

Snow Melt Series

50K BTU - 350K BTU Installation Guide

Table of Contents

Introduction.....	3
Components.....	4
Operation.....	5
Technical Data.....	6-9
Snow Sensor Installation.....	10-11
Wiring.....	12
Modular Expansion Panels.....	13
Warranty.....	14

Safety Procautions



Only suitably qualified individuals with formal training in electrical controls and hydronic systems should attempt the installation of this panel. Incorrect installation will affect the warranty provided with this panel.

During installation and operation, avoid injury from touching the hot surface of the pipe.

Please follow all warning signs on the panel for your own safety while dealing with the installation and service of this panel.

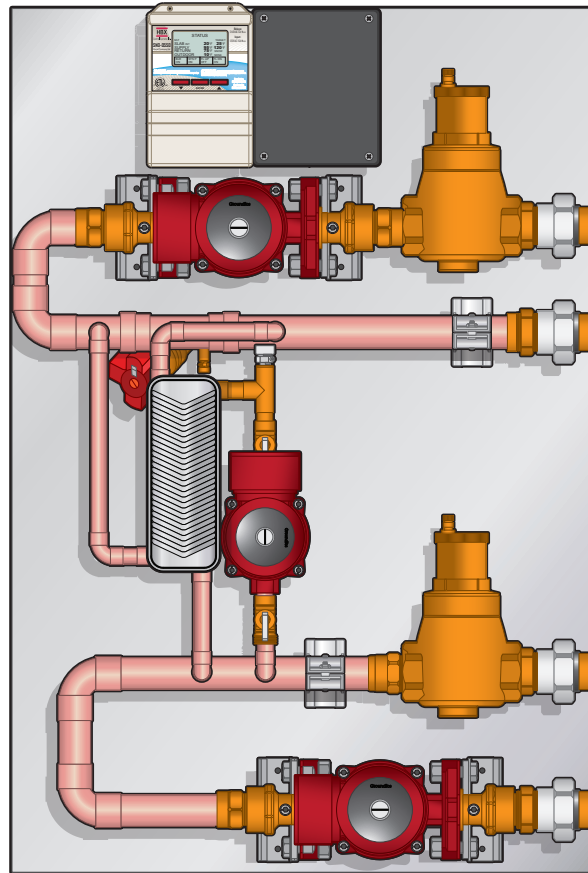
This User Guide is Applicable to:

Tamas Snow Melt Panels

T-SM-HBX-50HX	50, 000 BTU Snow Melt Panel with HBX SNO-0550, SNO-0110, SNO-0111
T-SM-HBX-100HX	100, 000 BTU Snow Melt Panel with HBX SNO-0550, SNO-0110, SNO-0111
T-SM-HBX-150HX	150, 000 BTU Snow Melt Panel with HBX SNO-0550, SNO-0110, SNO-0111
T-SM-HBX-200HX	200, 000 BTU Snow Melt Panel with HBX SNO-0550, SNO-0110, SNO-0111
T-SM-HBX-250HX	250, 000 BTU Snow Melt Panel with HBX SNO-0550, SNO-0110, SNO-0111
T-SM-HBX-300HX	300, 000 BTU Snow Melt Panel with HBX SNO-0550, SNO-0110, SNO-0111
T-SM-HBX-350HX	350, 000 BTU Snow Melt Panel with HBX SNO-0550, SNO-0110, SNO-0111

* Note:

The following parts lists and application drawings are general samplings. Each panel configuration dictates the required components, including pump type. See the Technical Data section of the manual for specific information on each part in your particular variation of the Tamas I.B.C. Boiler Board.



T-SM-HBX-150HX Model Shown

Description

The Tamas Snow Melt Panel provides mixing and distribution for outdoor snow and ice melting applications.

The adopted configuration is an innovative variant with the use of the injection pump, and an automatic balancing of the primary flow particularly practical and reliable.

The snowmelt system pump is piped independently from the boiler loop so that the only head loss that needs to be calculated in the system is the piping from the panel to the manifold, and the loops in the slab. This feature allows for higher flow rates and head losses if needed, which in turn expands the range of pumping ability for the system pump.

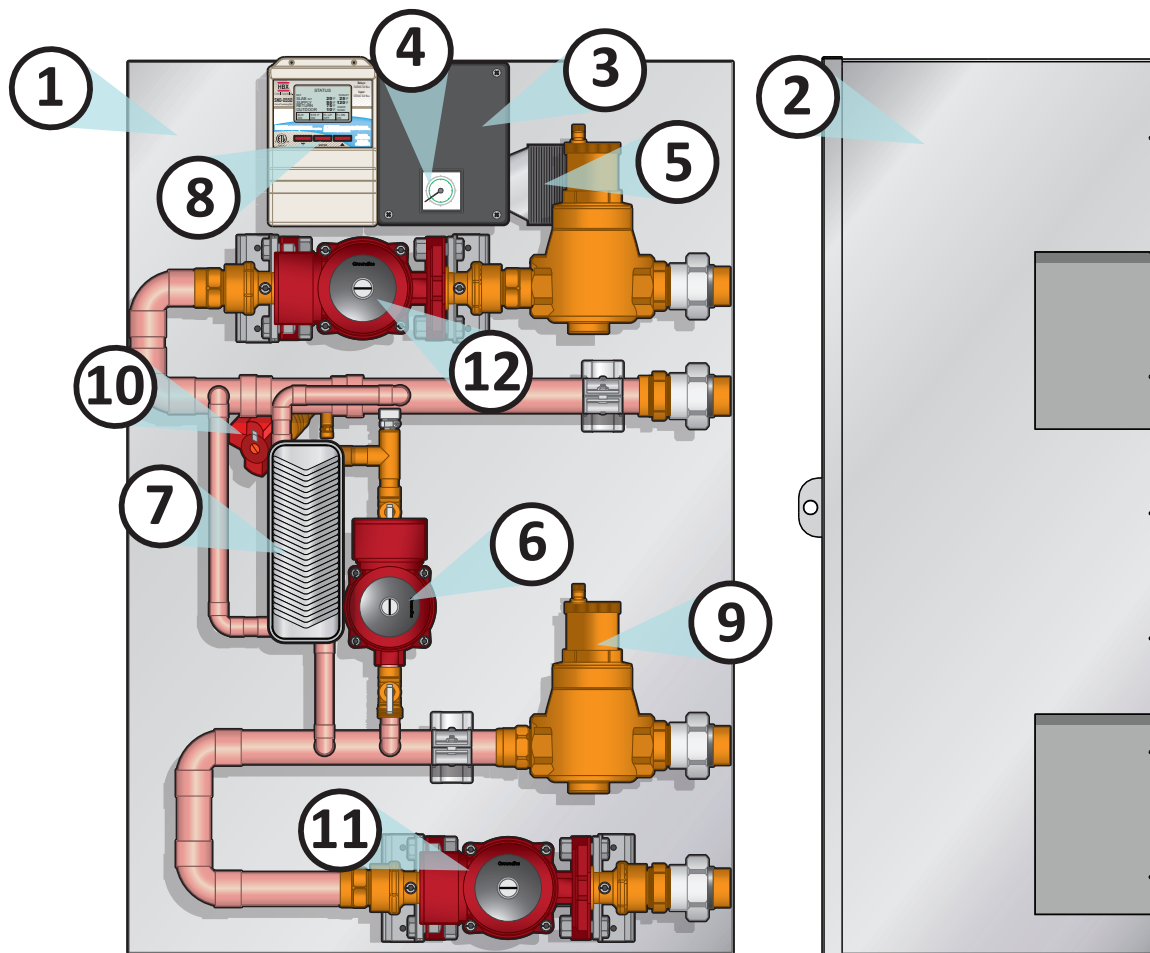
The control on the panel measures slab temperature, return temperature, as well as boiler loop temperature to ensure the return water going back to the boiler does not shock the boiler heat exchanger.

