

**POWERS**

A WATTS INDUSTRIES CO.

**TECHNICAL INSTRUCTIONS****Hydroguard T/P Series e420  
Under-the-Counter Thermostatic Tempering Valve****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. Stem makes temperature adjustment quick and easy. Hex in with an allen wrench

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



Shown above: Model e420-RB-E-S-S-O-O

**SPECIFICATIONS****Valve Construction:**

Under-the-Counter thermostatic mixing valve, with heavy cast bronze body and brass stem with allen wrench adjustment

**Connections** ..... 1/2" NPT Inlets and 1/2" NPT Top Outlet

**Capacity** ..... 5.25 gpm [19.8 L/min]\* (±0.25 gpm [0.94 L/min])

**Maximum Hot Water Supply Temperature** ..... 190°F [88°C]

**Minimum Hot Water Supply Temperature** (not applicable to low temperature hot water valve) ... .5°F [2.8°C] above set point

**Maximum Operating Pressure** ..... 125 psig [862 kPa]

**Temperature Range** ..... 90°-110°F Type P/65°-115°F [18°-46°C] Type T

**Maximum Static Pressure** ..... 125 psig [862 kPa]

**Minimum Flow** ..... 1.0 gpm [3.8 L/min]

**Shipping Weight** ..... .5 lbs. [2.3 kg]

The Hydroguard Series e420 Under-the-Counter valves meet the above operating conditions as stated in ASSE 1016 T/P (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 a Powers factory engineer to discuss your specific application. All Powers Under-the-Counter thermostatic mixing valves perform to the requirements of standards ASSE 1016 and CSA B125.

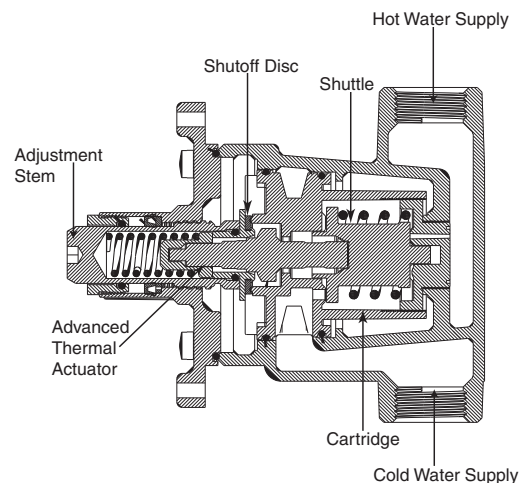
\* At 45 psi differential [310 kPa], with hot water supply between 140°-180°F [60-82°C] and 50/50 mix.

**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.

The standard Hydroguard e420 UTC valve is factory set to deliver tempered water of 110°F [43°C] with equal supply pressures, with hot water temperature 140°F [60°C], cold water temperature 60°F [15.6°C].



## 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.

**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.  
 (Installer: California law requires that this warning be given to the consumer.)  
 For more information: [www.wattsind.com/prop65](http://www.wattsind.com/prop65)

## PREVENTIVE MAINTENANCE

**Every Six Months:** Check and adjust the temperature setting (see instructions below).

**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. Remove the bonnet and check for freedom of movement of internal components.
5. Replace seals if cracked, cut, or worn.
6. Reassemble.
7. Adjust stem to desired temperature.

## 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 Hydroguard 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 below for location of date code.)

In the example below, the Date Code is labeled by circle "B". The first digit, 8, indicates the model number. The bonnet also indicates the maximum setting. In the figure below, circle "A" shows the location of the temperature range: "115" (a standard valve).

