

Operating Guidelines for Your Roof and Gutter Ice Dam Prevention System

1. Your heat cable system is designed to be preventative. This means it needs to be energized several hours prior to snow fall and should remain on while there is substantial snow on the roof. We will expand on this further in Section 4 – Seasonal Operation.
2. Your system is a hardwire system protected with ground fault equipment protection (EPD). This means that if the cable is damaged the system will turn off by means of the specialized circuit breaker protecting the system. This provides safety for both the home or business and its occupants.
 - a. Damage can occur from tree branches falling on the structure, rodents (squirrels, chipmunks, and/or mice, etc.), other contractors working in the area of the heat cables, gutter cleaning, etc. Care should be taken to prevent this from happening.
 - b. Because your system uses an EPD breaker, the system should be tested each fall to ensure no damage has occurred over the summer. This will be expanded on in Section 3.
3. **Preseason Testing.** Informational videos on Preseason Testing and Controller operation can be found at <https://www.youtube.com/user/NoIcedams> or by typing Wisconsin Ice Dam Solutions into the search bar on YouTube and look for our channel.
 - a. Preseason testing needs to be completed each fall to ensure the system will function for the coming season. It should not be assumed that the system will work just because it worked the prior year.
 - b. Preseason testing needs to be completed by October 15th of each year and any problems reported to GSB Services, LLC (262-646-3070) by October 30th during the warranty period (two year full warranty or ten year heat cable warranty). It is important to do this testing and inform us early enough as fall is our busiest season and sometimes winter comes early. Your warranty does not cover snow removal, thawing iced up gutter/downspouts, or ice dam removal to repair your system.
 - c. Testing your EPD breaker for ground fault protection.
 - i. EPD Breaker
 1. Have any control options in the off or stand by position.
 2. Press the test button on the EPD breaker(s) that feeds power to your heat cables. This is different than any breakers that power a Digital Controller.
 3. The breaker should ‘click’ into a tripped position. If it does not click into a tripped position it is either OFF or already tripped.
 4. Push the breaker all the way to ‘off’ and then back on. Some EPD breakers trip to a center position and you will not be able to turn the breaker back on until you reset fully to the OFF position and then to the on position. (If your breaker was in the OFF position and was not

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tripped by pushing the 'test' button, do that now and complete steps 1-4).

5. Reset your breaker to the ON position.
 - ii. Next, follow the appropriate control testing for the heat cables.
- d. System Control Options - Testing
- i. Testing Systems Controlled by a **SWITCH** (or circuit breaker)
 1. With your EPD breaker in the on position, turn any switch(es) for the heat cables ON.
 2. If your breaker holds and does not trip, your system is ready for winter.
 3. If your breaker trips, there is some damage to the cable. Please call GSB Services, LLC at 262-646-3070 to schedule a repair.
 - ii. Testing Systems Controlled by a **DS-2C Outdoor Controller** (or older DS-2B without green LED indicator light)
 1. With your breaker in the on position, go outside and turn on the controller by putting it in the 'manual' on position. This is done by positioning the toggle to the up position. This will allow for a two minute operation of the heat cables independent of temperature and can determine if there is any problems with the cables. This can be done at any temperature and is not dependent on temps being below 37 degrees. With the toggle in the up position the green LED light should blink (on DS-2C, no light on DS-2B) repeatedly indicating the controller is sending power to the heat cables.
 2. If your breaker holds and does not trip, your system is ready for winter. You will need to go to the circuit breaker panel to verify.
 - a. Adjust the toggle on the controller to the 'Auto' (or center position) and turn off the circuit breaker(s) until you are ready for winter operation.
 - b. Turning the breaker off is important to reset the controller after it was in the manual position. Failure to reset the controller may mean the controller will not trigger once temps drop
 - c. Resetting can also be done by putting the toggle in the bottom position 'standby/reset' for 1 minute and then to auto or leave in standby/reset with the breaker on until you are ready to operate. When ready to operate set the toggle in the 'auto' or center position.
 3. If your breaker trips during this testing, there is some damage to the cable. Please call GSB Services, LLC at 262-646-3070 to schedule a repair.
 - iii. Testing Systems Controlled by **DS-2C with Indoor Display Panel CDP-2**
 1. This panel duplicates the functions on the controller itself on the indoor wall mounted display panel.

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2. Once the outside testing has been done, test the functioning of the CDP-2
 - a. Press the 'Manual' button on the controller.
 - b. The light should blink on manual once or twice and then start blinking with 'deice on' (the upper most light). This is a two minute cycle that turns the heat cables on for testing.
 - c. Once the manual on is tested, then press the 'standby/reset' button and leave in that position for one minute. The 'deice on' light should stop blinking.
 - d. You are now ready to set into the 'Automatic' position. Press the 'Automatic' button. The light will blink at the Auto light. Depending on temperature the 'Deice on' light may start blinking (if it is below the trigger point temperature - @37 degrees).
 - e. You may leave the CDP-2 in the 'Standby/Reset' position by pressing that button. It will not turn the cables on until you press the center 'Automatic' button. You may also leave the CDP-2 in the automatic position and turn off the breaker.
- iv. Testing Systems Controlled by a AS Digital indoor controller
 1. Confirm the breaker for the control panel is in the on position. (This is a separate breaker that powers the control panel only).
 2. With your breaker in the on position, turn the controller to the 'manual' or 'hand' position.
 3. If your breaker holds and does not trip, your system is ready for winter.
 - a. You can now set your controller to the center or 'off' position until you are ready to operate.
 4. If your breaker trips, there is some damage to the cable. Please call GSB Services, LLC at 262-646-3070 to schedule a repair.

