Embrace the Technology®
CircuitSolver®
A ThermOmegaTech® brand

ALS C US NSF/ANSI/CAN 61 / 372

CircuitSolver® Union (CSU)

[Thermostatic balancing valve with integrated union and optional check valve]

SUBMITTAL

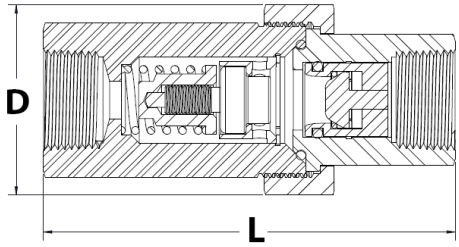
JOB:	**ORDER NO:**	**DATE:**
	SUBMITTED BY:	**DATE:**
UNIT TAG:	**APPROVED BY:**	**DATE:**
CITY:	**ENGINEER:**	**BUILDING TYPE:**
STATE:	**CONTRACTOR:**	**CONSTRUCTION TYPE:**
COMPLETION DATE:		

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 "CSU" CircuitSolver® model incorporates a union into the body of the valve and offers an optional check valve insert. The union uses an O-ring seal providing the advantage of a leak-free connection.

DIMENSIONS





		Diameter (D)		Length (L)		Weight		C_v			Max. Pressure		Max. Temp.	
Model No.	NPT	IN	MM	IN	MM	LBS.	KG	OPEN	CLOSED	DESIGN	PSIG	BAR	°F	°C
CSU- ½ -XXX	1/2"	1.8	46	3.7	94	1.2	0.5	1.3	0.2	0.60	200	14	250	121
CSU- ½ -XXX-CV1														
CSU- ¾ -XXX	3/4"	2.0	51	4.3	110	1.9	0.9	1.8	0.2	0.85				
CSU- ¾ -XXX-CV1														
CSU-1-XXX	1"	2.5	64	4.7	120	3.1	1.4	3.3	0.2	1.57				
CSU-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 CSU is to be installed on a 3/4" line, the model number would be CSU-3/4-120. To add optional check valve insert –CV1 to the end of the model number. Ex.CSU-3/4-120-CV1

FLOW RATE CALCULATION USING "Cv" FACTOR SHOWN IN TABLE ABOVE

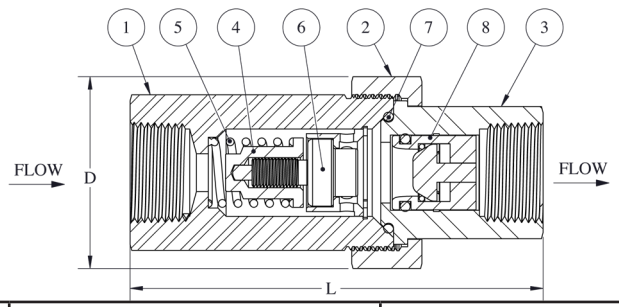
$$GPM = C_v\sqrt{\Delta P} \qquad C_v = \frac{GPM}{\sqrt{\Delta P}} \qquad \Delta P = \left[\frac{GPM}{C_v}\right]^2$$

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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

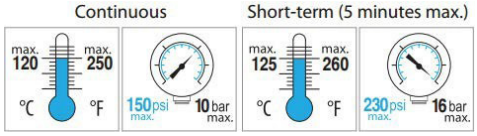
OPTIONAL CHECK VALVE

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® UNION as indicated on the plans. CIRCUITSOLVER® UNION shall be self-contained and fully automatic without additional piping or control mechanisms. Valve shall be a CIRCUITSOLVER® UNION as manufactured by ThermOmegaTech®, Inc. or equivalent.
  A. CIRCUITSOLVER® UNION shall regulate the flow of recirculated domestic hot water based on water temperature entering the CIRCUITSOLVER® UNION regardless of system operating pressure. As the water temperature increases the valve proportionally closes dynamically adjusting flow to meet the specified temperature.
    1. CIRCUITSOLVER® UNION 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® UNION is set at the factory for the desired return temperature. No field adjustments needed. Several temperature set points are available.

II. CIRCUITSOLVER® UNION body and all internal components are made with lead-free materials with major components constructed of type 300 series SS.
  A. CIRCUITSOLVER® UNION shall be rated to 200 PSIG maximum working pressure.
    1. THE CIRCUITSOLVER® UNION shall be standard tapered female pipe thread, NPT.
  B. THE CIRCUITSOLVER® UNION shall be rated to 250°F (121.1°C) maximum working temperature.
  C. CIRCUITSOLVER® UNION 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 shall be made by qualified tradesmen. Install CIRCUITSOLVER® UNION 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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