

Section 22 05 33 Pipe Tracing for Domestic Hot Water Temperature Maintenance



EasyHeat™ Pipe Trace

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes a UL Listed heat trace system for domestic hot water temperature maintenance that consists of a self-regulating heating cable, connection kits, and accessories.
- B. Related Sections
 - 1. Section 22 07 19 – Plumbing Piping Insulation
 - 2. Section 22 08 00 – Commissioning of Plumbing
 - 3. Section 22 09 00 – Instrumentation & Control for Plumbing
 - 4. Section 22 10 00 – Plumbing Piping
 - 5. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables
 - 6. Section 26 05 26 – Grounding and Bonding for Electrical Systems

1.2 REFERENCES

- A. Underwriter's Laboratories (UL)
- B. National Electric Code (NEC)

1.3 SYSTEM DESCRIPTION

- A. System for domestic hot water temperature maintenance.
- B. System consists of a self-regulating heating cable, connection kits, and accessories.
[Select all that apply]
- C. The heating cable shall have a modified polyolefin jacket.

1.4 ACTION SUBMITTALS

- A. Product Data
 - 1. Heating cable data sheet
 - 2. UL certificates for domestic hot water temperature maintenance heat trace.
 - 3. Heating Cable Installation and Maintenance Instructions
 - 4. Connection kit and accessory instructions. **[Select all that apply]**
 - 5. Electrical Wiring Diagram of System

1.5 QUALITY ASSURANCE

- A. Manufacturers' Qualifications
 - 1. Manufacturer to show minimum of thirty (30) years of experience in manufacturing self-regulating heating cables.
 - 2. Manufacturer to provide products consistent with IEEE 515.1 requirements.
- B. Installer Qualifications
 - 1. System installer shall have complete understanding of product and product literature from manufacturer or authorized representative prior to installation.
 - 2. Electrical connections shall be performed by a licensed electrician.
- C. Regulatory Requirements and Approvals
 - 1. All components shall be UL Listed

2. Electrical Components, Devices, and Accessories: Listed and labelled as defined in NFPA 70 and marked for intended use.

1.6 DELIVERY, STORAGE AND HANDLING

- A. General Requirements: Deliver, store and handle products to prevent their deterioration or damage due to moisture, temperature changes, contaminants or other causes.
- B. Delivery and Acceptance Requirements: Deliver products to site in original, unopened containers or packages with intact and legible manufacturers' labels identifying the following:
 1. Product and Manufacturer
 2. Length/Quantity
 3. Installation and Maintenance Instructions
- C. Storage and Handling Requirements
 1. Store the heating cable in a clean, dry location with a temperature range -40°F to 140°F (-40°C to 60°C).
 2. Protect products from mechanical damage and water ingress.

1.7 WARRANTY

- A. Extended Warranty
 1. Manufacturer shall make available a minimum two (2) year warranty for heating cable and connection kits.
 2. Contractor shall submit to owner the results of all installation tests required by the manufacturer.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. Contract Documents are based on manufacturer and products named below to establish a standard of quality.
- B. Manufacturer
 1. Manufacturer shall be Emerson – EasyHeat
 2. Manufacturer to show minimum of thirty (30) years of experience in manufacturing self-regulating heating cables.
 3. Manufacturer shall provide cULus approval certificates.

2.2 MATERIALS

- A. Heating Cables **[Select all that apply]**

Cable	Service Voltage, VAC	Max. Segment Length, ft (m)	Nominal Maintenance Temperature, °F (°C)	Ambient Temperature Range, °F (°C)	Color Code
HW8105	208	810 (246)	105 (41)	74-79 (23-26)	Blue
HW8115	208	770 (234)	115 (46)	70-78 (21-26)	Green
HW8125	208	720 (219)	125 (52)	70-78 (21-26)	Yellow
HW8140	208	715 (217)	140 (60)	70-78 (21-26)	Red
HW1125	120	330 (100)	125 (52)	70-78 (21-26)	Purple

