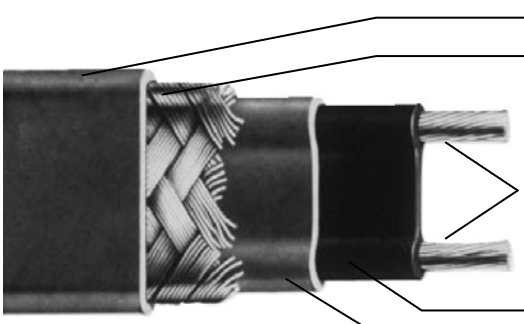
# NELSON™

## SELF-REGULATING HEATERS

APPLICATION INFORMATION

**TYPE CLT**




### Description:

Nelson Type CLT self-regulating heater cable is a parallel circuit electric heater strip. An irradiation cross-linked conductive polymer core material is extruded over the multi-stranded, tin-plated, 18-guage copper bus wires. The conductive core material increases or decreases its heat output in response to temperature changes. A thermoplastic elastomer dielectric jacket is then extruded over the conductive core. A copper braid is installed over this jacket providing a continuous ground path. A UV stabilized thermoplastic elastomer overjacket is provided to cover the braid for wet applications and exposure to the sun.

### Principle of Operation:

The parallel bus wires apply voltage along the entire length of the heater cable. The conductive core provides an infinite number of parallel conductive paths permitting the cable to be cut to any length in the field with no dead or cold zones developing. The heater cable derives its self-regulating characteristic from the inherent properties of the conductive core material. As the core material temperature increases, the number of conductive paths in the core material decreases, automatically decreasing the heat output. As the temperature decreases, the number of conductive paths increases, causing the heat output to increase. This occurs at every point along the length of the cable, adjusting the power output to the varying conditions along the pipe. The self-regulating effect allows the cable to be overlapped without creating hot spots or burnout. As the cable self-regulates it heat output, it provides for the efficient use of electric power, producing heat only when and where it is needed, and also limiting the maximum surface temperature.

### Application:

Nelson's Type CLT self-regulating heater cable is ideal for use in maintaining fluid flow under low ambient conditions. Freeze protection and low watt density process temperature systems such as pipelines, fire protection, process water, dust suppression systems, hot water and structure anti-icing are typical applications for this product. For other than metal pipe heating, see appropriate application guide. The base product is supplied with a copper metal braid with a thermoplastic elastomer overjacket for wet applications, exposure to the sun, and where mechanical abuse is a problem. Cables are UL Listed and CSA Certified for use in non-hazardous locations and can be used on branch sprinkler systems.

NELSON HEAT TRACE

## TYPE CLT

### Cable Selection @ 0°F Minimum Ambient Temperature

| Application Design Conditions | |
|---|---|
| Maintain Temperature | *40°F* |
| Insulation Type | *Fiberglass* |
| Wind Speed | *20 MPH* |
| Safety Factor | *10%* |
| Heater Attachment | *GT-6 Fiberglass Tape* |

**Metallic Pipe Applications*** include Carbon Steel, Stainless Steel and Copper pipe.
**Non-Metallic Pipe Applications*** include FRP, PVC, CPVC, HDPE, ABS and Polypropylene.

The information in the tables below represents the wattage of cable necessary to meet the Design Conditions. CLT3 = *3*, CLT5 = *5*, CLT8 = *8*. If a single pass of cable does not satisfy the heat loss requirement, then multiple passes are shown. Example: *5(2)* (two passes of *5* watt product).

**Metallic Pipe Applications ***

| **208 VAC** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Insulation Thickness** | **Pipe Size (in inches)** | | | | | | | | | |
| | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *3* | *3* | *5* | *5* | *5* | *8* | *8* | *8* | *8(2)* | *8(2)* |
| 1.0” | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *5* | *8* | *8* |
| 1.5” | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *8* |
| 2.0” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *5* |
| **120/240 VAC** | | | | | | | | | | |
| **Insulation Thickness** | **Pipe Size (in inches)** | | | | | | | | | |
| | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* |
| 1.0” | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *8* | *8* |
| 1.5” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* |
| 2.0” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* |
| **277 VAC @** | | | | | | | | | | |
| **Insulation Thickness** | **Pipe Size (in inches)** | | | | | | | | | |
| | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *8* | *5(2)* | *8(2)* |
| 1.0” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* |
| 1.5” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *5* |
| 2.0” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3* |

