HANKE
Filter Appliction

Filtration Solutions for **Machining**

We offer custom process filtration solutions including oil & gas filtration solutions, metallurgy filtration solutions, etc.

MACHINING FILTRATION SOLUTIONS

Machining is the process of changing the external dimensions or properties of workpieces by processing machinery. It is divided into cold and hot machining according to the temperature status of the workpiece being machined. In the process of machining, many fluids used for cooling and lubrication are recycled to reduce input costs and waste of resources. Filtration removes impurities from waste fluids and brings them up to reuse standards. Hanke is equipped with a professional technical team to provide you with customized machining filtration solutions, including machine tool coolant circulation & filtration solutions, cleaning fluid filtration solutions, hydraulic and lubricating oil filtration solutions.

Machining Filtration

Part 1

Process Filtration Solutions

MACHINE TOOL COOLANT CIRCULATION & FILTRATION

Background

Aqueous-based liquid coolants are used to cool and lubricate metal machine tools to facilitate metal cutting, extend the equipment service life and maintain part dimensions.

Problem

Machine tool coolants get contaminated with metal shavings, workshop dust and oil from metal surfaces. Contaminated coolants cause premature equipment failure, nozzle damage, shortened coolant life, and having a negative impact on surface finish.

Solution

Coolants are typically recycled to reduce costs and contaminated coolants need to be filtered before reuse. ***Bag filters*** and ***cartridge filters*** are employed for machine tool coolant filtration. Bag filters are recommended when the system has a high flow or requires a large liquid volume while cartridge filters are recommended when the system has a low flow or requires a small liquid volume.

Machining Filtration

Part 2

Process Filtration Solutions

CLEANING FLUID FILTRATION

Background

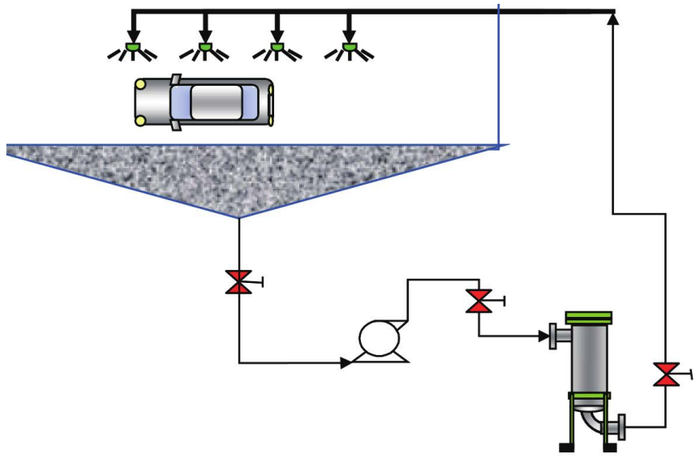
Manufacturing industry generally requires cleaning processes to remove grease and dirt from part surfaces. As a result, a large quantity of solvents and cleaning agents are required and it will inevitably increase the water displacement, thus greatly increasing the environmental load. Cleaning fluids are generally recycled to reduce the environmental load and input cost.

Problem

These used cleaning fluids contain impurities such as grease and dust and may clog the equipment, causing equipment wear and increased maintenance costs.

Solution

Therefore, cleaning fluids need to be filtered before reuse. Typically, ***bag filters*** are adopted for cleaning fluid filtration as they can not only effectively remove impurities in cleaning fluids, but also require a low price to minimize the input cost.



Machining Filtration

Part 3

Process Filtration Solutions

HYDRAULIC & LUBRICATING SYSTEM FILTRATION

Background

Hydraulic and lubricating oil filtration is a key element in engines, compressors and other equipment for efficient operation and maintenance.

Problem

Contaminated hydraulic and lubricating oils cause equipment wear, leading to engine and hydraulic equipment failures, increased maintenance frequencies and higher maintenance costs.

