



Heating Liquids/In-Line  
Models ELL, HLM, SRH, FHS

Many process operations can be heated in-line. With Penberthy in-line mixers, you can heat in-line while transporting the process media from one location to another. Steam jet heaters optimize the condensing of steam into the motive media to provide fluid heating. **Models ELL and HLM** are ejector-type heaters capable of operating at steam pressures lower than the operating liquid. They offer much higher thermal input than a comparable SRH, while incurring a higher inlet to discharge pressure drop.

The **SRH (Steam Ring Heaters)** are compact in-line units with low-pressure drop. SRH units inject steam through a ring shaped opening within an enlargement in the pipeline. They provide fast temperature correction noiselessly and because the liquid flow area is unrestricted, pressure drop across the nozzle are minimized.

Penberthy **Model FHS (Fluid Heating System)** units are complete, engineered systems, including an in-line heater, pneumatic temperature controller, steam control valve, thermometer, strainer, check valve and associated piping. Penberthy in-line jet heaters may be used in these automated systems.

Penberthy in-line jet heaters are perfect for many types of industries including: food processing, petroleum production & refining, chemical processing, distilling/ brewing and many other process operations. If you have a heating problem, a Penberthy jet heater may be the solution.

## Models Available

ELL, HLM, SRH, FHS



## Selection Guide

In order to pair the correct in-line jet heater with your specific application, it is required that certain information be provided. Supply the required information on the application form below, and then call your Penberthy sales representative for directions on ordering the correct in-line jet heater for your specific uses.

### MOTIVE:

- Liquid
- Pressure (Available)
- Flow Rate (gpm/kPag to be heated)
- Specific Gravity
- Inlet Temperature

### SUCTION:

- Steam Pressure (Available)
- Steam Temperature
- Flow Rate (Available volume)

### DISCHARGE:

- Pressure (That unit must overcome)
- Desired Temperature Rise

All conditions are measured at the Motive, Suction and Discharge ports.

## Model Construction Data

Model	ELL, HLM	SRH
Sizes Available	1/2"A-4" <b>Standard Materials</b> Cast: Low Lead Bronze, Iron, Carbon Steel, 316 STS 4' & up Fabricated: Carbon Steel, 316 STS	1 1/2", 2", 3", 6" <b>Standard Materials</b> Flanged: Low Lead Bronze, Iron, Carbon Steel, 316 STS

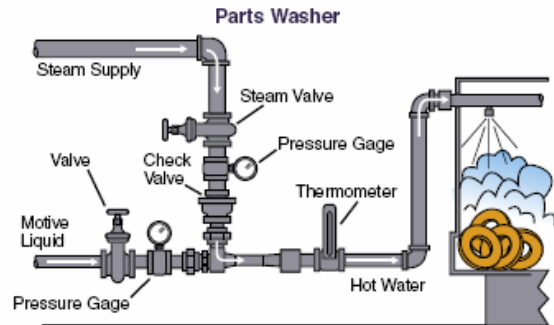
## Model Specifications

Model	ELL Low Steam Pressure	HLM High Steam Pressure	SRH Steam Ring Heater	FHS Liquid Heating System
Steam Pressure	up to 45 psig (310 kPag)	up to 120 psig** (830 kPag)	up to 150 psig (1035 kPag)	up to 150 psig (1035 kPag)
Max. water temp. rise ( $\Delta T$ )*	up to 182°F (83° C)	up to 216°F (102° C)	up to 200°F (93° C)	up to 140°F (60° C)
Max. capacity	5000 gpm (18925 lpm)	5000 gpm (18925 lpm)	500 gpm (1893 lpm)	500 gpm (1893 lpm)

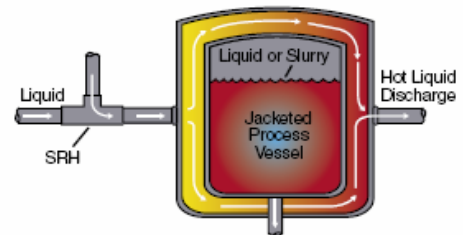
\* Based on 60°F (16° C) inlet water

\*\* Maximum steam pressure for iron body material, 60 psig (414 kPag)

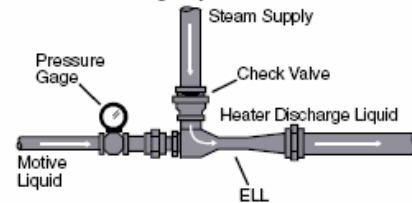
## Typical Applications



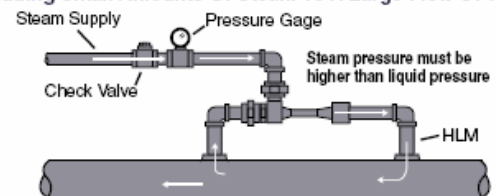
### Heating Liquid In-Tank with Model SRH



### Heating Liquids In-Line



### Adding Small Amounts Of Steam To A Large Flow Of Water



### Circulating Hot Water

