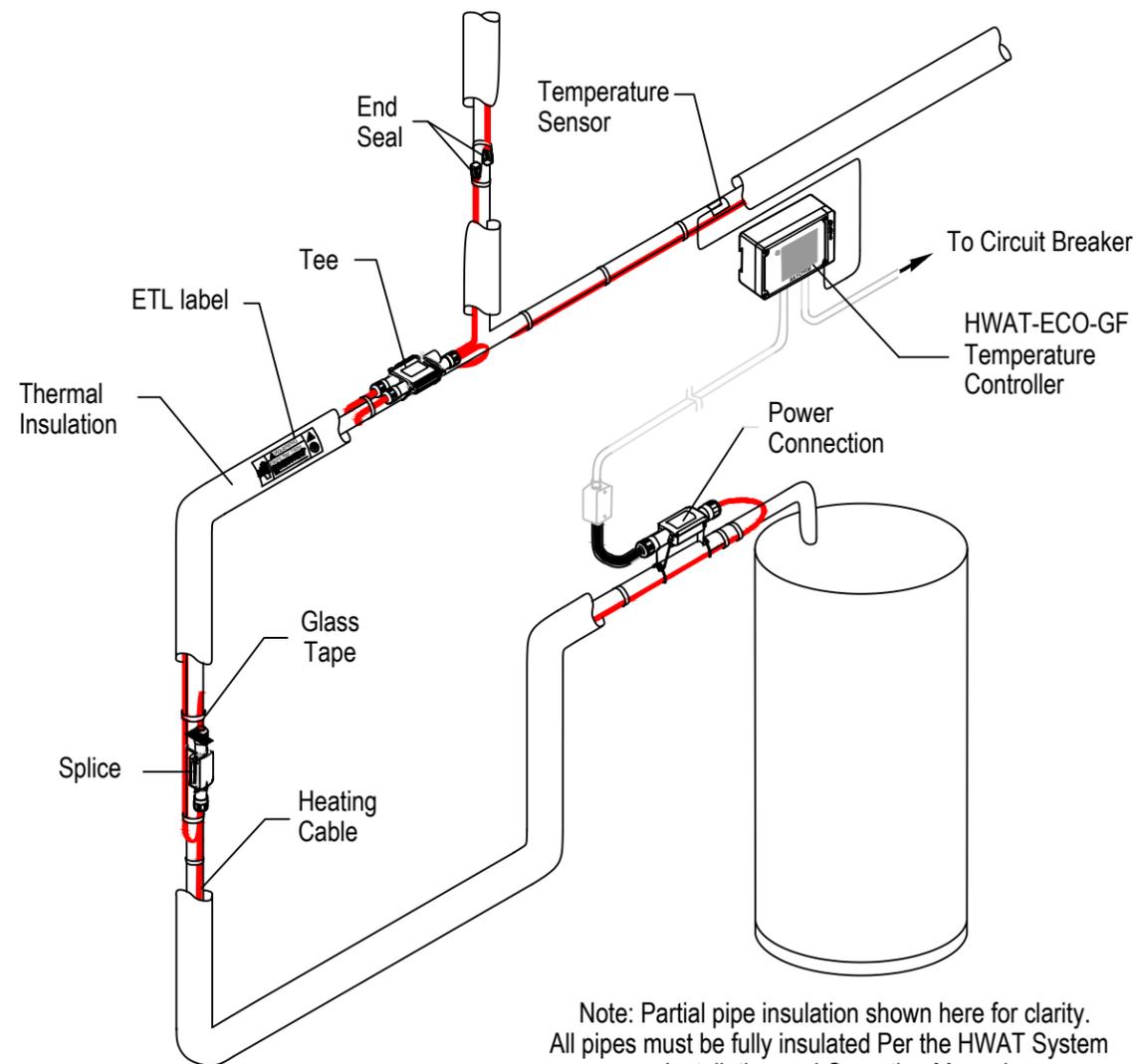


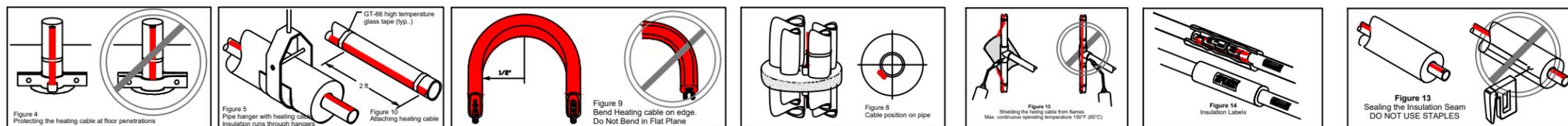
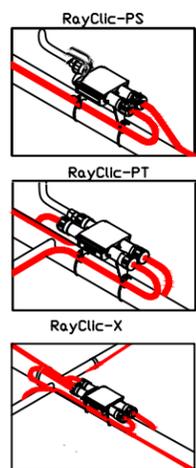
Fiberglass Insulation Schedule		
This insulation schedule is required for all DHW piping with HWAT heating cable		
Copper Pipe size (in)	IPS Insulation Size (in)	Insulation Thickness (in)
1/2	3/4	1/2
3/4	1	1
1	1 1/4	1
1 1/4	1 1/2	1 1/2
1 1/2	1 1/2	1 1/2
2	2	2
2 1/2	2 1/2	2 1/2
3	3	3

