

HydroGuard® Series e420
Under-the-Counter Thermostatic Tempering Valve

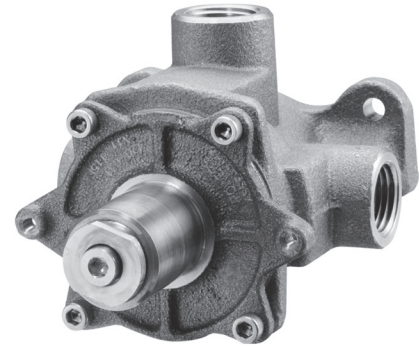
Technical Instructions

Description ■

Hydroguard Series e420 Under-the-Counter thermostatic tempering valves are designed for all applications where the temperature of generated hot water must be controlled for safe, economic use. A powerful advanced thermal actuator quickly senses and compensates for temperature fluctuations induced by water temperature and pressure changes in the supply line.

Rugged construction features cast brass body and corrosion-resistant internal components for years of dependable, trouble-free service. Hex socket makes temperature adjustment quick and easy.

For restricted access control, the Series e420 valve can be housed in a stainless-steel or white baked enamel steel cabinet and can be packaged with solenoid valve(s), checkstops or other accessories common to Powers' cabinet supply offering.



Advanced Thermal Activation

Specifications ■

Connections	1/2" NPT Inlets and 1/2" NPT Top Outlet
Capacity (without checkstops).....	4.25 gpm (16.0 L/min)*
.....	(±0.25 gpm [0.95 L/min])
Maximum Hot Water Supply Temperature	190°F (88°C)
Minimum Hot Water Supply Temperature	10°F (6°C) above set point**
Maximum Operating Pressure.....	125 psig (862 kPa)
Temperature Ranges:	
Standard.....	65-115°F (18-46°C)
Low	40-90°F (4-32°C)
High	120-175°F (49-79°C)
Maximum Static Pressure.....	125 psig (862 kPa)
Minimum Flow:	2.0 gpm (7.6 L/min)
Listing.....	ASSE 1070
Shipping Weight.....	5 lbs. (2.3 kg)

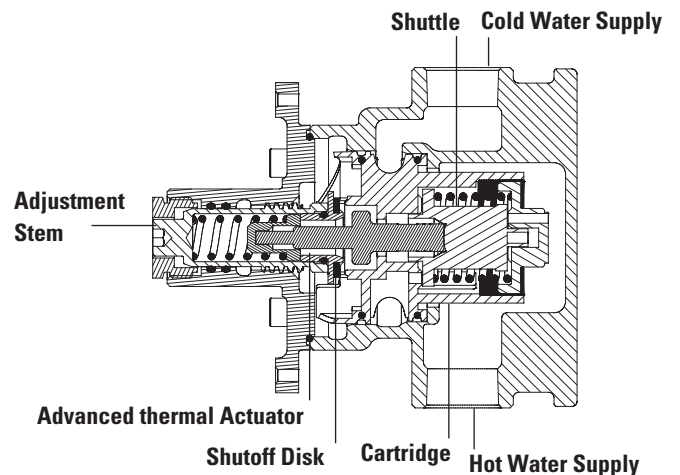
* At 45psi differential (310 kPa), with hot water supply between 140°-180°F (60-82°C) and 50/50 mix.

**not applicable to low temperature hot water valves

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 controls the valve assembly.

Rotating the adjustment handle repositions the shuttle in the cartridge assembly to produce the desired temperature. 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.



Safety and Performance 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. Although annual cleaning is recommended, frequency of cleaning depends on quality of local water conditions. Refer to Preventive Maintenance below for recommended cleaning procedure.
2. Quick closing valves may cause damage to the mixing valve by creating shock waves. When the e420 Hydroguard supplies tempered water to self-closing and/or solenoid valves, Powers recommends use of a shock absorber (Powers Part No. 460-353) on the discharge line. This protects the e420 Hydroguard valve from damage.

3. Locate the 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 to supply an entire building.
4. Correct valve sizing affects valve and system performance; under or over-sizing of the mixing valve(s) can cause poor operation and possibly injury.

Preventive Maintenance ■

Every Six Months: Check and adjust the temperature setting (See No. 4 under "Servicing".)

