



## Model: CSTC-\_\_

### Description:

The Cold Shot Chillers low temperature control system provides close tolerance process fluid down to as low as 33°F. When properly sized and paired with one of our industrial chillers, the system can maintain temperatures within +/- 0.5°F of the Set Value. The basic heat exchanger with pump model is shown. Typical flow variations and configurations are shown on flow diagram.

MODEL – TYPE	CSTC
Controls	Electronic Temperature Controller and Control Valve
Heat Exchanger Type	Stainless Steel / Copper Brazed Plate
Process Side Materials	Copper, Brass, and Stainless Steel
Chilled Side Materials	Copper, Brass, and Stainless Steel
Set Value Limit MIN To MAX (°F) (Deviation)	33 – 99°F (+/- 0.5 Δ°F)
Electrical Controls (V – Ø – Hz – A)	24VAC and 120VAC – 1PHASE – 60HZ – <1A
Ambient Conditions	Suitable for Indoor Use



MODEL – SIZES	36	90	150	360
<b>CONFIGURATION VARIATION</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
CAPACITY <sup>1</sup> (BTU/hr) Max	36,000	90,000	150,000	360,000
CHILLED SIDE (IN/OUT)	1" FNPT	1-1/4" FNPT	2" FNPT	2" FNPT
PROCESS SIDE (IN/OUT)	1" FNPT	1-1/4" FNPT	2" FNPT	2" FNPT
DIMENSIONS (Inches) LxWxH	36x20x55	36x20x55	36x25x55	36x25x55
WEIGHT (LBS)	150	210	275	350
<b>CONFIGURATION VARIATION</b>	<b>XP</b>	<b>XP</b>	<b>XP</b>	<b>XP</b>
(Typical) PUMP <sup>2</sup> (GPM@PSI)	30@30	55@30	75@30	95@30
PUMP HP	1	1-1/2	2	3
MCA FOR CODE -2: 208/230V - 1Ø	8.2	Na	na	Na
MCA FOR CODE -5: 208/230V - 3Ø	4.2	6.2	7.0	10.5
MCA FOR CODE -6: 460V - 3Ø	2.1	3.1	3.5	5.2
DIMENSIONS (Inches) LxWxH	36x30x55	36x30x55	36x30x55	36x30x55
WEIGHT (LBS)	350	400	400	400

### STANDARD FEATURES:

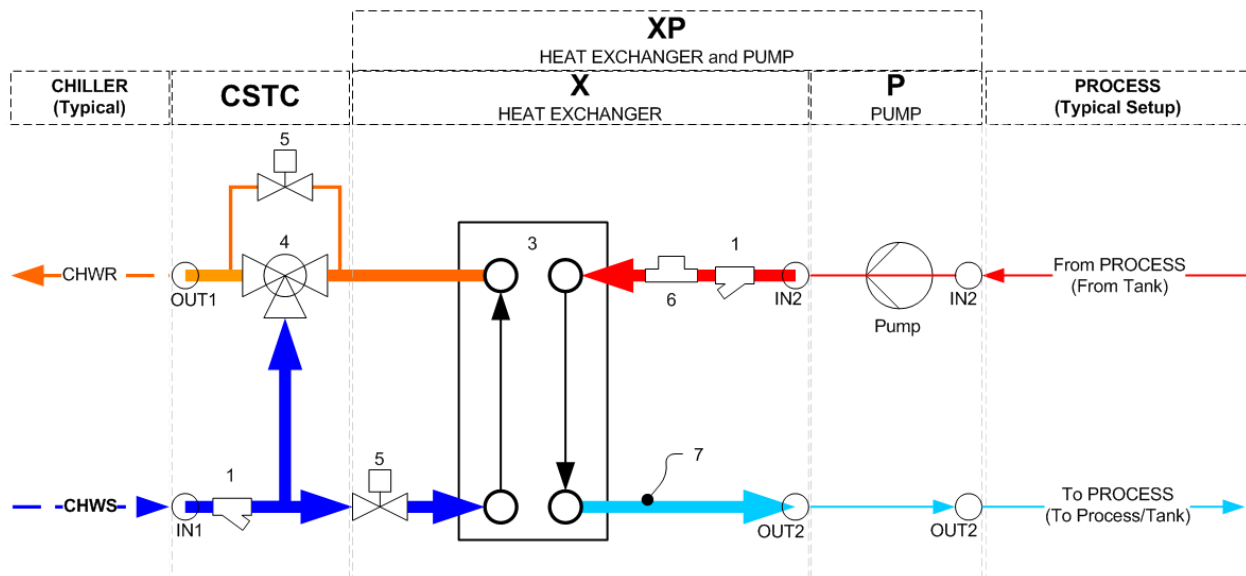
- **Controls:** Temperature controller provides constant display of Set Value and Process Value. Control valve controls cooling fluid flow.
- **Heat Exchanger:** Standard single wall heat exchanger. (Option: DX - Double-Wall Brazed Plate)
- **Fluid Components:** Heat exchangers to have strainer with 20 mesh stainless steel screen. (Option: DX includes potable water components.)
- **Safety Controls:** Low temperature alarm, freeze safety, low water flow switch, control circuit safety fuses.
- **Construction:** Insulated piping and components. Heat exchanger typically has stainless steel base skid with forklift slots.
- **Warranty:** One year parts.

