

## HydroGuard® Series Tempering Valve With Internal & External Cold Water Bypass

### Technical Instructions

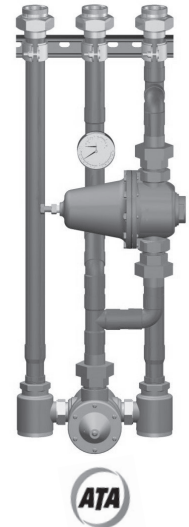
#### Description ■

Powers external bypass emergency tempering valve system consists of Powers ES Series emergency tempering valve and an independent external cold water bypass. Under normal operation the valve will thermostatically blend hot and cold water to deliver tepid water to emergency fixtures, quickly compensating for temperature variations due to changes in inlet temperature.

Powers ES Series valves have a dual internal cold water bypass that ensures cold water flow in the event of valve failure or loss of hot water. In many applications, the internal cold water bypass capacity is adequate to provide proper operation of the emergency fixtures.

The external cold water bypass system ensures an adequate supply of cold water if the primary valve, under a hot water supply loss or other failure mode, lacks the volume necessary for the proper operation of the emergency fixture.

Powers external bypass emergency tempering valve system includes a pressure regulating valve that will open when the outlet pressure decreases to a level that indicates a lack of water caused by a failure mode.



Advanced Thermal Activation

#### Specifications ■

- Maximum Operating Pressure ..... 125psi (861 kPa)
- Maximum Hot Water Temperature ..... 180°F (82°C)
- Approach Temperature ..... 15°F (8°C) Above Set Point
- Temperature Adjustment Range ..... 60 - 95°F (15 - 35°C)
- Factory Set Temperature ..... 85°F (29°C)
- Compliance ..... ANSI Z 358-1 1998

*Note: Set point cannot be less than the cold water temperature. For best operation, hot and cold water should be at least 15°F (8°C) from desired set point.*



**WARNING: TO ENSURE THE ACCURATE AND RELIABLE OPERATION OF THIS PRODUCT, IT IS ESSENTIAL TO:**

- Properly size each valve based on the individual application.
- Properly design the recirculation system to minimize pressure and temperature variations.
- Conduct an annual maintenance program to ensure proper operation of all critical components.

**FAILURE TO COMPLY WITH PROPER INSTALLATION INSTRUCTIONS COULD CONTRIBUTE TO VALVE FAILURE, RESULTING IN INJURY OR DEATH.**

#### Capacity ■

Flow Capacity at 50-50 Mixed Ratio							
		Pressure Drop Across Valve					
Model	Min. Flow Rate*	5psi (34 kPa)	10psi (69 kPa)	20psi (138 kPa)	30psi (207 kPa)	45psi (310 kPa)	60psi (414 kPa)
ES150XBY	1.0 gpm	4.0 gpm	6.0 gpm	9.0 gpm	14.0 gpm	17.0 gpm	20.0 gpm
	3.8 lpm	15.2 lpm	22.7 lpm	34.1 lpm	53.0 lpm	64.4 lpm	75.8 lpm
ES200XBY	3.0 gpm	15.0 gpm	20.0 gpm	30.0 gpm	36.0 gpm	45.0 gpm	52.0 gpm
	11.0 lpm	57.0 lpm	76.0 lpm	113.0 lpm	136.0 lpm	170.0 lpm	197.0 lpm
ES400XBY	3.0 gpm	27.0 gpm	38.0 gpm	54.0 gpm	66.0 gpm	80.0 gpm	92.0 gpm
	11.0 lpm	102.0 lpm	144.0 lpm	203.0 lpm	249.0 lpm	305.0 lpm	352.0 lpm

*\*Minimum flow when emergency bypass valve is installed at or near hot water source with recirculating tempered water with a properly sized continuously operating recirculating pump.*

#### Cold Water Bypass Capacity\* ■

- ES150XBY ..... 10.0 gpm (37.8 lpm) @ 30psi (207 kPa)
- ES200XBY ..... 36.0 gpm (136.3 lpm) @ 30psi (207 kPa)
- ES400XBY ..... 52.0 gpm (196.8 lpm) @ 30psi (207 kPa)

