

### Technical Instructions

#### Description ■

The e423 HydroGuard® T/P automatically mixes hot and cold water to deliver blended water within a specified range. Using an advanced thermal actuator, the e423 quickly compensates for temperature fluctuations induced by water temperature and pressure changes. In the event of cold water failure, the thermostatic motor virtually shuts off the flow of hot water.

The e423 features heavy cast-brass construction and all parts are accessible from the front of the valve and are corrosion resistant. The unit also features a metal-to-metal temperature limit stop, and all e423 valves open in the cold water position to ensure maximum bather safety and comfort.

The accuracy, reliability and water economy of the e423 HydroGuard® make it preferable for applications that require precise, consistent water control: showers, baths, hospital hydrotherapy and residential areas.

Many HydroGuard® e423 valves and shower systems can be selected to meet the Americans with Disabilities Act (ADA).



Advanced Thermal Activation

Model e423320

#### Specifications ■

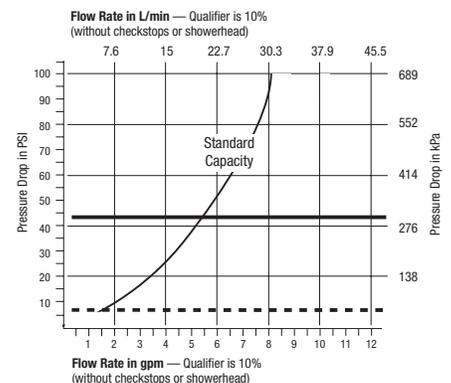
Connections:

Type e423	1/2" NPT Inlets and 1/2" NPT Top Outlet
Capacity (without checkstops)	5.25 gpm [19.9 L/min]* (±0.25 gpm [0.95 L/min])
Maximum Hot Water Supply Temperature	190°F [88°C]
Minimum Hot Water Supply Temperature (not applicable to low temperature hot water valves)	5°F [14°C] above set point
Maximum Operating Pressure	125 psig [862 kPa]
Temperature Ranges:	
ASSE 1016 Type T	65-115°F [18-46°C]
ASSE 1016 Type T/P	90-110°F [32-43°C]
Temperature Limit Stop	Adjustable* (factory set at 110°F [43°C])
Maximum Static Pressure	125 psig [862 kPa]
Minimum Flow and Pressure Differential:	1 gpm [3.79 L/min]
Certification	CSA B125
Compliance	ASSE 1016 T/P
Shipping Weight	5 lbs. [2.3 kg]

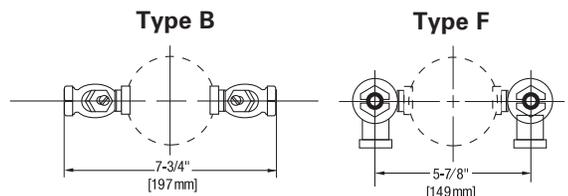
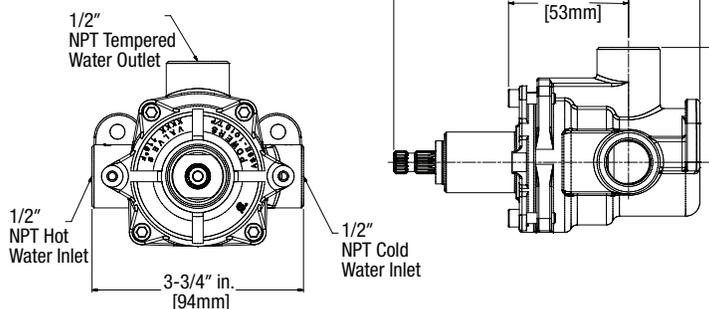
HydroGuard® Series e423 thermostatic mixing valves meet above performance specifications based on typical operating conditions as stated in ASSE 1016 [45 psi pressure differential, hot water supply between 140°-180°F (60°-82°C), cold water supply less than 70°F (21°C)].

If your operating conditions vary from those stated in the standard, performance may vary as well. Consult your local sales representative or the Powers technical support department @ 1.800.669.5430, Press "2" to discuss your specific application. All Powers thermostatic mixing valves perform to the requirements of standards ASSE 1016 Type T/P and CSA B125.

\* At 45 psi differential [310 kPa], with hot water supply between 140°-180°F [60-82°C]. 50/50 mix.



e423

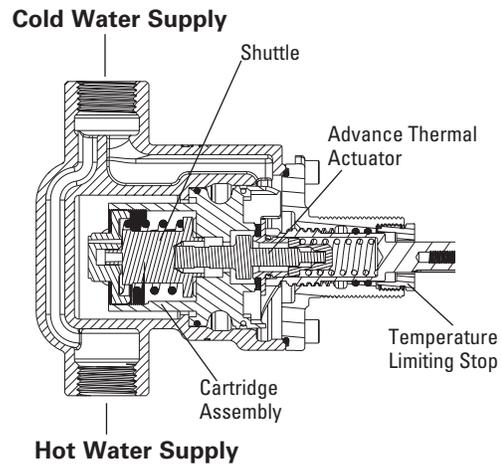


## Operation ■

Hot and cold water enter respective ports in the valve and mix in a chamber containing an advanced thermal actuator (refer to cutaway view). This actuator senses and maintains the set point of the valve.