Main Features

- Stainless steel back plate and lockable stainless steel cover
- Brazed heat exchanger
- 3/4" connections.
- Dynamic balancing valve
- ETL approved

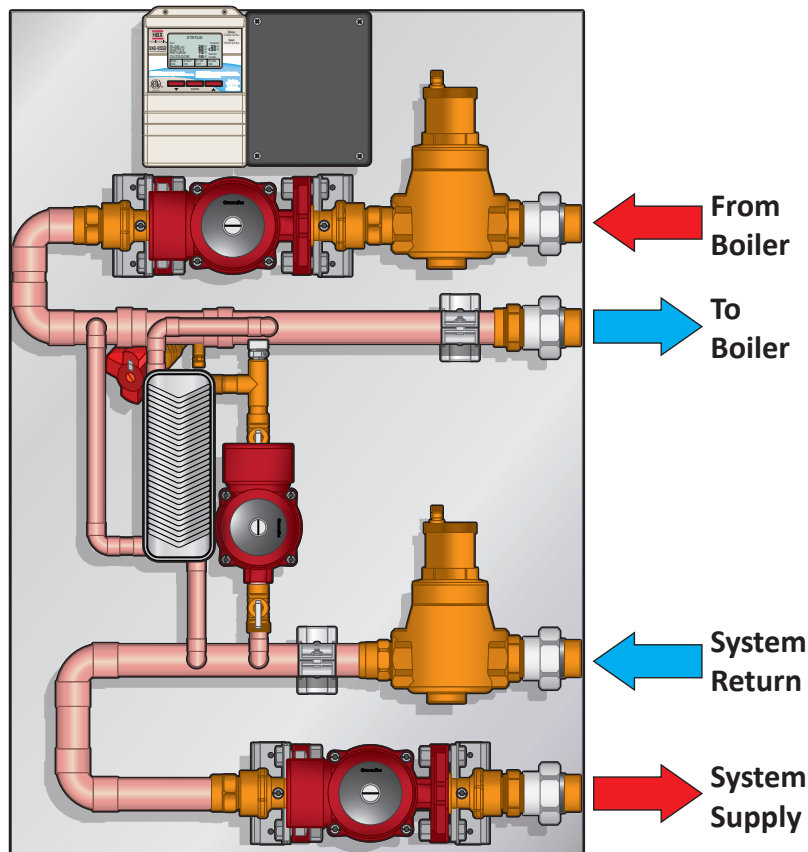
Technical Data

- Max. Operating Temperature: 93°C/200°F
- Max. Ambient Temperature: 49°C/120°F
- Max. Operating Pressure: 10 Bar/145 PSI



T-SM-HBX-150HX Model Shown

Components			
1	Stainless Steel Back Plate	7	Brazed Plate Heat Exchanger LA14-30
2	Lockable Stainless Steel Cover (Optional)	8	HBX Controls SNO-0550
3	Tamas Control Box	9	1 1/4" Air Eliminator
4	Temperature Gauge	10	1 1/4" Balancing Valve
5	24V Transformer	11	System Pump <i>UPS 15-58 on 50K BTU Models UPS 26-99 on 100K-300K BTU Models UPS 26-150 on 350K BTU Models</i>
6	Injection Pump UPS 15-58	12	Boiler Pump <i>UPS 15-58 on 50K BTU Models UPS 26-99 on 100K-300K BTU Models UPS 26-150 on 350K BTU Models</i>



Operation of the Primary

The primary circuit is composed of a dynamic balancing valve, an automatic air separator and a boiler pump. The water coming from the boiler pass through the air separator who continuously removes the air contained in the water. The circulation of fully de-aerated water enables the panel to operate under optimum conditions, free from noise, corrosion, localized or mechanical damage. The water is pumped into the primary circuit, through the boiler pump and at the same time the balancing valve creates a consistent output pressure to the system.

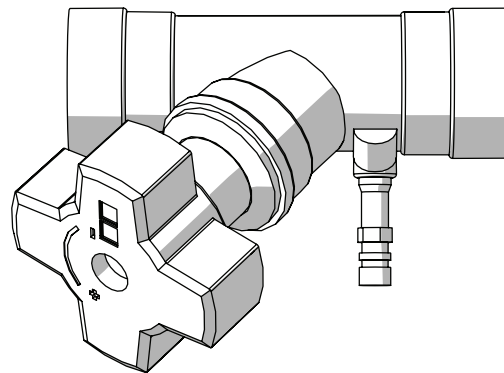
The mixing part of the panel has a brazed heat exchanger and a mixing pump. The heat exchanger allows heat from the primary circuit (water) to pass to the secondary circuit (glycol) without the two fluids having to mix together. The mixing pump injects a mix of warm water (glycol) from the return of the secondary circuit with hot water (glycol) from the heat exchanger.

The secondary circuit is composed of a system pump and air separator. The system pump will recirculate the glycol through the pipes embedded in the slab and the air separator will continuously remove the water from the circuit.

