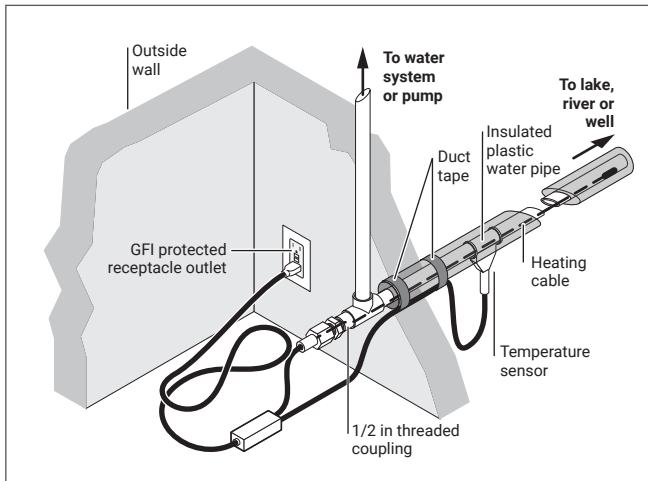




## RAYCHEM

# In-Pipe Mini – 120 V

## In-Pipe Freeze Protection Heating Cable Installation Instructions



### DESCRIPTION

nVent RAYCHEM In-Pipe Mini heating cable is a pipe freeze protection system that heats insulated water pipes from the inside. Utilizing a heavy-duty cable that is made entirely of metal and mineral insulation, In-Pipe Mini is an energy efficient in-pipe heating cable for pipes between 14 feet (4.3 m) and 34 feet (10.4 m) in length. In-Pipe Mini includes a temperature sensor and is designed for use with 1/2 in to 1-1/4 in plastic and metal pipes that are insulated with closed-cell thermal insulation.

In-pipe Mini can be installed in copper, CPVC and polyethylene pipes.

Pipe type	Vicat softening temperature
CPVC	230°F (110°C)
Polyethylene	241°F (116°C)

### KIT CONTENTS

Item	Qty	Description
A	1	In-Pipe Mini heating cable assembly
B	2	Plastic tie wraps – 8 in (200 mm) long
C	1	Installation Instructions (English and French)

### APPROVALS



Note: This product is suitable for use in potable water.

### WARNING:

In-Pipe Mini must be installed correctly to ensure proper operation and to prevent shock, fire or damage to the pipe. Read these important warnings and carefully follow all the installation instructions.

- A 5-mA ground fault circuit interrupter (GFCI) must be used.
- In-Pipe Mini should not be used in uninsulated pipe. For uninsulated pipes contact nVent.
- The heating cable must be installed in accordance with local and national electrical codes.
- Do not use a two-prong outlet, an extension cord, or with any voltage other than 120 volts AC.
- Do not unduly work or bend the cable. Bend gently and avoid repeated sharp bends, pinching, crimping, or flattening.
- Do not cut or alter the length of the heating cable or power cord.
- The heating cable must not pass through a valve or shut off of any kind.
- The heating cable must not pass through the pitless adaptor into the well casing
- Do not install this heating cable on the outside of piping.
- Do not energize the system until installation is complete and the pipe is filled with water. Never energize the system if the pipe is not filled with water.
- The temperature sensor must contact the pipe at all times or it could sense an incorrect temperature.
- Minimum installation temperature is -4°F (-20°C).

Please read these instructions completely before proceeding.

**Note: Heating cable must only be installed in straight or gradually bent pipe. Elbows and other sharp bends should not be used.**

1. If the cable is being installed in new pipe, follow Step 1a; if being installed in existing pipe, follow Step 1b.
- 1a. If being installed in a new pipe, determine the length of pipe to be protected as follows:

Assemble appropriate tee and necessary pipe fittings, adaptors, etc., and slide over the heating cable. Temporarily fasten threaded coupling to tee assembly. The cable should pass through the in-line segment of the tee assembly with no bending required, as shown in Figure 1.

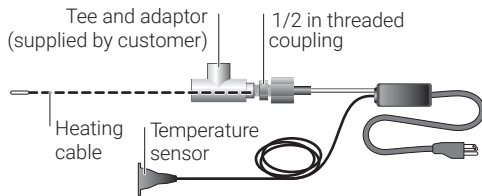


Figure 1

Place the end of the tee assembly, with the cable in it, against one end of the pipe. Place the straightened, uncoiled heating cable along the outside of the pipe. Mark and cut the pipe at a point 1 in (25 mm) longer than the end of the cable, as shown in Figure 2.

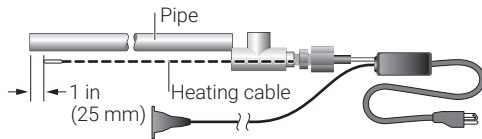


Figure 2

Remove the cable from tee assembly.  
Shut off water supply. Proceed to Step 2.

