

VineHeat

VineHeat™ VPF1

Self-adhesive Pipe Freeze Protection Cable

Installation Instructions



(Read through the entire instruction sheet before you begin. Make sure you have selected the correct length of heating cable.)

A. General Information

How Heating Systems Work

The Problem

Thermal insulation alone will not prevent pipes from freezing. For example, a 0.75" pipe having 1" thick insulation will freeze solid in only 13 hours when the ambient temperature is at 14°F. Frozen water pipes can burst causing loss of supply, flooding, and damage.

The Solution

VPF1 Self-adhesive Pipe Freeze Protection Cable compensates the heat that is lost through the thermal insulation layer by keeping the pipe and water inside the pipe at a constant temperature. With a built-in bi-metallic thermostat (inside the black cap), the heating cable operates only when the thermostat is at a temperature of 40°F or below.

The Application

The cable is mounted straight along the pipe and will protect pipes up to 1.5" in diameter. VPF1 is designed and approved for freeze protection of insulated metallic or plastic general water piping at the generally accepted maintenance temperature of 40°F with approved accessories.

Warnings:

1. *Do not use on pipes heated above 150°F such as steam lines.*
2. *Never install in walls, floors, or ceiling.*
3. *Never install on plastic pipe unless pipe is always filled with water.*
4. *Do not use on waste lines, drain lines, fuel lines or hoses.*
5. *Do not use for roof and gutter deicing applications.*

Tools Required

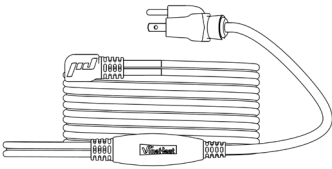


Scissors



Pencil

Material Required



VPF1 Heating Cable



Velcro Straps



1/2" fiberglass or
equivalent non-flammable
pipe insulation

Receipt & Storage

Receipt

- Compare the materials against the invoice and check to verify the proper materials have been received. The cable's model number is printed on its label.
- Review your design documents and check the received materials against the lists to verify all the needed materials were received.
- Inspect the heating cable and accessories to ensure there has been no in-transit damage.

Storage

- Cables and system components should be stored in a clean, dry area. The storage temperature range is 0°F to 140°F.

Before Installation

- The piping, insulation, electrical, and instrument components need to be coordinated before the installation of the electric heat tracing system.
- Installation should begin only after most of the mechanical construction is complete.
- Make sure all mechanical testing (i.e. hydrostatic testing/purging) is complete and the system has been cleared.
- If the cable is stiff or the adhesive is not sticky enough due to cold weather, first, uncoil the cable and then power it with a 120V outlet until it is warm and pliable. Next, unplug and apply it to the pipe.

Warnings:

(These are vitally important safety warnings that must be followed. Failure to do so could cause overheating and result in serious fire hazard or

electrical shock.)

6. *Improper installation use and/or maintenance of electrical heating cable can cause fire, electric shock, and/or freezing of pipe.*
7. *Make sure there is a properly grounded electrical outlet close enough to plug in the cable.*
8. *Heating cables must be installed in compliance with the U.S. National Electric Code and Canadian Electrical Code. Ground fault protection (GFCI) of the power supply circuit is required.*
9. *Proper installations are based on the use of VineHeat specified parts only. Any substitute parts or vinyl electrical tapes should not be used.*
10. *Do not connect power to the heating cable while it is coiled.*
11. *Do not install damaged heating cable.*
12. *Minimum pipe length is 3'.*
13. *Never alter the cable in any way. If made shorter, it will overheat. Once cut, the cable cannot be repaired.*
14. *Do not install a single cable on more than one pipe.*
15. *Never allow the heating cable to touch, cross, or overlap itself at any point.*
16. *Disconnect the cable from its power source during installation.*
17. *Always keep the heating section of the system at least 1" away from combustible surfaces.*

B. Product Availability and Specifications

Model No.		Heating Length	Power Output	Amp.
		(ft)	(Watt)	(@120v)
(3)	VPF1-003	3	21	0.18
(6)	VPF1-006	6	42	0.35
(9)	VPF1-009	9	63	0.51
(12)	VPF1-012	12	84	0.7
(15)	VPF1-015	15	105	0.88
(18)	VPF1-018	18	126	1.05

Model No.		Heating Length	Power Output	Amp.
		(ft)	(Watt)	(@120v)
(24)	VPF1-024	24	168	1.4
(30)	VPF1-030	30	210	1.75
(40)	VPF1-040	40	280	2.34
(60)	VPF1-060	60	420	3.5
(80)	VPF1-080	80	560	4.67

Caution:

- *Do not install VPF1 when the ambient temperature is colder than the minimum installation temperature of 32°F.*
- *These instructions must be saved and made available to the owner and transferred to future owners.*
- *If after reading the following instructions, you still have questions regarding installation or operation of this heating cable, contact: Technical Support at (888) 960-9698.*

C. Select the Proper Heating Cable Length

Use the following table to select the proper heating cable length.