Rotating the adjustment handle repositions the shuttle in the cartridge assembly to produce the desired temperature. The mixed water passes over the shutoff disc to the outlet. If the hot or cold supply water temperature or pressure changes, the thermal actuator will contract or expand. This movement repositions the shuttle to maintain the desired temperature. With the adjustment handle in full clockwise (OFF) position, the shutoff disc closes the mixing chamber from the outlet.

A Temperature limit stop limits the movement of the control handle. The standard HydroGuard® e423 valve is factory set to deliver tempered water up to 110°F [43°C] with equal supply pressures, with hot water temperature 140°F [60°C], cold water temperature 60°F [15.6°C].



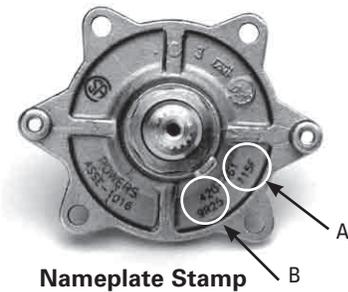
## Model Identification ■

To be sure you order and install the appropriate parts into your valve, first determine the correct model number and temperature range of your valve.

The temperature range of the valve is stamped on a nameplate (A). In the example, "115F" is shown.

The model number is the first digit of the four-digit date code stamped on the nameplate (B).

In the example, the date code starts with an 9, so the model number is 9.



## Preventative Maintenance ■

**NOTE:** Before servicing checkstops or piping, always turn off the upstream water supply.

### **EVERY 12 MONTHS:**

Open up the checkstops and check for free movement of the poppet. To access the checkstops, remove the valve handle assembly and dial plate.

Before servicing, turn off the water supply upstream.

To close the checkstops, turn the adjustment screw fully clockwise on each checkstop.

Remove the valve bonnet and rinse all grit and impurities from the internal components.

Winterize valves that are used outdoors. Remove and store the internal components and drain all water from the valve.

### **EVERY 3 MONTHS:**

Every three months, check the maximum temperature setting (handle rotation setting).

## Safety Guidelines ■

Adherence to these guidelines and recommendations promotes safe product use and ensures proper valve performance.

1. Thermostatic water mixing valves are control devices which must be cleaned and maintained on a regular basis. Powers specifies periodic maintenance at least once a year or immediately after any changes are made to the plumbing system. Annual cleaning and inspection is recommended, however, frequency of cleaning depends on quality of local water conditions. Refer to the Preventive Maintenance section for recommended cleaning procedure.
2. **WARNING:** To prevent injury to the user, it is important to periodically check the maximum temperature adjustment on the valve.
3. Quick closing valves may cause damage to the mixing valve by creating shock waves. When the HydroGuard® supplies tempered water to self-closing and/or solenoid valves, Powers recommends installing a shock absorber (Powers Part #460-353) on the discharge line, which will protect the HydroGuard® from damage.
4. Position the e423 valve as close as possible to outlet fixture to avoid waste of energy and water (except in applications where the valve is used as a primary mixing valve).

## Servicing ■

### **To Disassemble:**

1. Turn off hot & cold water supply-stops
2. Remove the handle and trim plate
3. Remove 4 bonnet screws and bonnet assembly
4. Remove all internal components from valve body
5. At this point you should have an empty valve body.

**WARNING:** After completing any maintenance/repairs, reset the high temperature limit stop.

### **To Reassemble:**

1. Ensure the inside of the valve body is free of deposits and debris. Clean as necessary.
2. Push the cartridge into the body without the O-rings installed. The cartridge should slide in easily, and bottom out with its large fins just inside the front surface of the casting. If the cartridge is difficult to install, or does not go in all the way, remove the cartridge and clean the body or remove any obstructions. Repeat this step until the cartridge installs easily.
3. Remove the cartridge and install the 2 O-rings. Lubricate the O-rings with silicon lubricant.
4. Install the cartridge back into the body. The cartridge should go in until the large fins are just inside the front surface of the casting (same position as in step 2). If you cannot push it in all the way due to O-rings, use bonnet and two (2) screws to force in.
5. Place the wax element into the stem assembly, stem side first, and place this bonnet-stem-motor assembly into/onto the valve body. Rotate the bonnet assembly to line up the bonnet screw holes and reinstall and tighten the four bonnet screws.

6. With handle, rotate the stem assembly clockwise, until it bottoms out on the cartridge. At this point your valve is in the off position.
7. Turn the hot and cold water supplies back on and verify there is no leakage.
8. Verify proper operation by rotating the stem from the off position, counterclockwise, to the high temperature position. Verify the temperature does not exceed your desired maximum temperature. Rotate stem back to the off position.
9. Leave the adjusting stem in the full hot position to determine the high temperature limit stop is set properly. If not, set the maximum temperature.

