

Technical Instructions

Description ■

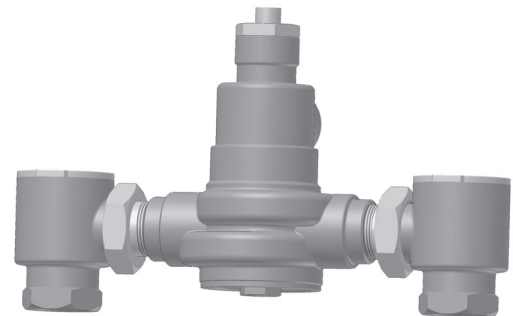
The Hydroguard® XP MM430 series is a temperature actuated mixing valve designed for use in hot water distribution systems, in compliance with ASSE 1017.

Specifications ■

- Maximum Operating Pressure 125 psig (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.



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.

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										
Model	Min. Flow Rate*	Min. Flow to ASSE 1017	Cv	Pressure Drop Across Valve						
				5psi (34 kPa)	10psi (69 kPa)	20psi (69 kPa)	30psi (207 kPa)	45psi (310 kPa)	60psi (414 kPa)	70psi (517 kPa)
MM431	0.5 gpm	3 gpm	6.32	14 gpm	20 gpm	28 gpm	35 gpm	42 gpm	49 gpm	53 gpm
	1.89 lpm	11 lpm		53 lpm	76 lpm	106 lpm	132 lpm	159 lpm	185 lpm	201 lpm
MM432	0.5 gpm	4 gpm	9.49	21 gpm	30 gpm	42 gpm	52 gpm	64 gpm	74 gpm	79 gpm
	1.89 lpm	15 lpm		80 lpm	114 lpm	159 lpm	197 lpm	242 lpm	280 lpm	299 lpm
MM433	0.5 gpm	5 gpm	16.44	37 gpm	52 gpm	74 gpm	90 gpm	110 gpm	127 gpm	138 gpm
	1.89 lpm	19 lpm		140 lpm	197 lpm	280 lpm	341 lpm	416 lpm	481 lpm	522 lpm
MM434	0.5 gpm	7 gpm	21.50	48 gpm	68 gpm	96 gpm	118 gpm	144 gpm	167 gpm	180 gpm
	1.89 lpm	26 lpm		182 lpm	257 lpm	363 lpm	447 lpm	545 lpm	632 lpm	681 lpm
MM435	0.5 gpm	10 gpm	31.00	69 gpm	98 gpm	139 gpm	170 gpm	208 gpm	240 gpm	259 gpm
	1.89 lpm	38 lpm		261 lpm	371 lpm	526 lpm	644 lpm	787 lpm	908 lpm	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.

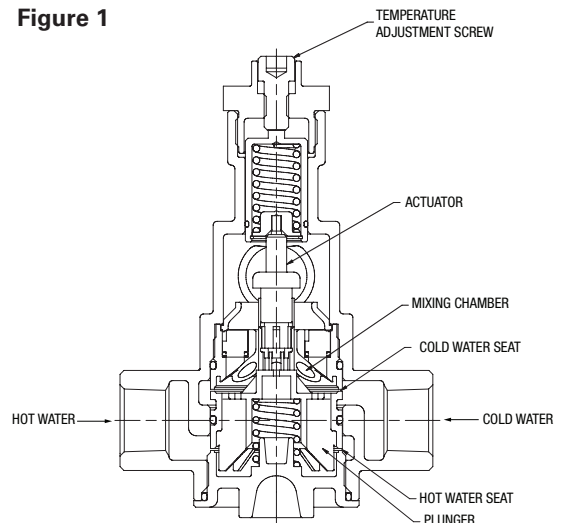
Temperature adjustment screw moves the actuator to determine the discharge temperature.

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



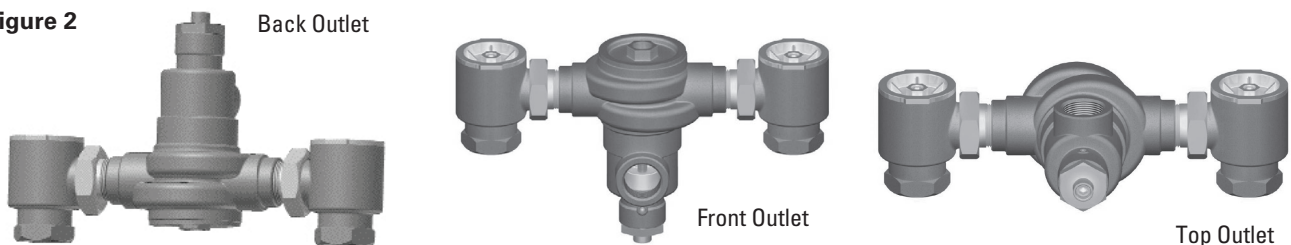
Installation Instructions ■

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 any 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



