

**CircuitSolver® Union Strainer Assembly with Thermometer & Uponor ProPEX® Systems**  
 [Thermostatic balancing valve with union body, ball valves, strainer, thermometer & ProPEX ends]

**SUBMITTAL**

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

**DESCRIPTION**

The CircuitSolver® Union Strainer Assembly with thermometer's primary component is the CircuitSolver® which is a self-acting thermostatic recirculation valve that automatically and continuously maintains the end of each domestic hot water supply line at the specified water temperature. Since the CircuitSolver® responds to water temperature and controls flow to the return, it eliminates the need to manually balance the system. The featured strainer (20 mesh) must be maintained in order to avoid flow obstruction.

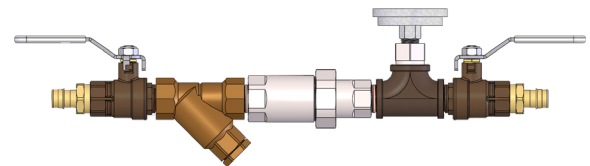
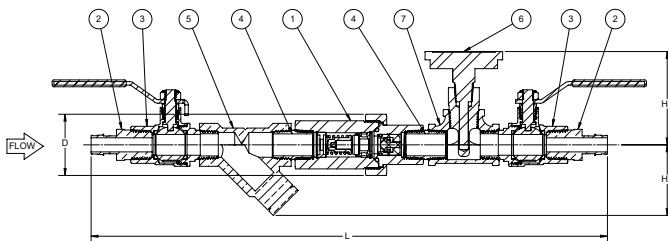
**DIMENSIONS**

| Item No. | Part Number    | Description   | Qty. | Item No. | Part Number    | Description   | Qty. | Item No. | Part Number    | Description   | Qty. |
|----------|----------------|---|------|----------|----------------|---|------|----------|----------------|---|------|
| 1        | 258-20X100-XXX | 1/2" CircuitSolver Thermostatic Balancing Valve With Integrated Union | 1    | 1        | 258-30X100-XXX | 3/4" CircuitSolver Thermostatic Balancing Valve With Integrated Union | 1    | 1        | 258-40X100-XXX | 1" CircuitSolver Thermostatic Balancing Valve With Integrated Union | 1    |
| 2        | 92-116         | 1/2" PXM Adapter  | 2    | 2        | 92-093         | 3/4" PXM Adapter  | 2    | 2        | 92-117         | 1" PXM Adapter  | 2    |
| 3        | 92-160         | Ball Valve, 1/2" MxF, Lead Free                                       | 2    | 3        | 92-158         | Ball Valve, 3/4" MxF, Lead Free                                       | 2    | 3        | 92-170         | Ball Valve, 1" MxF, Lead Free                                       | 2    |
| 4        | 92-162         | 1/2" x CL Nipple Brass  | 2    | 4        | 92-026         | 3/4" x CL Nipple Brass  | 1    | 4        | 92-044         | 1" x CL Nipple Brass  | 1    |
| 5        | 92-200         | Strainer, 1/2" NPT, Brass   | 1    | 5        | 92-201         | Strainer, 3/4" NPT, Brass   | 1    | 5        | 92-202         | Strainer, 1" NPT, Brass   | 1    |
| 6        | 93-094-S       | Thermowell Assembly   | 1    | 6        | 93-094-S       | Thermowell Assembly   | 1    | 6        | 93-094-S       | Thermowell Assembly   | 1    |
| 7        | 93-172         | 1/2" Tee, Brass   | 1    | 7        | 93-173         | 3/4" Tee, Brass   | 1    | 7        | 93-174         | 1" Tee, Brass   | 1    |

\*ALL COMPONENTS ARE LEAD-FREE

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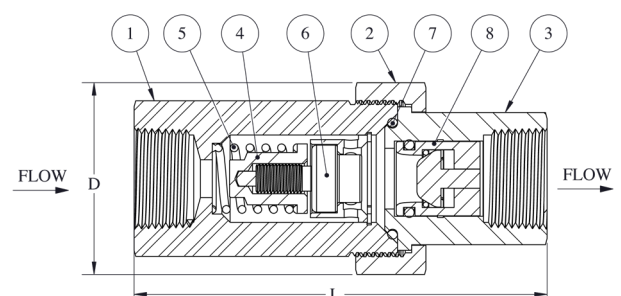
\*ALL COMPONENTS ARE LEAD-FREE



