

### TECHNICAL INSTRUCTIONS

TI e700

#### DESCRIPTION

The Series e700 HydroGuard T/P automatically mixes hot and cold water to deliver blended water within a specified range. Using an advanced thermal actuator, the Series e700 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. HydroGuard T/P meets the most stringent performance criteria for temperature and pressure changes, defined by ASSE 1016 (Type T/P).

Featuring heavy, cast-brass construction and an adjustable brass to brass high limit temperature stop, self-contained cartridge, corrosion resistant internal component, integral checks, and back to back shallow wall installation capability. All parts of the e700 Series valve are accessible from the front of the valve. All Series e700 valves open in the cold water position to ensure maximum bather safety and comfort.

The accuracy, reliability and water economy of the Series e700 HydroGuard T/P make it preferable for



applications that require precise, consistent water control: showers, baths, hospital hydrotherapy and residential areas. All e700 valves meet the **Americans with Disabilities Act (ADA)**.

#### SPECIFICATIONS

**Valve Construction:** Combination mixing valve, with heavy cast bronze body and brass stem. Concealed adjustable high temperature limit stop. Available with ADA-compliant ABS or metal lever handle.

<b>Connections</b> .....	1/2" Sweat Inlet/Outlet
<b>Capacity</b> .....	4 gpm @ 45 psi ΔP 50/50 mix
<b>Maximum Hot Water Supply Temperature</b> .....	190°F (88°C)
<b>Minimum Hot Water Supply Temperature (Approach Temperature)</b> .....	5°F (2.8°C) above set point
<b>Maximum Operating Pressure</b> .....	125 psig (862 kPa)
<b>Temperature Ranges (for +/- 3°F performance)</b> .....	<b>ASSE 1016 Type T/P:</b> 90 - 110°F (32 - 43°C) <b>ASSE 1016 Type T:</b> 80 - 120°F (27 - 49°C)
<b>High Temperature Limit Stop</b> .....	Adjustable (factory set at 110°F [43°C])
<b>Maximum Static Pressure</b> .....	125 psig (862kPa)
<b>Minimum Flow</b> .....	0.5 gpm (1.89 L/min)
<b>Certified</b> .....	CSA B125
<b>Listing</b> .....	ASSE 1016
<b>Shipping Weight</b> .....	3.5 lbs. (1.6 kg)

All HydroGuard T/P Series e700 combination 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 a Powers factory engineer to discuss your specific application. All Powers thermostatic mixing valves perform to the requirements of standards ASSE 1016 and CSA B125.

## 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 position of the plunger and temperature.

Rotating the adjustment handle repositions the plunger in the cartridge assembly to produce the desired temperature. The mixed water passes over the shut-off 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 plunger to maintain the desired temperature. With the adjustment handle in full clockwise (OFF) position, the shut-off disc closes the mixing chamber from the outlet.

A high temperature limit stop restricts the movement of the control handle. All HydroGuard T/P e700 valves are 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].

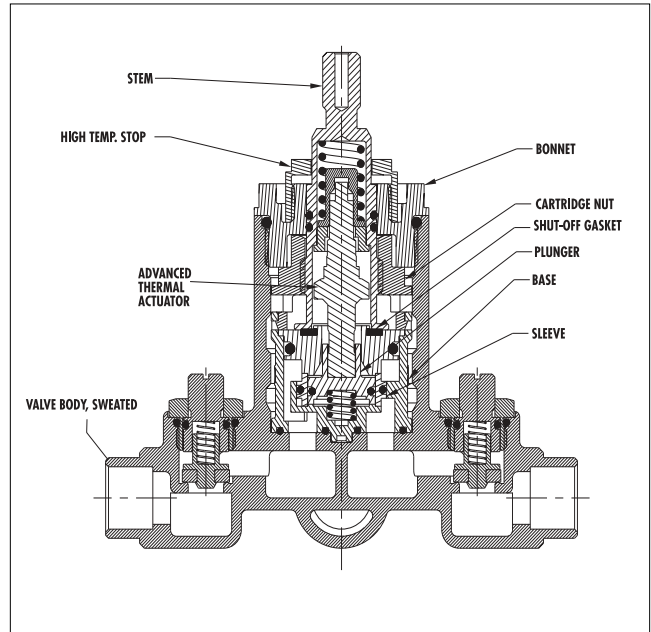
**Note: The handle rotation stop must be adjusted by the installer.**

**Maximum Temperature Setting/Handle Rotation Stop**

The handle rotation setting must be adjusted to limit the distance the user can rotate the handle towards the full hot water position.