- 1 (60) means: you need one “VPF1-060” cable.
- 2 (3) means: you need two “VPF1-003” cables.
- 1 (12) +1 (15) means: you need one “VPF1-012” cable with one “VPF1-015” cable.
- For pipe sizes not listed or for more information, please contact us.
- This design guide is based on the generally accepted maintenance temperature 40°F for freeze protection.
- This design guide is calculated based on 0.5" fiberglass insulation. Closed-cell flexible foam insulation may also be used, if the overall R value of the insulation, protective barrier and waterproof barrier is not greater than 2.0.

Selection table

Pipe Length	Pipe Diameter				
	1/2"	3/4"	1"	1.25"	1.5"
3	1 (3)	1 (3)	1 (3)	1 (3)	1 (3)

Pipe Length	Pipe Diameter				
	1/2"	3/4"	1"	1.25"	1.5"
4	1 (3)	1 (3)	1 (3)	2 (3)	2 (3)
5	1 (3)	1 (3)	2 (3)	2 (3)	2 (3)
6	1 (6)	1 (6)	1 (6)	1 (6)	1 (6)
7	1 (6)	1 (6)	1 (6)	1 (6) + 1 (6)	1 (6) + 1 (6)
8	1 (6)	1 (6)	1 (6)	1 (6) + 1 (6)	1 (6) + 1 (6)
9	1 (9)	1 (9)	1 (9)	1 (9)	1 (9)
10	1 (9)	1 (9)	1 (9)	1 (9)	2 (6)
11	1 (9)	1 (9)	1 (9)	2 (6)	2 (6)
12	1 (12)	1 (12)	1 (12)	1 (12)	1 (12)
13	1 (12)	1 (12)	1 (12)	1 (12)	1 (6) + 1 (9)
14	1 (12)	1 (12)	1 (12)	1 (6) + 1 (9)	1 (6) + 1 (9)
15	1 (15)	1 (15)	1 (15)	1 (15)	1 (15)
16	1 (15)	1 (15)	1 (15)	1 (15)	2 (9)
17	1 (15)	1 (15)	1 (15)	2 (9)	2 (9)
18	1 (18)	1 (18)	1 (18)	1 (18)	1 (18)
20	1 (18)	1 (18)	1 (18)	1 (18)	1 (9) + 1 (12)
22	2 (12)	2 (12)	2 (12)	2 (12)	2 (12)
24	1 (24)	1 (24)	1 (24)	1 (24)	1 (24)
26	1 (24)	1 (24)	1 (24)	1 (12) + 1 (15)	1 (12) + 1 (15)
28	1 (12) + 1 (15)	1 (12) + 1 (15)	1 (12) + 1 (15)	1 (12) + 1 (15)	1 (12) + 1 (18)
30	1 (30)	1 (30)	1 (30)	1 (30)	1 (30)
35	2 (18)	2 (18)	2 (18)	2 (18)	2 (18)
40	1 (40)	1 (40)	1 (40)	1 (40)	1 (40)
45	1 (18) + 1 (24)	1 (18) + 1 (24)	1 (18) + 1 (24)	1 (18) + 1 (24)	2 (24)
50	2 (24)	2 (24)	2 (24)	2 (24)	1 (12) + 1 (40)
55	1 (24) + 1 (30)	1 (24) + 1 (30)	1 (24) + 1 (30)	1 (24) + 1 (30)	1 (18) + 1 (40)

