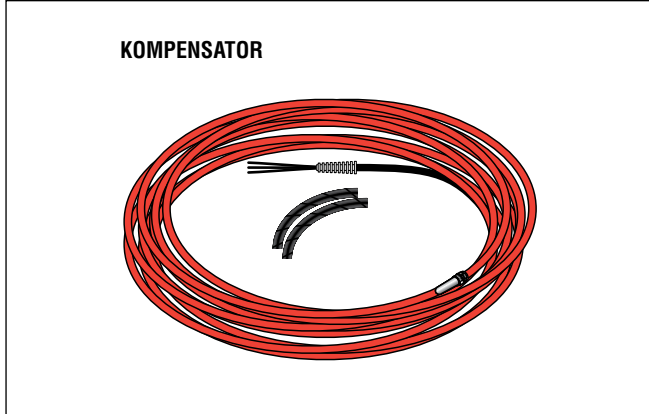




# Kompensator by Heat-Line®

## Pre Assembled, Low Voltage, Heating Cable Sets for Pipe Freeze Protection

### Installation Instructions



#### General Information

Kompensator systems are low voltage for use as pipe freeze protection.

1. Kompensator cable is suitable for use on metal and plastic pipes (such as PVC or polyethylene)
2. Exposure to temperatures above 150°F will shorten the life of your cable. Before installing on hot water pipes, set the water heater thermostat below 150°F (low to medium on most thermostats).
3. Remove any old heating tapes or insulation before installing your Kompensator heating cable.
4. **Do not** use thin 1/8" foil backed foam insulation.
5. If the Kompensator cable must be taken off and re-installed carefully follow all installation instructions.
6. Leave these instructions with the user for future reference.
7. These systems can be used with thermostats where applicable to improve energy efficiency.

**Kompensator is a technically advanced product. Handle it with proper care and be sure not to damage the outer sheaths or jackets of the cable.**

**Read the Safety Instructions and Installation Instructions completely before installing this product.**

#### Kompensator Kit Contents

Kompensator heating cable
Strain relief
Installation Instructions

#### Options

Insulation	Various sizes and types available, contact Heat-Line
NEMA-4X enclosure	5x5x2
SJOOW	12/3 Power lead

#### Approvals

- Low voltage
- These systems are intended for ordinary locations only

#### **WARNING:**

**Fire and shock hazard. This component is an electrical device which must be installed properly. Follow these important warnings to ensure proper operation and to prevent electrical or fire hazard.**

1. The heater (cable) must not exceed the recommended voltage as described on the product. It is the installer's responsibility to make sure the product is protected from an increase in voltage and to provide correct over-current protection.
2. To minimize the danger of fire if the heating cable is damaged or improperly installed, Kompensator must be installed with over current protection and must also be properly grounded. Arcing may not be stopped by conventional circuit protection.
3. The Kompensator cable is designed for water pipe freeze protection. Thermal design is based on dry insulated metal and plastic pipes.
4. As with any other electrical product, exposure of the Kompensator cable to water or other electrolytes if the cable is damaged creates a risk of electrical shock or fire.
5. Connect only to a dedicated circuit with appropriate over current protection and which are protected from rain and other water (dry location).
6. The cable jacket must not be cut, nicked, or worn down, therefore:
  - Never cut the cable's outer jacket.
  - Prevent chaffing. Do not install the cable where objects might hit it or cut it or where it might be damaged by rubbing against rough surfaces.
  - Before installation, file and remove any sharp edges which might damage the cable. Make sure the cables cross only smooth, non-abrasive surfaces.
  - Protect the complete system with a metal sheath where it might be damaged by animals or impact.
  - Do not use any wire or clamps to attach the cable to the pipe. Use 1/2" or 1" tape, fiberglass tape, or plastic ties.
6. Do not use nails, metal clamps, wires or other devices that might cut the cable or cord to support it between the pipe and its power location.
- If you discover a nick or worn spot on your cable, immediately disconnect the system and replace the cable. Inspect the cable periodically for damage. And remember to replace any damaged insulation after each inspection of the cable.
6. Never attempt to splice or repair a damaged cable. Replace it with a new unit. The system is not designed to be repaired and to do so may create a danger of fire or shock.
7. Do not install the cable close to flammable materials, liquids, or fumes. If the cable is cut while the system is energized and if there is moisture present, there is a risk of fire and flammable objects or fumes near the cable might be ignited.

