

WE FILTER OUT YOUR PROBLEMS

Consistency

Reliability

Economics

Ease of use



TECHNO-FILT
INTERNATIONAL

TECHNO-FILT

We take pleasure to introduce our self as a team of qualified and experience engineers involved in filtration business. Most of our engineers are trained and having more than 15-20 years of experience in providing industrial and hydraulic filter to the Indian industry. Based on fluid parameters, we design and select the filter cartridge from our wide range and manufacture required filter housing in C.S., M.S., M.S.R.L., S.S. 316, S.S. 304 and give total solution to the end users, OEM or traders. We have been able to offer filters for most demanding applications from single source.

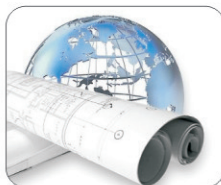
To effectively select and specify any optimum filter element for a given application, several guidelines should be followed. Many variables need to be considered.

THESE INCLUDES:

- Service temperature (Operating, design)
- Service Pressure (Operating, design)
- Initial clean pressure drop
- Pressure drop restrictions (Total Allowable pressure)
- Service flow rate (Operating, design)
- Filter area
- Flux rate (gpm/ft²)
- Fluid Density
- Fluid Viscosity
- Efficiency required
- Removal rating
- Filter medium and gasket/O-ring chemical compatibility
- Filter life required (continuous or batch operation) and
- Type of particulate encountered (hard, gelatinous)

Any combination of these factors can impact final selection.

Economics ▶



Economics is very important in micron filtration and we, being a experience team of engineers, recommend long-term economical solution to the problem. Micron filtration is very complex design.

Reliability ▶



Reliability is most important in micron filtration. Giving micron rating to the media is an arbitrary micrometer value indicated by the filter manufacturer. Hence selecting proper filter media to particular application is very important. We do our own Bubble point test for Sintered S.S. and S.S. Wire-mesh media.

Consistency & Re-productivity ▶



Consistency and re-productivity is must in filter media. We give Nominal, absolute Beta rated or up to 10¹⁰ Bacterial Aerosol Challenge tested cartridges depend upon the application.

Ease of Use ▶



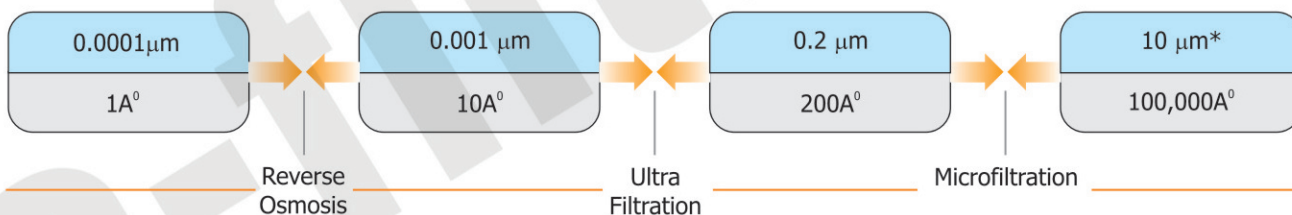
Ease of Use is being considered during sizing and designing of the system. We give quick opening of the housing to replace/remove the cartridge within no time.

BASIC FILTRATION

There are various filtration & separation procedures followed by industry for removal of un-wanted particles (contamination) like:

- Centrifuge
- Continuous vacuum filter
- Disc type knife filter
- Filter press
- Cartridge filter (Micro filtration)
- Dialysis
- Electro dialysis
- Reverse osmosis
- Ultra filtration / Nano filtration system

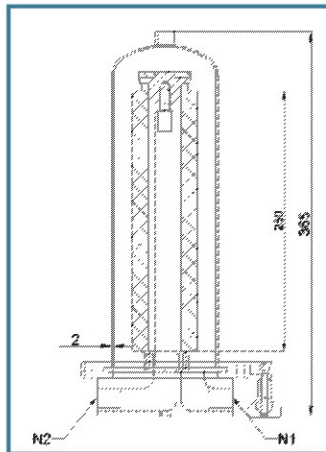
Basic difference between Micro filtration, Ultra filtration & R.O:



- μm – Micron
- Smallest pencil dot, which we can see by naked eye, is about 40 μm .

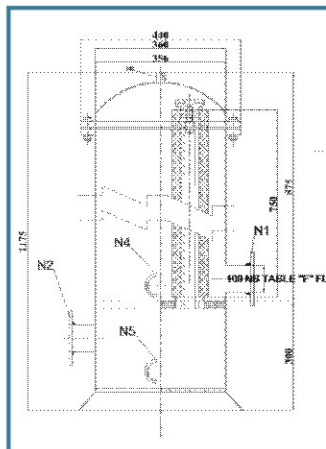
MICRO FILTRATION (CARTRIDGE FILTER):

Filtration for the removal of suspended particles from the range of 0.2 μm to 100 or 150 μm is generally known as micro filtration or cartridge filter. This is pressure filter in line as shown in the picture: Pressurized fluid comes in to the housing and due to pressure, passing from the cartridge, where actual filtration takes place and contamination retain on/over the cartridges and clear fluid comes out from the center of the cartridge. This is out to in system.