HWAT-P1 or HWAT-R2 Domestic Hot Water Heating Cable System Schedule						
Circuit Number	PC Location	Operating Temperature	Estimated Length	Circuit Breaker (A)	Max. CT. Length	Notes:
1	Outside Room XXX	140	XXX	30	500	Serving Kitchen Tee located in hallway
2	Outside Room XXX	115	XXX	30	500	Serving A wing 1st floor end at sink B3
3	Outside Room XXX	115	XXX	30	500	Serving A wing 1st floor
4	Outside Room XXX	115	XXX	30	500	Serving A wing 1st floor
5	XXX	XXX	XXX	30	500	SPARE

Maximum Allowable Circuit Length (ft)		
assume minimum 50F start temperature		
Circuit Breaker Size (Amps)	HWAT-P1 @ 120V	HWAT-R2 @ 208-277V
10	125	
15	195	250
20	276	330
30	395	500



Note: Partial pipe insulation shown here for clarity. All pipes must be fully insulated Per the HWAT System Installation and Operation Manuals



nVent RAYCHEM HWAT Domestic Hot Water Heating Cable Specification::

- A. Heating Cable - nVent RAYCHEM HWAT-P1 or HWAT-R2 self-regulating heating cable manufactured by nVent. The heating cable shall operate on line voltages of 120, 208, 220, 240 or 277 volts without the use of transformers. The heating cable shall have a plasticizer diffusion shield. Also required is a thicker gauge (5/24) tinned copper braid for ground path and mechanical ruggedness. The heating cable shall have the ability to raise the water temperature to 140°F (60°C).
- B. Connection Kits - nVent RAYCHEM RayClic connection kits. All components shall be UV stabilized and shall not require the installing contractor to cut into the heating-cable core to expose the bus wires.
- C. Attachment - GT-66 general purpose, high temperature, glass filament tape for attachment of heating cable to water lines, or AT-180 aluminum tape, high temperature for all plastic piping. Cable ties are not permitted.
- D. Labels - Provide nVent RAYCHEM ETL "Electric Heat Traced: warning labels every 10 feet on exterior of insulation, opposite sides of pipe.
- E. Control - Single Circuit Local Digital Control shall be the nVent RAYCHEM HWAT-ECO-GF. Digital controller shall operate on 120 or 208 - 277 V. Digital controller shall have an integrated GFPD (30mA). Have flexible temperature control from 40°F (5°C) to 150°F (65°C). Three programmable temperature set points for maximum energy efficiency: Maintain, Economy, Off. Controller shall have 24/7 pre-programmed time based profiles specific to the selected heating cable application such as schools, hospitals, and prisons. Controller shall have a water heater sensor and water heater temperature alarm. Controller shall have NO/NC alarm contacts and alarm on: loss of power, water heater temperature too high/too low, master/slave error. Digital controller shall have c-UL-us approvals specifically for use with HWAT-P1 or HWAT-R2 heating cable.
- F. Approval - The system (heating cable, connection kits, and controller) shall be UL Listed, CSA Certified, or FM Approved for hot water temperature maintenance. No parts of the system may be substituted or exchanged.
- G. Installation - Install and secure the heating cable in accordance with the HWAT Installation and Operation manual (H57548). Special attention should be given to the Insulation Thickness Chart. No deviation will be acceptable.
 1. Any deviation in circuitry, insulation, or piping material must be approved by engineer prior to execution.
 2. Distribution pipes & express risers must be isolated electrically. Each shall have their own circuit(s).
 3. Branch lines shall be grouped electrically based on location.
 4. All power connections must be located in accessible areas. Access panels for power connection shall be a minimum of 12" x 12" and within reach of power connection kit.
 5. Refer to Electrical Specification for power connection locations.
 6. All power, tee, and splice connection points shall be shown on the plumbing as-built.
 7. Installation training provided by an authorized manufacturer's representative must be completed prior to work mobilization.
- H. Testing -The heating cable circuit integrity shall be tested using a 2500 Vdc megohmmeter. Minimum acceptable insulation resistance shall be 1000 megohms. Contractor shall submit to owner results of installation tests required by the manufacturer.
- I. Start-up - System start-up shall be performed by factory technician or factory representative per the owner's requirements.
- J. Manufacturer - Manufacturer shall be nVent Thermal Management, LLC. For pricing and technical information call nVent at 800-545-6258 or email thermal.info@nVent.com.

REV	BY	DATE	DESCRIPTION
D	AL	04/26/22	Revised to add HWAT-P1
C	CD	04/16/19	Issued for Review
B	CD	03/15/16	Issued for Review
A	CD	02/25/13	Issued for Review

nVent RAYCHEM

TITLE: HWAT with HWAT-ECO-GF Control Schematic

SCALE: NONE DWG. NO: ACS-1 REV: C

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