## Kompensator Installation Instructions

### PRE-INSTALLATION INFORMATION

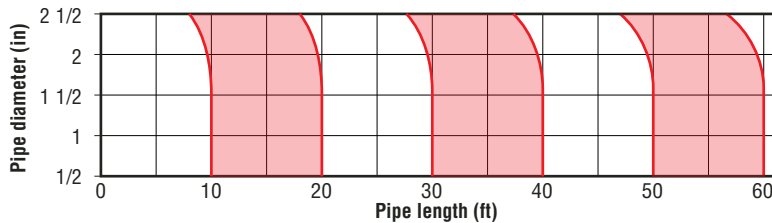
#### General Requirements For Pipe Freeze Protection

- Kompensator heating cables may be used on metal and plastic water pipes. Please consult Heat-Line if you have other pipes or tubing.
- Kompensator heating cables are not intended for use inside any pipes, for freeze protection of liquids other than water, or for use in classified hazardous locations.
- Install with a minimum of 1/2" fire-resistant, waterproof thermal insulation.
- Never use on any pipes that may exceed 150°F (65°C).

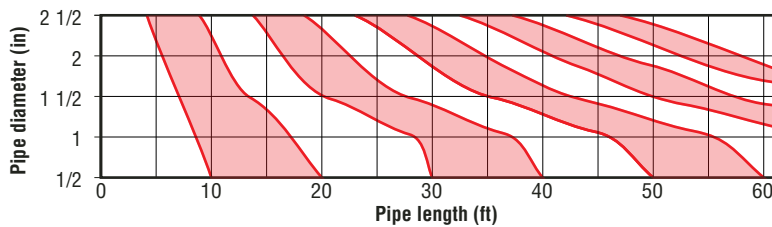
- Use appropriate wire gauge for the heating cables circuitry.
- Install only in accessible locations; do not install behind walls or where the cable would be hidden.
- Do not run the heating cable through walls, ceilings, or floors.
- Connect only to circuits with the appropriate over current protection and proper grounding and are protected from rain and other water. Important: For the Heat-Line warranty to be valid, you must comply with all the requirements outlined in these guidelines. Determine Which Kompensator Heating Cable You Need for Pipe Freeze Protection

Use the Tables 1 and 2 to select the correct heating cable. Add 2 foot to your pipe length for each valve or spigot on your pipe system. The charts assume the lowest outside temperature is 0°F (-18°C), with a minimum of 1/2" thick waterproof, fire-resistant thermal insulation (preformed foam). For protection to -20°F (-29°C), use 1" thick insulation. Important: All thermal and design information provided here is based upon a "standard" installation with heating cable fastened to an insulated pipe. For any other application or method of installation, consult Heat-Line at (800) 584-4994.

**Table 1 Metal Pipes**



**Table 2 Plastic Pipes**



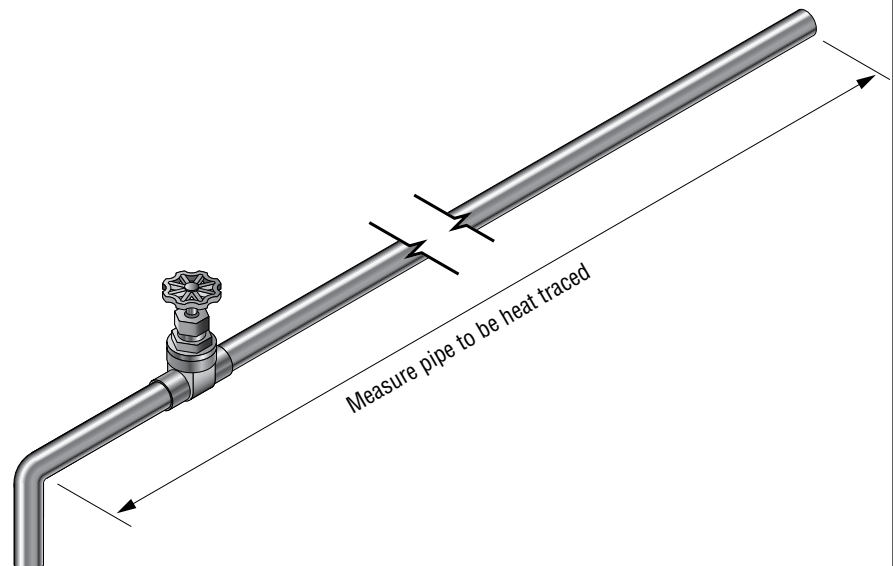
### INSTALLATION INSTRUCTIONS for Kompensator Cables on Pipe