Balancing Valve

Technical Data

Max Static Working Pressure	290 psi (20 Bar)
Temperature Range	-4°F to 250°F (-20°C to 120°C)
Connection	Female NPT and Female Solder
Pressure Tappings	P/T Plugs
Allowable Fluid	100% water, max 50% glycol mixture



Setting Flow Coefficient Values (Cv value=GPM@1psi ΔP)

Size	Number of Turns										Values
	1	2	3	4	5	6	7	8	9	10	
1"	0.56	0.89	1.19	1.74	2.67	4.18	5.80	7.54	9.16	10.20	Cv
2"	2.32	4.18	6.03	8.82	13.80	19.4	24.60	29.00	33.20	36.50	

Based upon the flow or differential pressures required within the system, the flow can be determined by using the equation:

$$Q = Cv \cdot \sqrt{\Delta p}$$

Q = Flow

Cv = Flow coefficient

Δp = Differential pressure

For correction of fluids other than water, the following equation applies provided the viscosity of the fluid is the same for water, which is the case for most glycol and brine solutions:

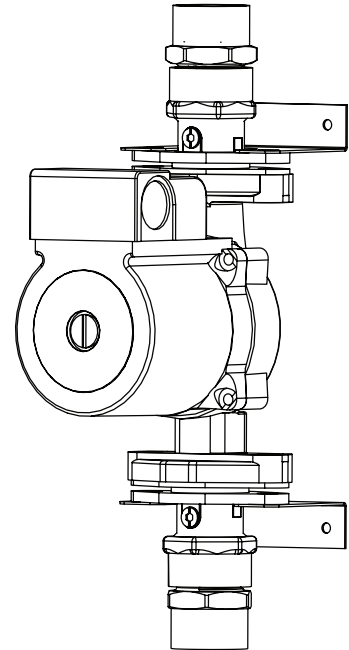
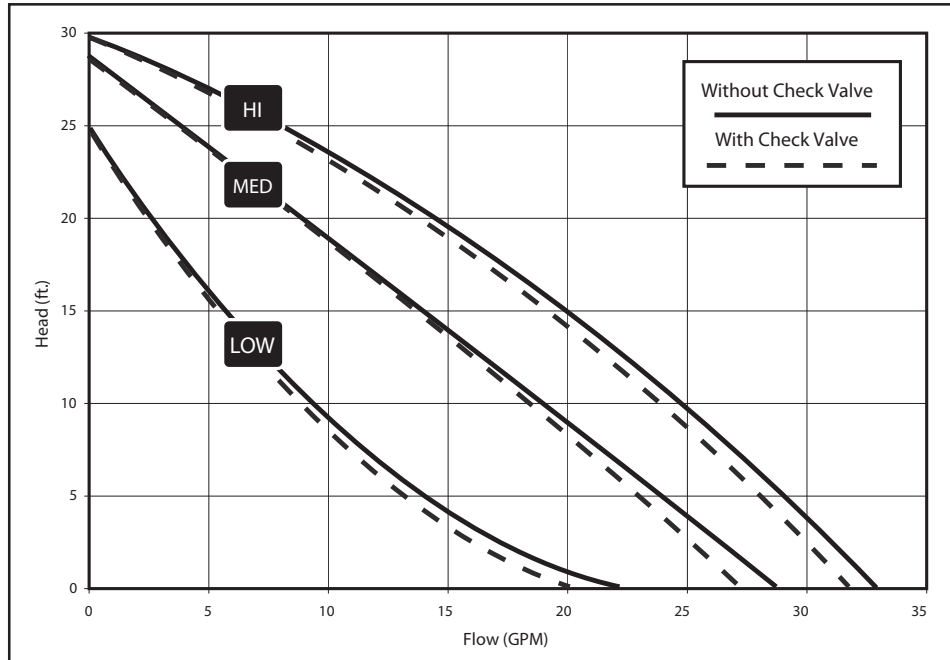
$$Q_R = \frac{Q_M}{\sqrt{\delta}}$$

Q_R = Real flow

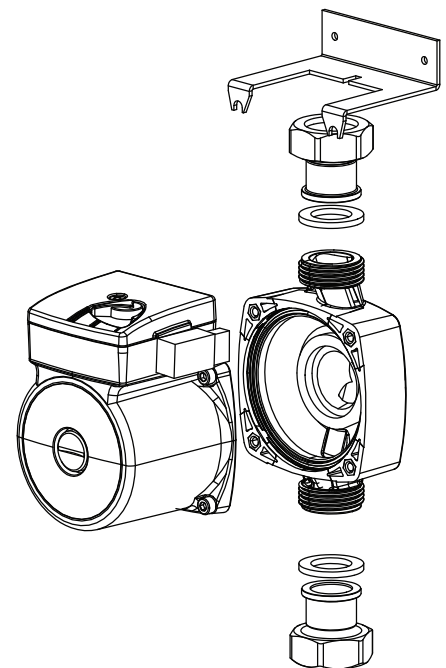
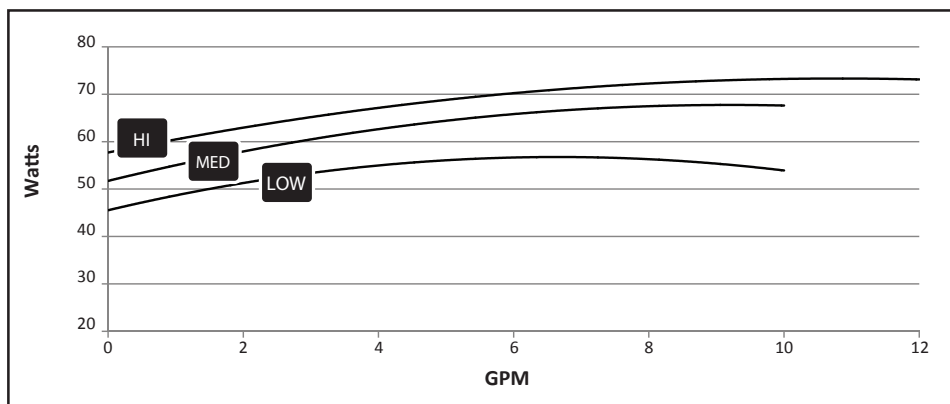
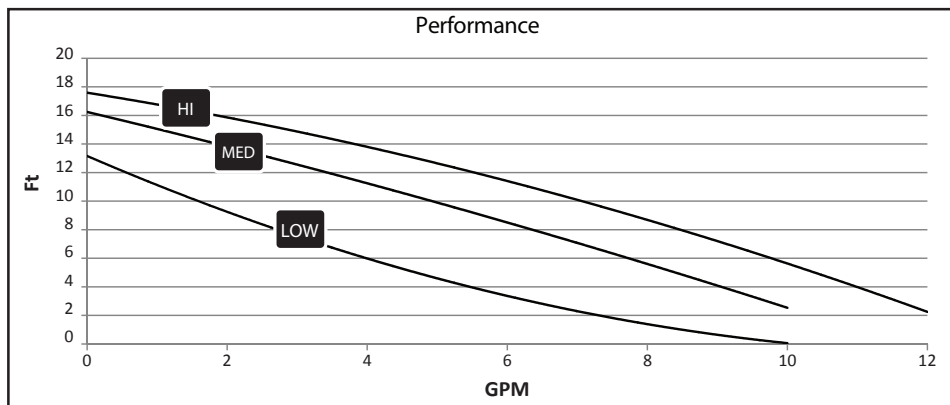
Q_M = Measured flow