**Non-Metallic Pipe Applications ***

| **208 VAC** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Insulation Thickness** | **Pipe Size (in inches)** | | | | | | | | | |
| | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *5* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* | | |
| 1.0” | *3* | *3* | *5* | *5* | *5* | *8* | *8* | *8* | *8(2)* | *8(2)* |
| 1.5” | *3* | *3* | *3* | *5* | *5* | *5* | *5* | *8* | *8* | *8(2)* |
| 2.0” | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *5* | *8* | *8* |
| **120/240 VAC** | | | | | | | | | | |
| **Insulation Thickness** | **Pipe Size (in inches)** | | | | | | | | | |
| | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *3* | *5* | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* | | |
| 1.0” | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* |
| 1.5” | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *5(2)* |
| 2.0” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *8* | *8* |
| **277 VAC** | | | | | | | | | | |
| **Insulation Thickness** | **Pipe Size (in inches)** | | | | | | | | | |
| | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *3* | *3* | *3* | *5* | *8* | *8* | *5(2)* | *5(2)* | *8(2)* | |
| 1.0” | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *8* | *5(2)* | *5(2)* |
| 1.5” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *8* | *8* |
| 2.0” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *8* |

## TYPE CLT

### Cable Selection @ -20°F Minimum Ambient Temperature

| Application Design Conditions | |
|---|---|
| Maintain Temperature | *40°F* |
| Insulation Type | *Fiberglass* |
| Wind Speed | *20 MPH* |
| Safety Factor | *10%* |
| Heater Attachment | *GT-6 Fiberglass Tape* |

**Metallic Pipe Applications*** include Carbon Steel, Stainless Steel and Copper pipe.
**Non-Metallic Pipe Applications*** include FRP, PVC, CPVC, HDPE, ABS and Polypropylene.

The information in the tables below represents the wattage of cable necessary to meet the Design Conditions. CLT3 = *3*, CLT5 = *5*, CLT8 = *8*. If a single pass of cable does not satisfy the heat loss requirement, then multiple passes are shown. Example: *5(2)* (two passes of *5* watt product).

**Metallic Pipe Applications ***

**208 VAC**

| Insulation Thickness | Pipe Size (in inches) 0.50 | 0.75 | 1.00 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 6.00 | 8.00 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.5” | *5* | *5* | *5* | *8* | *8* | *8* | | | | |
| 1.0” | *3* | *3* | *5* | *5* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* |
| 1.5” | *3* | *3* | *3* | *5* | *5* | *5* | *5* | *8* | *8* | *5(2)* |
| 2.0” | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *8* |

**120/240 VAC**

| Insulation Thickness | Pipe Size (in inches) 0.50 | 0.75 | 1.00 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 6.00 | 8.00 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.5” | *3* | *5* | *5* | *5* | *8* | *8* | | | | |
| 1.0” | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *8* | *5(2)* |
| 1.5” | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *8* | *8* |
| 2.0” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *8* |

**277 VAC**

| Insulation Thickness | Pipe Size (in inches) 0.50 | 0.75 | 1.00 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 6.00 | 8.00 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.5” | *3* | *3* | *3* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* | |
| 1.0” | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *8* | *5(2)* |
| 1.5” | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *8* |
| 2.0” | | | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* |

**Non-Metallic Pipe Applications ***

**208 VAC**

| Insulation Thickness | Pipe Size (in inches) 0.50 | 0.75 | 1.00 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 6.00 | 8.00 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.5” | *8* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* | | | | |
| 1.0” | *5* | *5* | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* | | |
| 1.5” | *3* | *5* | *5* | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* |
| 2.0” | *3* | *3* | *5* | *5* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* |

**120/240 VAC**

| Insulation Thickness | Pipe Size (in inches) 0.50 | 0.75 | 1.00 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 6.00 | 8.00 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.5” | *5* | *5* | *8* | *5(2)* | *5(2)* | *8(2)* | *8(2)* | | | |
| 1.0” | *3* | *5* | *5* | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* | |
| 1.5” | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* |
| 2.0” | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *8* | *5(2)* |