One needs to monitor the filter by pressure difference (delta P - the difference in inlet pressure and outlet pressure). Initially, when cartridge is clean, clean pressure drop will be minimum and as it got contaminated, pressure drop will increase gradually. At 2.5 or 3 Kg/cm² g pressure drop, one needs to change the cartridge, if it is disposable or clean the cartridge in case of re-usable cartridge.

If the flow rate is more, we need to give more number of cartridges in one housing as shown here.

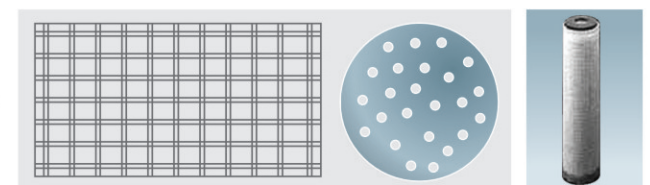
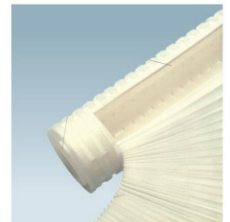


TYPE OF CARTRIDGES :

Depending on filter media we can classify the filter cartridges as depth or surface filter. Also they are available in various materials like, Polypropylene, Cotton, Cellulose, Glass-fibre, Nylon, PTFE, PES, Ceramic, S.S. Screen, Sintered S.S. or Bronze etc...

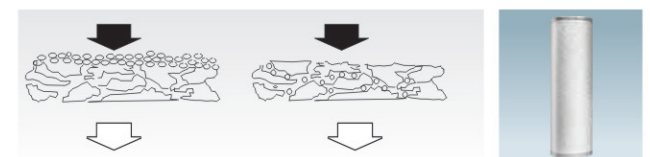
SURFACE FILTER:

Filter media where the pores are within the same 'Plane' i.e. Screen or Surface filter as shown in the picture here



DEPTH FILTER:

Filter media where the pores are distributed throughout the thickness of the medium. Particles are stopped both on the upstream surface and within the medium.



BASIC FILTRATION

STANDARD CARTRIDGES:

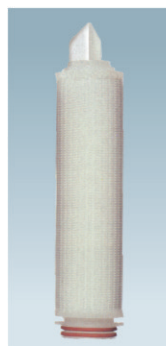
Generally cartridges are available as per international standard in 10", 20", 30" and 40" length cylinders. O.D. of the cartridge is approx 70 mm and I.D. is 25 mm. They are available in different end connections like Double Open End - "RF" Style, Double Open end with Gasket, Code-7 type, Code 9 type etc...as shown here: (Photograph of end connections) Generally cartridges can be classified as pleated or depth type.

PLEATED CARTRIDGE:

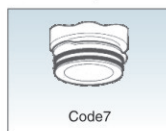
In pleated cartridges, actual filter media is in pleated form to cover more surface area. It is pleated on perforated core. It is supported with any other media, which is coarser to give minimum pressure drop and good strength to the cartridge. Outer cage is provided to give mechanical strength to the cartridge.

Most precise filter elements for guaranteed removal efficiency is pleated polymer cartridges.

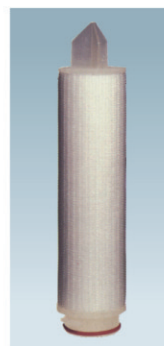
Paper, S.S. wire-mesh, polypropylene, Nylon - N66, Polyethersulfone, Fluoropolymer, Glassfibre or PTFE material pleated filter cartridges are widely available.



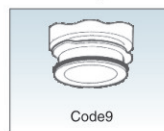
Single open ended 70mm diameter with double O-ring seal. With bayonet lock.



Code7



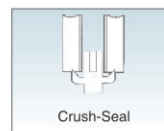
Single open ended 70mm diameter with single O-ring seal. With bayonet lock.



Code9



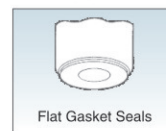
Double open ended 63.5mm diameter with crush-seal.