δ = Specific density of fluid

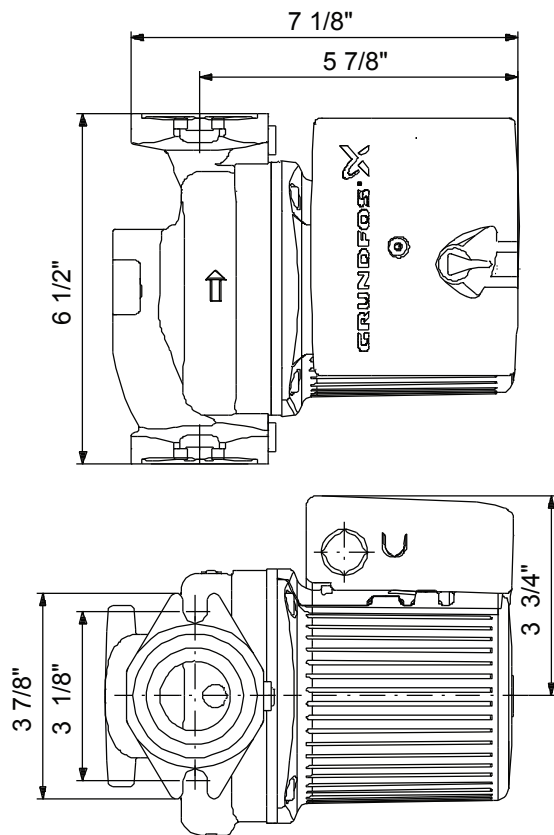
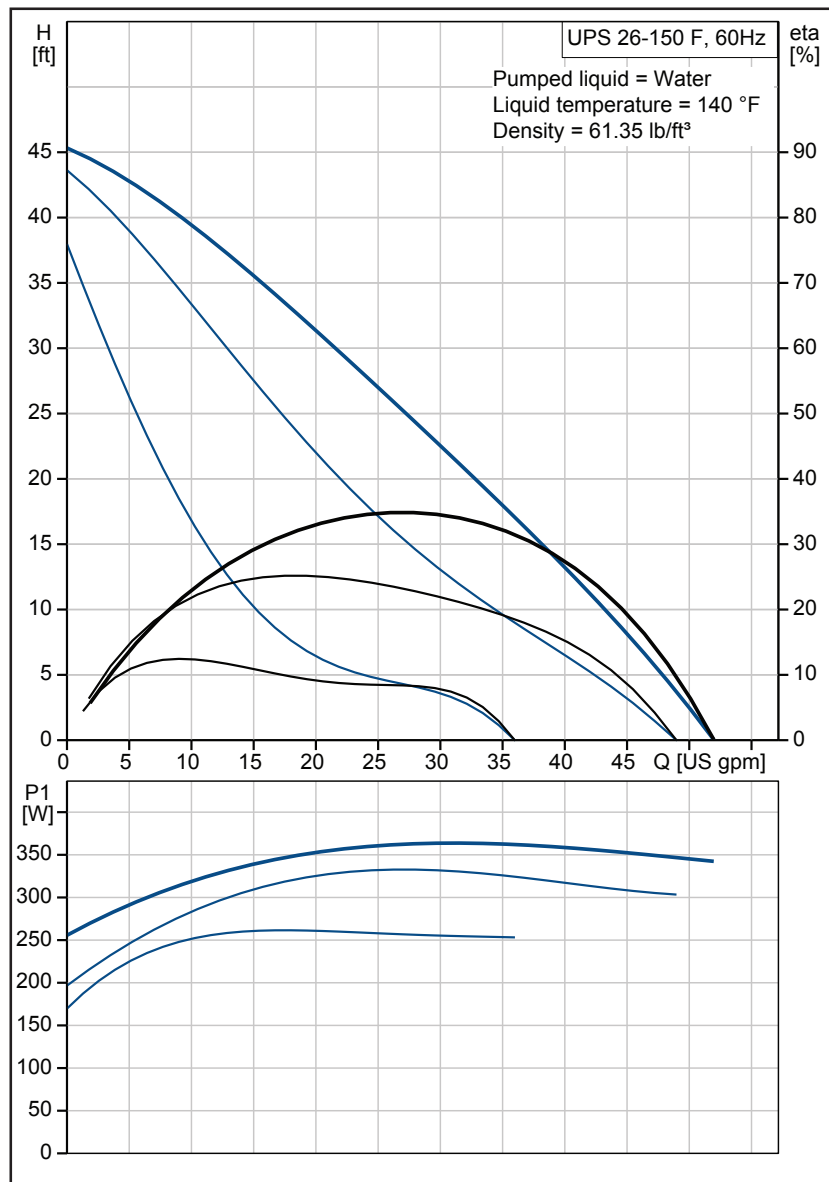
UPS 26-99FC/BFC Superbrute