**277 VAC**

| Insulation Thickness | Pipe Size (in inches) 0.50 | 0.75 | 1.00 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 6.00 | 8.00 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.5” | *5* | *5* | *5* | *8* | *5(2)* | *5(2)* | *8(2)* | *8(2)* | | |
| 1.0” | *3* | *3* | *3* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* | |
| 1.5” | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *5(2)* | *8(2)* |
| 2.0” | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *8* | *5(2)* |

## TYPE CLT

### Cable Selection @ -40°F Minimum Ambient Temperature

| Application Design Conditions | |
|---|---|
| Maintain Temperature | *40°F* |
| Insulation Type | *Fiberglass* |
| Wind Speed | *20 MPH* |
| Safety Factor | *10%* |
| Heater Attachment | *GT-6 Fiberglass Tape* |

**Metallic Pipe Applications*** include Carbon Steel, Stainless Steel and Copper pipe.
**Non-Metallic Pipe Applications*** include FRP, PVC, CPVC, HDPE, ABS and Polypropylene.

The information in the tables below represents the wattage of cable necessary to meet the Design Conditions. CLT3 = *3*, CLT5 = *5*, CLT8 = *8*. If a single pass of cable does not satisfy the heat loss requirement, then multiple passes are shown. Example: *5(2)* (two passes of *5* watt product).

**Metallic Pipe Applications ***

| **208 VAC** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Insulation** | **Pipe Size (in inches)** | | | | | | | | | |
| **Thickness** | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* | *8(2)* | | |
| 1.0” | *5* | *5* | *5* | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* |
| 1.5” | *3* | *3* | *5* | *5* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* |
| 2.0” | *3* | *3* | *3* | *5* | *5* | *5* | *5* | *8* | *8* | *5(2)* |
| **120/240 VAC** | | | | | | | | | | |
| **Insulation** | **Pipe Size (in inches)** | | | | | | | | | |
| **Thickness** | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *5* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* | | |
| 1.0” | *3* | *3* | *3* | *5* | *5* | *8* | *8* | *8* | *8(2)* | *8(2)* |
| 1.5” | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *8* | *5(2)* |
| 2.0” | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *8* |
| **277 VAC** | | | | | | | | | | |
| **Insulation** | **Pipe Size (in inches)** | | | | | | | | | |
| **Thickness** | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *3* | *5* | *5* | *8* | *8* | *5(2)* | *5(2)* | *8(2)* | | |
| 1.0” | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *5(2)* | *8(2)* |
| 1.5” | *3* | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *8* | *5(2)* |
| 2.0” | | | *3* | *3* | *3* | *3* | *3* | *5* | *5* | *8* |

**Non-Metallic Pipe Applications ***

| **208 VAC** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Insulation** | **Pipe Size (in inches)** | | | | | | | | | |
| **Thickness** | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *8* | *8* | *5(2)* | *8(2)* | *8(2)* | | | | | |
| 1.0” | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* | *8(2)* | | |
| 1.5” | *5* | *5* | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* | |
| 2.0” | *5* | *5* | *5* | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* |
| **120/240 VAC** | | | | | | | | | | |
| **Insulation** | **Pipe Size (in inches)** | | | | | | | | | |
| **Thickness** | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *8* | *8* | *8* | *8(2)* | *8(2)* | *8(2)* | | | | |
| 1.0” | *5* | *5* | *5* | *8* | *8* | *5(2)* | *5(2)* | *8(2)* | | |
| 1.5” | *3* | *5* | *5* | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* | |
| 2.0” | *3* | *3* | *5* | *5* | *5* | *8* | *8* | *8* | *5(2)* | *8(2)* |
| **277 VAC** | | | | | | | | | | |
| **Insulation** | **Pipe Size (in inches)** | | | | | | | | | |
| **Thickness** | **0.50** | **0.75** | **1.00** | **1.50** | **2.00** | **2.50** | **3.00** | **4.00** | **6.00** | **8.00** |
| 0.5” | *5* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* | | | | |
| 1.0” | *3* | *3* | *5* | *8* | *8* | *5(2)* | *5(2)* | *8(2)* | | |
| 1.5” | *3* | *3* | *3* | *5* | *5* | *8* | *8* | *5(2)* | *8(2)* | *8(2)* |
| 2.0” | *3* | *3* | *3* | *3* | *5* | *5* | *5* | *8* | *5(2)* | *8(2)* |