Every Twelve Months:

1. Shut off water supply.
2. Open up checkstops (if any).
3. Clean strainers (if any) and check for free movement of checkstop poppet.
4. Replace seals if cracked, cut, or worn.
5. Reassemble.
6. Adjust stem to desired temperature.

WARNING:

Always verify the maximum temperature setting to the valve after any changes are made. This should also be checked as a part of a facilities maintenance/safety program.

Troubleshooting ■

1. The flow of water is less than desired...

- valves upstream from supply not fully open
- low supply pressures
- accumulation of lime deposits in hot water pipes, restricting the flow of hot water
- checkstops not fully open
- clogged strainer screens in the checkstops
- clogged cartridge

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

- valves upstream from supply completely closed
- failure of cold water supply pressure (the e420 Hydroguard is designed to shut off on a cold water supply failure)
- checkstops completely closed

3. Flow is untempered hot or cold water...

- accumulation of lime deposits in hot water pipes, restricting the flow of hot water
- thermostatic actuator failure; replace with new thermostatic actuator
- hot and cold water supplies are connected to the wrong ports

4. Maximum temperature specified for the e420 Hydro-guard cannot be obtained...

- accumulation of lime deposits in hot water pipes, -restricting the flow of hot water
- hot water supply temperature is too low

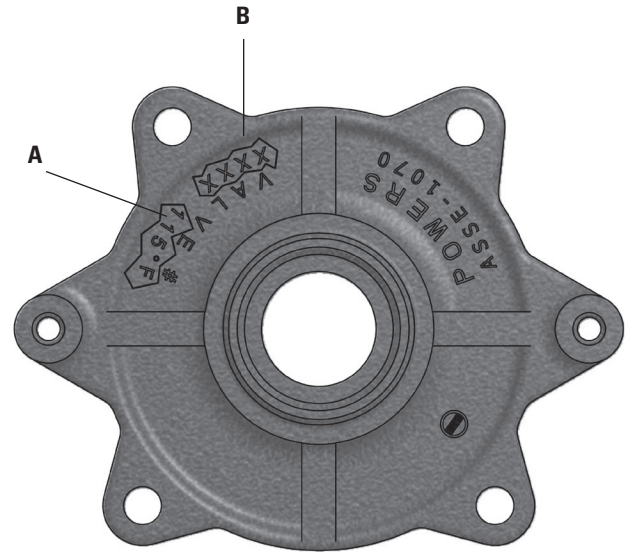
5. Variable discharge temperature occurs...

- extreme pressure variations in supply lines
- valve operating below minimum capacity requirements

Model Identification ■

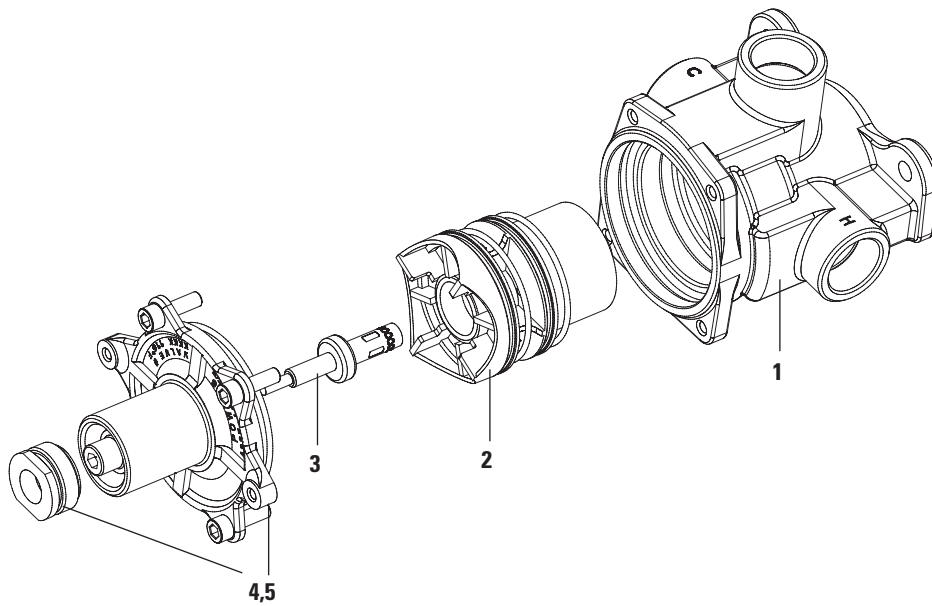
To be sure you are installing appropriate parts into your valve, determine the model number. The easiest way to do that is to look at the date code (found on the bonnet of the valve). The date code (not to be confused with the product or part number) is a four-digit code. Its purpose is to record the model/version number of the product itself and the date of manufacture. (See circle "B" in the figure for location of date code.)