#### 1

#### Determine the length of cable required

- For systems with pipe diameters up to 1 1/4" I.D. a single straight run should be Sufficient using the KHL125 Series Kompensator. For systems with pipe diameters over 1 1/4" I.D. consult Heat-Line Corporation to discuss your particular requirement.

**Note:** Pipes must be insulated for maximum efficiency and performance.



## Kompensator Installation Instructions

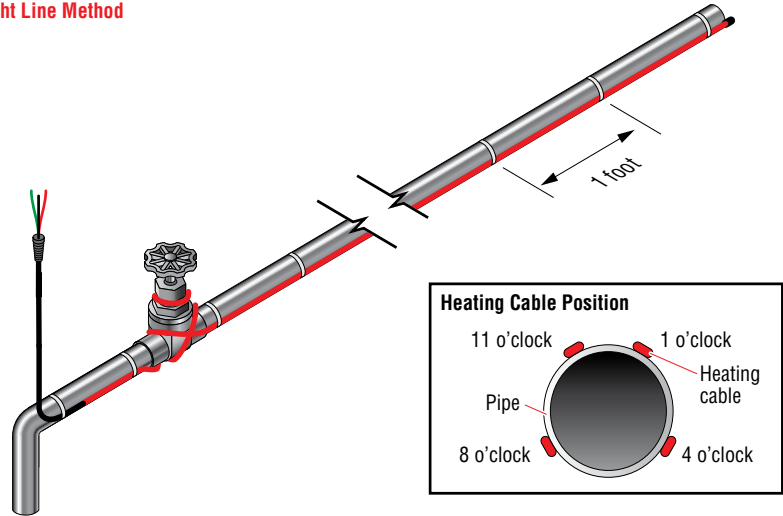
2

### Apply cable to the pipe

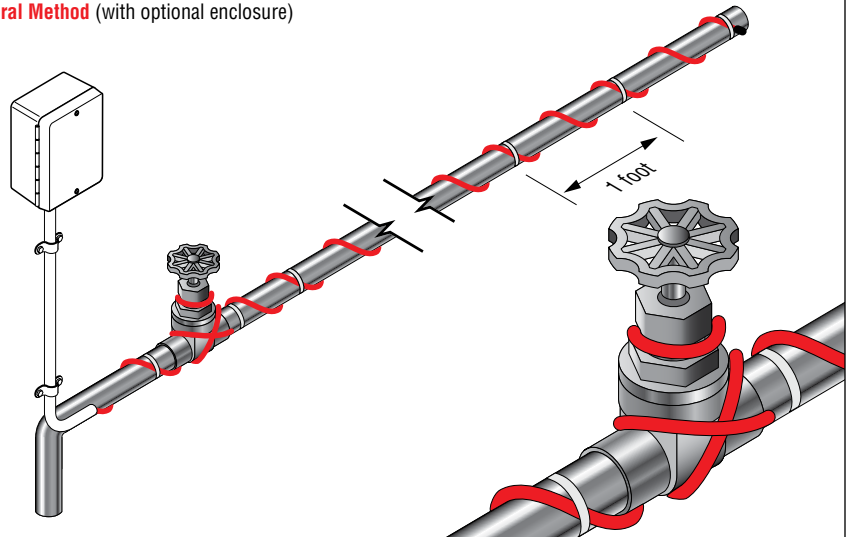
- If your Kompensator cable set is the same length as the pipe, run it straight along the pipe in the 4 or 8 o'clock position. For large diameter pipes you can pitch or spiral the heater evenly along the pipe length or run the cable longitudinally at the 4 or 8 o'clock position.
- To provide extra heat at valves and other fitting areas, simply wrap an extra 2 feet of cable at these areas.
- Fasten the cable at one foot intervals using quality electrical tape or plastic cable ties. DO NOT over tighten or compress the heater as this will damage the conductive core. If there is excess cable double it back.
- If your Kompensator cable set is longer than the pipe, spiral it evenly along the pipe.
- Fasten the cable at one foot intervals using quality electrical tape or plastic cable ties.