| Model No.               | Diameter (D) |     |    | Length (L) |     | Height 1 (H1) |    | Height 2 (H2) |    | Weight |     | C <sub>v</sub> |        |        | Max. Pressure |     | Max. Temp. |     |
|-------------------------|--------------|-----|----|------------|-----|---------------|----|---------------|----|--------|-----|----------------|--------|--------|---------------|-----|------------|-----|
|                         | NPT          | IN  | MM | IN         | MM  | IN            | MM | IN            | MM | LBS.   | KG  | OPEN           | CLOSED | DESIGN | PSIG          | BAR | °F         | °C  |
| CSUAS- ½ -XXX-PX-TW     | 1/2"         | 1.7 | 43 | 14.6       | 371 | 2.6           | 66 | 2.0           | 51 | 3.9    | 1.8 | 1.3            | 0.2    | 0.60   | 200           | 14  | 250        | 121 |
| CSUAS- ½ -XXX-CV1-PX-TW |              |     |    |            |     |               |    |               |    |        |     |                |        |        |               |     |            |     |
| CSUAS- ¾ -XXX-PX-TW     | 3/4"         | 2   | 51 | 17.5       | 445 | 2.9           | 74 | 2.3           | 58 | 5.8    | 2.6 | 1.8            | 0.2    | 0.85   |               |     |            |     |
| CSUAS- ¾ -XXX-CV1-PX-TW |              |     |    |            |     |               |    |               |    |        |     |                |        |        |               |     |            |     |
| CSUAS-1-XXX-PX-TW       | 1"           | 2.4 | 61 | 19.8       | 503 | 3.0           | 76 | 2.5           | 64 | 8.7    | 3.9 | 3.3            | 0.2    | 1.57   |               |     |            |     |
| CSUAS-1-XXX-CV1-PX-TW   |              |     |    |            |     |               |    |               |    |        |     |                |        |        |               |     |            |     |

**Model Number Selection**

XXX refers to the desired closing temperature. When the water temperature drops below this point the CircuitSolver® will begin to open, allowing water to easily enter the return line. For example, if you want 120°F desired return temperature and the CSUAS is to be installed on a 3/4" line, the model number would be CSUAS-3/4-120-PX-TW. To add optional check valve insert -CV1 directly after the temperature designation in the model number. Ex: CSUAS-3/4-120-CV1-PX-TW.

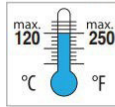



| MATERIALS   |                             |                            |
|---|-----------------------------|----------------------------|
|  |                             |                            |
| ITEM  | DESCRIPTION                 | MATERIAL                   |
| 1   | Valve Body w/ Union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

| FLOW RATE CALCULATION USING "Cv" FACTOR |                                     |   |
|---|-------------------------------------|---|
| $GPM = C_v \sqrt{\Delta P}$             | $C_v = \sqrt{\frac{GPM}{\Delta P}}$ | $\Delta P = \left[ \frac{GPM}{C_v} \right]^2$ |

### TYPICAL SPECIFICATION

- I. Furnish and install CIRCUITSOLVER® UNION STRAINER ASSEMBLY with THERMOMETER as indicated on the plans. CIRCUITSOLVER® UNION STRAINER ASSEMBLY with THERMOMETER shall be self-contained and fully automatic without additional piping or control mechanisms. Thermostatic 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® UNION STRAINER ASSEMBLY with THERMOMETER regardless of system operating pressure. As the water temperature increases the valve proportionally closes dynamically adjusting flow to meet the specified temperature.
    1. The 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 STRAINER ASSEMBLY with THERMOMETER shall be available in ½", ¾", & 1" with Uponor ProPEX adapter fittings at both ends.
- II. All components in the CIRCUITSOLVER® UNION STRAINER ASSEMBLY with THERMOMETER are made with lead-free materials. The major components that make up the CIRCUITSOLVER® are constructed of type 300 series SS.
  - A. CIRCUITSOLVER® UNION STRAINER ASSEMBLY with THERMOMETER shall be rated to 200 PSIG maximum working pressure.
    1. CIRCUITSOLVER® UNION STRAINER ASSEMBLY with THERMOMETER shall be standard tapered female pipe thread, NPT with ProPEX adapter fittings at both ends.
  - B. CIRCUITSOLVER® UNION STRAINER ASSEMBLY with THERMOMETER shall be rated to 250°F (121.1°C) maximum working temperature.
  - C. CIRCUITSOLVER® UNION STRAINER ASSEMBLY with THERMOMETER shall be NSF/ANSI/CAN 61 or 372 certified.
  - D. 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® UNION STRAINER ASSEMBLY with THERMOMETER shall be made by qualified tradesmen. Install CIRCUITSOLVER® UNION STRAINER ASSEMBLY with THERMOMETER in each domestic hot water return piping branch beyond last hot water device in that branch.
  - A. Strainer is integrated in the valve assembly.
  - 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.

| OPTIONAL CHECK VALVE                           |                          |
|--|--------------------------|
| <b>Features and Benefits</b>                   |                          |
| -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                     |                          |
| <b>Certifications</b>                          |                          |
| -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   |  |
| Continuous<br> | Short-term (5 minutes max.)<br> |
|                |                                 |