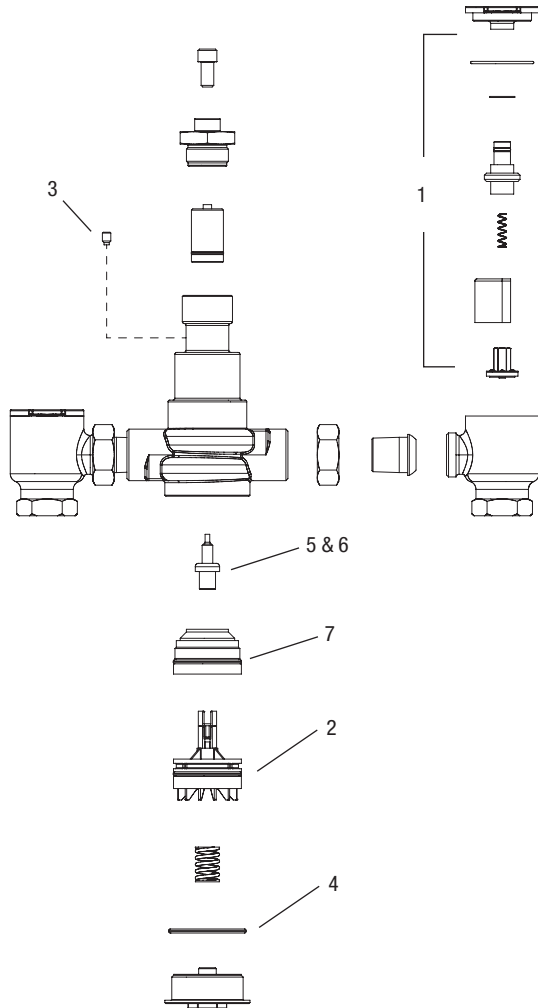
Maintenance and Troubleshooting ■

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.

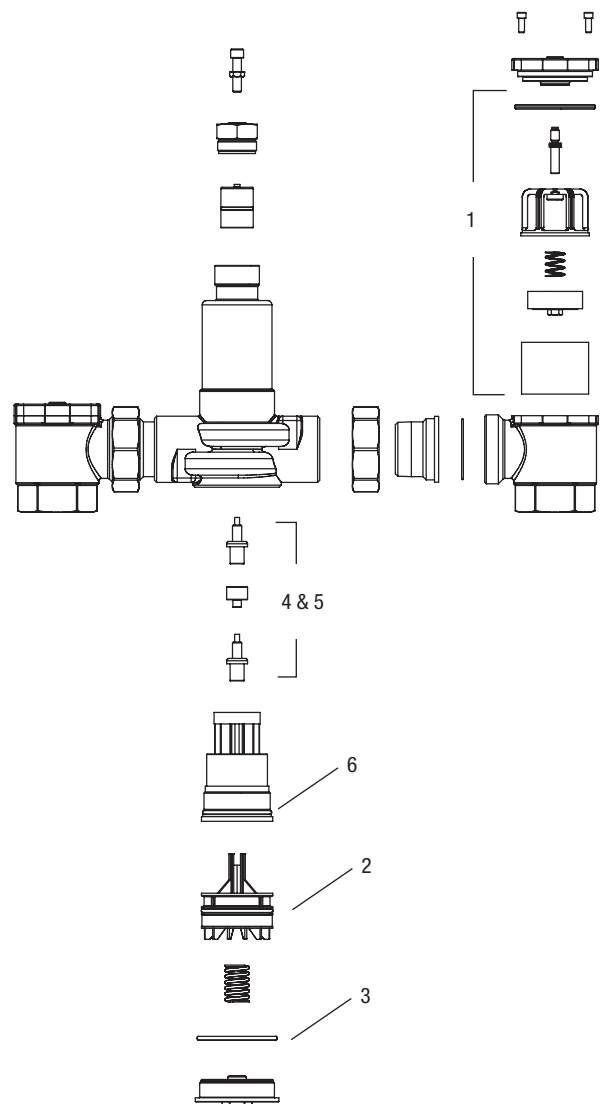
Parts List - MM431, MM432, MM433, MM434 ■

Index	Description	Part #			
		MM431	MM432	MM433	MM434
1	Checkstop Rebuild Kit	390 800	390 800	390 801	390 801
2	Plunger Kit	390 802	390 802	390 803	390 803
3	Set Screw	390 804	390 804	390 804	390 804
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



Parts List - MM435 ■

Index	Description	Part #
		MM435
1	Checkstop Rebuild Kit	390 811
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



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. Unscrew locking setscrew.
2. Remove bonnet and over load assembly.
3. Lift out thermal actuator.
4. Reassemble in reverse order.

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.

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 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 = 3 gpm
 - MM432 = 4 gpm
 - MM433 = 5 gpm
 - MM434 = 7 gpm
 - MM435 = 10 gpm

3. For MM431 to MM434, loosen set screw on the back of the body, for MM435 loosen locknut.
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 set screw for MM431 to MM434, tighten the locknut for MM435. 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

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.

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