- 1b. If heating cable is to be installed in existing pipe, proceed as follows (an electrician's fish tape or snake will be required):

**Important: You must estimate the pipe length before you cut the pipe. See the paragraphs marked (\*) that follow before you proceed.**

Shut off water supply and drain pipe. Cut pipe at point where cable will be inserted.

**Note: Do not uncoil the heating cable at this time.**

Insert fish tape or snake through tee (without pipe fittings) and the cut water supply pipe until tape comes into contact with the pitless adaptor or outer well casing, or with closed water service valve if connecting to a main water supply line. Ensure tee butts against end of cut pipe. Mark fish tape to indicated pipe and tee length (Figure 3).

Remove fish tape from pipe/tee and measure distance from end of fish tape to mark.

This measured pipe length should be shorter than the length of the heating cable purchased (the heating cable length may be found on the package).

- (\*) If the measured pipe length is more than 48 in (1,220 mm) shorter than the heating cable length, do not install the cable; return it for the next shorter cable.
- (\*) If the measured pipe length is more than 2 in (50 mm) longer than the heating cable length do not install the cable; return it for the next longer cable.

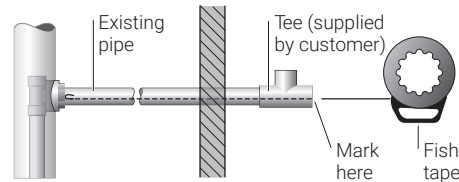


Figure 3

Once the heating cable length has been verified to be appropriate for the pipe length, uncoil and straighten the heating cable.

Next, insert the cable through the tee and into the water supply pipe until it contacts the pitless adaptor, outer well casing or closed water service valve. Ensure tee butts against end of cut pipe. Mark the cable where it enters the tee. Pull some of the cable back and measure and record the length between the mark and the small plastic nut in the center of the threaded coupling (supplied with the cable) as shown in Figure 4. Ensure that the brass fitting is completely inserted into the threaded coupling until it stops (about 3/4 in (19 mm) of the coupling will be showing). If there is no excess cable as shown in Figure 4, proceed to Step 2.

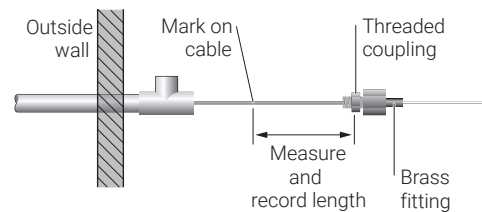


Figure 4

Completely remove cable assembly from pipe/tee.

Cut a piece of appropriate pipe material (the length required is the measured length recorded above plus 2 in (50 mm); eg. 21 in + 2 in = 23 in (533 mm + 50 mm = 583 mm).

Using appropriate connection hardware, as required by local codes, attach the length of newly cut pipe (added pipe) to the tee opening as shown in Figure 5. Install adaptor and necessary pipe fitting, etc., onto the end of the 'added pipe' to accept the 1/2 in threaded coupling.

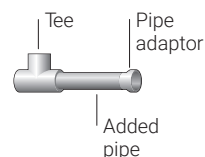


Figure 5

2. If not already done, connect far end of the pipe to the water supply system, per local codes, using appropriate hardware.

**Note: When connecting to a water well where a pitless adaptor is used, the heating cable must stop at the pitless adaptor. If the heating cable extends past the pitless adaptor, it will be damaged when the submersible pump is removed.**

3. Attach the tee assembly to the near end of the water supply pipe, per local codes. Be sure the tee is installed so that the cable will be able to pass straight through the tee and into the pipe with no bending required (see Figure 6).

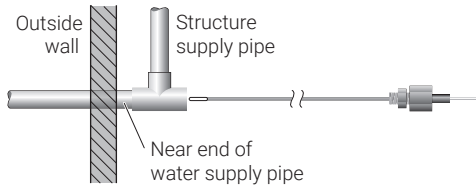


Figure 6

4. Attach structure supply pipe to the tee opening as shown in Figure 6, per local codes, using appropriate materials. If the cable will be installed as in Figure 8 and a shutoff valve will be used in this section of the pipe, the total length of unheated pipe (pipe plus valve without cable in it) must not exceed 6 in (150 mm).

**Note: Do not position the pipe in which the heating cable will be inserted in such a way as to cause sharp bends in the pipe.**

**Note: If this installation is for pipe supplying water to a manufactured home, the structure supply connection should be made underneath the vapor barrier supplied with the home, if possible (see Figure 8).**

5. If the cable is being installed in new pipe, follow Step 5a; if being installed in existing pipe, follow Step 5b.
- 5a. Ensure adaptor and appropriate pipe fittings to accept threaded coupling are properly connected to the tee, per local codes, and fully insert the cable into the water supply pipe through remaining opening in tee assembly as shown in Figure 7 or Figure 8 as appropriate for the installation. If a valve or shutoff is installed at any point on the pipe, the heating cable must not pass through it. Proceed to Step 6.
- 5b. If no pipe has been added to the tee, ensure adaptor and appropriate pipe fittings to accept threaded coupling are properly connected to the tee, per local codes, and fully insert the cable into the water supply pipe through remaining opening in tee assembly as shown in Figure 7 or Figure 8 as appropriate for the installation.