**Checkstops are required with this valve to prevent cross-flow.**

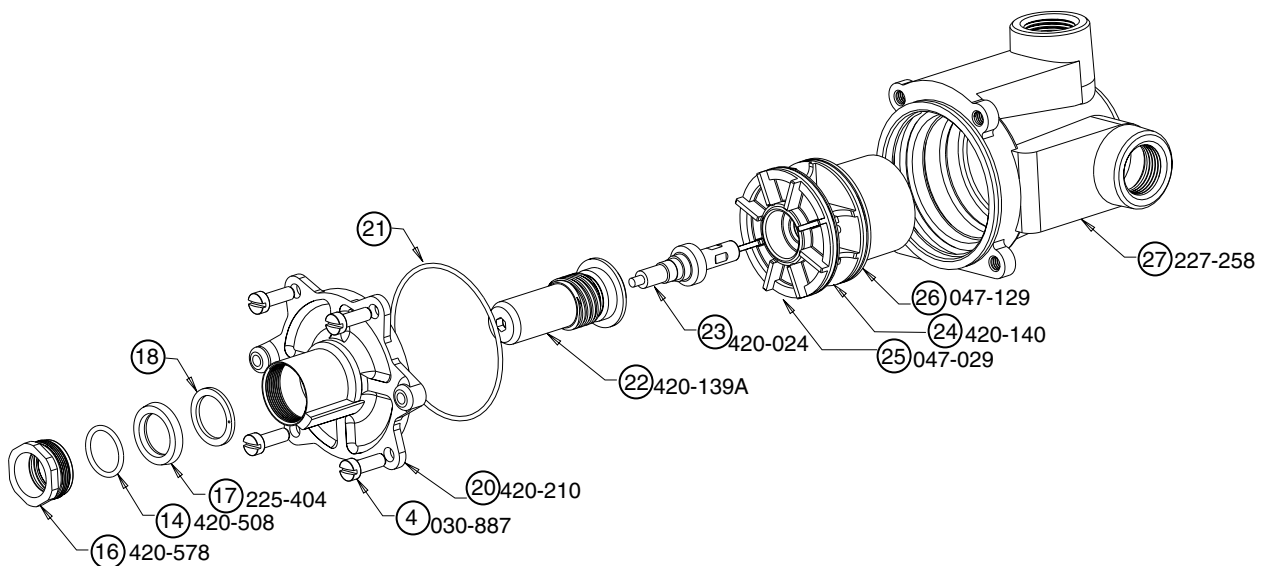


**Nameplate Stamp**

**PARTS LIST**

| Item # | Product # | Description                         | Material        |
|--------|-----------|-------------------------------------|-----------------|
| 4      | 420-214   | Screw Kit (12 pcs.)                 | Stainless Steel |
| 4A     | 080-050   | Vandal Resistant Screw Kit (12 pcs) | Stainless Steel |
| 14     | 084-014   | Stem "O" Ring                       | Buna N          |
| 16     | 420-578   | Packing Gland                       | Brass           |
| 17     | 225-404   | Huva Cup                            | Buna N          |
| 18     | 420-210   | Packing Stop Ring                   | Brass           |
| 20     | *         | Bonnet (use 420-610 kit)            |                 |
| 21     | 047-128   | Bonnet "O" Ring                     |                 |
| 22     | *         | Stem (use 420-610 bonnet kit)       | Brass           |
| 23     | *         | Thermal Actuator (use 420-453 kit)  |                 |
| 24     | *         | Cartridge (use 420-452 kit)         |                 |
| 25     | *         | "O" Ring (use 420-610 bonnet kit)   | Buna N          |
| 26     | *         | "O" Ring (use 420-610 bonnet kit)   | Buna N          |
| 27     | N/A       | Body                                | Brass           |

N/A = item not available as an individual commercial part.

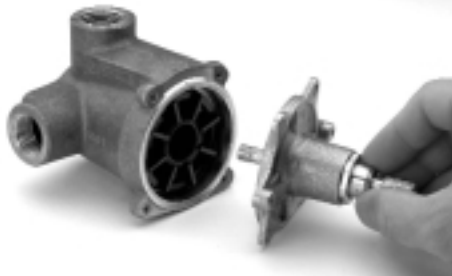
**REPAIR KIT PART NUMBERS**

| Problem                                                                        | Recommended Kit Type   | Repair Kit No. | Includes Items                           |
|--------------------------------------------------------------------------------|------------------------|----------------|------------------------------------------|
| Variable or untempered discharge temperature                                   | Thermal Actuator       | 420-453        | Thermal Motor, Bonnet O-Ring, (21, 23)   |
| Water leaks at bonnet/body                                                     | Soft Parts Kit         | 420-456        | Stem O-Ring, Bonnet O-Ring, Shutoff Disc |
| Variable or untempered discharge temperature continues after motor replacement | Cartridge Kit          | 420-452        | Cartridge, O-Rings,                      |
|                                                                                | Bonnet Kit             | 420-610        | Bonnet O-Ring                            |
|                                                                                | Models 8-9 Upgrade Kit | 420-611        | All items except 27                      |

