Embrace the Technology®
CircuitSolver®
A ThermOmegaTech® brand

All components are NSF/ANSI 61 or NSF 372 Certified for use in domestic water systems.

# CircuitSolver® Union Assembly Thermal Disinfection Dual Valve with Uponor ProPEX® Systems (CSUATD-D-PX)

[Thermostatic balancing valve with union body, ball valves, ProPress ends & two actuators]

## SUBMITTAL

| | | |
|---|---|---|
| **JOB:** | **ORDER NO:** | **DATE:** |
| | **SUBMITTED BY:** | **DATE:** |
| **UNIT TAG:** | **APPROVED BY:** | **DATE:** |
| **CITY:** | **ENGINEER:** | **BUILDING TYPE:** |
| | | |
| **STATE:** | **CONTRACTOR:** | **CONSTRUCTION TYPE:** |
| | | |
| **COMPLETION DATE:** | | |

## DESCRIPTION

CircuitSolver® is a thermostatic balancing valve that automatically and continuously adjusts flow to maintain the desired temperature in a domestic hot water supply line. Since the CircuitSolver® responds to water temperature to control the flow entering the recirculation line it eliminates the need to manually balance the system. The "CSUATD-D-PX" version CircuitSolver® incorporates a second actuator to reopen the valve during a thermal disinfection process, an optional check valve, isolated ball valves, and Uponor ProPEX® adapter fittings.

## DIMENSIONS

| Item No. | Part Number | Description | Qty. |
|---|---|---|---|
| 1 | 261-20X00X-XXX | CSUTD-D-1/2-XXX/YYY-(CV1) | 1 |
| 2 | 92-116 | ADAPTER, ½" NPT x ½" ProPEX | 2 |
| 3 | 92-160 | BALL VALVE, ½" MxF, LF | 2 |

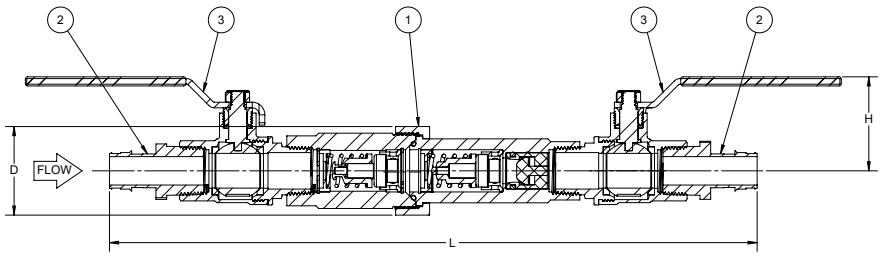
*ALL COMPONENTS ARE LEAD FREE

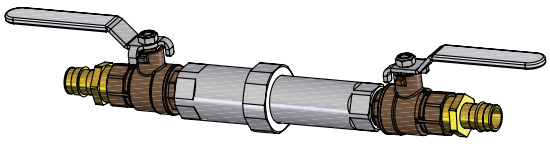
| Item No. | Part Number | Description | Qty. |
|---|---|---|---|
| 1 | 261-30X00X-XXX | CSUTD-D-3/4-XXX/YYY-(CV1) | 1 |
| 2 | 92-093 | ADAPTER, ¾" NPT x ¾" ProPEX | 2 |
| 3 | 92-158 | BALL VALVE, ¾" MxF, LF | 2 |

*ALL COMPONENTS ARE LEAD FREE

| Item No. | Part Number | Description | Qty. |
|---|---|---|---|
| 1 | 261-40X00X-XXX | CSUTD-D-1-XXX/YYY-(CV1) | 1 |
| 2 | 92-117 | ADAPTER, 1" NPT x 1" ProPEX | 2 |
| 3 | 92-170 | BALL VALVE, 1" MxF, LF | 2 |

*ALL COMPONENTS ARE LEAD FREE



| | | Diameter (D) | | Length (L) | | Height (H) | | Weight | | Standard Balancing $C_v$ | | | Thermal Disinfection Balancing $C_v$ | | Maximum Operating Pressure | | Maximum Temperature | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model No. | NPT | IN | MM | IN | MM | IN | MM | LBS | KG | OPEN | CLOSED | DESIGN | OPEN | CLOSED | PSIG | BAR | °F | °C |
| CSUATD-D-½-XXX/170-PX | 1/2" | 1.8 | 46 | 12.6 | 320 | 1.8 | 46 | 3.8 | 1.7 | 1.8 | 0.2 | 0.85 | 0.5 | 0.2 | 200 | 14 | 250 | 121 |
| CSUATD-D-½-XXX/170-CV1-PX | | | | | | | | | | | | | | | | | | |
| CSUATD-D-¾-XXX/170-PX | 3/4" | 2.0 | 51 | 13.9 | 353 | 2.0 | 51 | 4.0 | 1.8 | 1.8 | 0.2 | 0.85 | 0.5 | 0.2 | | | | |
| CSUATD-D-¾-XXX/170-CV1-PX | | | | | | | | | | | | | | | | | | |
| CSUATD-D-1-XXX/170-PX | 1" | 2.5 | 64 | 15.8 | 401 | 2.3 | 58 | 7.1 | 3.2 | 3.3 | 0.2 | 1.57 | 0.5 | 0.2 | | | | |
| CSUATD-D-1-XXX/170-CV1-PX | | | | | | | | | | | | | | | | | | |