## Performance and Rating Data:

| Catalog No. | CLT3 | CLT5 | CLT8 | CLT23 | CLT25 | CLT28 |
|---|---|---|---|---|---|---|
| Voltage (VAC) | 120 | 120 | 120 | 240 | 240 | 240 |
| Power Output @ 40°F (W/ft.) | 3.2 | 5.4 | 8.6 | 3.2 | 5.4 | 8.6 |
| Maximum Segment Length (ft.) | 221 | 178 | 142 | 533 | 458 | 347 |
| Minimum Installation Temp (°F) | -35°F | -35°F | -35°F | -35°F | -35°F | -35°F |
| Current Load (amp/foot): | | | | | | |
| At 0°F Start-up | .072 | .100 | .143 | .036 | .050 | .071 |
| At -20°F Start-up | .080 | .111 | .158 | .040 | .056 | .079 |
| At -40°F Start-up | .088 | .122 | .174 | .044 | .061 | .087 |

**Note: Amp/Foot values include 20% breaker derating per National Electrical Code.**

## Circuit Breaker Selection:

| Watts/Ft. | Start-Up Temp. | Maximum Length (feet) Vs Circuit Breaker Size | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 120VAC | | | 240VAC | | | |
| | | 15A | 20A | 30A | 15A | 20A | 30A | 40A |
| 3 | 40°F | 268 | 358 | 537 | 537 | 716 | 1074 | 1432 |
| | 0°F | 208 | 277 | 416 | 416 | 555 | 832 | 1110 |
| | -20°F | 187 | 249 | 374 | 374 | 499 | 748 | 998 |
| | -40°F | 170 | 226 | 340 | 340 | 453 | 679 | 906 |
| 5 | 40°F | 192 | 256 | 384 | 384 | 511 | 767 | 1023 |
| | 0°F | 150 | 199 | 299 | 299 | 399 | 598 | 798 |
| | -20°F | 135 | 180 | 269 | 269 | 359 | 539 | 718 |
| | -40°F | 123 | 163 | 245 | 245 | 327 | 490 | 654 |
| 8 | 40°F | 134 | 179 | 269 | 269 | 358 | 537 | 716 |
| | 0°F | 105 | 140 | 210 | 210 | 280 | 421 | 561 |
| | -20°F | 95 | 127 | 190 | 190 | 253 | 380 | 506 |
| | -40°F | 86 | 115 | 173 | 173 | 231 | 346 | 461 |

Notes:
1. Maximum segment length is the maximum continuous heater run with minimal voltage drop. For breaker loading, multiple heater segments can be installed in parallel providing no individual length is longer than the maximum published segment length. For voltages other than 240VAC, multiply the amps/foot value in the table above by the power adjustment value below, then divide full breaker amperage rating by the adjusted value to determine maximum total footage allowed.
2. Circuit breakers are sized per Article 427-4 of the 1999 National Electrical Code.
3. Article 427-22 of the National Electrical Code requires ground-fault equipment protection for each branch circuit supplying electric heating equipment. Electrical connections should be made by a licensed electrician.
4. Cable Selection Tables are designed for product selection over a wide range of piping materials. For specific applications utilizing heat transfer aids, such as AT-50 aluminum foil tape, consult your Nelson products representative.