UPS 15-58 3 Speed Pump

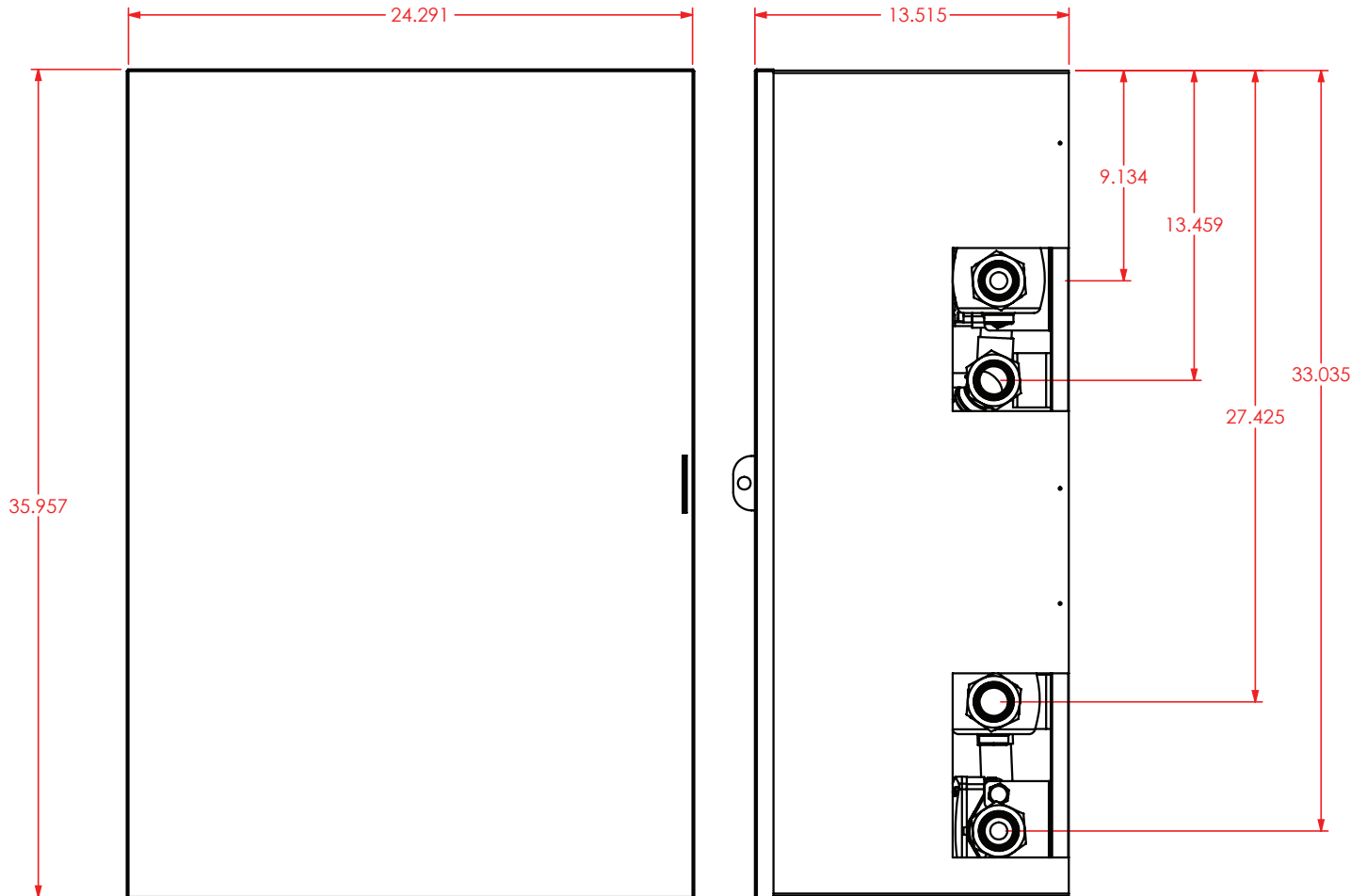


UPS 26-150 Pump Specifications

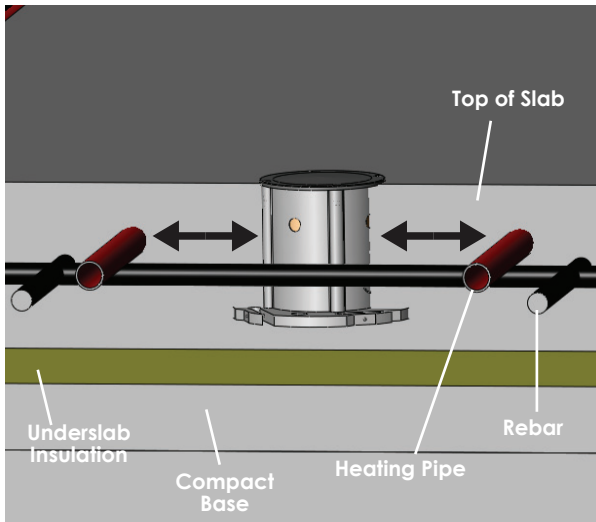


Description	Value
Technical:	
Speed Number:	3
Max flow:	52 US gpm
Head max:	45.3 ft
Approvals on nameplate:	ETL, CSA

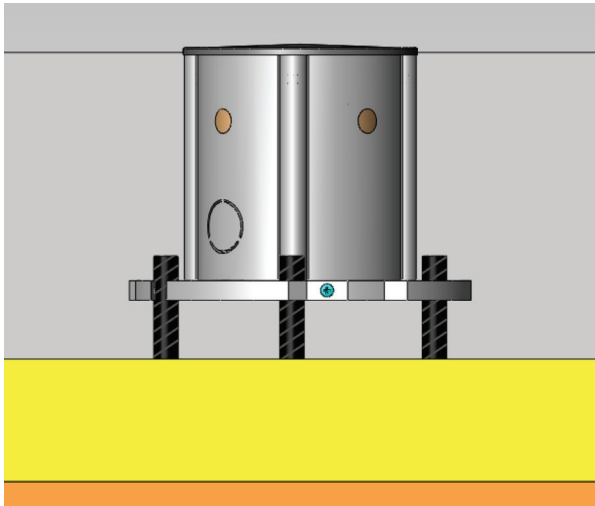
Panel Dimensions



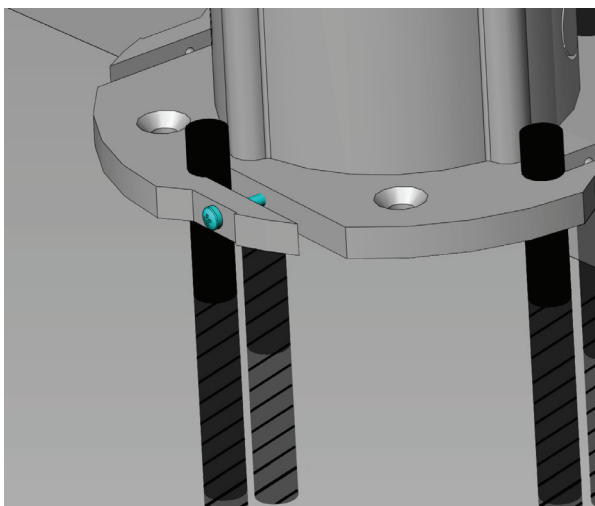
NOTE: Dimensions are in inches. Includes Optional Lockable Enclosure.



Snowment sensor location (FIG. 1)



Leveling the socket and cover plate (FIG. 2)



Tightening the socket onto the rebar (FIG. 3)

Installation:

1. Slab Sensor Location

Installing the sensor at the correct location in the slab is critical for a properly functioning snow/ice melting system. The sensor should be located where snowfall is normal and not affected by surrounding buildings. Also, the sensor must not be installed where standing water could accumulate on its surface.

