Troubleshooting

The following information is intended to assist in maintaining and troubleshooting a heat traced hot water system. The primary goal of a heat tracing system is to provide an efficient supply of hot water closer to the point of use than is possible with a recirculated system.

Like many other systems installed in a facility, the successful installation of a heat tracing system will require coordination among several trades involved in the construction process. Mechanical, electrical and insulation contractors must each provide services that are critical to the proper operation of the system.

Before calling your heat tracing vendor when things aren't going right, make a visual inspection; perhaps the thermal insulation is wet, damaged or missing. Also, consider the possibility that repairs or maintenance of nearby equipment may have resulted in damage to the heat tracing or its power supply. These are common causes of heat tracing problems, and they are often overlooked. A number of other possibilities are listed below, with their symptoms and remedies.

If at any time you feel that the heating cable has been damaged, a dielectric insulation resistance test with a megohmmeter (megger) is recommended.

CAUTION

Replace all damaged heating cable. Do not reconnect power to cable that has been exposed to excessive heat moisture. Failure to replace damaged cable can cause arcing or fire.

CAUTION

Disconnect power to heating cable (turn off circuit breaker) when working on heat trace pipe, or heat tracing systems.

Symptom - Water Not Hot Enough

Possible Causes	Remedy
Water heater/mixing valve set point too low	Reset water heater temperature level, maximum temperature 65°C (149°F).
No power to heating cable	Check power distribution panel to ensure breakers are energized or have not tripped.
Splice connection missed during installation	Using drawing and visual inspection, check to see if any splice connection has been overlooked. This may be evident if one area of a heat traced circuit is "cold".
Compressed, missing or wet insulation	Replace missing or damaged insulation, ensure that pipe and insulation have not been forced against other pipes to cause heat sink along its length.
Pipes were not properly insulated	Ensure that insulation is per the table. Reinsulate where needed.
No heating cable installed in area	Verify that the pipe in question was scheduled for heating cable.
Ambient temperature too low	Measure ambient temperature in interstitial space where the heat traced pipe is located. If the temperature is below 22°C (71°F), the ambient is too cool. Raise the ambient temperature.
Cable not powered at correct voltage	Verify the proper design voltage and compare with measured value at power connection point.
Heat loss at temperature limiting valve	In some TLV's heat loss can occur between the hot and cold inlets via the non return valves. Check that dirt from system is not causing malfunction of the non return valves. Supply and install filter screens at inlet to valve body.

Symptom - Water Too Hot

Possible Causes	Remedy
Water heater/mixing valve set point too high	Reset water heater temperature level, maximum temperature 65°C (149°F).
Pipes were not properly insulated	Ensure that insulation is per the table. Reinsulate where needed.
Ambient temperature too high	Measure ambient temperature in interstitial space where the heat traced pipe is located. If the temperature is above 27°C (80°F), the ambient is too high. Lower the temperature interstitial space.
Cable not powered at correct voltage	Verify the proper design voltage and compare with measured value at power connection point.

Symptom - Circuit Breaker Tripping

Possible Causes	Remedy
Improper electrical connection	Cable could be damaged or improperly connected. Visually inspected heating cable, connections and terminations. Test cable with megger.
Maximum circuit length exceeded	Verify the length of the heating cable, including all cable located on tee splices. Compare this length with the maximum circuit length and circuit breaker sizing chart. Increase breaker size or add additional circuit if needed.
Piping/building is too cold during start-up	The building and the water in the pipe must be greater than 16°C (61°F). Raise building temperature or purge hot water lines.
Damaged power feed wire leading to power connection	Disconnect heat cable at power connection and test power feed wires running back to power distribution panel.
Faulty branch circuit breaker	Replace breaker and energize heating cable.