Solution

Mobile trolleys with ***bag filters*** are recommended for hydraulic & lubricating oil filtration as they can move freely featuring high mobility and easy to operate. Therefore, this kind of devices can effectively remove impurities from hydraulic & lubricating oil, protect the downstream equipment and extend the service life of downstream equipment.

Hanke Filter

Trustworthy Filtration

Expert & Partner

Bag Filters—Single Bag Filter

Single bag filter consists of a filter housing, a support basket and a filter bag and is suitable for solid filtration applications at low flow velocity range.

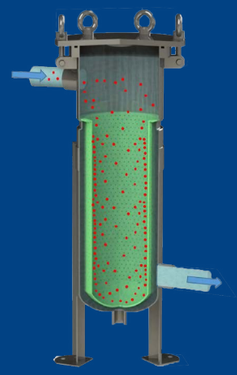
Features

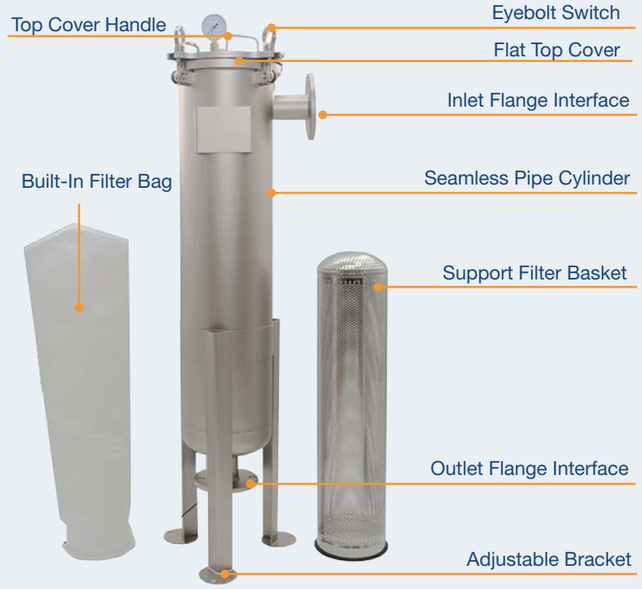
- Carbon steel, SS304, SS316 filter housing, special materials are available upon request.
- Single filter bag structure, PE, PP, PA, PTFE and stainless steel filter bags for your option.
- Filter rating up to 0.5 – 1000 μm, flow rate up to 250 GPM
- An adjustable bracket is provided, as a result, the height of the filter is adjustable.

Working Principle

The position of the single bag filter inlet is higher than that of the filter bag. Filter medium flows into the filter bag from the inlet. After filtration, the impurities are trapped in the filter bag, and the clean filtrate flows out from the outlet along the fixed metal basket wall.

The filter bag needs to be replaced when the impurities on the filter bag build up into a filter cake and the differential pressure reaches 0.05-0.1 MPa. When replacing the filter bag, the filter system must be shut down for a period of time, open the pressure relief valve and filter cover, and reinstall the filter after replacing the filter bag. Filter bags can be reused after cleaning, but need to be replaced when damaged to a certain extent. Filter bags can be reused after cleaning, but need to be replaced when being damaged to a certain extent.





Specification

Housing material: Carbon steel SS304 SS316

Support basket material: Stainless steel woven wire mesh Stainless steel perforated metal mesh

Filter rating: 0.5 μm → 1000 μm

Operating pressure: 0 — 1.5 MPa

Bag type: Stainless steel, PE, PP, nylon or PTFE filter bags.

Surface treatment: Mirror polishing

Gasket: EPDM, NBR, Viton, PEFE, silica gel, etc.

Configurations: Side-in/side out and side-in/bottom-out.

Housing and cover connection: Eyebolt, eyebolt topline, V clamp

Installation: Flange connection, butt weld connection and threaded connection.

Operating temperature:

250°F (120°C)

Installation Instructions

step.1

Open the lid to the fullest extent.

step.2

Restrainer baskets should be positioned in the housing.

step.3

Bag inserted into the holders and molded flush with the holder for complete support.

step.4

Center the collar of the bag on the holder rim to achieve a tight seal.

