

Filtration and Strainers Selection Guide

How to Size and Select Filtration & Strainers

Correctly sizing and selecting industrial, commercial or municipal filtration and strainers can reduce process downtime and maintenance time while improving product quality. The Carotek Filtration & Strainers Selection Guide explains filtration selection and sizing. When you need more help with your final selection, please contact us.

Types of Filtration Equipment, Filters and Strainers

Filtration Systems using filters and strainers share a similar function. They separate solids from fluids to remove unwanted contaminants and to protect processing equipment downstream.

The primary difference between filters and strainers is the size of particulates they are designed to remove. Filters often remove particulates measured in microns, while strainers remove larger particles that would be visible with the naked eye.

In order to understand how to size and select industrial, commercial or municipal filters and strainers, a general knowledge of the types of filtration on the market can be useful.

Types of Filtration

Filtration is often divided into surface filtration and depth filtration. Surface filters are generally used for higher concentrations of particles, while depth filters are used for lower concentrations. Surface filters are generally better suited for applications that require backwashing.

- Bag filtration systems consist of a filter housing and filter bags made of felt or fabric mesh, which are either sewed or welded. A bag filtration system is generally inexpensive and works well in a range of process conditions. Some bag housings are available with steam jackets.
- Cartridge filtration systems use modular filters in a housing, so this style generally offers a longer service life.
- Automatic Self-cleaning filters offer tubular backwashing and mechanically cleaned technology for continuous flow, simplified maintenance and worry-free operation, saving labor and production down-time.

Types of Strainers

Strainers are mechanical devices placed in-line with process piping to remove solids from a flowing liquid. Strainers can be cleaned and reused, and they are available in a variety of styles:

- Basket strainers are a type of strainer used with horizontal piping, featuring a debris collection chamber and drain connection that must be in the lowest possible position. Basket strainers can be either simplex strainers, designed with a single in-line strainer basket, or duplex strainers, designed with two strainer baskets so the flow can be switched to allow for one basket to be cleaned while not stopping the process flow. They come in a variety of metallurgies and can be coated.
- Y strainers are a type of strainer used with horizontal or vertical piping. They have a higher operating pressure range than basket strainers.
- Temporary strainer, which are often cone shaped, are inserted with a flanged pipe spool. Temporary strainers are generally used for process startup.
- Additional types of strainers include back flushing, automatic self-cleaning, and special application strainers.

Criteria for Strainer or Filtration Sizing and Selection

Although a filter or a strainer may be more suitable depending on the application, the general criteria for filtration sizing and selection are generally the same as the criteria for strainer sizing and selection.

- Pipe size. The strainer or filter should be sized to match the existing pipe. In addition, pipe configuration (horizontal or vertical piping, or right angle) affects which type of industrial filtration would be a best fit.
- Flow rate. Maximum flow must be accommodated. Minimum flow is important for backwashing filters.
- Temperature and pressure range. Filters are always rated for maximum pressure. Minimum pressure comes into play primarily for automatic, self-cleaning filters. Generally, a Y strainer rather than basket strainer for high pressure over 6000 psi.
- Particle size and characteristics. Filter mesh is described with a mesh number (number of openings per inch), mesh size, and strand diameter that affect the size of particles collected.
- Maintenance. If the line cannot be shut down, a duplex strainer may be needed so the flow can be switched when a basket becomes full. For some applications, a self-cleaning filter may be suitable to reduce the need to stop flow or disassemble piping.
- Batch or continuous process. If the process operates for long periods without stopping, continuous filtration might be needed.

- Material requirements. Often the filter or strainer material is specified as the same as the pipeline requirements, to ensure that it can handle the materials as well as ensure the same coefficient of expansion. If the filtration material is hazardous reactive, it may require specialized media.

Filtration sizing and selection depends on the properties of the material and the contaminants (or byproducts) that are being removed, as well as process needs. The ideal filtration solution also depends on whether automatic cleaning is necessary, and whether the process can be interrupted to change or clean filters. Knowing how to size and select commercial filters and strainers is crucial to protect downstream equipment from damage due to contamination.

Carotek is a recognized leading supplier, service center, and maintenance facility for industrial filtration and strainers. Carotek offers extensive local product inventory, expertise, and support for a range of commercial filters and strainers. Contact Carotek for expert selection assistance or browse our selection of filters and strainers to find the right fit for your application.