### OPTIONS:

- **Pump:** (Typically, mounted on heat exchanger skid)
  - o Typical ratings and capacities are shown on technical data tables above for standard systems.
  - o Stainless steel centrifugal type pump.
  - o Motors to include overload and short-circuit protection.
- **Tank:** (Typically, shipped separately for connecting to X or XP Skid at site)
  - o Vented polypropylene insulated tank with lid, level sight glass, and drain valve.
  - o **Fluid Level Monitor/Fill Upgrade** (Addition to Tank option)
    - Connects to tank (specify refill rate for proper sizing of valves and floats)

<sup>1</sup> Heat transfer capacity is dependent on the chiller system used and the system setup.

<sup>2</sup> Pump capacity shown is a specific point on the pump capacity curve diagram.



COMPONENT CODES	
1	Strainer
2	Solenoid Valve
3	Heat Exchanger
4	Control Valve
5	Flow Control Valve
6	Liquid Flow Switch
7	Temperature Sensor
8	Pump

Typical Flow Diagram with CSTC unit

**ORDERING GUIDE: (Model Nomenclature) example**

Model Type	Capacity Size <sup>3</sup>	Series	Flow Configuration <sup>4</sup>	Temperature Range <sup>5</sup>	Ambient Conditions <sup>6</sup>	Voltage <sup>7</sup>
<b>CSTC-</b>	<b>—</b>	<b>-A-</b>	<b>X-</b>	<b>LT-</b>	<b>IND-</b>	<b>4</b>
CSTC	36 90 150 360	A	X = HX only XP = HX & Pump DX = DWHX only DXP = DWHX & Pump	_ = Standard Temp LT = Low Temp	IND = Suitable for indoor use only. 40 = Suitable for outdoor to 40°F (Not recommended for use below 40°F)	2 = 208-230VAC-1Ø-60Hz 4 = 120VAC-1Ø-60Hz 5 = 208-230VAC-3Ø-60Hz 6 = 460VAC-3Ø-60Hz

**NOTES:** All specifications subject to change without notice. Specify any variations upon ordering.  
MCA=Minimum circuit amps based on UL1995

<sup>3</sup> Capacity is dependent on the chiller system used and the system setup.

<sup>4</sup> Flow Design: X=HeatExchanger, XP=HeatExchanger&Pump, XPT= HeatExchanger,Pump&Tank (Add "D" prefix for Double-Wall HX)

<sup>5</sup> Leaving Fluid Temperature: (\_=Standard, LT=Low Temperature (Standard is 33°F. If other, specify lowest temperature in °F.))

<sup>6</sup> Ambient Temperature Conditions (IND=Indoor Use, 40=Outdoor Use to 40°F, Not recommended for use below 40°F.)