1. Heating Cable
 - a. Shall be a self-regulating heater cable with a parallel circuit electric heater strip.
 - b. Shall feature an irradiation cross-linked conductive polymer core material that is extruded over the multi-stranded, tin-plated, 16-gauge copper bus wires.
 - c. The conductive core material shall increase or decrease its heat output in response to temperature changes.
 - d. Shall be able to maintain a hot water pipe temperature of: **[Select all that apply]**
 - i. At 208 VAC: 105°F (HW8105), 115°F (HW8115), 125°F (HW8125), or 140°F (HW8140)
 - ii. At 120 VAC: 125°F (HW1125)
 - e. Two inner thermoplastic jackets shall be extruded over and bonded to the core material for extra dielectric strength, moisture resistance, and protection from impact and abrasion damage.
 - f. A stranded copper braid shall be installed over the inner jackets, providing a continuous ground path.
 - g. A color-coded modified polyolefin over jacket shall cover the braid for added dielectric strength, moisture resistance, and protection from impact and abrasion damage.
- B. Connection Kits – EasyHeat TSRP, SRP, TSRS, TSRT **[Select all that apply]**
 1. Power Connection Kit
 - a. Shall be suitable for connecting up to two heating cables to customer supplied power wiring.
 - b. Kit type: **[Select all that apply]**
 - i. Type TSRP: Shall include a junction box, universal base, box adapter, one molded silicon power termination and cable end seal with adhesive sealant, terminal blocks, pipe clamps, and associated hardware.
 - ii. Type SRP: Shall include a ½” NPT threaded conduit fitting with cable grommet, heat shrink, wire nuts, and pipe standoff (junction box not included).
 2. TSRS Splice Connection Kit **[Select if applicable]**
 - a. Shall be suitable for connecting two heating cables in an in-line splice configuration.
 - b. Shall include a junction box, universal base, box adapter, two molded silicon power terminations with adhesive sealant, terminal blocks, pipe clamps, and associated hardware.
 3. TSRT Tee Connection Kit **[Select if applicable]**
 - a. Shall be suitable for connecting three heating cables in a tee splice configuration.
 - b. Shall include a junction box, universal base, box adapter, three molded silicon power terminations and two cable end seal with adhesive sealant, terminal blocks, pipe clamps, and associated hardware.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions
 - 1. Prior to installation of heating cable system, verify that all piping which will have heat trace has passed all hydrostatic/pressure test and is signed off by plumbing inspector.
- B. Preinstalling Testing
 - 1. Prior to installing heating cable on the piping an insulation resistance test shall be performed by the installing contractor to ensure integrity of heating cable as describe in the installation & maintenance manual.

3.3 INSTALLATION

- A. Acceptable Installers
 - 1. Subject to compliance with requirements of Contract Documents, installer shall be familiar with installing pipe trace cables and equipment.
- B. The hot water maintenance system shall conform to all local building codes including but not limited to NFPA70, IEEE 515.1 Commercial Heat Tracing Applications.
- C. The installer shall layout heating cable per approved shop drawings.
- D. Grounding of the heat trace system shall be in accordance with section 26 05 26 “Grounding & Bonding for Electrical Systems”
- E. Connections of all electrical wiring shall be in accordance with section 26 05 19 “Low-Voltage Electrical Systems”
- F. Comply with the following manufacturer’s recommendations:
 - 1. EasyHeat Self-Regulating Pipe Tracing Heater Cable Installation & Operation Manual (14030-001).
 - 2. TSRP Power Connection Kit Instructions (14036-001). **[Select if applicable]**
 - 3. SRP Power Connection Kit Instructions (14023-001). **[Select if applicable]**
 - 4. TSRS Splice Connection Kit Instructions (14037-001). **[Select if applicable]**
 - 5. TSRT Tee Connection Kit Instructions (14038-001). **[Select if applicable]**

3.4 FIELD QUALITY CONTROL

- A. Initial start-up and field testing (commissioning) of the system shall be performed by a technician per the owner’s requirements.
- B. Field Tests and Inspections in accordance with the EasyHeat Self-Regulating Pipe tracing Heater Cable Installation & Operation Manual (14030-001), recorded and included in submittals to owner:
 - 1. The following test shall be performed before the heat cable has been installed:
 - a. Continuity test on reel
 - b. Insulation resistance on reel – 2500 VDC
 - 2. The following test shall be performed after the heat cable has been installed but before the insulation and after insulating the piping:
 - a. Continuity test
 - b. Insulation resistance – 2500 VDC, 5 megaohm minimum

3.5 MAINTENANCE

- A. Maintenance Service
 - 1. Comply with manufacturer’s recommendations in the applicable Installation and Maintenance Instructions.

END OF SECTION