

INSTRUCTION MANUAL for INLINE HEATER

【 1 】 Necessary Conditions

1. Steam pressure (SP) must be higher than water pressure (P1).
($SP \geq P1 + 0.05 \sim 0.10$ MPa or more.)
2. Water pressure (P1) must be higher than 0.05 MPaG.

【 2 】 Installation

1. Inline Heater can be used with piping either in the horizontal or vertical direction.
(even upward flow or downward flow.)
2. Steam pipeline connected to the Inline Heater should be horizontal or vertical flowing down.
Vertical flowing upward cannot be used.
3. Install a check valve in steam pipeline that is nearest to the Inline Heater.
4. Install a Y-strainer (40~60 mesh) in steam pipeline as much as possible.
5. If the steam flowrate is small and a standard pipe diameter is not necessary, please select a suitable steam pipesize that matches steam flowrate (velocity is almost : 20~30 m/sec.) and make connection by reducing flange or reducer.
6. Connected water pipeline should be straight (Inlet : Diameter×3 times, Outlet : Length×3 times), and set up thermometer away from the discharge side more than about 3 times of the length.
7. When the Inline Heater is needed to install in the suction side of a pump, necessary installations are shown in the catalogue.

【 3 】 Control of Discharge Temperature

1. Discharge temperature can be controlled by steam flowrate using an automatic steam control valve.
2. In principle, discharge temperature is controlled by steam flowrate. But if necessary it can also be done by control of water flowrate.
3. Steam flowrate can be controlled maximum to zero-flow without hammering.
4. Prevention of HAMMERING : When steam pressure becomes equal or less than water pressure by control of steam flowrate, hammering is prevented by elements in the body of the Inline Heater.
5. Maximum discharge temperature (T2) can be kept approximately 10°C lower than boiling temperature of water under discharge water pressure.

【 4 】 Control of Water Flowrate

1. Control-range of water flowrate is shown in the catalogue .
2. Warning : When you decrease with water flowrate rapidly during heating , it causes the temperature change that is rapid if the follow of the steam control valve is slow.
In this case, Change water flowrate slowly so that the steam control valve can follow.
3. When the water flowrate control frequently or rapidly in a discharge side, return control water flowrate to the absorbing side of the pump, or keep overflow by using a relief valve.

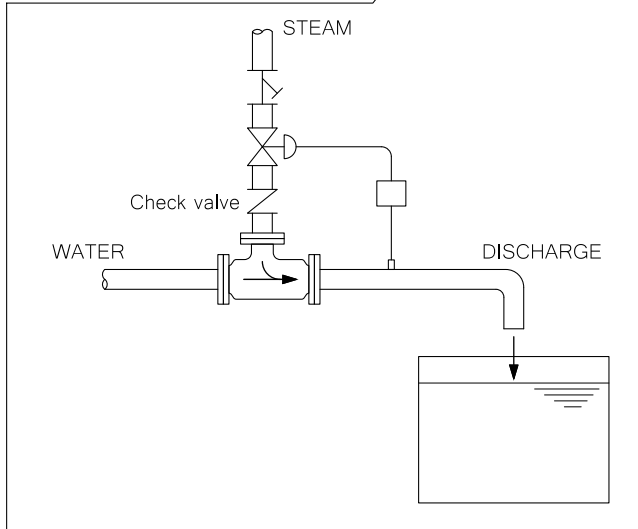
【 5 】 How to Operate

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|-------------|-----------------------------------|
| «Start up» | 1. The water is supplied. |
| | 2. Open the steam valve. |
| | 3. Set the discharge temperature. |
| «Shut down» | 4. Shut the steam valve. |
| | 5. Shut off the water. |

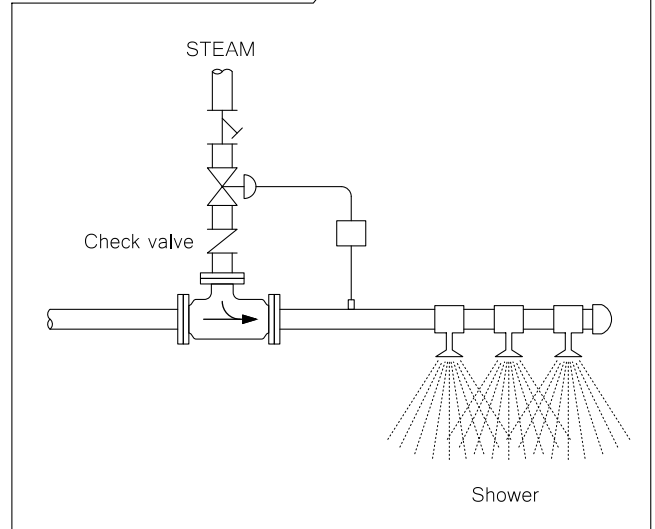


【 6 】 Example for ONE-PASS SYSTEM

Discharging hot water

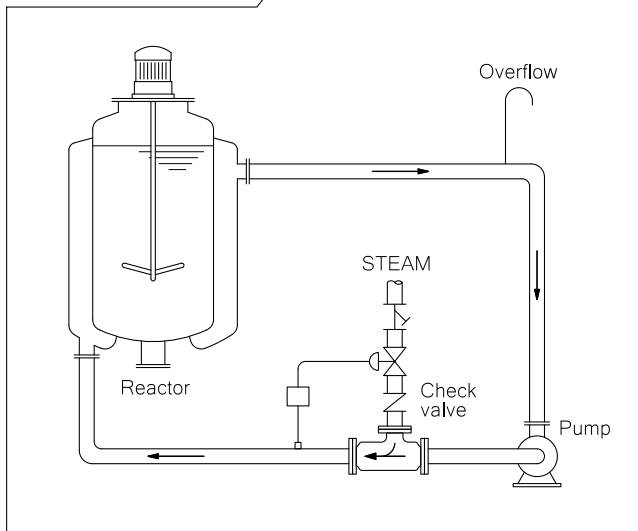


Hot water shower

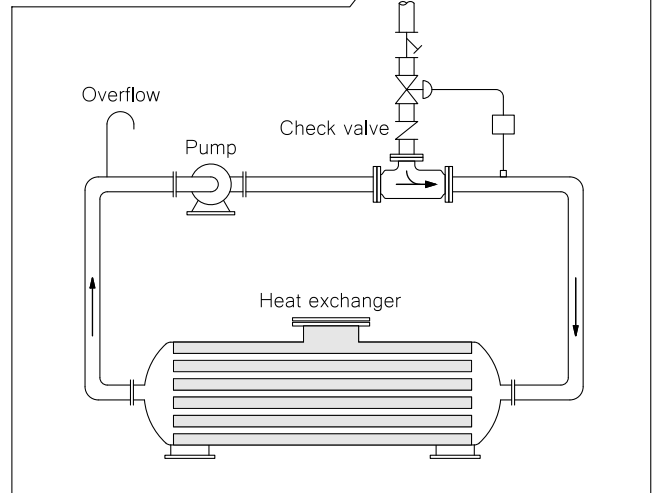


【 7 】 Example for RECYCLE SYSTEM

Reactor jacket



Closed loop heater with heat exchanger



【 8 】 Inquiry

If there are any questions, please refer to our company.

E-mail : star@hokuto-mfg.com



HOKUTO MFG.CO.,LTD.