

## CircuitSolver® with Integrated Union Assembly with Strainer (CSUAS)

[Thermostatic balancing valve with union body, ball valves, and strainer]

### SUBMITTAL

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

**DESCRIPTION**

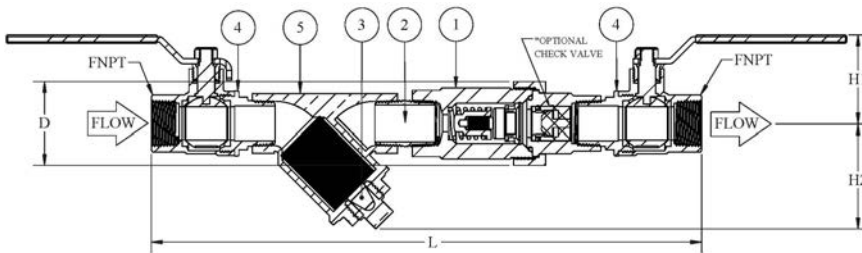
The CircuitSolver® Assembly's primary component is the CircuitSolver® which is a self-acting thermostatic recirculation valve which automatically and continuously maintains the end of each domestic hot water supply line at the specified water temperature. Since the CircuitSolver® responds to water temperature 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.

| Item No. | Part Number    | Description  | Qty. | Item No. | Part Number    | Description  | Qty. | Item No. | Part Number    | Description  | Qty. |
|----------|----------------|--|------|----------|----------------|--|------|----------|----------------|--|------|
| 1        | 258-20X100-XXX | ½" CIRCUITSOLVER® THERMOSTATIC BALANCING VALVE WITH INTEGRATED UNION | 1    | 1        | 258-30X100-XXX | ¾" CIRCUITSOLVER® THERMOSTATIC BALANCING VALVE WITH INTEGRATED UNION | 1    | 1        | 258-40X100-XXX | 1" CIRCUITSOLVER® THERMOSTATIC BALANCING VALVE WITH INTEGRATED UNION | 1    |
| 2        | 92-162         | ½" X CL NIPPLE BRS LF  | 1    | 2        | 92-026         | ¾" X CL NIPPLE BRS LF  | 1    | 2        | 92-044         | 1" X CL NIPPLE BRS LF  | 1    |
| 3        | 92-167         | 3/8" PIPE PLUG LF BRASS  | 1    | 3        | 92-058         | ½" PIPE PLUG LF BRASS  | 1    | 3        | 92-023         | 3/4" PIPE PLUG LF BRASS  | 1    |
| 4        | 92-160         | BALL VALVE, ½" MXF, LF   | 2    | 4        | 92-158         | BALL VALVE, ¾" MXF, LF   | 2    | 4        | 92-170         | BALL VALVE, 1" MXF, LF   | 2    |
| 5        | 92-161         | STRAINER, ½" Y, BRONZE LF  | 1    | 5        | 92-159         | STRAINER, ¾" Y, BRONZE LF  | 1    | 5        | 92-171         | STRAINER, 1" Y, BRONZE LF  | 1    |

\*ALL COMPONENTS ARE LEAD FREE

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| Model No.         | NPT  | Diameter (D) |    | Length (L) |     | Height 1 (H1) |    | Height 2 (H2) |    | Weight |     | C <sub>v</sub> |        | Max. Pressure |     | Max. Temp. |     |
|-------------------|------|--------------|----|------------|-----|---------------|----|---------------|----|--------|-----|----------------|--------|---------------|-----|------------|-----|
|                   |      | IN           | MM | IN         | MM  | IN            | MM | IN            | MM | LBS.   | KG  | OPEN           | CLOSED | PSIG          | BAR | °F         | °C  |
| CSUAS- ½ -XXX     | 1/2" | 1.8          | 46 | 10.7       | 272 | 1.8           | 46 | 2.5           | 64 | 3.3    | 1.5 | 1.3            | 0.1    | 200           | 14  | 250        | 121 |
| CSUAS- ½ -XXX-CV1 |      |              |    |            |     |               |    |               |    |        |     |                |        |               |     |            |     |
| CSUAS- ¾ -XXX     | 3/4" | 2.0          | 51 | 13.2       | 335 | 2.0           | 51 | 3.0           | 76 | 5.3    | 2.4 | 1.8            | 0.1    |               |     |            |     |
| CSUAS- ¾ -XXX-CV1 |      |              |    |            |     |               |    |               |    |        |     |                |        |               |     |            |     |
| CSUAS-1-XXX       | 1"   | 2.5          | 64 | 15.5       | 394 | 2.3           | 59 | 3.2           | 82 | 8.4    | 3.8 | 3.3            | 0.1    |               |     |            |     |
| CSUAS-1-XXX-CV1   |      |              |    |            |     |               |    |               |    |        |     |                |        |               |     |            |     |

**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. To add optional check valve insert -CV1 directly after the temperature designation in the model number. Ex. CSUAS-3/4-120-CV1

**FLOW RATE CALCULATION USING "C<sub>V</sub>" FACTOR FOR WATER**

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

**TYPICAL SPECIFICATION**

- I. Furnish and install CIRCUITSOLVER<sup>®</sup> ASSEMBLY as indicated on the plans. CIRCUITSOLVER<sup>®</sup> ASSEMBLY shall be self-contained and fully automatic without additional piping or control mechanisms. Thermostatic valve shall be a CIRCUITSOLVER<sup>®</sup> as manufactured by ThermOmegaTech<sup>®</sup>, Inc., or equivalent.
  - A. CIRCUITSOLVER<sup>®</sup> shall regulate the flow of recirculated domestic hot water based on water temperature entering the CIRCUITSOLVER<sup>®</sup> ASSEMBLY 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<sup>®</sup> 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<sup>®</sup> ASSEMBLY shall be factory adjustable as required by project conditions.
    3. CIRCUITSOLVER<sup>®</sup> ASSEMBLY shall be available in ½", ¾", & 1" with FNPT at both ends.
- II. All components in the CIRCUITSOLVER<sup>®</sup> ASSEMBLY are made with lead free materials. The major components that make up the CIRCUITSOLVER<sup>®</sup> are constructed of type 303 SS.
  - A. CIRCUITSOLVER<sup>®</sup> ASSEMBLY shall be rated to 200 PSIG maximum working pressure.
    1. CIRCUITSOLVER<sup>®</sup> ASSEMBLY shall be standard tapered female pipe thread, NPT.
  - B. CIRCUITSOLVER<sup>®</sup> ASSEMBLY shall be rated to 250°F (121.1°C) maximum working temperature.
  - C. CIRCUITSOLVER<sup>®</sup> ASSEMBLY shall have all lead free components.
  - 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<sup>®</sup> ASSEMBLY shall be made by qualified tradesmen. Install CIRCUITSOLVER<sup>®</sup> ASSEMBLY in each domestic hot water return piping branch beyond last hot water device in that branch.
  - A. Provide suitable 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.