

UNICON

Installation and Operation Manual

D400 Series

Nozzle Spray Desuperheater Station

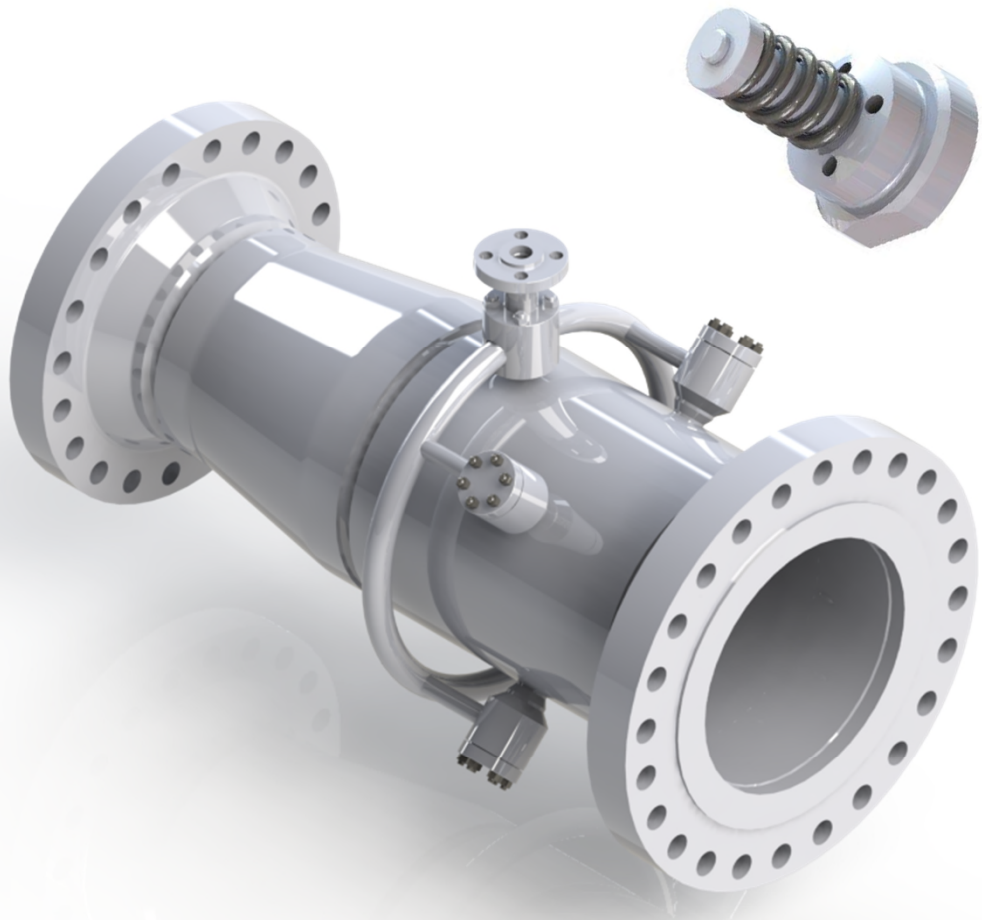


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Safety Information

Important – Please Read Before Installation

UNICON D400 Series Desuperheater instructions contain **Danger**, **Warning** and **Caution** labels, where necessary, to alert you to safety related or other important information. Read the instructions carefully before installing and maintaining your desuperheater. **Danger** and **Warning** hazards are related to personal injury. **Caution** hazards involve equipment or property damage. Operation of damaged equipment can, under certain operational conditions, result in degraded process system performance that can read to injury or death. Total compliance with all **Danger**, **Warning** and **Caution** notices is required for safe operation.

The safety terms **Danger**, **Warning**, **Caution** and **Note** have used in these instructions to highlight particular dangers and/or to provide additional information on aspects that may not be readily apparent.

Danger : indicates that death , severe personal injury and/or substantial property damage will occur if proper precaution is not taken.

Warning : indicates that death, severe personal injury and/or substantial property damage can occur if proper precaution is not taken.

Caution : indicates that minor personal injury and/or property damage can occur if proper precaution is not taken.

Note : indicates and provides additional technical information which may not be obvious, even to qualified personnel.

1. General

Water atomization and vaporization are key elements in any steam conditioning application. The D400 series design incorporates a spray water manifold of variable geometry nozzles that produce an optimized spray pattern over a wide operating range. These nozzles are strategically placed to achieve optimal mixing and quick vaporization at all flowing conditions.

Warning

Always wear protective gloves, clothing, and eyewear when performing any installation operations to avoid personal injury.

Personal injury or equipment damage caused by sudden release of pressure may result if the desuperheater is installed where service conditions could exceed the limits of the pressure rating noted on the nameplate.

To avoid such injury or damage, provide a relief valve for over pressure protection as required by government or accepted industry codes and good engineering practices.

