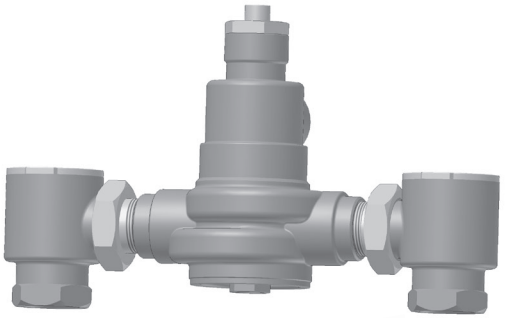
HYDROGUARD® XP Master Tempering Valves Series MM430 and LFMM430

Technical Instructions

Description ■

The Hydroguard® XP MM430 and LFMM430 series is a temperature actuated mixing valve designed for use in hot water distribution systems, in compliance with ASSE 1017.



Advanced Thermal Activation

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

** **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 ■

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)**
MM431 and 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
MM432 and 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
MM433 and 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
MM434 and 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
MM435 and 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.

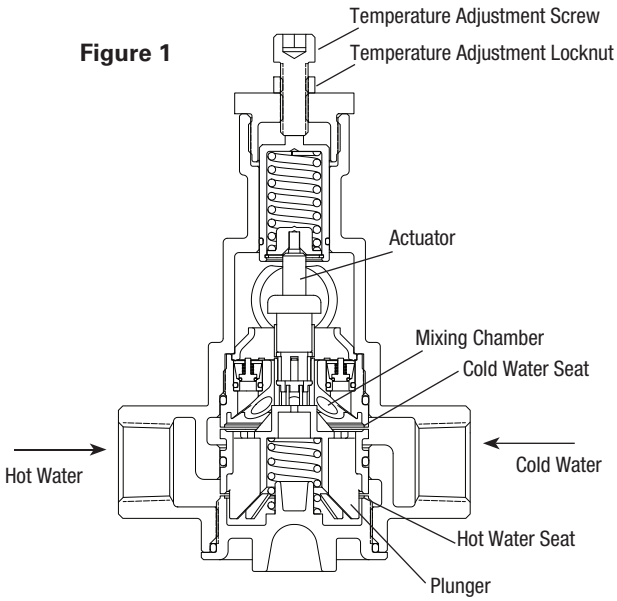
With a rise in discharge temperature due to pressure or temperature fluctuation on the inlet, the actuator expands, decreasing flow of hot water. The reverse occurs with a drop in discharge temperature.

• 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.

Figure 1



Installation Instructions ■

1. **IMPORTANT:** 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.

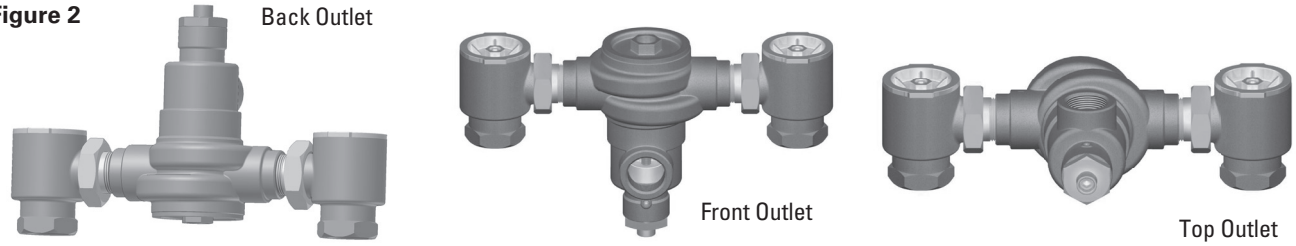
5. **CAUTION:** When the Hydroguard supplies tempered water to self-closing and/or solenoid valves, provide a shock absorber (Powers Part No. 460-353) on the discharge line.

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



Maintenance and Troubleshooting ■

What to look for if:

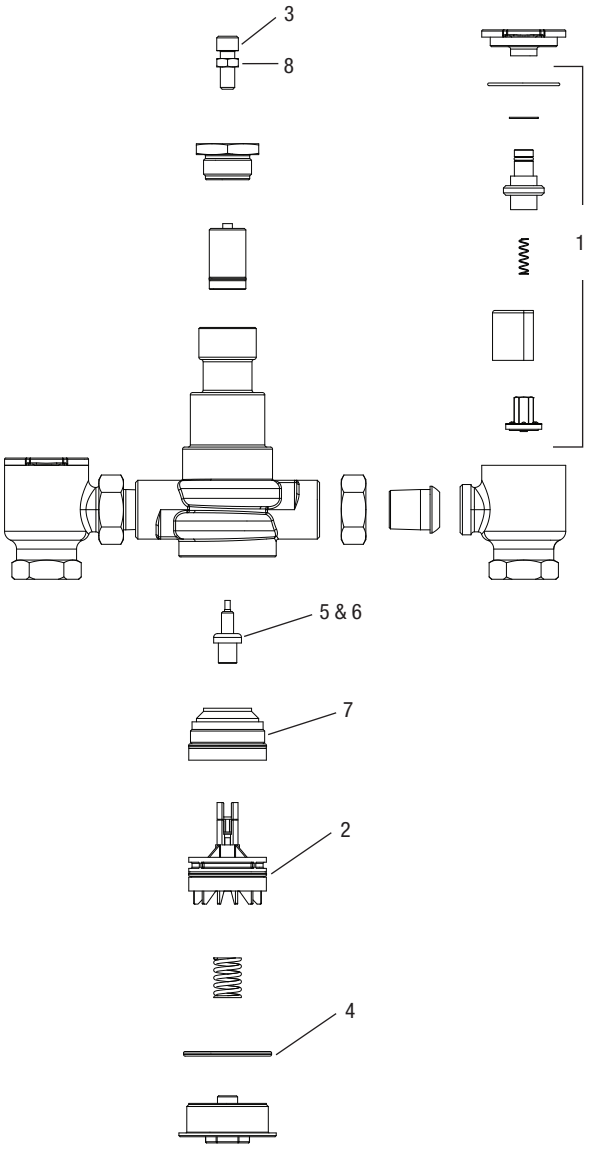
- **The flow of water is less than desired...**
  a. Stop valves or supply to Hydroguard not fully open.
  b. Clogged checkstop strainer screens.
  c. Accumulation of lime deposits around valve seats.
  d. Low supply pressures.