<sup>7</sup> Electrical Power Code

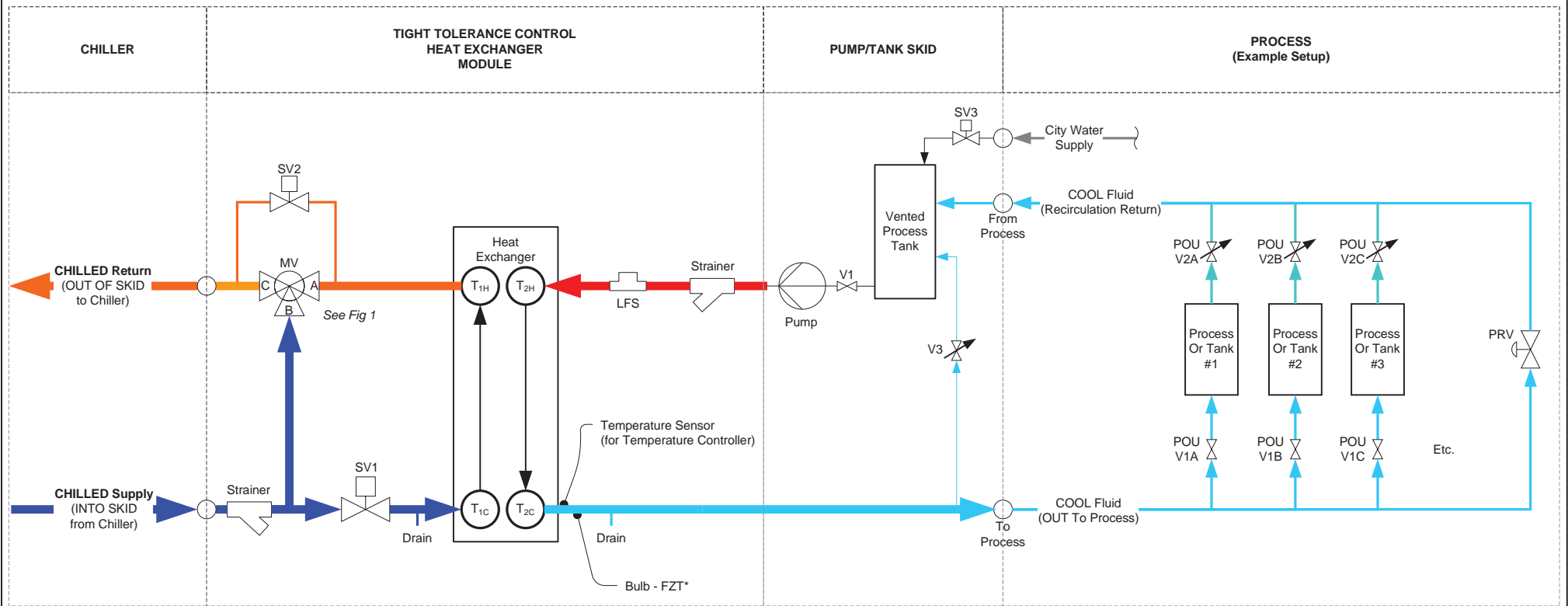
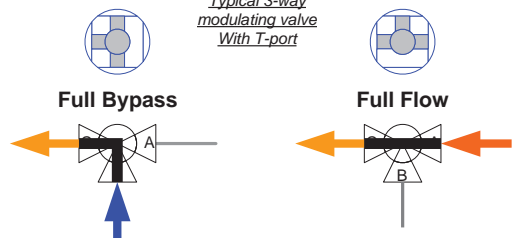


Figure 1  
Typical 3-way modulating valve With T-port



COMPONENT CODES	
FZT	Freeze Safety Thermostat
LFS	Liquid Flow Switch
HX	Heat Exchanger
MV	Modulated Position Valve
NC	Normally Closed
NO	Normally Open
POU	Point-Of-Use
SV1	Solenoid Valve 1 (Safety Control)
SV2	Solenoid Valve 2 (Flow Capacity Control)
SV3	Solenoid Valve 3 (Tank Fill Control)
TC	Thermocouple (Type J only)
TLH	Tank Level Switch - High
TLL	Tank Level Switch - Low
TLM	Tank Level Switch - Mid
V1	Valve 1 (Tank to Pump)
V2	Valve 2 (Pump to HX)
V3	Valve 3 (Cooling Recirculation Valve) - Throttled

**PAGE NOTES**

**Chiller System Fluid**

- Temperature of Chiller fluid supplied to Cooling Skid must be approximately 10°F below the Set Value of Cooling Skid.

**Tight Tolerance Control and Heat Exchanger Module**

- To control the Chiller fluid in the Heat Exchanger to maintain a constant temperature output. There will be a delay in the output process temperature until the chiller and the process have reached equilibrium.
- Required on systems that will have different fluid than the chiller.
- The heat exchanger can be a brazed-plate type or some other type of thermal heat exchanger such as a jacketed-tank. If so, then the temperature probe must monitor the process fluid temperature.
- SV1 used on systems when the cooled fluid is near freezing and the freeze could damage the heat exchanger.
- The "To Process" is the monitored, displayed, controlled, and supplied fluid.

**Pump/Tank Skid**

- For On-Demand chilled fluid at the Point-of-Use, then a recirculating loop is recommended.
- Cooling Skid with Pump or Pump&Tank depends on need of system.

**Process Circuit (Example Setup with Suggestions)**

- To permit constant supply of chilled water at the process "Point-of-Use", it is recommended that a recirculation line be included from the Process "Point-of-Use" back to the Tank. The line should be sized to permit a certain velocity so that if the fluid in the system warms up due to the ambient conditions of the process piping, then the Chilling Skid System will maintain the desired chilled temperature at the Point-of-Use.



**DESCRIPTION**

Options for Series A Control System  
Standard setup and typical variations shown or noted.

FILE: DWG\_TightToleranceControlModuleSystem\_M051217\_051217.vsd  
REF DATE: May 12, 2017

**GENERAL NOTES**

- Design, specifications, and components are subject to change without notice.
- Diagram is for illustration purposes only, not for engineering purposes. Colors for illustration purposes only.
- All intellectual property, including designs and programming logic are the property of Cold Shot Chillers and is not to be copied or used without permission from Cold Shot Chillers.
- Options and alternate design and components may exist and are typically dependent on design and specific parts used for the system.