**Note:** Pipes must be insulated for maximum efficiency and performance.

### Straight Line Method



### Spiral Method (with optional enclosure)



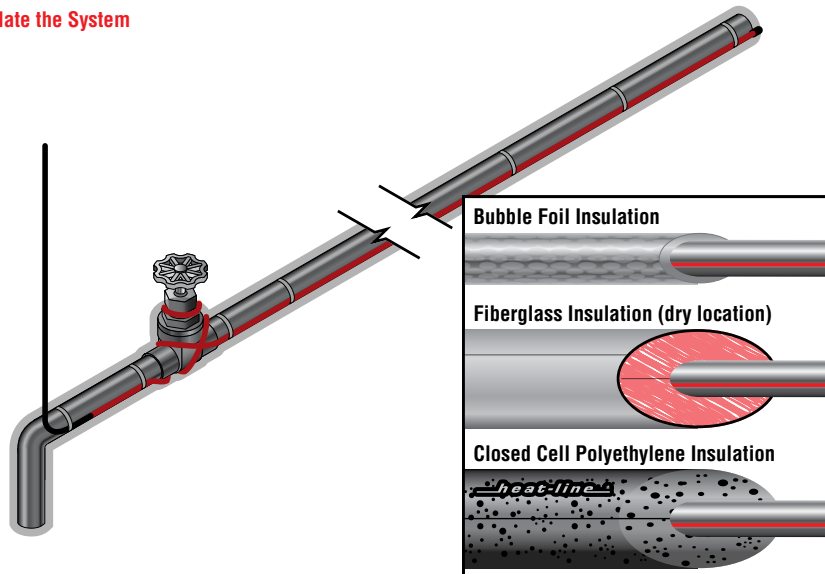
3

### Protect the system with insulation

Insulation may include foil bubble insulations, fiberglass pipe insulations in dry locations or foam insulations outside in wet locations.

- Before insulating ensure that there is no cable damage, such as nicks or cuts.

### Insulate the System



## Kompensator Installation Instructions

### WIRING, SIZING AND POWER REQUIREMENTS

The Kompensator heating cable has a conductive polymer core and its heat output changes (increases or decreases) with heat and cold. It is important to understand however, the cable never operates at 0 output and that it is a consumer of energy when powered. Though the heat outputs will change with temperature variables along the pipe, it is consuming power while it is on.

It is recommended that you install a shutoff switch to avoid draining the battery or power supply. Please see control options for further information on controlling your Kompensator.

**Note:** It is the installer's responsibility to make sure proper voltage regulation is supplied.

#### Fuse and Breaker Sizing Recommendations

##### **KHL123 Series (12 volt, 3 watts @ 50°F)**

Fuse or Breaker Size (AMP)	Kompensator Length (feet) Max. 40'	Wire Gauge (AWG)
5	1 – 8	14
7.5	9 – 12	14
10	13 – 16	14
15	17 – 26	12
20	26 – 40	12

##### **KHL125 Series (12 volt, 5 watts @ 50°F)**

Fuse or Breaker Size (AMP)	Kompensator Length (feet) Max 30'	Wire Gauge (AWG)
5	1 – 7	14
7.5	8 – 10	14
10	11 – 14	14
15	15 – 20	12
20	20 – 30	12

##### **KHL243 Series (24 volt, 3 watts @ 50°F)**

Fuse or Breaker Size (AMP)	Kompensator Length (feet) Max 60'	Wire Gauge (AWG)
5	1 – 15	14
7.5	16 – 23	14
10	24 – 35	14
15	36 – 48	12
20	48 – 60	12