Maintenance

- The filter bag needs to be replaced when the impurities on the filter bag build up into a filter cake and the differential pressure reaches 0.05-0.1 MPa.
- As bag filters are frequently used, trapping a large quantity of impurities, as a result, regular inspection, maintenance and repair are required even the differential pressure is small.
- If the gasket is deformed, replace with a new one immediately.

Bag Filters—Multi Bag Filter

Multi bag filter consists of a filter housing, multiple fixed baskets and multiple filter bags and is suitable for high flow fluid filtration with a flow rate of up to 2400 GPM.

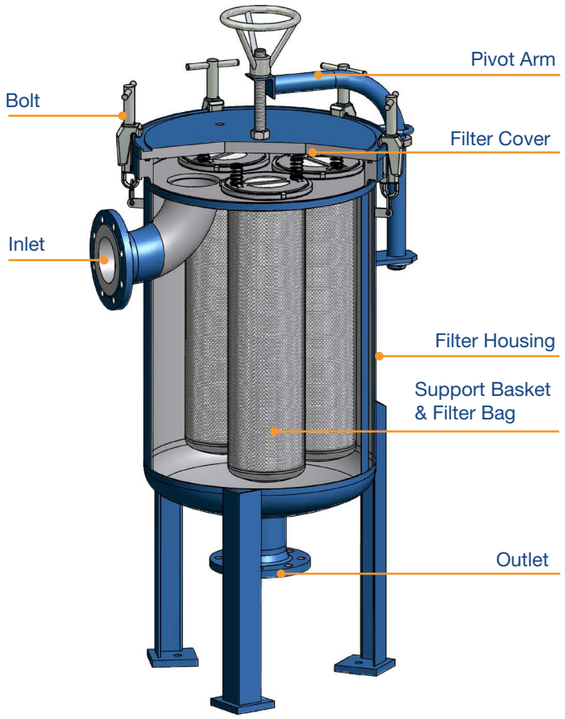
Features

- Material: carbon steel, SS 304, SS316, special materials are available upon request.
- Muti bag structure, PE, PP, PA, PTFE and stainless steel filter bags for your option.
- Filter rating up to 0.5 – 1000 μm, flow rate up to 2400 GPM

Working Principle

The position of the multi bag filter inlet is lower than that of filter bags. Filter medium enters from the inlet, reaches the top part of the housing above filter bags, flows downward and goes through filter bags for filtration. After filtration, impurities are trapped in filter bags, and the clean filtrate flows out from the outlet.

Filter bags need to be replaced when the impurities on filter bags build up into filter cakes and the differential pressure reaches 0.14–0.17 MPa. When replacing filter bags, you must shut down the filter system for a period of time, open the pressure relief valve and filter cover, and reinstall the filter after replacing filter bags.
Filter bags can be reused after cleaning, but need to be replaced when damaged to a certain extent.
Filter bags can be reused after cleaning, but need to be replaced when being damaged to a certain extent.



Specification

We offer both standard and custom multi bag filters. Standard multi bag filter is provided with 2—24 filter bags while custom multi bag filter can accommodate up to 40 filter bags. For filters with a few filter bags, a handwheel and a swivel arm with standard bearings are provided to make filters easy to open and operate. For filters with 12 filter bags and above, pneumatic cylinders or hydraulic auxiliary devices may be selected as it makes filters open and close require one operator only. auxiliary devices include pressure relief valves, positioning pins, etc., to effectively ensure the safe operation of the equipment.

Housing material: Carbon steel SS304 SS316

Support basket material: Stainless steel woven wire mesh Stainless steel perforated metal mesh

Filter rating: 0.5 μm → 1000 μm

Operating pressure: 0 — 1.5 MPa

Bag type: Stainless steel, PE, PP, nylon or PTFE filter bags.

Surface treatment: Mirror polishing

Gasket: EPDM, NBR, Viton, PEFE, silica gel, etc.

Configurations: Side-in/side out and side-in/bottom-out.