### **Maximum Temperature Setting**

The high temperature limit stop is threaded onto the bonnet. Turn counterclockwise to increase setting and clockwise to decrease setting. Powers recommends a maximum setting of 110°F (43°C). To adjust temperature, rotate handle to the maximum desired outlet temperature, screw temperature limit stop until it touches stem's shoulder. Close valve and open it to verify setting.

10. Install cover plate and handle with the screw provided. Ensure that the handle set screw lines up with the groove on the adjustment stem.

## Troubleshooting ■

*What to look for if:*

### The maximum temperature cannot be obtained...

- Lime deposits may have accumulated in the hot water pipes, restricting the hot water supply.
- The hot water supply temperature may be too low.
- The temperature limit stop setting may be too low. Remove valve handle, and readjust the temperature limit stop.

### Flow of water is less than desired...

- The upstream supply valves may not be fully open.
- The inlet supply pressure(s) may be low.
- Lime deposits may have accumulated in cartridge, restricting water flow.
- The showerhead may be clogged. Remove and clean.
- The checkstops may be clogged. Clean check stops.

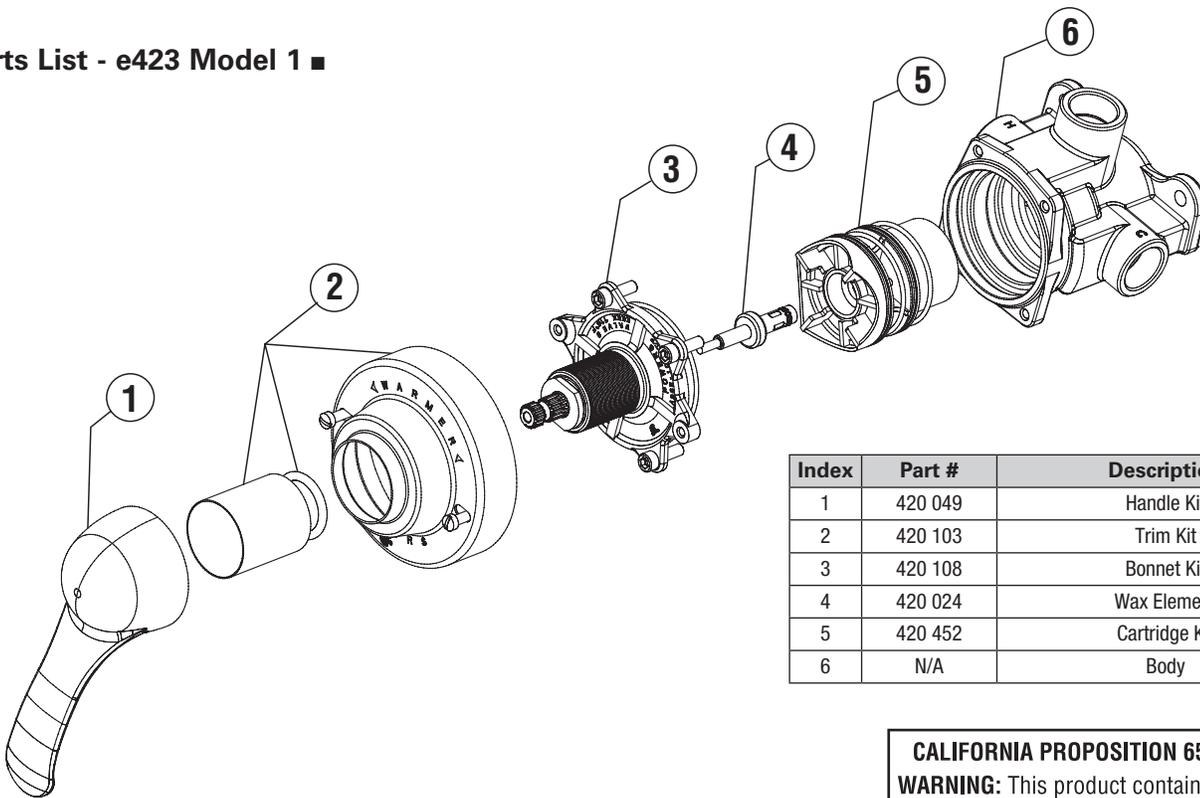
### The valve opens with hot water flow rather than cold water flow...

- The inlet water supplies are connected to the wrong ports. Remove the valve and reinstall.

### Flow of water is completely shut off...

- The upstream supply valves may be completely closed.
- The hot or cold water supply pressure may have failed. The HydroGuard® e423 valve is designed to reduce the flow of water upon either supply failure.
- The checkstops may be closed. Access the checkstops and open by turning the adjustment screw fully counterclockwise.

## Parts List - e423 Model 1 ■



Index	Part #	Description
1	420 049	Handle Kit
2	420 103	Trim Kit
3	420 108	Bonnet Kit
4	420 024	Wax Element
5	420 452	Cartridge Kit
6	N/A	Body

### 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](http://www.watts.com/prop65)

## 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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