Pipe Length	Pipe Diameter				
	1/2"	3/4"	1"	1.25"	1.5"
60	1 (60)	1 (60)	1 (60)	1 (60)	1 (60)
65	1 (6) + 1 (60)	1 (6) + 1 (60)	1 (6) + 1 (60)	1 (6) + 1 (60)	1 (6) + 1 (60)
70	1 (40) + 1 (30)	1 (40) + 1 (30)	1 (40) + 1 (30)	1 (40) + 1 (30)	1 (12) + 1 (60)
75	1 (15) + 1 (60)	1 (15) + 1 (60)	1 (15) + 1 (60)	1 (15) + 1 (60)	1 (15) + 1 (60)
80	1 (80)	1 (80)	1 (80)	1 (80)	1 (80)
85	1 (24) + 1 (60)	1 (24) + 1 (60)	1 (24) + 1 (60)	1 (24) + 1 (60)	1 (6) + 1 (80)
90	1 (30) + 1 (60)	1 (30) + 1 (60)	1 (30) + 1 (60)	1 (30) + 1 (60)	1 (30) + 1 (60)
95	1 (18) + 1 (80)	1 (18) + 1 (80)	1 (18) + 1 (80)	1 (18) + 1 (80)	1 (18) + 1 (80)
100	1 (40) + 1 (60)	1 (40) + 1 (60)	1 (40) + 1 (60)	1 (40) + 1 (60)	1 (40) + 1 (60)

D. Installation Instructions

Pre-Installation Check

- The heating cable should be tested to ensure electrical integrity with at least a 500V DC megohmmeter (megger) between the grounding pin and any of the other two pins.
- Minimum resistance should be $20M\Omega$. Readings below $20M\Omega$ may mean the electrical insulation has been damaged, and the heating cable must be replaced.
- Ensure the service voltage available is correct for the heating cable system.
- Inspect the piping system and plan the routing of the heating cable on the pipe. Remove any burrs, rough surfaces, or sharp edges at the same time. Remove dirt, rust, and scale with a wire brush. Remove oil and grease films with a suitable solvent.

Laying Out the Cable

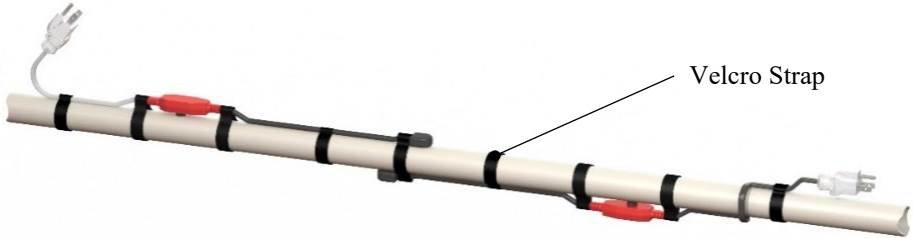
Standard Lengths: to protect a pipe with a standard length of heating cable

- Simply peel off the release paper from adhesive and apply the cable straight along the bottom of horizontal pipe or the “weather side” of vertical pipe.



Non-standard Lengths: to protect a pipe with other than one standard length of heating cable

- Simply peel off the release paper from adhesive and apply two separate cables on opposite sides of the pipe, starting from opposite ends.
- Overrun in the middle of the pipe should not exceed 3'.



Warnings:

1. *Avoid pulling or jerking on the heating cable or installing against sharp edges.*
2. *Do not kink or crush the cable, including walking on it or running over it with equipment.*
3. *Do not use metal attachments such as pipe straps or tie wire to attach the heater cable, as these may damage heating cable and cause electrical arcing or fire.*

Attaching the Heating Cable

- Once the heating cable has been run for the entire section, begin fastening it with the Velcro straps at approximately 20" intervals to the pipe to keep the thermostat and the entire length of heating cable tightly in contact with the pipe.
- The thermostat should be placed on the coldest end of the pipe.
- If necessary, hand-tightened plastic ties, which have a temperature rating higher than 175°F, may also be used to secure the cable.
- For plastic pipe systems, wrapping the plastic pipe with aluminum foil before installing the heating cable will improve heat transfer and provide more even heat distribution.

Bending, Crossing & Cutting the Heating Cable

The minimum bending radius is 0.3". Do not bend the heating cable along the flat plane. Sharp bends can damage the heating element.

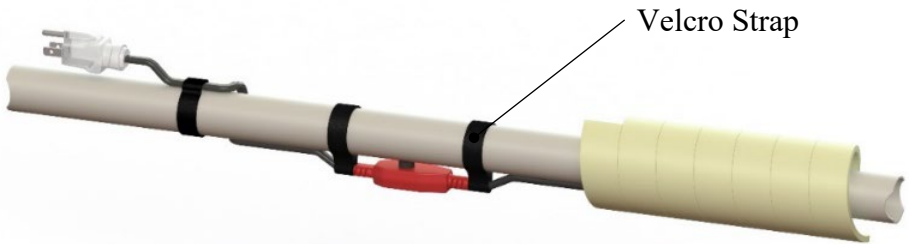
Warning:

VPF1 is not a parallel resistance cable. It cannot be cut to the desired length.

Once cut, the cable cannot be repaired. Also, the cable should never be overlapped.