If a length of pipe was added to the tee, ensure adaptor and appropriate pipe fittings to accept threaded coupling are properly connected to end of the 'added pipe' per local codes, and fully insert the cable into the water supply pipe through the end of the pipe as shown in Figure 9.

If a valve or shutoff is installed at any point on the pipe, the heating cable must not pass through it.

6. Wrap several turns of Teflon tape around the tapered thread (exposed end) of the supplied 1/2 in NPT threaded coupling. Fasten the threaded coupling to the tee or 'added pipe' assembly. Ensure compression nut is not tight and push the brass fitting into the back end of the threaded coupling until it stops (about 3/4 in (19 mm) of the coupling will be showing). Tighten the compression nut onto the brass fitting.

**Note: Do not overtighten coupling assembly.**

**Note: Do not plug in the assembly to power source at this time.**

**Note: The total length of unheated pipe from the pitless adaptor or outer well casing to the end of the heating cable must not exceed 3 in (75 mm).**

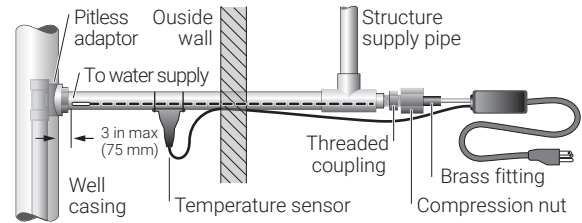


Figure 7

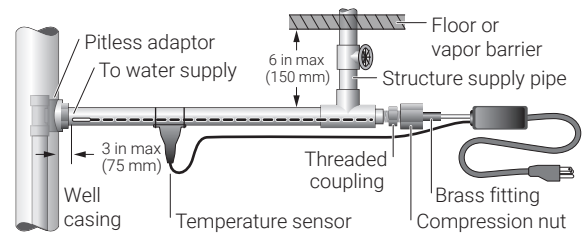


Figure 8

7. Turn on water supply to pipe and check installation for leaks.
8. Fully extend temperature sensor cord and attach temperature sensor to pipe as shown in Figure 7 (for thru walls) or Figure 8 (for under floors) as appropriate for the installation, using tie-wraps provided. If installation is as shown in Figure 7, the temperature sensor MUST be attached to the pipe as far from the outside wall as possible.

**Note: Do not attach temperature sensor to a section of pipe that is indoors or to a section of pipe where water will not flow, such as the 'added pipe' as shown in Figure 9.**

**Note: Do not leave temperature sensor exposed to sense air temperature.**

**Note: The temperature sensor must be attached to the pipe before insulating the pipe.**

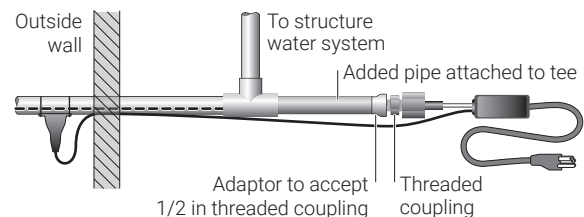


Figure 9

9. Install 1/2 in (13 mm) minimum thickness closed cell split tube insulation over all pipe, with and without heating cable inside. Also cover valve bodies and temperature sensor with insulation (see Figure 10 and Figure 11).

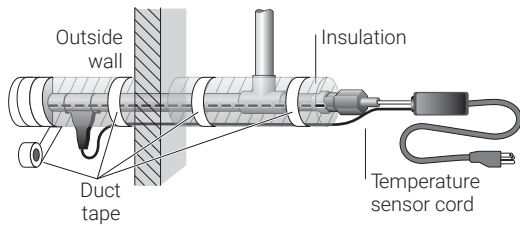


Figure 10

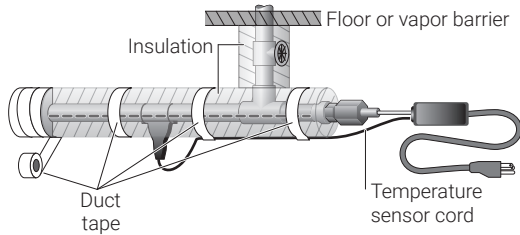


Figure 11

10. Cover seams and joints in insulation with duct tape or other suitable material to prevent water from entering the insulation. Use duct tape to secure temperature sensor cord to outside of the insulation in several places.
11. Protect the insulated pipe from the wind by burying it at least three inches deep or covering it with earth. If this is not possible, slide a larger plastic pipe, sometimes referred to as "Big O" or drawpipe, over the exposed sections of insulated pipe.
12. Plug the power cord directly into a three-prong grounded 120 volt GFCI protected outlet installed in accordance with local and national electrical codes. Do not use an extension cord.

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