



HWAT® Hot Water Temperature Maintenance System

Application Design Note

Hot Water Maintenance System: Insulation Schedule for Non-Static Supply Piping

The key to a successful HWAT system is to use the correct thermal insulation on the pipes. The standard fiberglass insulation thickness schedule from the HWAT Product Selection and Design Guide (H57538) is shown in Table 1. This schedule provides constant heat loss for all pipe sizes and results in uniform temperature maintenance with the HWAT system. If different thicknesses are used, pipe temperatures will vary.

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

Note: For pipes 3 inches and larger, the thickness of insulation can be equal to the pipe diameter with one run of heating cable or 1/3 the pipe diameter with two runs of heating cable.

Table 1. Standard Pipe Insulation Schedule (From H57538)

For supply mains greater than 2 inches in diameter, the insulation schedule in Table 1 may present some difficulty due to the space required to accommodate the insulation. If this is a problem, reduce the insulation thickness to 1/3 of that specified and install two runs of HWAT heating cable.

The reason the insulation thickness is so critical for HWAT is that the pipes are assumed to be static for long periods of time. Using the specified insulation size and thickness ensures the pipes will be at the correct and uniform temperature. However, large diameter pipes are not likely to remain static for prolonged periods of time in large installations such as hospitals and hotels. In these pipes hot water is frequently added to the pipe system replacing the cold water and reducing the effective heat loss of the pipes.

For these situations an alternative insulation schedule has been created for HWAT systems on copper pipes 2 1/2 inches or larger with constant but low flow. The mains can be insulated with only 2 inches of fiberglass thermal insulation and use a single run of HWAT heating cable if the minimum flow is maintained. Figure 1 shows the flow rate required to have less than 1°F temperature drop for every 50 feet of supply pipe.

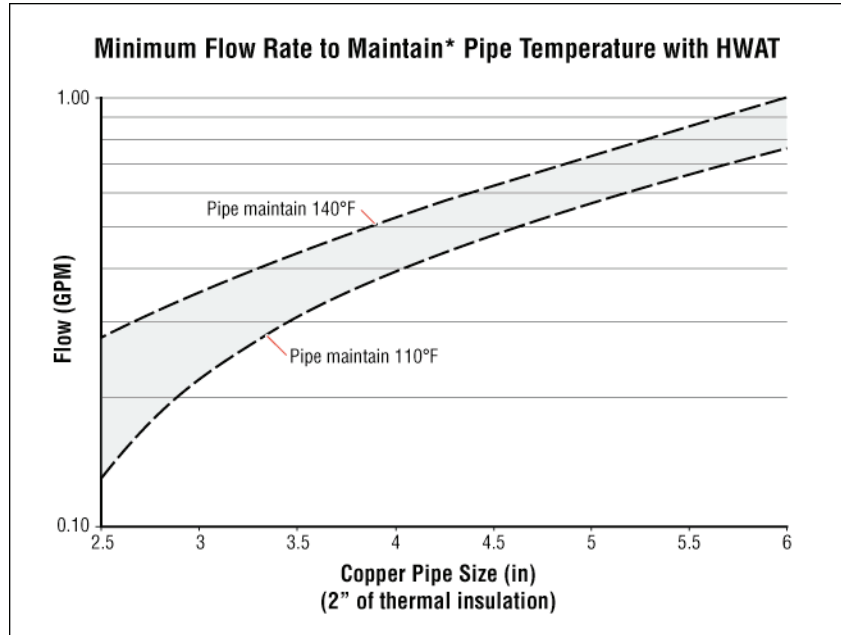


Figure 1. Flow rate required to maintain* pipe temperature with a single run of HWAT heating cable

* Less than 1°F temperature drop for every 50 feet of supply pipe

Using this approach, HWAT systems can maintain uniform pipe temperatures throughout the system with thinner insulation on the main supply pipe and standard insulation on the branch pipes.

Install in accordance with the HWAT System Installation and Operation Manual (H57548) and the HWAT-ECO Installation and Maintenance Manual (H57340).

Approvals and performance are based on using Tyco Thermal Controls approved connection kits and accessories, do not substitute parts.