The sensor location should also be halfway between the two heating pipes that are installed in the slab (see FIG. 1). There is a thermistor built into the sensor that senses the slab temperature at all times. Keeping the sensor away from pipes in the slab ensures the accurate operation of your snow/ice melting system.

a) Mounting the Socket and cover plate

When mounting the socket and cover plate in the snowmelt slab use rebar mounted in the soil below to level the socket and cover plate so that the cover plate is level with the finished grade of the snow melting surface (see FIG. 2).

When the socket and cover plate are level, use a screw to tighten the socket onto the rebar (see FIG. 3).

Failure to mount the socket properly may result in incorrect or faulty sensor readings.

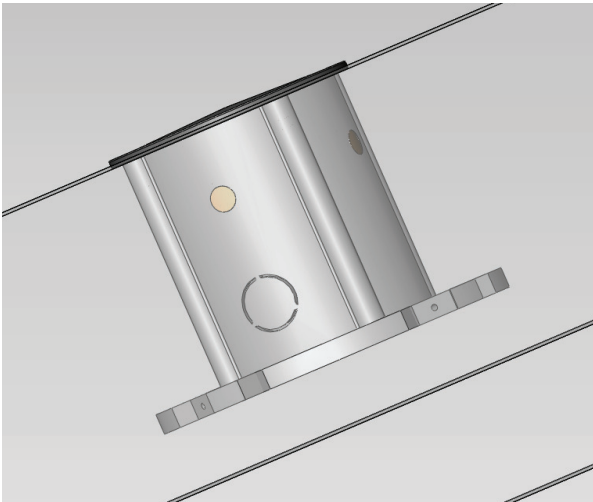
i) Ramp Mounting

The socket and cover plate can also be mounted on a ramp. Make sure to locate the socket and cover plate near the bottom of the ramp. This will allow for proper ice melting when the melted snow flows down (see FIG. 4).

ii) Brass Plugs

On the socket there are 4 brass plugs. These plugs are designed to make contact with the brass ring on the sensor so the sensor can get proper slab temperatures. Take care not to press these plugs in or out as they are properly set at the factory. Manipulation of the plugs may result in the sensor not fitting properly in the socket (see FIG. 5).

Take special care to clean the brass surfaces on the inside of the socket, making sure to clean any concrete that may have accumulated on them. Failure to do so may result in the sensor not making proper contact and not reading the slab temperature properly.



Ramp Mounting (FIG. 4)

b) Placing Concrete

A plastic cover is provided with the socket to prevent it from being accidentally filled with concrete. The plastic cover is the same thickness as the sensor flange.

This allows the finished surface of the concrete to be troweled flush with the cover. The cover must be installed prior to placing the concrete. Also insure that the mounting plate drainage hole remains unplugged once the concrete has cured.

Install the socket directly on top of gravel in order to provide good drainage. If that is not possible, please ensure that you drill a hole through the bottom of the socket for proper drainage of water for the optical snow sensor to function. If this is not done, it will void the warranty of the snow sensor (see FIG. 6).

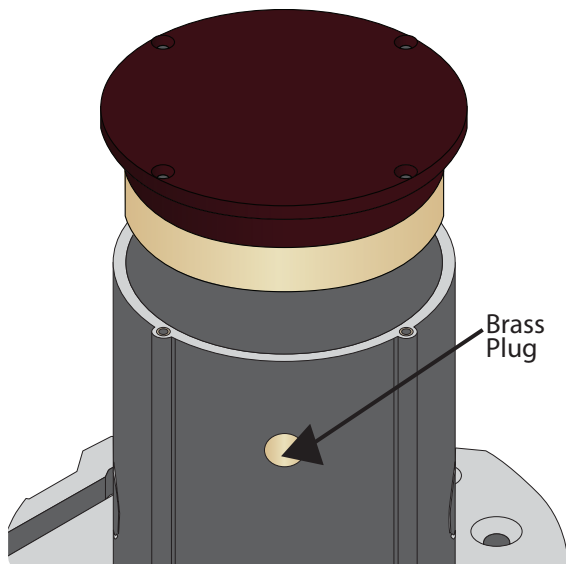
Never use the wire conduit as drainage. This can damage the sensor wire resulting in damage to the control and/or sensor.

c) Installing the Sensor

Once the snow melting surface is finished you can install the snow/ice sensor. Clean any excess debris from inside the socket. Fish the snow/ice sensor wire through the pre-installed pipe. Make sure to leave a little bit of slack in the wire.

Once the snow/ice sensor is properly inserted into the socket put the four screws back in place to secure it.

Take special care to align the screw holes from the snow/ice sensor to those on the socket. Once the sensor is pressed into place prying up the sensor to line up the holes will result in damage to the sensor and, potentially, the socket.



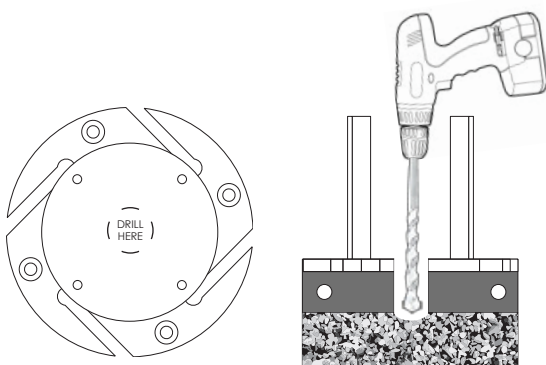
Brass Plug (FIG. 5)

2. Remote Sensor Location

The optical nature of the snow/ice sensor allows for mounting somewhere other than the slab (i.e. a roof or fence post). This is possible, but take special care that it is not mounted in an area where the surroundings cause an abnormal amount of snow fall.

Paving stones or equivalent should be installed with a remote sensor.