*Suggested fusing for equipment protection*

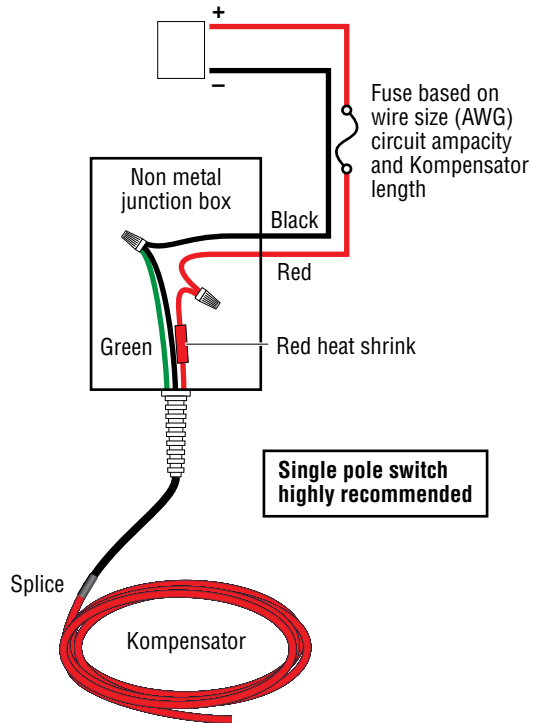
### CONTROL OPTIONS:

Kompensator heaters can be installed with multiple control capabilities installed by others. These include and not limited to:

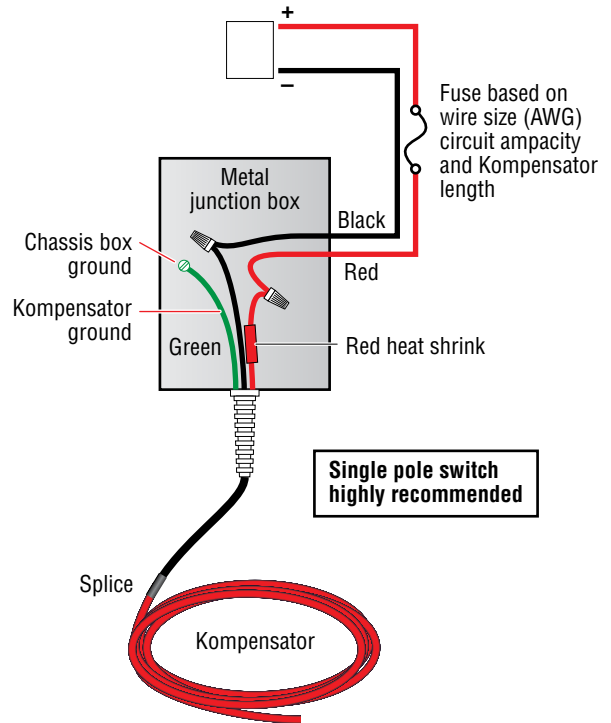
- Shut off switches
- LED indicator lights
- Low voltage thermostats
- Timers