## Voltage Adjustment:

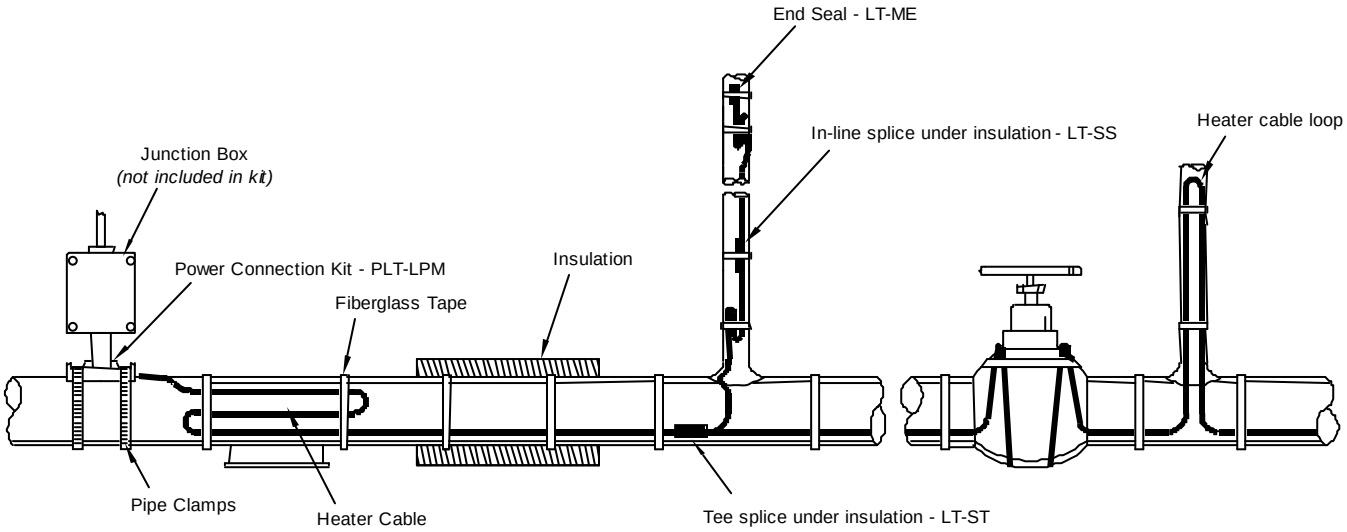
Use of Type CLT products at other than nominal voltages requires minor adjustments in power and maximum segment lengths.

| Product | Adjustment Multiplier | | | |
|---|---|---|---|---|
| | 208VAC | | 277VAC | |
| | Power | Length | Power | Length |
| CLT23 | .71 | 1.04 | 1.34 | .98 |
| CLT25 | .80 | 1.01 | 1.22 | 1.02 |
| CLT28 | .87 | 1.00 | 1.12 | 1.03 |

## Catalog Numbers:

| Voltage | Overjacketed | | |
|---|---|---|---|
| | 3 | 5 | 8 |
| 120VAC | CLT3-JT | CLT5-JT | CLT8-JT |
| 240VAC | CLT23-JT | CLT25-JT | CLT28-JT |

| Additional Footage of Heater for Various Heat Sinks | | | | | | |
|---|---|---|---|---|---|---|
| **Pipe Size** | **Standard Flange** | **Blind Flange** | **Pipe Support** | **Screwed or Welded Valve** | **Flanged Valve** | **Butterfly Valve** |
| 0.50 | .3 | .5 | 1.0 | 1.0 | 1.0 | 1.0 |
| 0.75 | .3 | .5 | 1.5 | 1.0 | 1.5 | 1.0 |
| 1.00 | .3 | .5 | 1.5 | 1.0 | 2.0 | 1.0 |
| 1.50 | .3 | .5 | 1.5 | 1.5 | 2.5 | 1.5 |
| 2.00 | .3 | .5 | 2.0 | 2.0 | 2.5 | 2.0 |
| 3.00 | .5 | .75 | 2.0 | 2.5 | 3.0 | 2.5 |
| 4.00 | .5 | .75 | 2.5 | 3.0 | 4.0 | 3.0 |
| 6.00 | .75 | 1.0 | 2.5 | 3.5 | 5.0 | 3.5 |
| 8.00 | .75 | 1.0 | 2.5 | 4.0 | 7.0 | 4.0 |




Note: Heater cable power connections and end seals are included in Power Connection Kit (PLT-LPM). Additional heater cable end seals, splices, tees and thermostats are used as needed.

## Components and Accessories:

| Catalog No. | Units | Description |
|---|---|---|
| PLT-LPM | Ea. | Power Connection Kit with Cable Seals |
| LT-SS | 5 Ea. | Splice Kit – Heat Shrink |
| LT-ST | 5 Ea. | Tee Splice Kit – Heat Shrink |
| LT-ME | 5 Ea. | End Termination Cable Seals |
| PC03 | Ea. | Pipe Clamp, .50-3.00” Pipe |
| PC12 | Ea. | Pipe Clamp, 3.50-12.00” Pipe |
| GT-6 | Ea. | Glass Fiber Tape, 60 Feet/Roll |
| AT-50 | Ea. | Aluminum Foil Tape, 50 Yards/Roll |
| WS-100 | Ea. | Warning Sign |
| JB-552 | Ea. | Junction Box, 5” x 5” x 2”, NEMA 4X |
| TF4X40 | Ea. | Thermostat, 40°F Fixed Setpoint, NEMA 4X Enclosure |
| TH4X325 | Ea. | Thermostat, 25-325°F, NEMA 4X Enclosure |
| TA4X140 | Ea. | Ambient Thermostat, 15-140°F, NEMA 4X Enclosure |