**CAUTION: Any repair or modification of the valve may affect the high temperature setting. The maximum temperature setting must be checked by the installer before use.**

1. Remove the valve handle and trim.
2. Adjust the valve to the desired maximum outlet temperature [110°F (43°C) max]. Screw on the high temp. limit stop until it touches the stem shoulder.
3. Turn the stem clockwise until the water stops. Open valve to full hot position and verify maximum outlet temperature setting.
4. Place sleeve "O" Ring on the bonnet shoulder. Slide sleeve over the "O" Ring until it stops.



5. Replace trim plate and handle.

### Reversed Inlets

Valve is factory-set for standard inlets. If **reversed inlets** are required due to back-to-back installation (Cold water supply on the left and Hot water supply on the right), follow instructions a through d below:

- a. Connect **cold inlet** to **hot port** ("H") and **hot inlet** to **cold port** ("C"). **Note:** Do not turn valve upside down. If valve is upside down, water will not flow properly through tub spout or showerhead.
- b. Turn water off with checkstops, remove bonnet and cartridge.
- c. Reinstall cartridge. "H" on the cold side of the valve body and "C" should be on the hot side of the valve body.
- d. Reinstall bonnet with high temperature limit stop on it.

**Note: Be certain that valve opens in full cold!**

- e. Hot and Cold inlets should be re-identified for reversed inlets to avoid confusion during future maintenance.

## PREVENTIVE 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 handle assembly and trim plate.
- Before servicing the valve, turn off the water supply upstream OR close the checkstops. 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 cartridges.
- Winterize valves that are used outdoors. Remove and store the internal components and drain all water from the valve.

**SAFETY GUIDELINES - ALL MODELS**

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

1. Combination 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 is recommended, however, frequency of cleaning depends on quality of local water conditions. Refer to the

Preventive Maintenance section for recommended cleaning procedure.

**2. The high temperature limit stop setting must be adjusted to limit the distance the user can rotate the handle towards the full hot water position.**

3. Position the e700 valve as close as possible to outlet fixture to avoid waste of energy and water.

**TROUBLESHOOTING**

**What to look for if:**

**The maximum temperature cannot be obtained...**

- a. Lime deposits may have accumulated in the hot water pipes, restricting the hot water supply.
- b. The hot water supply temperature may be too low.
- c. The handle rotation setting may be too low. Remove valve handle, and readjust the high temperature limit stop (see page 2).

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

- a. The upstream supply valves may not be fully open.
- b. The inlet supply pressure(s) may be low.
- c. The showerhead may be clogged. Remove and clean the showerhead.
- d. The checkstops may be clogged. Refer to Preventive Maintenance section.

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

- a. The inlet water supplies are connected to the wrong ports or cartridge is installed improperly. See section on "Reverse Inlets".

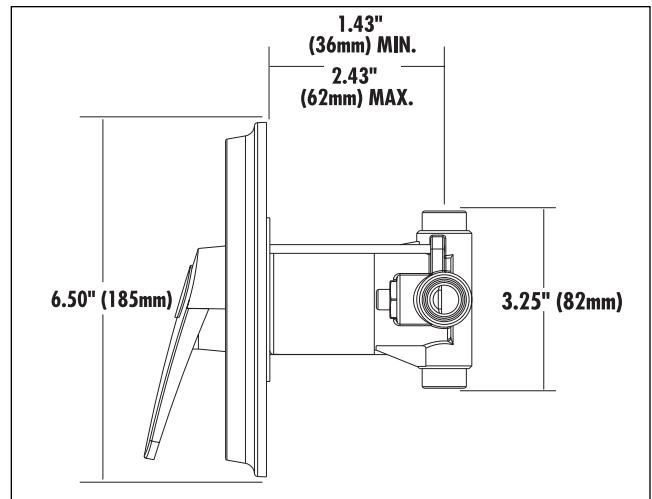
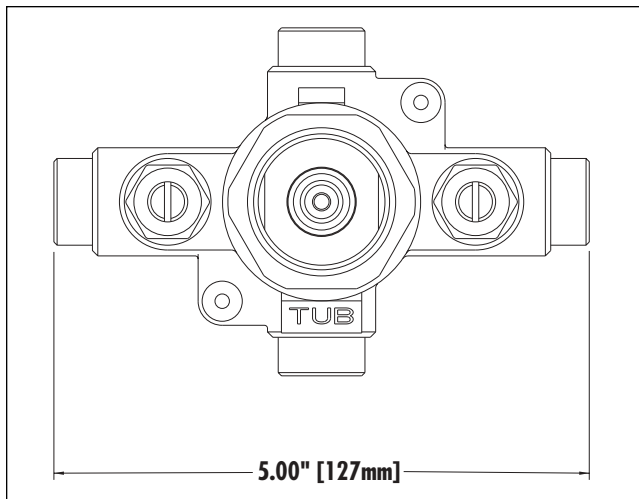
**The tempered water is too cold, although cartridge has been replaced, OR the hot water temperature is below 115°F...**