**WIRE SCHEMATICS**

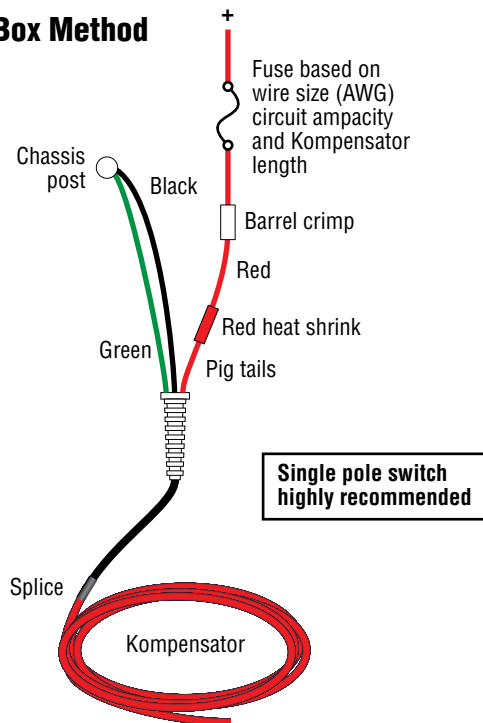
**Non metal Junction Box**



**Metal Junction Box**

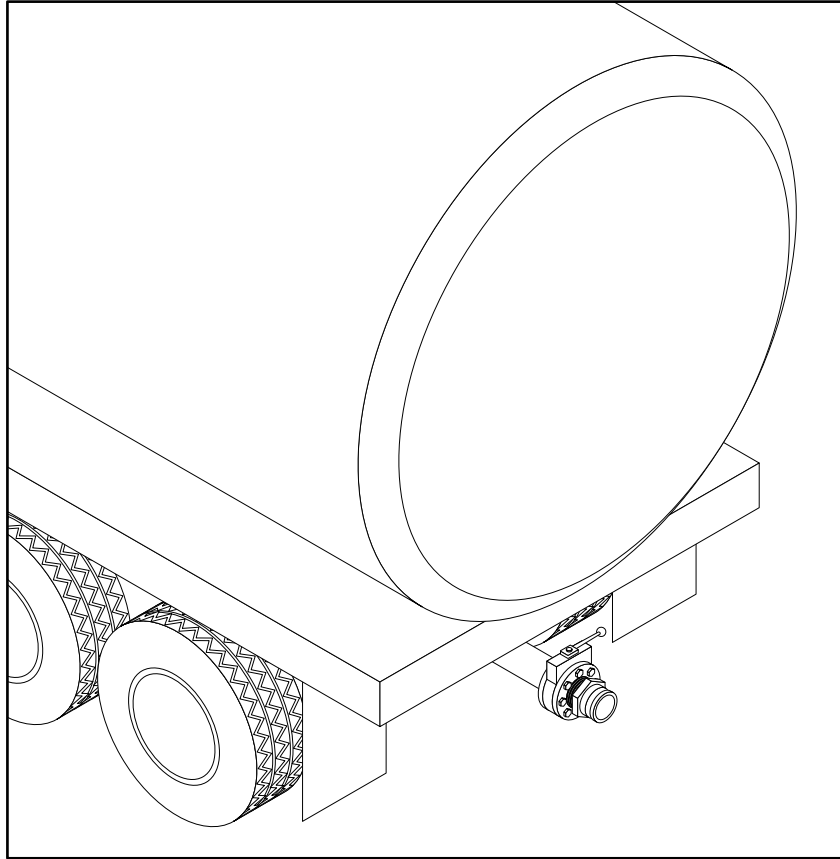


**No Box Method**



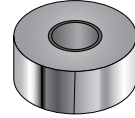
## Kompensator Installation Instructions

## EXAMPLES

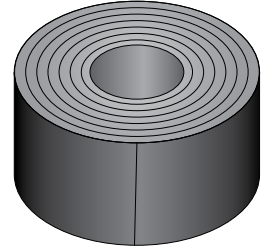


## Accessories

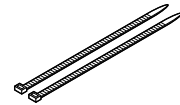
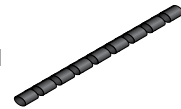
Aluminum tape



Insulation

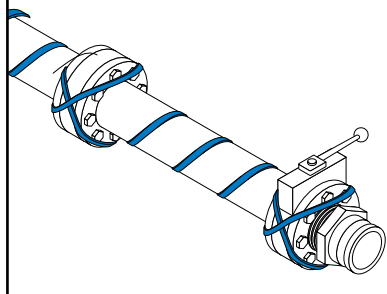


Cable ties

Cable guard  
Loom

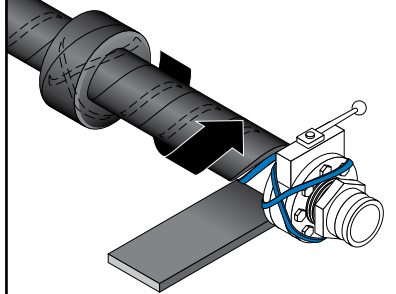
1

- Spiral on Kompensator cable
- Criss cross at flanges and valves



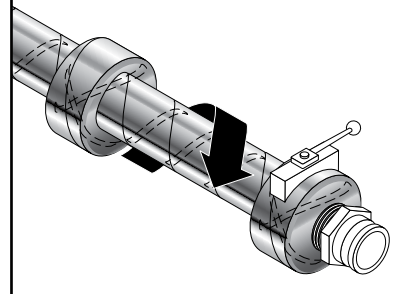
2

- Wrap insulation over pipe and Kompensator



3

- Finish off by enclosing in Aluminum Tape



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