*\* Flow capacity measured with 60psi (414 kPa) cold water supply pressure.*

## Prior to Installation ■

1. Flush all piping thoroughly before installing.
2. Locate HydroGuard® as close as possible to the fixture being supplied
3. **Consult proper medical/safety authorities for the optimum temperature for your application. Before use, check for proper discharge temperature. Reset if necessary. Valve is preset for 85°F (29°C)**

## Temperature Adjustment ■

1. Open emergency fixture to allow flow through HydroGuard®
2. Loosen adjustment locking setscrew on the side of the orange top
3. Use special wrench (provided with the valve) to adjust the discharge tempered water. Place wrench at temperature adjustment screw. Turn screw counterclockwise to full hot position
4. Turn clockwise to desired temperature. Allow valve temperature to settle before making next adjustment.
5. When desired temperature is set, tighten the adjustment locking screw. Remove special wrench and keep in a safe place for future use
6. Close emergency fixtures

## Adjustment of Cold Water Bypass ■

1. Open emergency fixture
2. Close hot water checkstop
3. Verify there is adequate flow at the emergency fixture
4. If there is less flow than required, adjust cold water bypass flow as follows:
  - a) Loosen the locknut at the top of the cold water bypass. This must be all the way out to allow full range of adjustment
  - b) To increase bypass flow, turn adjusting screw clockwise or turn counterclockwise to reduce flow  
NOTE: Improper setting of cold water bypass may lead to continuous cold water flow that will effect tempered water setting.
  - c) Once proper flow conditions are set, tighten the locknut
  - d) Open hot water checkstop

**NOTE:** For any problems, refer to Troubleshooting section of this document or contact Powers' Technical Support Department at 1.800.669.5430 or [info@powerscontrols.com](mailto:info@powerscontrols.com).

## PART LIST FOR VALVE ■

See TI ES150 or TI ES200/ES400

### 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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## Troubleshooting ■

*What to look for if:*

- **The flow of water is less than desired:**
  1. Checkstops are not fully open
  2. Clogged checkstop strainer screen
  3. Accumulation of lime deposits around the valve
  4. Low supply pressure or unusual supply temperature
  5. Bypass valve not open. Refer to adjustment of cold water bypass instructions
- **The flow of water is completely shut off:**
  1. Checkstops are not fully open
  2. Fixtures downstream of HydroGuard® are fully closed
  3. Loss of cold water supply
- **The tempered water is too cold:**
  1. Refer to temperature adjustment instructions
  2. Make sure hot and cold water are at least 15°F (8°C) from desired set point
  3. Cold water bypass incorrectly set

## Preventative Maintenance ■

Emergency tempering valves are control devices which must be cleaned and maintained on a regular basis.

1. Test HydroGuard® system every week:
  - a) Open all fixtures and verify tempered water is still at set point
  - b) Verify flow rate is adequate at fixture
  - c) Shut cold water checkstop to verify that flow through mixing valve shuts down immediately
  - e) Open cold water checkstop and shut hot water checkstop. Verify adequate flow from fixtures. If not, refer to adjustment of cold water bypass instructions.
  - f) Open hot water checkstop. Verify temperature returns to set point.
- 2) Before servicing checkstops or piping, turn off the water upstream. At least every twelve (12) months open up the checkstops and check for the free movement of the poppet.
- 3) Before servicing the valve, turn off the water supply upstream or close the checkstops. To close the checkstops, turn the adjusting screw clockwise.
- 4) When opening checkstops after servicing, turn adjusting screw counterclockwise to fully open position then turn adjusting screw 1/2 turn clockwise for final setting
- 5) Every three (3) months, check the maximum temperature adjustments.
- 6) Every twelve (12) months, remove the valve bonnets and check the internal components for freedom of movement.



**CAUTION: Any changes in supply condition could effect the outlet water temperature. Check and adjust the valves accordingly to prevent injury to the users.**