

Pump suction strainer

1 . Necessity of pump suction strainer

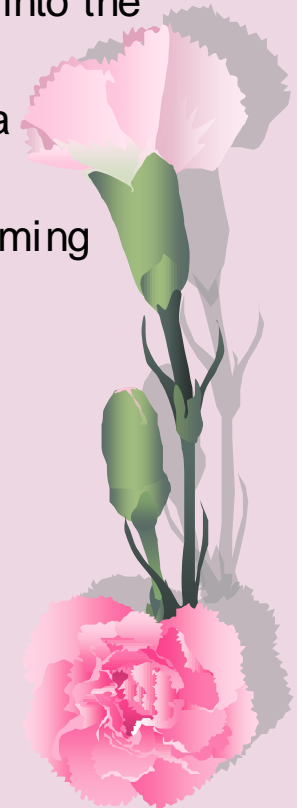
Though a pump suction strainer is installed just before pump suction, it is not always necessary. In the following cases, when a suction strainer is installed, it is safe.

(1) When there is a possibility that foreign body mixes in the piping etc. connected to the pump:

Leaving welding scale and bolts/nuts etc. can be included in piping when under construction of the plant etc. Such foreign body mixes remain, then they put into the pump and the pump might be damaged.

(2) The foreign body mixes do not usually put into a pump, and it when there is a possibility that the liquid crystallizes because of the process:

In the liquids that pumps handle, there is something made a crystal when becoming below some temperature with the liquid temperature.



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2 . Selection and notes of suction strainer when installing

(1) Mesh

The mesh of the suction strainer should be made a size not to be able to pass the assumed foreign body mixes. Or, when it has no problem even if the foreign body mixes below a certain size mixes put into the pump, it makes the size. In general, a lot of suction strainers of 40 meshes are used.

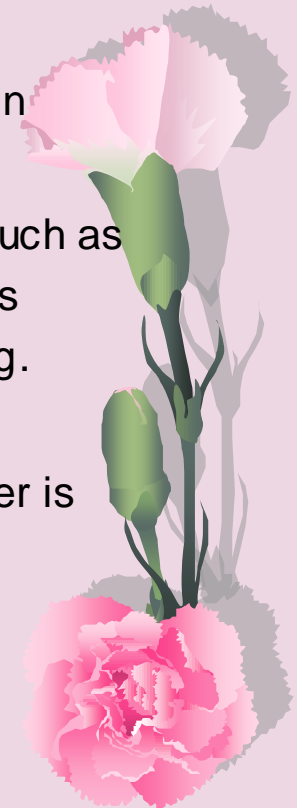
(2) Type

A suction strainer includes corn type, Y type, bucket type, and parallel, etc. When seeing from the usage and maintenance,

Corn type is used only at flushing of the piping etc. done after the construction such as the plants is completed, and after flushing it is removed. Though Y type is always installed while laying pipes, its maintenance of the strainer is easy when clogging.

Bucket type is used in case of large size, and is always installed on the base.

Parallel is used when the pump should keep the operation even when the strainer is clogged.



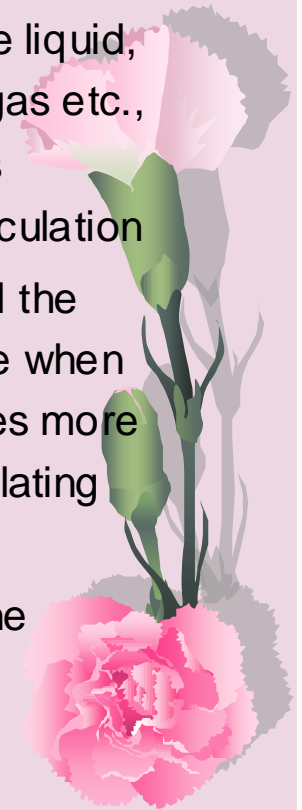
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2 . Selection and notes of suction strainer when installing

(3) Notes : Notes are only one. It is necessary to secure NPSHA of the pump. In case that the number of meshes of suction strainer becomes big (fine meshes) , suction pressure loss is increased as well. Then NPSHA of the pump becomes small. In other words, in case that the number of meshes of suction strainer becomes big (fine meshes) , suction pressure is degraded as well. Then the pump impeller becomes impossible to suck liquid. (It is called cavitation).

In general, there is often no problem when suction pressure is high in water like liquid, even if it is a suction strainer with large number of meshes. In case of liquefied gas etc., the suction pressure is high and saturated vapor pressure is also high. Then it is necessary to predict the pressure loss of the suction strainer and NPSHA by calculation I believe that the square curve etc. that shows the relationship between flow and the pressure loss from strainer manufacturers. The piping diameter does not change when the size of the suction strainer is as well as pump suction size. However, it makes more than one rank a large suction strainer, when the loss is large as a result of calculating the pressure loss.

Moreover, it is likely to make it to the suction strainer greater than the size of the pump suction for safety, even if NPSHA is enough as a result of calculating the pressure loss.



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3 . Measures when installing

The mistake is not found in safety few for pumps in the accessories including valves etc. including a suction strainer. Because there is an accident such as overlooking of strainer clogging, by making a mistake in opening completely the valve, and non-detection due to an electric trouble.

Therefore, for suction strainers, to operate a pump safely even if the person made a mistake, the following measures are needed.

(1) Differential pressure gauge

with electric contacts to stop pump by "alarm shutdown" when differential pressure before and behind suction strainer is measured, and it became more than the limits.

(2) Or, pressure gauge

with electric contacts to stop pump by "alarm shutdown" when suction pressure became abnormally lower than the limits.

(3) Valves

with having lock to maintain it in opening completely, when installing stop valves before and behind the suction strainer for maintenance.

(4) Electric contacts to confirm if signal wire does not cut by electric signals for "Alarm shutdown" (electric contact B)