Thermal Insulation

- After installing the heat tracing system, visually inspect the cable to ensure it is properly installed and there are no signs of damage.
- Use a maximum 0.5" fiberglass (including pre-formed fiberglass) insulation over the cable and the thermostat to keep the heat tracing system working more efficiency.
- In order to protect the insulation from moisture, and physical damage, and to ensure the proper performance of the heat tracing system, a protective barrier (with an additional waterproof barrier over-wrapped in the opposite direction) should be installed over the system.
- Apply "Electric Traced" labels to the insulation weather barrier at intervals of 10' along pipe, as a warning to maintenance personnel.



Warning:

Never use more than 0.5" of fiberglass insulation or other not fire-retarded insulation material for the heat tracing system. (The overall R value of the insulation, protective barrier and waterproof barrier should not be greater than 2.0) Over-insulation can cause the heating cable to overheat and cause fire hazard or electrical shock.

Electrical Requirements

- Make sure that the heating cable load you are connecting is within the rating of your control system.
- The cable should be plugged into a permanently installed receptacle.
- Ground fault circuit breakers are required on all heater constructions per the National Electric Code. Use circuit breakers that incorporate 30mA ground-fault circuit protection, or equivalent levels of ground-fault protection.

Testing

- It is recommended that after the installation of the thermal insulation and weather

barrier but before energizing the circuit, another insulation resistance (megger) test should be performed. This should reveal any damage to the heating cable that may have occurred during the insulation installation.

- It is the installer’s or electrician’s responsibility to perform a series of tests on the heat tracing system at specific points at the start of and during installation of the heating cable.
- Quick identification of any heating cable damage is the most economic approach to troubleshooting an installation. The installation costs of the cable and thermal insulation are much greater than the heating cable.
- Once power is connected, but before putting the system into operation, verify all heating cable testing and documentation have been completed for each heat tracing circuit. This will ensure that the system has been installed per the manufacturer’s recommendations.

Maintenance

- Inspect the cable at the beginning of every heating season and monthly during operation.
- Preventive Maintenance: A preventive maintenance program is needed which will encompass both visual and electrical checks of the system. These should be done not only before initial operation of the system, but also on a scheduled basis. The checks should also be done after any maintenance has been performed.
- Check the system to verify that the insulation is not wet from rainfall. Wet sections of pipe can result in cold spots or frozen sections. If the insulation is damp or wet, it should be replaced.
- Turn off or disconnect the power when the heating season ends. Reconnect before the next heating season.

Warning: *Disconnect the power connection before inspecting.*

E. Troubleshooting

Symptom	Probable causes	Correction
Circuit Breaker Trips	Circuit breaker is undersized.	Replace the circuit breaker if defective or improperly sized. *Check to see if existing power wire sizing is compatible with larger sized breakers.
	Defective circuit breaker.	Check for where there may have been maintenance work done. Remove the insulation and replace the cable.
	Physical damage to the heating cable may be causing a direct short.	Remove the insulation and replace the cable.
	GFCI is undersized.	Replace undersized GFCI with 30-

		mA GFCI.
Low insulation resistance	Nicks or cuts in the heating cable.	If heating cable is not yet thermal insulated, visually inspect the entire length for damage.
	A short between the braid and heating cable core or the braid and pipe.	If the system is thermal insulated, remove the insulation and replace the cable.
Frozen Pipe (The heating cable does not work)	Loose power connection.	If the light inside the power plug is not illuminated, check the power outlet or circuit to determine if it has power.
	The bi-metal thermostat inside the black cap is damaged.	Replace the damaged heating cable with a new one.
	There is another heat source near the bi-metal thermostat.	Remove the heat source.
	The heat output of the system cannot compensate the heat loss of the pipe.	Recheck the selection procedure to make sure you have selected the correct length and number of heating cables.

Warning: *Disconnect the power connection before inspecting.*

IMPORTANT:

The system warranty is not valid without evidence that the system resistance has been tested. The Control Card must be completed and given to the property or homeowner upon completion of installation and required testing.

For assistance with your heating cable product,
please contact TRUCOR SOLUTIONS LLC
by calling (888) 960-9698 or email to help@trucorsolutions.com

CONTROL CARD

Product Name:

Model number:

Supplier/Purchased from:

TEST	Pre-installation check	After final installation
Continuity:		
Resistance of Cable (Ω)		
Insulation Resistance ($M\Omega$)		

Address of Installation:

Date of Installation:

Name of Qualified Electrician:

Signature of Qualified Electrician:
