

## Circuit Solver® 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

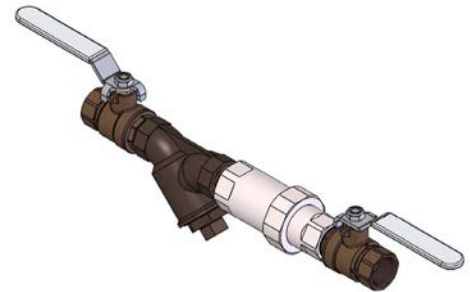
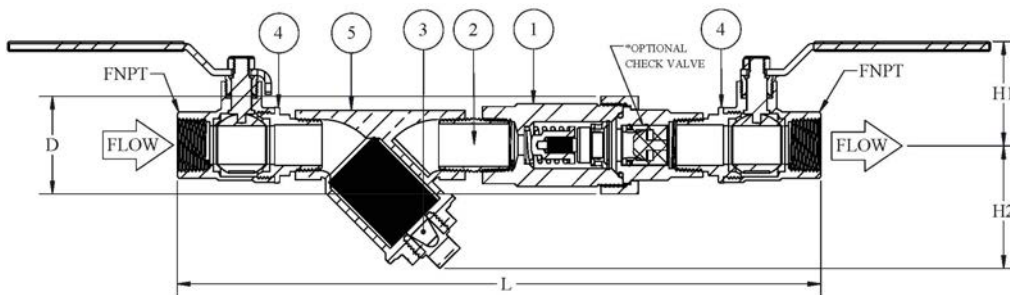
The Circuit Solver® Assembly's primary component is the Circuit Solver® which is a self-acting thermostatic recirculation valve which automatically and continuously maintains the end of each domestic hot water supply line at the specified water temperature. Since the Circuit Solver® responds to water 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.
1	258-20X100-XXX	1/2" CIRCUIT SOLVER® THERMOSTATIC BALANCING VALVE WITH INTEGRATED UNION	1
2	92-162	1/2" X CL NIPPLE BRS LF	1
3	92-167	3/8" PIPE PLUG LF BRASS	1
4	92-160	BALL VALVE, 1/2" MXF, LF	2
5	92-161	STRAINER, 1/2" Y, BRONZE LF	1

\*ALL COMPONENTS ARE LEAD FREE

Item No.	Part Number	Description	Qty.
1	258-30X100-XXX	3/4" CIRCUIT SOLVER® THERMOSTATIC BALANCING VALVE WITH INTEGRATED UNION	1
2	92-026	3/4" X CL NIPPLE BRS LF	1
3	92-058	1/2" PIPE PLUG LF BRASS	1
4	92-158	BALL VALVE, 3/4" MXF, LF	2
5	92-159	STRAINER, 3/4" Y, BRONZE LF	1

\*ALL COMPONENTS ARE LEAD FREE



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- 1/2 -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- 1/2 -XXX-CV1																	
CSUAS- 3/4 -XXX	3/4	2.0	51	13.2	335	2.0	51	3.0	76	5.3	2.4	1.8	0.1				
CSUAS- 3/4 -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 Circuit Solver® 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 CIRCUIT SOLVER® ASSEMBLY as indicated on the plans. CIRCUIT SOLVER® ASSEMBLY shall be self-contained and fully automatic without additional piping or control mechanisms. Thermostatic valve shall be a CIRCUIT SOLVER® as manufactured by ThermOmegaTech®, Inc., or equivalent.
- A. CIRCUIT SOLVER® shall regulate the flow of recirculated domestic hot water based on water temperature entering the CIRCUIT SOLVER® 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 CIRCUIT SOLVER® 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. CIRCUIT SOLVER® ASSEMBLY shall be factory adjustable as required by project conditions.
  3. CIRCUIT SOLVER® ASSEMBLY shall be available in ¾” with FNPT at both ends
- II. All components in the CIRCUIT SOLVER® ASSEMBLY are made with lead free materials. The major components that make up the CIRCUIT SOLVER® are constructed of type 303 SS.
- A. CIRCUIT SOLVER® ASSEMBLY shall be rated to 200 PSIG maximum working pressure.
1. CIRCUIT SOLVER® ASSEMBLY shall be standard tapered female pipe thread, NPT.
- B. CIRCUIT SOLVER® ASSEMBLY shall be rated to 250° F (121.1°C) maximum working temperature.
- C. CIRCUIT SOLVER® 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 CIRCUIT SOLVER® ASSEMBLY shall be made by qualified tradesmen. Install CIRCUIT SOLVER® 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.