Tempering the Hot Water Source
- ZW1017XL Point of Source Thermostatic Mixing Valve
- 850XL Shut-Off Valve

Tempering at Point of Use
- ZW1070XL Point of Use Thermostatic Mixing Valve
- Z6950-XL Aqua-FIT® Sensor Faucet
- ZS340/534B Wall Hung Lavatory

Tempering at Point of Use (continued)
- ZW3870XLT-4P Point of Use Thermostatic Mixing Valve
- ZS340/534B Wall Hung Lavatory

Complementary Products
- Z415BZ Floor Drain
- ZS880 Stainless Steel Linear Shower Drain
- Z7500-DV-HW Pressure Balance Shower Unit
What is a Thermostatic Mixing Valve (TMV)?

A TMV mixes cold water and hot water and produces tempered water at a constant pre-set temperature. By using multiple TMVs, the system can be designed to prevent bacterial growth and deliver tempered water to the end user, eliminating the chance of scalding.

Point of Source Thermostatic Mixing Valves ASSE 1017: Temperature Actuated Mixing Valves for Hot Water Distribution Systems are used for controlling in-line water temperatures in domestic hot water systems and are installed at the hot water source. They are not intended for end use applications including emergency eyewash and shower equipment.

Point of Use Thermostatic Mixing Valves ASSE 1070: Water Temperature Limiting Devices shall control and limit the water temperature to fittings for fixtures such as sinks, lavatories or bathtubs and are intended to reduce the risk of scalding.

Conflicting Needs: Water Temperature vs. Water Safety

The ideal temperature range for safety (anti-scalding) happens to be the ideal growth range for bacteria, such as Legionella. This creates a need for water to be hot enough to kill bacteria throughout the system, yet water must be cool enough when delivered to the end user to avoid scalding.

Need to Minimize Scalding Injury:
- Maintain the temperature of the delivered hot water below 120° F to minimize the potential of a Scalding Injury

Need to Reduce Bacterial Infection:
- Maintain the temperature of the hot water heater to 140° F to minimize the potential of Legionella
- TMVs deliver a solution for the conflicting needs of reducing bacteria, yet providing water at a comfortable temperature for end users.

<table>
<thead>
<tr>
<th>Temperature (°F)</th>
<th>Bacterial Response</th>
<th>Scald Risk</th>
<th>Time to produce 2nd and 3rd degree burns*</th>
</tr>
</thead>
<tbody>
<tr>
<td>68°</td>
<td>Dormant</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>69° – 122°</td>
<td>Growth Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>95° – 115°</td>
<td>Ideal Growth Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>122°</td>
<td>Can Survive, Won’t Multiply</td>
<td>Moderate</td>
<td>5 min.</td>
</tr>
<tr>
<td>131°</td>
<td>5-6 Hours to Kill</td>
<td>Moderate</td>
<td>30 sec.</td>
</tr>
<tr>
<td>140°</td>
<td>Dies within 32 Minutes</td>
<td>High</td>
<td>5 sec.</td>
</tr>
<tr>
<td>150°</td>
<td>Dies within 2 Minutes</td>
<td>Very High</td>
<td>2 sec.</td>
</tr>
</tbody>
</table>

*Data from American Burn Association
How a TMV Works

1. Adjusting spindle allows user to preset desired outlet temperature
2. Hot and Cold water enter mixing chamber of valve
3. Thermal Motor senses change in outlet temperature
4. Piston extends or retracts in response to temperature change
5. Flow Cartridge moves in opposite direction of actuator to adjust the incoming amount of hot and cold water
6. Preset temperature is achieved and maintained

When mixed water is too hot, flow cartridge moves down, allowing more cold water to enter

When mixed water is too cold, flow cartridge moves up, allowing more hot water to enter
**Point of Source**

**ZW1017XL**
- Designed to be used at the hot water source (residential and light commercial installations) to mix hot and cold water in the distribution system
- Inlet checks and strainers included
- Certified to ASSE® standard 1017, CSA® Certified
- Meets the requirements of NSF/ANSI 61

**ZW1017XLHT - High Temperature**
- Designed to be used at the hot water source with higher temperature applications (hydronic/radiant heating) to mix hot and cold water in the distribution system
- Inlet checks and strainers included
- Certified to ASSE standard 1017
- Meets the requirements of NSF/ANSI 61

**Point of Use**

**ZW1070XL**
- Designed to be installed at the point of use (commercial and residential installations) to mix hot and cold water from the distribution system to a final safer temperature
- Inlet checks and strainers included
- Nickel-plated bronze
- Suitable for multiple fixtures
- Certified to ASSE standard 1070, CSA Certified
- Meets the requirements of NSF/ANSI 61

**ZW3870XLT/ZW3870XLT-4P**
- Designed to be installed with 3/8" point of use applications (commercial and residential installations) to mix hot and cold water from the distribution system to a final safer temperature
- ZW3870XLT most suitable for use with sensor faucets
- ZW3870XLT-4P most suitable for use with manual faucets
- Inlet checks and strainers included
- Designed for single fixture use
- Nickel-plated bronze
- Certified to ASSE standard 1070, CSA Certified
- Meets the requirements of NSF/ANSI 61

**Connection Options**

Tailpiece kits are available with all Zurn Wilkins TMV models in threaded, copper sweat, CPVC, compression, Z-Bite™ push type solderless connections, Z-Press™ press type solderless connections, and PEX.
Thermostatic Mixing Valve Specifications

<table>
<thead>
<tr>
<th></th>
<th>ZW1017XL</th>
<th>ZW1070XL</th>
<th>ZW3870XLT (-4P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outlet Temperature Range</td>
<td>95° - 131° F</td>
<td>95° - 115° F</td>
<td>95° - 115° F</td>
</tr>
<tr>
<td>Temperature Hot Supply</td>
<td>120° - 195° F</td>
<td>120° - 195° F</td>
<td>120° - 195° F</td>
</tr>
<tr>
<td>Temperature Cold Supply</td>
<td>40° - 75° F</td>
<td>40° - 75° F</td>
<td>40° - 75° F</td>
</tr>
<tr>
<td>Set Temperature Accuracy</td>
<td>+/- 4° F</td>
<td>+/- 3° F</td>
<td>+/- 3° F</td>
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<tr>
<td>Maximum Working Pressure</td>
<td>145 psi</td>
<td>145 psi</td>
<td>145 psi</td>
</tr>
<tr>
<td>Dynamic Working Pressure</td>
<td>1.5 - 70 psi</td>
<td>1.5 - 70 psi</td>
<td>1.5 - 70 psi</td>
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<tr>
<td>Flow Rate@45 psi Pressure Loss</td>
<td>25 gpm</td>
<td>12 gpm</td>
<td>3.1 gpm</td>
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<tr>
<td>Minimum Flow Rate</td>
<td>.5 gpm</td>
<td>.5 gpm</td>
<td>0.35 gpm</td>
</tr>
</tbody>
</table>

ZW3870XLT recently approved at .35 gpm for low flow faucets

ZW1070XL Detailed Component View

- **Hot Inlet**
- **Cold Inlet**
- **Union Nut**
- **Cone Strainer with Washer**
- **Check Sub-Assembly**
- **Tailpiece**
- **Tailpiece Kit**
- **Mixed Outlet**

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**Aqua-Gard® TMV Solutions**

**www.zurn.com**

**Aqua-Gard® Thermostatic Mixing Valves**