## Total Cable Requirements:

The total cable length for deicing is determined by including all elements of the roof system that need protection. Use the following tables to determine the total length of cable required.

| Item | Feet of cable/Ft. Item | Comments |
|---|---|---|
| Gutter | 1' | 1 Trace/6" gutter width |
| Downspout | 2' | Unless downspout is on end of circuit, the cable is looped down and back |
| Roof Valley | 6' | Per Valley |
| Dormer | 1' | 1 ft. of cable/foot of dormer perimeter |

| Cable Footage Required for Roof Overhangs (Feet of Cable per Foot of Roof) | | | |
|---|---|---|---|
| **Eave Overhang** | **Feet of Cable Loop Height** | **Shingle Roof** | **Metal Roof** |
| 12" | 18" | 1'-10" | 2'-6" |
| 24" | 30" | 2'-8" | 3'-6" |
| 36" | 42" | 3'-8" | 4'-6" |
| 48" | 54" | 4'-8" | 5'-6" |

## Performance and Rating Data:

| Catalog No. | CLT5-JT | CLT25-JT | | |
|---|---|---|---|---|
| Voltage (VAC) | 120 | 208 | 240 | 277 |
| Power Output in Ice (W/ft.) | 9.2 | 8.1 | 9.2 | 10.2 |
| Maximum Segment Length (ft.) | 141 | 370 | 377 | 381 |
| Minimum Installation Temp (°F) | -35°F | -35°F | -35°F | -35°F |
| Current Load (amp/foot): | | | | |
| At 20°F Start-up | .125 | .055 | .063 | .071 |
| At 0°F Start-up | .140 | .062 | .070 | .078 |
| At -20°F Start-up | .156 | .069 | .078 | .087 |
| At -40°F Start-up | .171 | .076 | .086 | .095 |

**Note: Amp/Foot values include 20% breaker derating per National Electrical Code.**

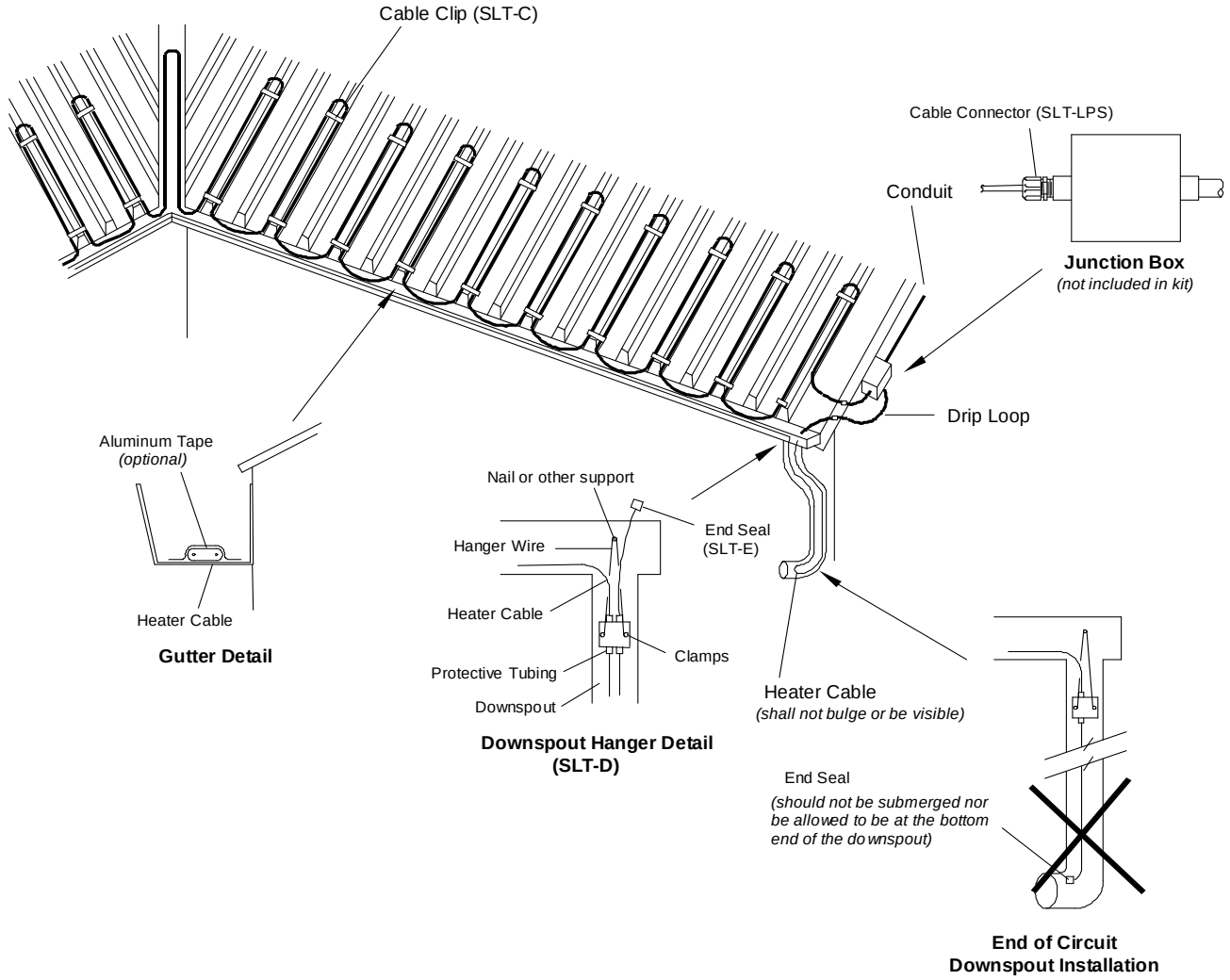
## Circuit Breaker Selection:

| Start-Up Temp. | Maximum Length (feet) Vs Circuit Breaker Size | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLT5-JT @ 120VAC | | | CLT25-JT @ 240VAC | | | |
| | **15A** | **20A** | **30A** | **15A** | **20A** | **30A** | **40A** |
| 20°F | 120 | 160 | 240 | 240 | 320 | 480 | 640 |
| 0°F | 107 | 142 | 214 | 214 | 286 | 429 | 571 |
| -20°F | 96 | 128 | 192 | 194 | 258 | 387 | 516 |
| -40°F | 88 | 117 | 175 | 174 | 232 | 348 | 464 |

Notes:

1. Maximum segment length is the maximum continuous heater run with minimal voltage drop. For breaker loading, multiple heater segments can be installed in parallel providing no individual length is longer than the maximum published segment length. For voltages other than 240VAC, divide full breaker amperage rating by amps/foot @ start-up temperature to determine maximum total footage allowed.
2. Circuit breakers are sized per Article 426-4 of the 1999 National Electrical Code.
3. Article 426-28 of the National Electrical Code requires ground-fault equipment protection for fixed outdoor electrical deicing equipment. Electrical connections should be made by a licensed electrician.

## TYPE CLT




### Components and Accessories:

| Catalog No. | Units | Description |
|---|---|---|
| SLT-LPS | Ea. | Power Connection Kit with Cable Seals |
| SLT-RC | 25 Ea. | Roof Clips |
| SLT-C | 25 Ea. | Roof Clips (Universal) |
| SLT-D | 5 Ea. | Downspout Hangers |
| SLT-S | 5 Ea. | Splice Kit – Heat Shrink |
| SLT-E | 5 Ea. | End Termination Cable Seals – Heat Shrink |
| AT-50 | Ea. | Aluminum Foil Tape, 50 Yards/Roll |
| TF4X40 | Ea. | Thermostat, 40°F Fixed Setpoint, NEMA 4X Enclosure |
| TA4X140 | Ea. | Ambient Thermostat, 15-140°F, NEMA 4X Enclosure |

| APPROVALS | |
|---|---|
| **CSA**<br>**Ordinary Locations** | **UL**<br>**Ordinary Locations** |

Nelson Heat Tracing Systems products are supplied with a limited warranty. Complete Terms and Conditions may be found on Nelson's website at www.nelsonheaters.com.

P.O. Box 726 • Tulsa, OK 74101 • 918-627-5530 • Fax: 918-641-7336 • www.nelsonheaters.com

315-SA-040
May 2015