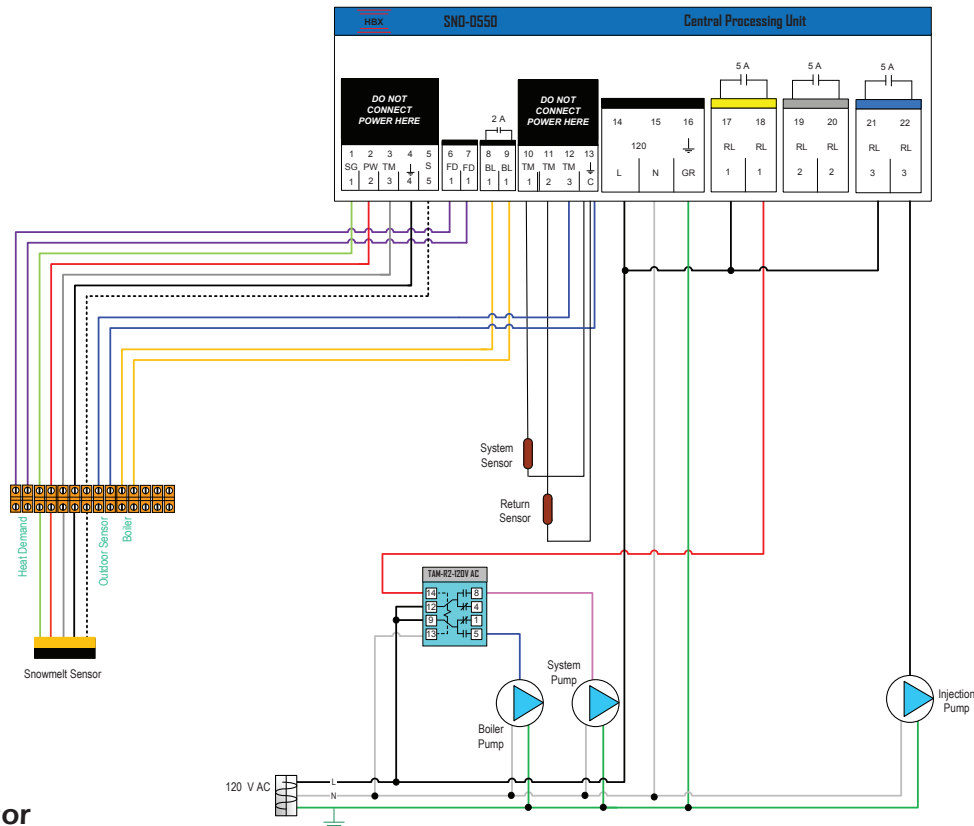
When remote mounting the sensor an external slab sensor must be used in order for the control to be able to read the slab temperature. The temperature sensor on the snow/ice sensor will no longer be used.



Drilling the socket (FIG. 6)

Wiring Diagram

All electrical wiring to the panel (including grounding) must conform to local electrical codes and/or National Electrical Code, ANS/NFPA No. 70-latest edition, or the Canadian Electrical Code, C22.1- Part 1.



Snow Melt Sensor

Take special care that the sensor wire is not run with any high voltage wiring as this may result in faulty readings. The sensor is supplied with 100 feet of 22 AWG shield cable. If the sensor is more than 100 feet from the control extend the wire from the end of the sensor wire. Do not shorten the original sensor wire then extend its length over 100 feet. When extending the cable (to a maximum of 200 feet) use 18 AWG shielded cable. If possible two pair shields 18 AWG for best results. You must also extend the shield wire and attach it to the same point as the black wire on the terminal block.

Do not cut the wire. All 100 ft. should always be left intact as the wire has an ohm rating. If you cut the wire the sensor will be hotter than normal and void the warranty.

Outdoor Sensor

The outdoor sensor should be installed in the north face location and has to be connected to the HBX snow melt control SNO-0550

Boiler

Boiler output to connect to the TT contact in the boiler

Power

Connect a 120 VAC/15 Amp supplies to the "AC IN" tagged leads in the wiring box.

Maintenance

Have your panel checked and serviced by a licensed contractor at least once a year, preferably before the heating season begins.

Complete the following checklist:

- Check the level of the system antifreeze solution required for the snow melt system
- Check controls of the system to ensure proper and safe operation (see instructions below- HBX Manual page 12)

Testing

SETUP MENU

- 1) SNOW RATE SETUP
- 2) DESIGN TEMPS
- 3) SLAB SETUP
- 4) SYSTEM SETUP
- 5) TESTING
- 6) °C OR °F °F

Testing Setup

This setting is used to test and view functionality of the control.

TESTING SETUP

TESTING

- 1) CONTROL INFO
- 2) FUNCTION TEST ON
- 3) RELAY 1 OFF
- 4) RELAY 2 OFF
- 5) RELAY 3 OFF
- 6) RELAY 4 OFF

Control Information

This setting will display processing information about the control.

TESTING

- 1) CONTROL INFO
- 2) FUNCTION TEST ON
- 3) RELAY 1 OFF
- 4) RELAY 2 OFF
- 5) RELAY 3 OFF
- 6) RELAY 4 OFF

Function Test

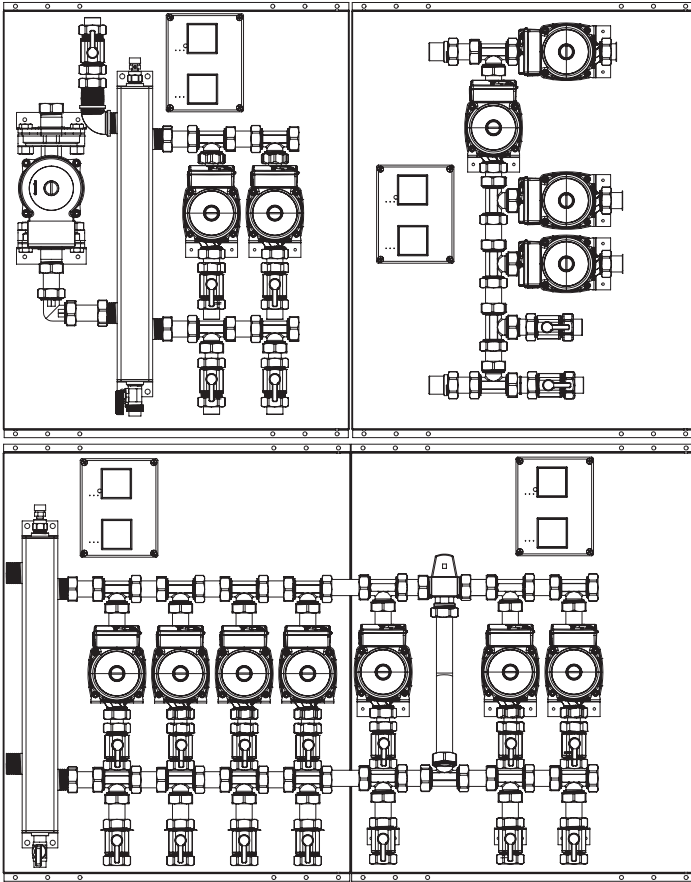
This setting will allow the user to pre-test the control during setup. It will set the outdoor temperature to 10 °F and the system temperature to 70 °F so the system will test in warmer months.