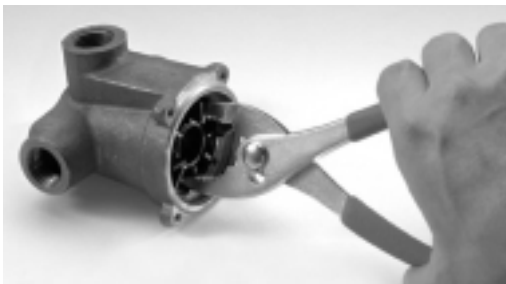
**SERVICING**

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

1. Remove four bonnet screws (16) and pull out bonnet assembly. The motor should come out with the bonnet. If not, it can easily be pulled out.

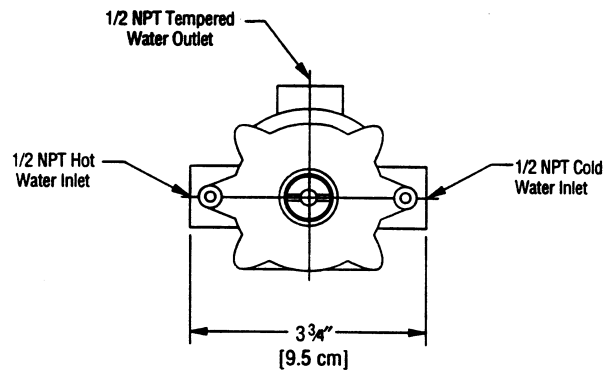
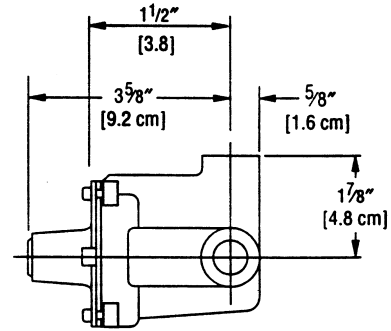


2. Remove the cartridge with tool (supplied) and a screwdriver or pliers.

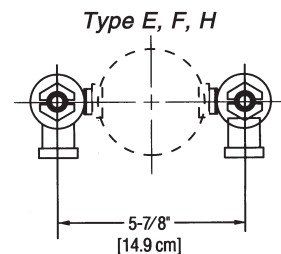
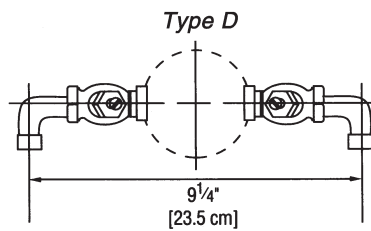
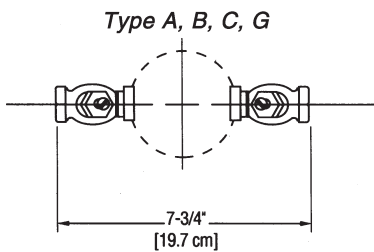


3. Reassemble the valve in reverse order.
4. **IMPORTANT:** After completing any maintenance/repairs, check maximum discharge temperature. Adjust if necessary.

**DIMENSIONAL DATA**



**CHECKSTOPS**



**WARRANTY INFORMATION**

Powers warrants that the equipment manufactured by it is free from defects in material and workmanship and, without charge, equipment found to be defective in material and 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 (2) years after date of shipment, provided said equipment has been properly installed, operated in accordance with Seller's instructions, and provided such defects are not due to abuse or chemical 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 Seller's equipment unless done by 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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