4. Seasonal Operation

a. Operation – Controller Options

i. Operating Systems Controlled by a **Switch** (or circuit breaker)

1. Your system need to be energized several hours prior to expected snowfall. This will allow for the most efficient operation of your system, ensuring it is warm enough to start melting snow as it is falling.
2. Your system should be left on while there is snow of the roof. This allows for the prevention of ice formation from melted snow. Snow can melt from temperatures fluctuating above and below freezing, heat loss from the home/business, and/or solar gain.
3. It is possible for snow to fall faster than your system can melt. Your system should recover once extreme conditions subside. This is entirely

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dependent on the power of the system chosen. Should greater capacity be desired, additional heating options can be added.

4. The system may be turned off while there is snow on the roof depending on how much melting is occurring. This is at your peril.
 5. The system may be turned off when temperatures rise above 36 degrees (this allows for the slower warm up of roof and gutter surfaces even though air temp is above freezing) or is below 0-10 degrees (depending on the level of heat loss and snow build up on your roof). It is recommended that your system be turned off when temps are below zero as they may only produce enough heat to create ice. Systems turned off during cold temps should be turned back on when temps rise above 10 degrees.
 6. If your system is left off while snow and/or ice accumulates, it may clear once the system is turned on. This is entirely dependent on weather conditions. Failure of the system to recover entirely if the system is left off while snow and ice accumulate is the responsibility of the owner.
 7. Systems may be turned off when no snow is on the roof. You must remember to turn the systems back on once snow is expected.
- ii. Operating Systems controlled by an ASE DS-2C, DS-2B, or DS-2C with optional CDP-2.
1. Systems need to be energized several hours prior to expected snowfall. This is done by making sure the EPD breaker is in the ON position in your circuit breaker panel and then setting the toggle on the controller to the 'automatic' positing. This will allow for the most efficient operation of your system ensuring it is warm enough to start melting snow as it is falling.
 2. The system should be left on while there is snow of the roof. This allows for the prevention of ice formation from melted snow. Snow can melt from temperatures fluctuating above and below freezing, heat loss from the home/business, and/or solar gain.
 3. The system may be turned off (by either turning off the EPD breaker in your circuit breaker panel or setting the toggle on the controller to the 'standby/reset position) while there is snow on the roof depending on how much melting is occurring. This is at your peril.
 4. The system may be turned off when temperatures rise above 38 degrees (this allows for the slower warm up of roof and gutter surfaces) or is below 0-10 degrees (depending on the level of heat loss and snow build up on your roof). This is at your peril. Your ASE controller will do this automatically if left in the 'automatic' position.
 5. If your system is left off while snow and/or ice accumulates, it may clear once the system is turned on. This is entirely dependent on weather

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conditions. Failure of the system to recover entirely if the system is left off while snow and ice accumulate is the responsibility of the owner.

6. Systems may be turned off when no snow is on the roof. You must remember to turn the systems back on once snow is expected.
- iii. Operating Systems Controlled by an AS Digital Thermostat Controller.
1. Make sure that the breaker for the controller is in the ON position **AND** the EPD breaker is in the ON position as well. These are located in your circuit breaker panel and not in the controller itself. If only the breaker for the controller is ON, it will function (turn on and off). Just because the controller functions does not mean it is able to send power to the cables if the breaker protecting the cables is turned off.
 2. Systems need to be energized several hours prior to expected snowfall. This is done by making sure the EPD breaker is in the ON position in your circuit breaker panel and then setting the switch on the controller to the Auto or Hand (or Manual) position. The center position on the switch is 'OFF'
 - a. 'Hand' operation allows the controller to turn on the cables regardless of outside temps. It operates just like a switch.
 - b. 'Auto' operation reads the outside temps and turns the cables on based on the settings. Generally, the settings should be @ 38 degrees on the high side and @ 10 degrees on the low side. When temps are outside of that range, the controller will not send power to the heat cables. This will allow for the most efficient operation of your system ensuring it is warm enough to start melting snow as it is falling.
 3. The system should be left on while there is snow on the roof. This allows for the prevention of ice formation from melted snow. Snow can melt from temperatures fluctuating above and below freezing, heat loss from the home/business, and/or solar gain.
 4. The system may be turned off using the switch on the controller while there is snow on the roof depending on how much melting is occurring. This is at your peril.
 5. The system may be turned off when temperatures rise above 36 degrees (this allows for the slower warm up of roof and gutter surfaces) or is below 10 degrees (depending on the level of heat loss and snow build up on your roof). This is at your peril. Your AS Digital controller will do this automatically if left in the 'auto' position.
 6. If your system is left off while snow and/or ice accumulates, it may clear once the system is turned on. This is entirely dependent on weather conditions. Failure of the system to recover entirely if the system is left off while snow and ice accumulate is the responsibility of the owner.

