

CircuitSolver® Assembly (CSA)
 [Thermostatic balancing valve with ball valves, check valve, and union]
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 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.

DIMENSIONS

Item No.	Description	Qty.
1	CIRCUITSOLVER® THERMOSTATIC BALANCING VALVE	1
2	BALL VALVE, MXF, LF	2
3	SWING CHECK VALVE BRS LF	1
4	BRASS UNION THD LF	1
5	CL NIPPLE BRS LF	2

* ALL COMPONENTS ARE LEAD-FREE

Model No.	NPT	Diameter (D)		Length (L)		Height (H)		Weight		C _v			Max. Pressure		Max. Temp.	
		IN	MM	IN	MM	IN	MM	LBS.	KG	OPEN	CLOSED	DESIGN	PSIG	BAR	°F	°C
CSA-3/4-XXX	3/4"	2.0	51	12.8	325	1.8	46	4.0	1.8	1.8	0.2	0.85	200	14	250	121
CSA-1-XXX	1"	2.5	64	14.3	363	2.5	64	8.0	3.6	3.3	0.2	1.57				
CSA-1 1/4-XXX	1 1/4"	2.8	71	18.1	460	2.5	64	11.2	5.0	5.1	0.2	2.48				
CSA-1 1/2-XXX	1 1/2"	3.4	86	20.6	523	2.8	71	15.1	6.8	7.6	0.2	3.72				
CSA-2-XXX	2"	4.0	102	23.7	602	3.0	76	23.1	10.4	14.2	0.2	7.02				

Model Number Selection

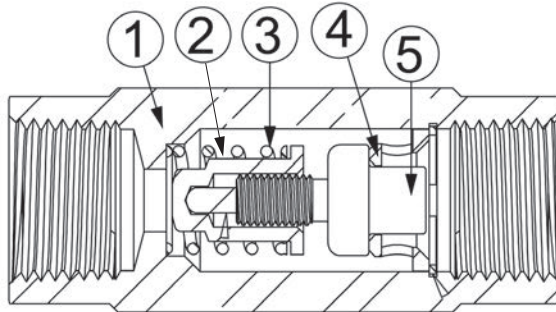
XXX refers to the desired closing temperature. When the water temperature drops below this point the CircuitSolver® will begin to open, allowing water to easily enter the return line. For example, if you want 120°F desired return temperature and the CSA is to be installed on a 3/4" line, the model number would be CSA-3/4-120.

FLOW RATE CALCULATION USING "Cv" FACTOR SHOWN IN TABLE ON FRONT

$$\text{GPM} = C_v \sqrt{\Delta P}$$

$$C_v = \sqrt{\frac{\text{GPM}}{\Delta P}}$$

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

DIMENSIONS


ITEM	DESCRIPTION	MATERIAL
1	Valve Body	303 stainless steel
2	Valve Plug	303 stainless steel
3	Spring	302 stainless steel
4	Carrier	303 stainless steel
5	Thermal Actuator	303 stainless steel

TYPICAL SPECIFICATION

- I. Furnish and install CIRCUITSOLVER[®] ASSEMBLY as indicated on the plans. CIRCUITSOLVER[®] ASSEMBLY 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[®] ASSEMBLY 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[®] shall be available in ¾", 1", 1¼", 1½", & 2" with FNPT at both ends.
- II. All components in the CIRCUITSOLVER[®] ASSEMBLY are made with lead-free materials. The major components that make up the CIRCUITSOLVER[®] are constructed of type 303 SS.
 - A. CIRCUITSOLVER[®] ASSEMBLY shall be rated to 200 PSIG maximum working pressure.
 1. CIRCUITSOLVER[®] ASSEMBLY shall be standard tapered female pipe thread, NPT.
 - B. CIRCUITSOLVER[®] ASSEMBLY shall be rated to 250°F (121.1°C) maximum working temperature.
 - C. CIRCUITSOLVER[®] 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[®] ASSEMBLY shall be made by qualified tradesmen. Install CIRCUITSOLVER[®] 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.