Housing and cover connection: Eyebolt, flange and quick opening

Installation: Flange connection, butt weld connection and threaded connection.

Operating temperature:

250°F (120°C)

Maintenance

- The filter bag needs to be replaced when the impurities on the filter bag build up into a filter cake and the differential pressure reaches 0.14-0.17 MPa.
- As bag filters are frequently used, trapping a large quantity of impurities, as a result, regular inspection, maintenance and repair are required even the differential pressure is small.
- If the gasket is deformed, replace with a new one immediately.

Bag Filters—Duplex Bag Filter

Duplex bag filter is a kind of filter that consists of 2 single bag filters and their inlets and outlets are connected together via butterfly valve and ball valves. This special design allows one bag filter to maintaining running when the other bag filter is in maintenance, thereby reducing the overall operating costs.

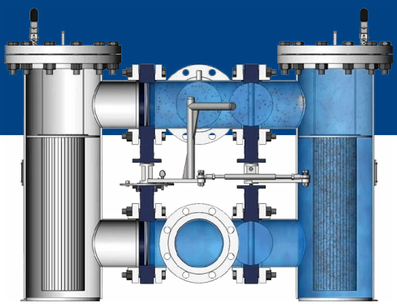
Features

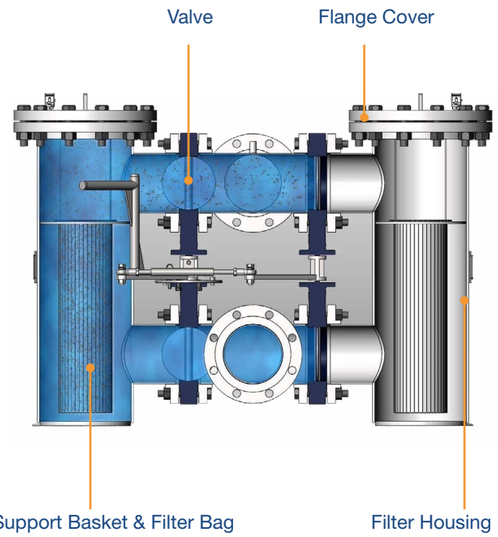
- Allow continuous operation and reduce downtime.
- Filter rating: 0.5–800 μm
- Easy to install and replace filter bags, easy to operate
- An adjustable bracket is provided, as a result, the height of the filter is adjustable.
- Special materials and sizes are available upon request.

Working Principle

Duplex bag filter consists of 2 single bag filters connected together via valves. During the filtration, generally, one bag filter performs filtration and the other one works as a standby. The position of the inlet is higher than that of filter bags. Filter medium flows into the filter bag in service from the inlet. After filtration, the impurities are trapped in the filter bag, and the clean filtrate flows out from the outlet along the fixed metal basket wall.

When replacing the filter bag, you may close the filter on the side the filter bag needs to be replaced and open the standby filter for filtration. In this way, it ensures the system performs continuous filtration and reduces costly downtime.





Specification

Housing material: Carbon steel SS304 SS316

Support basket material: Stainless steel woven wire mesh Stainless steel perforated metal mesh

Filter Rating: 0.5 μm → 800 μm

Operating pressure: 0 — 150 MPa (10 bar)

Number of bags: Two bags

Operating temperature: 250°F (120°C)

Bag type: Stainless steel, PE, PP, nylon or PTFE filter bags.

Gasket: EPDM, NBR, Viton, PEFE, silica gel, etc.

Surface treatment: Mirror polishing

Housing weight: 240 lb. (109 kg)

Capacity: *(50 gpm – 200 gpm per bag)*

Replacement

1. Cut off the water flow into the filter bag that needs to be replaced and drain it out.
2. Remove the filter cover and take out the dirty bag. It is recommended to check the filter basket and clean it as needed. Put the cleaned basket and new bag back into the filter.
3. Check the O-ring at the top of the housing and apply food grade grease to prevent it from drying out. Be sure the chemical properties of the grease are compatible with the O-ring and then reinstall the filter and make it access to the system.