- a. Raise the temperature of the hot water supply.

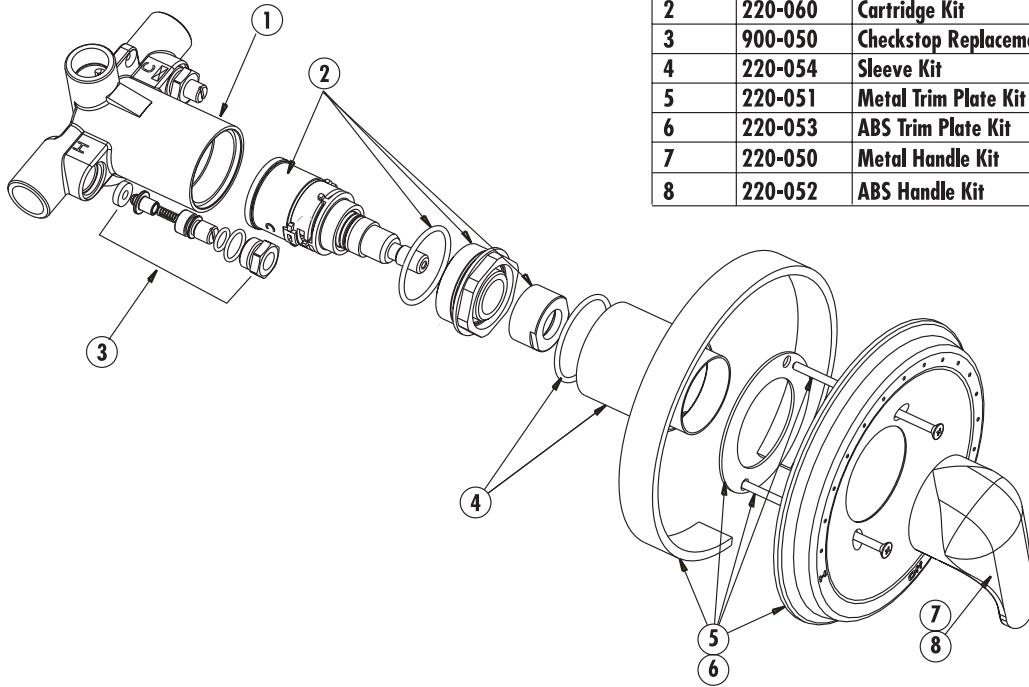
**Flow of water is completely shut off...**

- a. The upstream supply valves may be completely closed.
- b. The hot or cold water supply pressure may have failed. The e700 valve is designed to close down upon cold water supply pressure failure.
- c. The checkstops may be closed. Access the checkstops and open by turning the adjustment screw fully counterclockwise.

**DIMENSIONAL DATA**



**EXPLODED VIEW and PARTS LIST - e700**



ITEM#	KIT#	DESCRIPTION
1	N/A	Valve Body
2	220-060	Cartridge Kit
3	900-050	Checkstop Replacement Kit
4	220-054	Sleeve Kit
5	220-051	Metal Trim Plate Kit
6	220-053	ABS Trim Plate Kit
7	220-050	Metal Handle Kit
8	220-052	ABS Handle Kit

**REPAIR KITS**

Description	Troubleshooting	Repair Kit No.
Cartridge Kit	<ul style="list-style-type: none"> <li>• Water leaks at valve stem and/or bonnet.</li> <li>• Water leaks at valve shut-off.</li> <li>• Water temperature changes during shower.</li> </ul>	220-060
Checkstop Replacement Kit	<ul style="list-style-type: none"> <li>• Checkstop leaks or will not shut-off completely.</li> </ul>	900-050

**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)

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