**Model Number Selection**

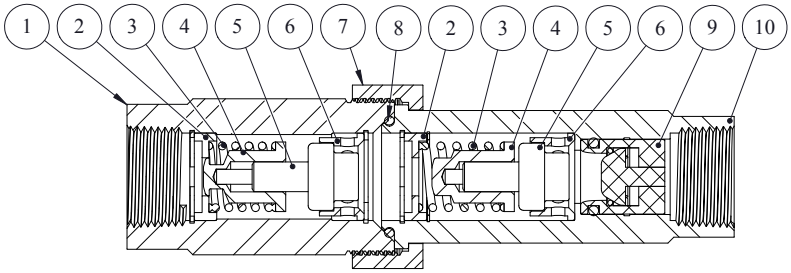
XXX refers to the desired closing temperature for standard balancing. When the water temperature drops below this point the CircuitSolver® will begin to open, allowing water to easily enter the return line. The valve will start to reopen approximately 20°F above the standard balancing temperature and rebalance the system at 170°F. For example, if you want 120°F desired return temperature and the CSUATD-D-PX is to be installed on a 3/4" line, the model number would be CSUATD-D-3/4-120-170-PX. To add optional check valve insert –CV1 to the end of the model number. Ex. CSUATD-D-3/4-120-170-CV1-PX

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1-877-379-8258 | CircuitSolver.com

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## MATERIALS




| ITEM | DESCRIPTION | MATERIAL |
|---|---|---|
| 1 | Valve Body w/ Union Threads | 300 series stainless steel |
| 2 | Insert - CircuitSolver® | 300 series stainless steel |
| 3 | Spring | 300 series stainless steel |
| 4 | Plug | 300 series stainless steel |
| 5 | Thermal Actuator | 300 series stainless steel |
| 6 | Carrier | 300 series stainless steel |
| 7 | Union Nut | 300 series stainless steel |
| 8 | O-ring | BUNA |
| 9 | Check Valve (optional) | GLASS FILLED NORYL |
| 10 | Insert - Female Threaded | 300 series stainless steel |

## FLOW RATE CALCULATION USING "Cv" FACTOR

$$GPM = C_v\sqrt{\Delta P} \qquad C_v = \frac{GPM}{\sqrt{\Delta P}} \qquad \Delta P = \left[\frac{GPM}{C_v}\right]^2$$

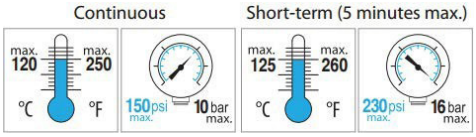
## OPTIONAL CHECK VALVE

**Features and Benefits**
-100% factory tested drip tight operation
-Snap fit design, no retainer needed
-Extra-low head loss and low cracking pressure
-External O-ring in groove
**Certifications**
-ANSI/ NSF 61

| ITEM | MATERIAL |
|---|---|
| Cap | Glass filled Noryl |
| Guide | Glass filled Noryl |
| Plunger | Glass filled Noryl |
| Lip Spring | EPDM rubber |
| Spring | Stainless Steel AISI 301 |
| O-ring | EPDM rubber |

## OPTIONAL CHECK VALVE TECHNICAL DATA

Medium: Clear water only
Approximate Cracking Pressure: 0.29 PSI




## TYPICAL SPECIFICATION

I. Furnish and install CIRCUITSOLVER® as indicated on the plans. CIRCUITSOLVER® shall be self-contained and fully automatic without additional piping or control mechanisms. Valve shall be a CIRCUITSOLVER® as manufactured by ThermOmegaTech®, Inc. or equivalent.
  A. CIRCUITSOLVER® shall regulate the flow of recirculated domestic hot water based on water temperature entering the CIRCUITSOLVER® regardless of system operating pressure. As the water temperature increases the valve proportionally closes dynamically adjusting flow to meet the specified temperature.
    1. CIRCUITSOLVER® never fully closes, even at the desired set point. There is always sufficient bypass flow back to the recirculating pump to prevent overheating or "dead heading" of the pump.
    2. CIRCUITSOLVER® is set at the factory for the desired return temperature. No field adjustments needed. Several temperature set points are available.
    3. CIRCUITSOLVER® Union Assembly Thermal Disinfection Dual Balancing Valve shall be available in 1/2", 3/4" & 1" NPT with ProPEX adapter fittings at both ends.
  B. CIRCUITSOLVER® Union Assembly Thermal Disinfection Dual Balancing Valve with ProPEX adapters allows for an additional balancing cycle at 170°F.
    1. The valve will start to re-open above the low temperature balancing set point to allow high temperature water through during a thermal disinfection process. The valve will rebalance at the second temperature set point.
II. CIRCUITSOLVER® body and all internal components are made with lead-free materials with major components constructed of type 300 series SS.
  A. CIRCUITSOLVER® shall be rated to 200 PSIG maximum working pressure.
    1. CIRCUITSOLVER® shall be standard tapered female pipe thread, NPT, with ProPEX adapter fittings at both ends.
  B. CIRCUITSOLVER® shall be rated to 250°F (121.1°C) maximum working temperature.
  C. Thermal actuator shall be spring-loaded and self-cleaning, delivering closing thrust sufficient to keep orifice opening free of scale deposits.
III. Installation of CIRCUITSOLVER® shall be made by qualified tradesmen. Install CIRCUITSOLVER® in each domestic hot water return piping branch beyond last hot water device in that branch.
  A. Provide suitable line size isolation valves, unions, and strainer as indicated in piping detail shown on the drawings.
  B. Provide suitable access panel as required in non-accessible ceilings and walls.
  C. Pay close attention to flow arrow, especially with valves that have an integrated check valve.

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