Caution

When ordered, the desuperheater configuration and construction materials were selected to meet particular pressure, temperature, pressure drop, and fluid conditions. Do not apply any other conditions to the desuperheater.



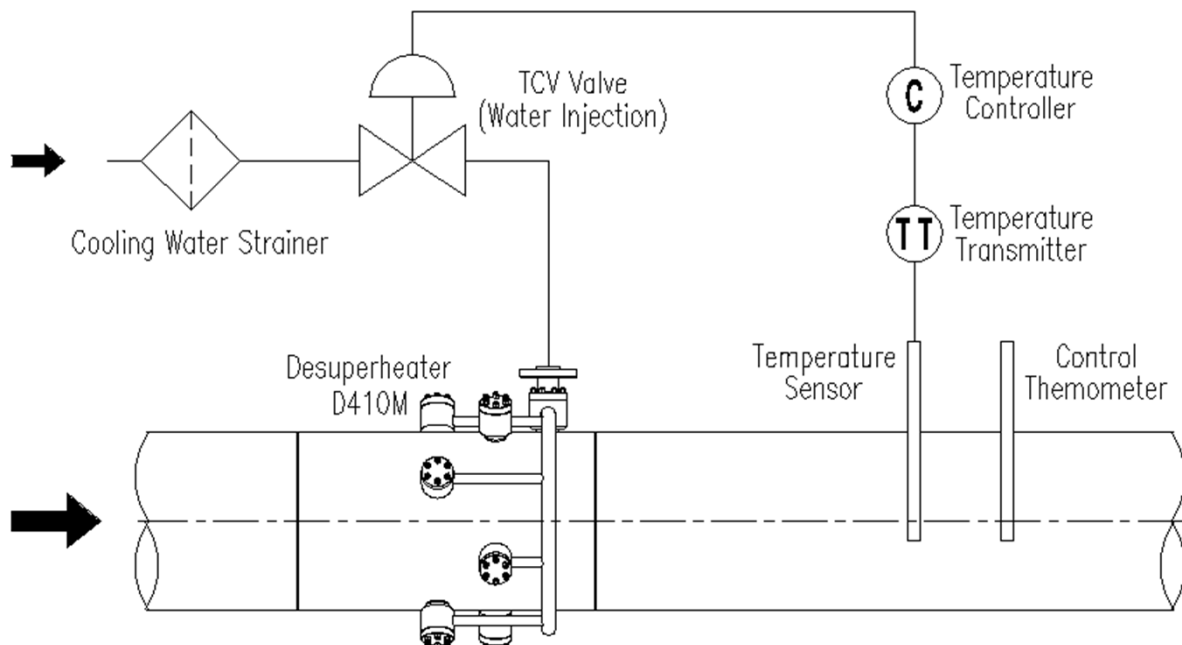
D410 - Single Spray Variable Nozzle Type



D410M - Multiple Spray Variable Nozzle Type

Installation of the D410M

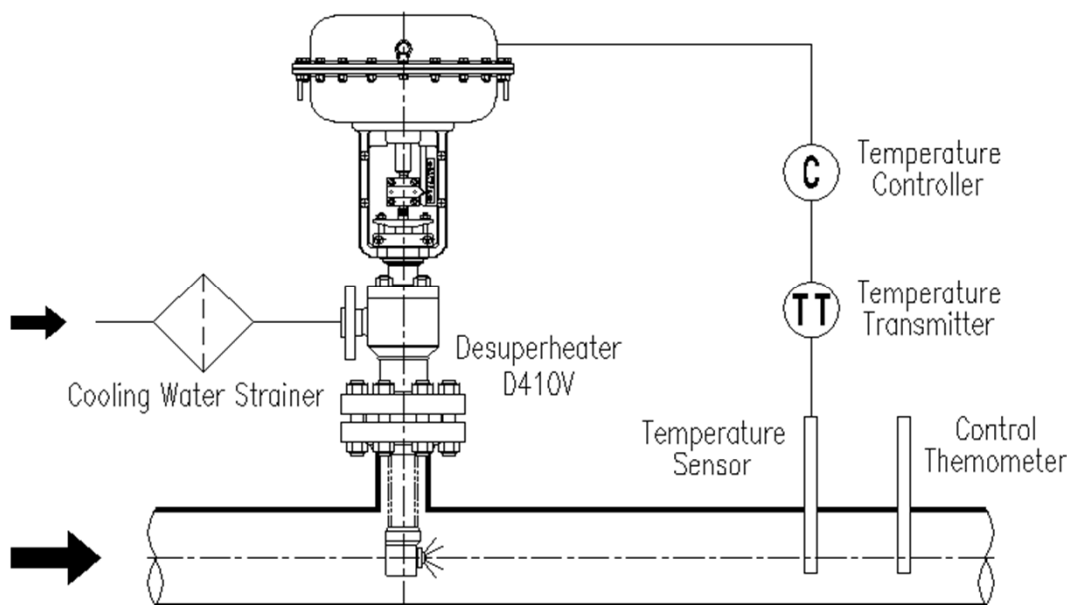
Select the location of installation carefully. This is especially important in cases where the steam velocity is low and the steam temperature is close to saturation. Straight pipe runs upstream and downstream are very important as well as the distance between the temperature sensor and the D410M.