The bonnet also indicates the maximum setting. In the figure, circle "A" shows the location of the temperature range: "115" (a standard valve).



Checkstops are required with this valve to prevent crossflow.

Parts List ■



Index	Part #	Description
1	N/A	Body
2	420 452	Cartridge Kits
3	420 024	Wax Element
4	420 060	Bonnet Kit, RB
5	420060A	Bonnet Kit, CP

Servicing ■

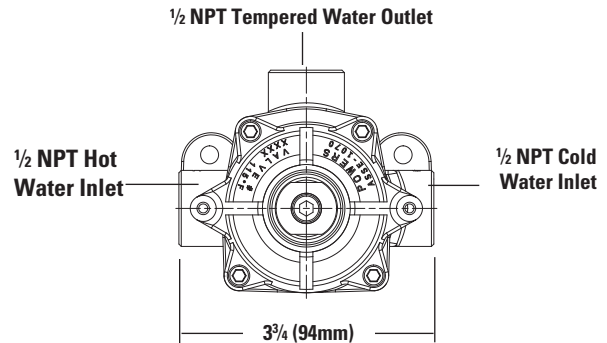
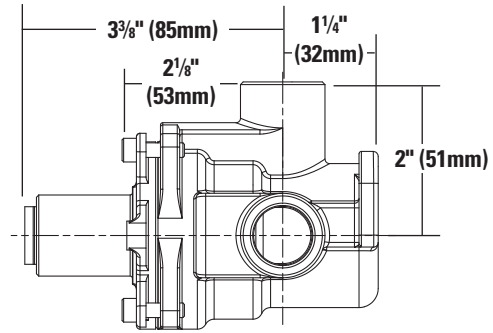
Before disassembling valve piping, turn off valve and the supply water upstream.

1. Remove four bonnet screws and pull out bonnet assembly.
The motor should come out with the bonnet. If not, it can easily be pulled out.
2. Remove the cartridge
3. Reassemble the valve in reverse order.

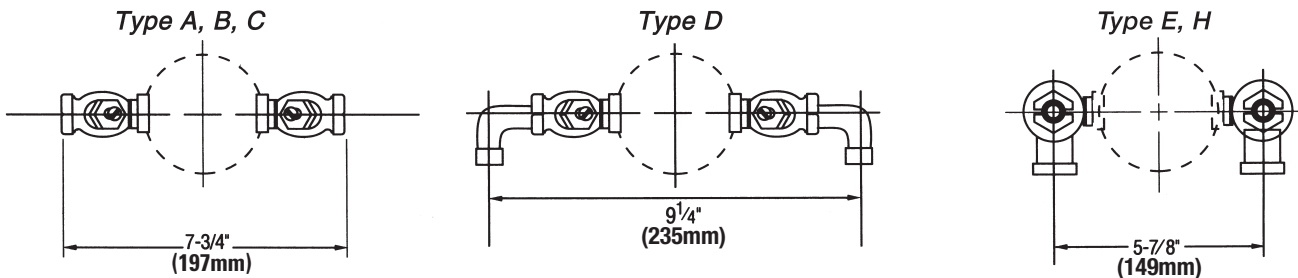
IMPORTANT: After completing any maintenance/repairs, check maximum discharge temperature. Adjust if necessary.

4. Maximum temperature setting: The high temperature limit stop is threaded on to the bonnet and is turned counter clockwise for an increased setting and clockwise for a decreased setting. Powers recommends a maximum setting of 110°F (43°C). To adjust the temperature, rotate stem to the maximum desired outlet temperature, screw temperature limit stop until it touches stem's shoulder. Close valve and open it to verify setting.

Dimensions ■



Checkstops ■



NOTE: After completing repairs, check discharge temperature. Reset if necessary.

WARNING: Failure to perform this operation could result in unsafe discharge temperature which may cause injury or death.

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

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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