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7. Systems may be turned off when no snow is on the roof. You must remember to turn the systems back on once snow is expected.

b. Snow Melting Expectations

- i. We design systems to be preventative based on annual averages. We do this to balance operating and installation costs with expected effectiveness.

ii. Heavy Snow Fall/Blizzard

1. It may be possible for snow to fall faster than your system can melt.
2. There can be weather events that are far outside of these averages. This may be snowfall that occurs in heavy amounts over a short period of time or snow fall at temperatures at or below 5 degrees. It may also be associated with blizzard type conditions resulting in heavy drifting.
3. Your system will recover once conditions normalize. It is not uncommon for this to take several or more days and is controlled by the temperatures and winds after the event.
4. Should greater melting capacity be desired, additional heat panels can be added.

iii. Average snow falls

1. Your system is designed to be preventative. This means that with average snow falls, it will keep the roof edges, valleys, and gutters free flowing while it is on. Valleys may appear snow covered while there is a tunnel underneath allowing for melted water to run off.
2. Depending on your homes performance, it may be possible to turn the system off once the treated areas are clear of snow and ice. Care should be taken to not allow ice to build up as this will be more difficult to melt.

iv. Windy conditions

1. The windier it is, the more quickly heat can be wicked away from your system. This may result in the formation of small or minor icicles, especially at gutter edges. This is not a failure of the system.
2. Systems are designed with energy consumption in mind. If these minor icicles are not acceptable, additional heating options can be considered.

v. Secondary Ice Dam Formation

1. Ice Dams can form higher on roofs. This result from various conditions.
 - a. Upper dormers
 - i. Dormers often do not have gutters and also form valleys that have uncontrolled run off. This can result in ice forming in areas not anticipated. It can also result in melt water refreezing at areas treated by the ice dam

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prevention system due to that area being overwhelmed.

- ii. Should this be a problem, additional remedies can be taken such as adding heat panel systems in these areas along with gutters and downspouts.

b. Exhaust Vents

- i. Exhaust vents can introduce unnatural melting by concentrating conditioned (warm) air in an area. The resulting melting can refreeze very close to the vent and result in leaking.
- ii. Should this be a problem, additional remedies can be taken such as adding a heat panel to create a melt path the heated eaves or valleys.

c. Skylights

- i. Skylights are a source of heat loss and the cause of melting and refreezing. Because they are often not near an eave, they are left untreated.
- ii. Should this be a problem, these areas can be treated with additional heat panels to prevent the refreezing.

vi. Annual Changes in Weather Patterns

1. Our winters vary. One winter may be above average in temperatures or snow fall. The next may be colder or have less snow fall.
2. We design for what the average is for the area.
 - a. We offer no guarantee what the weather will be for any given season.
 - b. We offer no guarantee that you will never have an ice dam or icicle.
 - i. We cannot control the weather. We may have a snow fall event that is far outside the normal along with severe and prolonged below zero degree temperatures.
 - ii. We cannot control when you have the system on or off.
 - iii. We have a proven track record of designing and installing systems that prevent ice dams.
 - iv. We can install a 'tiered' system. This will allow for additional heat cables to be turned on for extreme winter events. This may require additional circuits and heat panels as well as further electrical requirements.
 1. When not needed for normal winter functioning, these extra cables can be turned off.

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5. Trouble Shooting Your Heat Cable System

- a. Your system does not appear to be on or melting anything.
 - i. Check that the circuit breaker controlling the heat cables is truly in the ON position. Tripped breakers can appear on when they have not been reset. Reset the breaker by turning it all the way OFF and then to the ON position.
 - ii. Check that all controlling switches or thermostat controllers are ON and functioning.
 - iii. Check that the ambient temperature is not currently outside of any trigger temperatures for your controller.
 1. These trigger temps can be adjusted on the AS Digital Controller.
- b. The EPD circuit breaker keeps tripping when you try to reset it.
 - i. There is some physical damage to your heat cable. The circuit breaker is performing its designed function.
 - ii. Call GSB Services, LLC at 262-646-3070 or your electrician.
- c. The AS Digital indoor controller will not turn on.
 - i. Check that the circuit breaker controlling the unit in ON.
 - ii. Check that you have turned the switch to the 'hand' or 'manual' position. Only the light at the center will light up if the controller is in the 'hand' or 'manual' position – no temperature indications will display.
- d. The ASE DS-2C outdoor controller will not turn on.
 - i. Check that the EPD breaker for the system is on.
 - ii. Check that the controller is in the 'Auto' position.