Typical Installation of D410M

Installation of the D410V

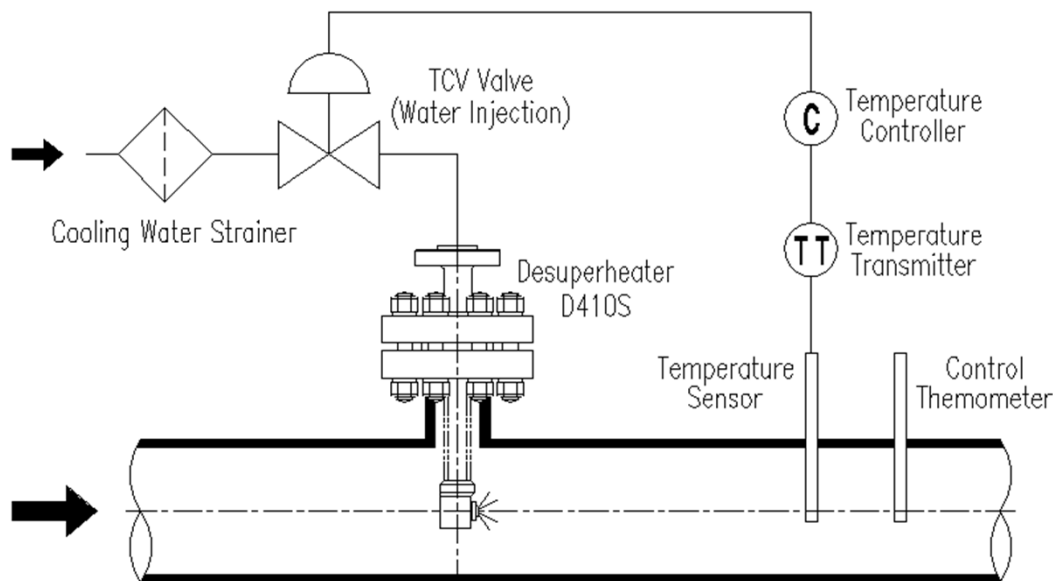
The D410V is mounted perpendicular to the steam pipe. It is obtainable with two types of connections to the steam header.



Typical Installation of D410V

Installation of the D410S

Select the installation point carefully. This is especially important in cases where the steam velocity is low and the steam temperature is close to saturation. It is equally important to install the temperature sensor where it, in a representative manner, can sense the temperature that shall be controlled. See separate instruction for desuperheater installation.



Typical Installation of D410S

2. Installation & operation

- » Before installation, all piping upstream of the valve must be blown clean so that no loose materials such as welding slag, dirt or other foreign matter, are left in the pipe. Use care to keep foreign matter out of the line openings while preparing the valve installation.
- » Flanged Connections—Grease the flange connection bolts with a high temperature thread lubricant. Install flange gaskets and connection bolts per accepted practices and tighten securely.
- » Welded Connections—Welding procedures should be in accordance with the applicable codes and the base materials. For preheat, welding electrodes, and post weld heat treatment, refer to the applicable codes and practices applicable for the specific facility.
- » Remove the spray water control valve and flush the cooling water line until all debris is removed from the line prior to connecting it to the desuperheater.
Use only clean sources of cooling water to reduce the possibility of nozzle clogging. A 100 mesh strainer should be installed in the water line as close to the desuperheater as possible.
- » A appropriate length of straight pipe is required downstream of the desuperheater to ensure complete vaporization of cooling water. This distance will vary depending on a number of factors including steam velocity and percentage of spray water.
- » A typical installation is temperature sensor measures changes in temperature and a temperature transmitter transmits the signal to the temperature control device. The output signal from the controller is sent to the positioner on the cooling water(spray water) control valve.
The positioner's output signal strokes the cooling water(spray water) control valve open, increasing water pressure on the nozzles. Increasing water pressure upstream of the nozzles increases water flow through the nozzles.

Warning

Do not lift the desuperheater by its cooler manifold piping. Personal injury or damage to equipment could occur if the desuperheater is improperly lifted into place. If the desuperheater is equipped with butt-weld ends, the valve body must be supported using a lifting sling or other method that does not place a load or force onto the finished surface of the butt-weld ends. The desuperheater does not have a stable resting condition. The valve inlet and outlet must be fully supported until fully welded (butt-weld end connections) or bolted (flanged end connections) into the piping.

Warning

Failure to use a strainer could result in nozzle clogging and subsequent property damage or loss. Uncontrolled temperatures resulting from clogged nozzles may result in equipment or process temperature limits being exceeded. Exceeding system temperature limits could result in property damage or personal injury.