

*What to look for if:*

- **The flow of water is less than desired...**
  - a. Stop valves or supply to Hydroguard not fully open.
  - b. Clogged checkstop strainer screens.
  - c. Accumulation of lime deposits around valve seats.
  - d. Low supply pressures.
- **The flow of water is completely shut off...**
  - a. Stop valves or supply valves are completely closed.
  - b. Valves downstream from Hydroguard fully closed.
  - c. Loss of either hot or cold water supply pressure.
- **Discharge temperature varies...**
  - a. Very large restriction in outlet flow.
  - b. Very large drop in inlet pressure.
  - c. Very large fluctuation of hot water supply temperature.
  - d. Worn valve seats.
  - e. Minimum flow requirement not achieved.
  - f. Lime deposits around motor, poppets and/or seat.

## Servicing ■

### NOTICE

Before disassembling, make certain both hot and cold water supplies are shut off.

### Checkstop Disassembly

1. Remove bonnet with socket wrench
2. Lift out strainer screen.
3. Reassemble in reverse order.

### Valve Disassembly

#### To Remove Thermal Actuator from Top

1. Loosen Locknut.
2. Remove bonnet and pull out overload assembly by using a standard pliers.
3. Lift out thermal actuator by using a needle nose pliers.
4. Reassemble in reverse order.
5. **Temperature setting must be checked by an installer before use.**  
See temperature adjustment below.

#### To Remove The Plunger Assembly or Funnel from Bottom

1. Remove the bottom cap.

### CAUTION

1. Spring is under tension.
2. Pull out spring.

## 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.

3. Pull out plunger using a pair of pliers.
4. To remove funnel, you will need a deep socket wrench and funnel removal tool.
5. Reassemble in reverse order.
6. **Temperature setting must be checked by an installer before use.**  
See temperature adjustment below.

### NOTICE

After reassembling go back to thermal actuator section and make sure it is sitting in its holder properly.

## Temperature Adjustment ■

### Temperature setting for LFMM430 Series Valves:

1. Turn off re-circulation pump (if one is in the system).
2. Open up enough fixtures to meet minimum flow requirement of:
  - LFMM431 = 3 gpm (11 Lpm)
  - LFMM432 = 4 gpm (15 Lpm)
  - LFMM433 = 5 gpm (19 Lpm)
  - LFMM434 = 7 gpm (26 Lpm)
  - LFMM435 = 10 gpm (38 Lpm)
3. Loosen locknut. (see Fig. 1)
4. Turn temperature adjustment screw counterclockwise to increase or clockwise to decrease the outlet temperature. (see Fig. 1)

### NOTICE

Please allow valve temperature to settle in before making your next adjustment.

5. When desired temperature is set, tighten the locknut. Turn recirculation pump back on. Close open fixtures.

### WARNING

**Any changes in supply condition could effect the outlet water temperature. Check and adjust the valves accordingly to prevent injury to the users. After completing repairs, check discharge temperature, (105°F [41°C]). Reset if necessary. Failure to perform this operation could result in unsafe discharge temperature, which may cause injury or death.**

**WARNING:** This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.  
**For more information: [www.watts.com/prop65](http://www.watts.com/prop65)**

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