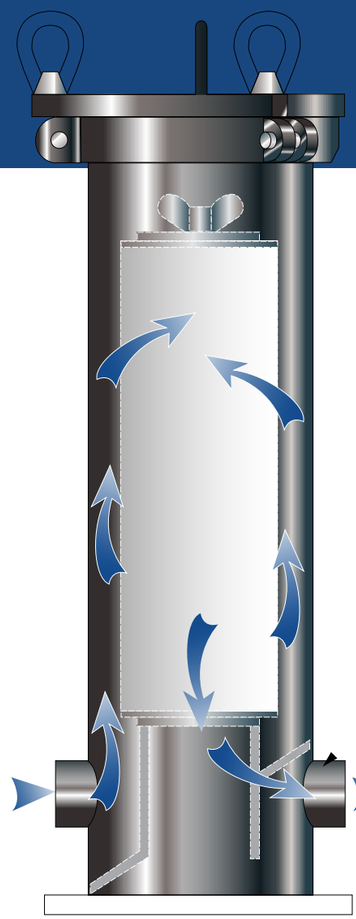
Cartridge Filters

Single Cartridge Filter

Single cartridge filter requires only one filter cartridge inside. Compared with multi cartridge filter, it requires a smaller footprint and filters a smaller area, as a result, it is suitable for applications with low flow rates in limited space.

Features

- V-bands or swing-bolt closures are provided for quick filter cartridge replacement.
- Suitable for accommodating filter cartridges with a length of 10", 20" or 30"
- Suitable for DOE and SOE filter cartridges
- Removable filter cartridges, easy to clean and replace.
- Suitable for filtering fluids in low flow at low flow rates.
- Cartridge filters in special specifications are available upon request.



Working Principle

First, precoat is applied before filtering. Agitate precoat tank containing filtrate and filter aid (diatomaceous earth, perlite, etc.) for around 10 minutes. Then, fill the vessel with the mixture, empty all the air, and pressurize the vessel. The precoat runs for 15 minutes at a fluid rate around 30–60 gallons per square foot per hour.

※ Specification

Optional cartridge:

PP melt blown, string wound PP cartridge, PP pleated cartridges, ceramic cartridges and stainless steel wire cartridges

Cartridge size (length): 10", 20", 30"

Cartridge end cap: DOE, SOE (222)

Housing material: SS304, SS316L, carbon steel

Operating pressure: 150 psi (10.3 bars) max

Operating temperature:

4°C → 149 °C

10°F → 300 °F

Model	Cartridge Size	Inlet Size	Flow Rate (GPM)	Drain Size (NPT)
1	10"	3/4" – 1"	6	1/4"
2	20"	3/4" – 1"	12	1/4"
3	30"	3/4" – 1"	18	1/4"

Multi Cartridge Filter

Multi cartridge filter consist of a stainless steel filter housing and multiple filter cartridges like filter PP filter cartridge inside. It is mainly used after multi-medium pretreatment filtration and before membrane filtration equipment such as reverse osmosis and ultrafiltration to ensure the water filtration rating and protect membrane filter elements from large particles.