TESTING

- 1) CONTROL INFO
- 2) FUNCTION TEST ON
- 3) RELAY 1 OFF
- 4) RELAY 2 OFF
- 5) RELAY 3 ON
- 6) RELAY 4 OFF

Relay Test

These settings will test each relay in the control in order to ensure correct operation. The user is able to test each relay individually. In order to test, select the desired relay by pressing **ENTER**. The relay can be toggled on and off by pressing the ▼ or ▲ buttons.

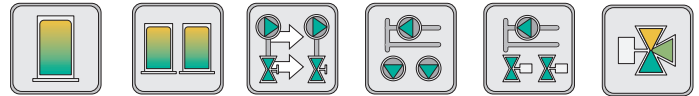


Tamas Hydronics Modular Panels

The Tamas Modular Panel line contains a series of expandable hydronic panels suited for a variety of applications and building sizes.

The comprehensive system provides a versatile method of distributing heat to a multitude of applications. Indoor/outdoor reset controls are utilized to improve system efficiency and management. Specific panels allow for system expansion, multiple boiler management, injection mixing and domestic hot water.

Available panels: Boiler, Staging, Expansion, Low Temperature Injection (Pump, Valve, TMV)





Tamas Hydronic Panels **Snow Melt Series** Warranty

Limited Warranty

Tamas Hydronic Systems Inc. warrants each of its products to be free from defects in workmanship and materials under normal use and service for a period of 24 months from date of purchase from a Tamas Hydronic Systems inc. authorized Dealer.

If the product proves to be defective within the applicable warranty period, Tamas Hydronic Systems inc. on its sole discretion will repair or replace said product. Replacement product may be new or refurbished of equivalent or better specifications, relative to the defective product. Replacement product need not be of identical design or model. Any repair or replacement product pursuant to this warranty shall be warranted for not less than 90 days from date of such repair, irrespective of any earlier expiration of original warranty period. When Tamas Hydronic Systems Inc. Provides replacement, the defective product becomes the property of Tamas Hydronic Systems Inc.

Warranty Service, within the applicable warranty period, may be obtained by contacting your nearest Tamas Hydronics Systems inc. office via the original Authorized Agent and requesting a Return Material Authorization Number (RMA #). Proof of purchase in the form a dated invoice/receipt must be provided to expedite the issuance of a Factory RMA.

After an RMA number has been issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit. The RMA number must be visible on the outside of the package and a copy included inside the package. The package must be mailed or otherwise shipped back to Tamas Hydronic Systems Inc. with all costs of mailing/shipping/insurance prepaid by the warranty claimant.

Any package/s returned to Tamas Hydronic Systems Inc. without an approved and visible RMA number will be rejected and shipped back to purchaser at purchaser's expense. Tamas Hydronic Systems Inc. Reserves the right, if deemed necessary, to charge a reasonable levy for costs incurred, additional to mailing or shipping costs.

Limitation of Warranties.

If the Tamas Hydronic Systems Inc. product does not operate as warranted above the purchasers sole remedy shall be, at Tamas Hydronic Systems Inc.' s option, repair or replacement. The foregoing warranties and remedies are exclusive and in lieu of all other warranties, expressed or implied, either in fact or by operation of law, statutory or otherwise, including warranties of merchantability and fitness for a particular purpose/application. Tamas Hydronic Systems Inc. neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale, installation maintenance or use of Tamas Hydronic Systems Inc. products.

Tamas Hydronic Systems Inc. shall not be liable under this warranty; if its testing and examination discloses that the alleged defect in the product does not exist or was caused by the purchasers or third persons misuse, neglect, improper installation or testing, unauthorized attempts to repair or any other cause beyond the range of intended use, or by accident, fire, lightning or other hazard.

Limitation of Liability.

In no event will Tamas Hydronic Systems Inc. be liable for any damages, including loss of data, loss of profits, costs of cover or other incidental, consequential or indirect damages arising out of the installation, maintenance, commissioning, performance, failure or interruption of a Tamas Hydronic Systems Inc. product, however caused and on any theory of liability. This limitation will apply even if Tamas Hydronic Systems Inc. has been advised of the possibility of such damage.

Local Law.

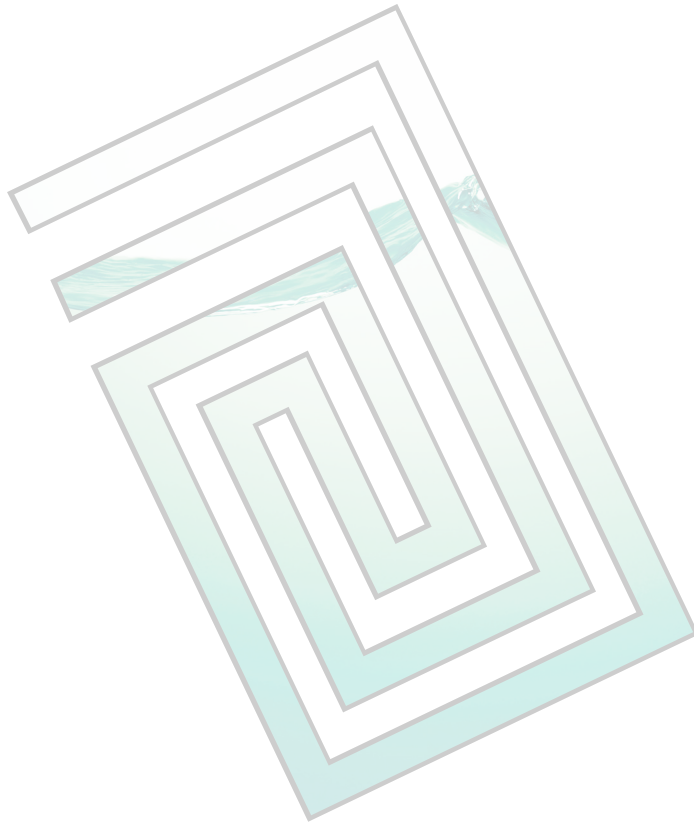
This limited warranty statement gives the purchaser specific legal rights. The purchaser may also have other rights which vary from state to state in the United States, from Province to Province in Canada and from Country to Country elsewhere in the world.

To the extent this Limited Warranty Statement is inconsistent with local law, this statement shall be deemed modified to be consistent with such local law. Under such local law, certain disclaimers and limitations of this statement may not apply to the purchaser. For example, some states in the United States, as well as some governments outside the United States (including Canadian Provinces), may:

Preclude the disclaimers and limitations in this statement from limiting the statutory rights of a consumer (e.g. United Kingdom);

Otherwise restrict the ability of a manufacturer to enforce such disclaimers or limitations; or

Grant the purchaser additional warranty rights which the manufacturer cannot disclaim, or not allow limitations on the duration of implied warranties.



Custom, Reliable Hydronic Systems

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