- **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.

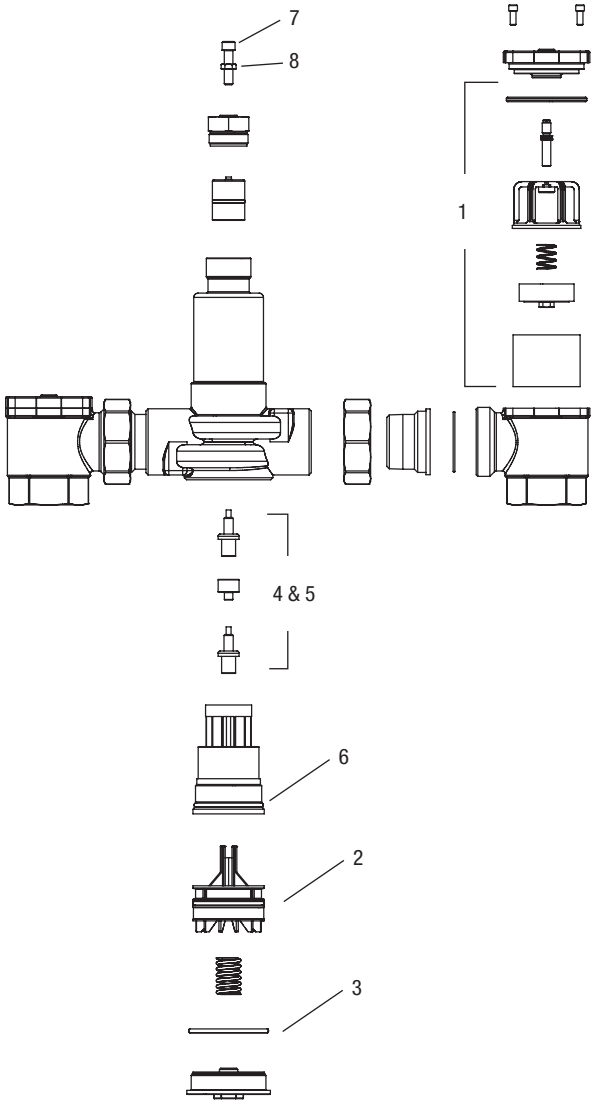
Parts List - MM431, LFMM431, MM432, LFMM432, MM433, LFMM433, MM434, LFMM434 ■

Index	Description	Part #							
		MM431	LFMM431	MM432	LFMM432	MM433	LFMM433	MM434	LFMM434
1	Checkstop Rebuild Kit	390 800	LF390 800	390 800	LF390 800	390 801	LF390 801	390 801	LF390 801
2	Plunger Kit	390 802	390 802	390 802	390 802	390 803	390 803	390 803	390 803
3	Adjusting Screw	390 668	390 668	390 668	390 668	390 668	390 668	390 668	390 668
4	O-Ring	390 805	390 805	390 805	390 805	390 806	390 806	390 806	390 806
5	Actuator - Standard Temperature	390 807	390 807	390 807	390 807	390 809	390 809	390 809	390 809
6	Actuator - Low Temperature	390 808	390 808	390 808	390 808	390 810	390 810	390 810	390 810
7	Funnel Kit	390 826	390 826	390 826	390 826	390 827	390 827	390 827	390 827
8	Locknut	1051117	1051117	1051117	1051117	1051117	1051117	1051117	1051117



Parts List - MM435, LFMM435 ■

Index	Description	Part #	
		MM435	LFMM435
1	Checkstop Rebuild Kit	390 811	LF390 811
2	Plunger Kit	390 812	390 812
3	O-Ring	390 813	390 813
4	Actuator - Standard Temperature	390 814	390 814
5	Actuator - Low Temperature	390 815	390 815
6	Funnel Kit	390 828	390 828
7	Adjusting Screw	390 668	390 668
8	Locknut	1051117	1051117



Servicing ■

NOTE: 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:** spring is under tension.
2. Pull out spring.
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.**

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

Temperature Adjustment ■

Temperature setting for MM430 or 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:

   MM431 and LFMM431 = 3 gpm (11 Lpm)
   MM432 and LFMM432 = 4 gpm (15 Lpm)
   MM433 and LFMM433 = 5 gpm (19 Lpm)
   MM434 and LFMM434 = 7 gpm (26 Lpm)
   MM435 and LFMM435 = 10 gpm (38 Lpm)

3. Loosen locknut. (see Fig. 1)

4. Turn temperature adjustment screw counter-clockwise to increase or clockwise to decrease the outlet temperature. (see Fig. 1)

NOTE: 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.

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

⚠ WARNING

NOTE: AFTER COMPLETING REPAIRS, CHECK DISCHARGE TEMPERATURE. (115°F [46°C]). RESET IF NECESSARY.

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