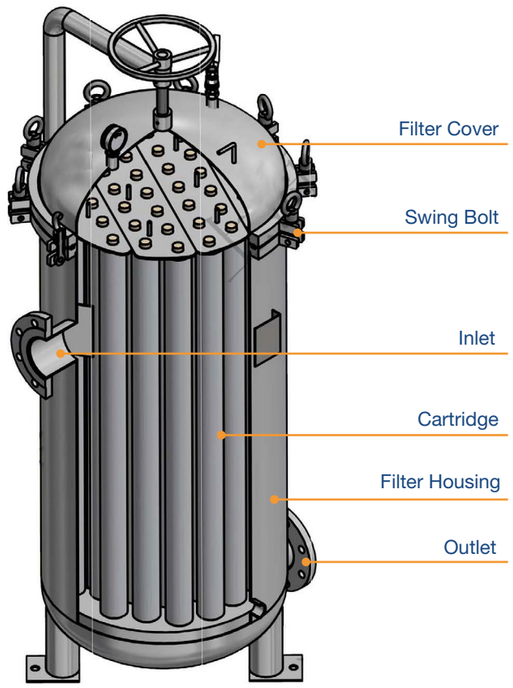
Features

- V-bands or swing-bolt closures are provided for quick filter cartridge replacement.
- Suitable for accommodating filter cartridges with a length of 10", 20", 30" or 40".
- Suitable for DOE and SOE filter cartridges.
- Removable filter cartridges, easy to clean and replace.
- Suitable for filtering fluids in high flow at various flow rates.
- Other specifications are available upon request.

Working Principle

The unfiltered liquid flows into the filter from the inlet, flows through the cartridge from outside to inside and becomes clean. Impurities are trapped in the deep layer or on the surface of the cartridge and clean fluid flows out from the outlet.

When the differential pressure upstream and downstream is more than 0.2MPa and the flow rate of the liquid is 30% less than before, it is time to change the filter cartridge to prevent system clogging.



Specification

Optional cartridge:

PP melt blown, string wound PP cartridge, PP pleated cartridges, ceramic cartridges and stainless steel wire cartridges

Rated value: 0.05–200 μm

Cartridge size (length): 1–200

Cartridge end cap: DOE, SOE (Fin/ 222, Fin/ 226, Flat/ 222, Flat/ 226)

Housing material: SS304, SS316L, carbon steel

Surface treatment: Sandblasting, mechanical polishing, electrolytic polishing

Operating temperature:

40 °F → 140 °F

Inlet/outlet: BSP, Tri-cover, ANST flange

Design pressure: 0.6 MPa, 1.0 Mpa

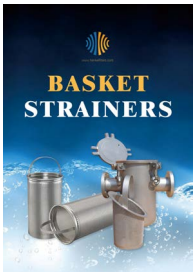
Applicable viscosity (cp): 1–500

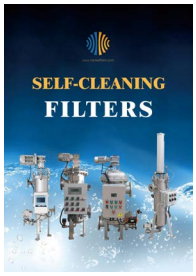
Cover connection: V-band, swing-bolt

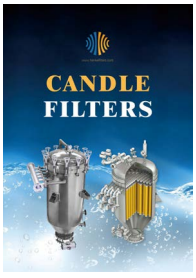
Model #	Cartridge Requirements	Pipe Size (flange)	Max. Flow Rate (GPM)	Drain Size (NPT)
1	(4) of 10"	2"	24	1/2"
2	(4) of 20"	2"	48	1/2"
3	(4) of 30"	2"	72	1/2"
4	(4) of 40"	2"	96	1/2"
5	(5) of 10"	2"	30	1/2"
6	(5) of 20"	2"	60	1/2"
7	(5) of 30"	2"	90	1/2"
8	(5) of 40"	2"	120	1/2"
9	(6) of 40"	3"	144	1/2"
10	(7) of 20"	2"	84	1/2"
11	(7) of 30"	2"	126	1/2"
12	(7) of 40"	3"	168	1/2"
13	(9) of 40"	3"	216	1/2"
14	(12) of 40"	4"	288	1/2"
15	(22) of 30"	4"	396	1/2"
16	(22) of 40"	6"	528	1/2"
17	(27) of 40"	6"	660	1/2"
18	(36) of 40"	6"	720	1/2"
19	(42)of 40"	6"	1,008	1/2"
20	(55)of 40"	8"	1,320	1/2"
21	(61) of 40"	8"	1,464	1/2"
22	(73)of 40"	8"	1,752	1/2"
23	(98)of 40"	10"	2,340	1/2"
24	(120)of 40"	10"	2,880	1/2"
25	(150)of 40"	10"	3,000	1/2"

10+ years
est. 2011

BASKET STRAINERS,
BAG FILTERS,
SELF-CLEANING FILTERS,
CANDLE FILTERS,
PRESSURE LEAF FILTERS,
FILTER CARTRIDGES







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