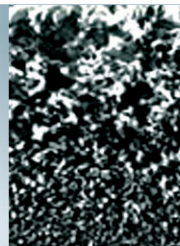
Crush-Seal



Double open ended 63.5mm diameter. Gaskets heat welded to each end/



Flat Gasket Seals

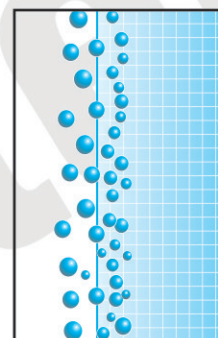


DEPTH CARTRIDGES:

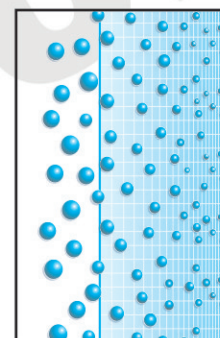
Polypropylene, Cotton, Nylone, Cellulose, Ceramic, Sintered S.S. & Sintered Bronze media are available in depth type cartridges. Many manufacturers make graded pore structure depth media, which gives efficient filtration because of proper pore distribution. (Cross section of Depth cartridge)

As shown here, Cross section of graded pore structure cartridges, bigger particles retain on the outer surface of the cartridge and most upper layer of the cartridges. While smaller particles retain at inner and very small particles retains at the inner layer of the cartridge. Thus entire depth of the cartridge utilizes and hence filtration is very economical.

Thus graded pore structure depth filter cartridges are good pre-filter, because it traps bigger particles then its rating.



Depth filter cartridges



Graded filter cartridges

FILTER SELECTION & SIZING

Following parameters are to be considered for selection of the filter :

- Fluid to be filtered
- Viscosity of the fluid at operating temperature
- Flow rate
- Filter material (Chemical compatibility)
- Filtration rating (Micron - Cut off)
- Load of suspended particles
- Operating Pressure
- Continuous or batch process - Batch size etc..
- Operating temperature



WOUND FILTER CARTRIDGES:

- Nominal rated Wound cartridges are widely used as a pre-filter for economical filtration. It is available in different media and core for wider chemical compatibility.
- Media options available: Polypropylene, Cotton, Glass-fibre & Polyester
- Core options available - Polypropylene, S.S. 316, S.S. 304 & Tin Steel.
- Computer controlled winding pattern gives longer life of the cartridge.
- Wide range of media gives economical pre filtration insures longer life of final filter.
- Available in 10°, 20°, 30° & 40° with micron rating options of 0.5 micron to 150 micron.

Length in inches : 10, 20, 30, 40 & 9 ¾, 19 ½, 29 ¼, 39.

Micron rating 0.5, 1, 3, 5, 10, 25, 50, 100 & 150

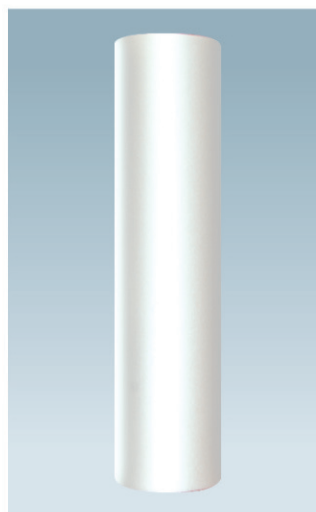


PLYPROPYLENE SPUN FILTER CARTRIDGES :

- 100% Polypropylene Cartridge made from very fine fibers.
- Graded Pore Structure, which gives longer service life.
- Polypropylene fibers sealed at fusing temperature, hence no media migration.
- Polypropylene media gives wide chemical compatibility.
- Temperature range - up to 70° C.
- Available in 10", 20", 30" and 40" length with pore size ranging from 0.5 to 100 µ.

Length in inches : 10, 20, 30, 40 & 9 ¾, 19 ½, 29 ¼, 39.

Micron rating 0.5, 1, 3, 5, 10, 20, 50 & 100



RESIN BONDED CELLULOSE FILTER CARTRIDGES:

Resin bonded, cellulose depth type, graded pore structure. Grooved and un-grooved options available for more surface area. The overall graded pore structure effect is to stop large particles on the outer portion of the cartridge while smaller particles become trapped as they progress through the declining tortuous path in the cartridge. The annular grooves expand the surface collection area by more than 60%, preventing premature blinding of the outer surface.

Length in inches : 10, 20, 30, 40 & 9 ¾, 19 ½, 29 ¼, 39.

Micron rating 1, 3, 5, 10, 25, 50, 100 & 150



PLEATED CARTRIDGES

PLEATED POLYPROPYLENE CARTRIDGES :

- High dirt capacity pleated depth filter cartridges
- Absolute rated filter with wide range of 0.2 μ to 70 μ , lengths 5", 10" 20", 30" & 40" with a variety of end fittings to suit existing housings Thermally bonded all polypropylene filter cartridges ensure higher throughputs, low-pressure loss, high dirt capacity, long on stream life and lower filtration cost.
- Pure polypropylene construction gives extremely good chemical compatibility with a wide range of fluids.
- No surfactants or binder resins.
- Meets FDA requirements and can be in-situ sterilized



PLEATED POLYETHERSULPHONE CARTRIDGES: (PES)

- Polyethersulfone (PES) membrane with polypropylene support layer and polypropylene hardware cartridge.
- Double membrane of polyethersulfone (PES) is ideal filters for the clarifications of particulate-laden solutions in the pharmaceutical, biological and food and beverage industries.
- A double-layered configuration of PES membrane provides for a built-in pre-filter that decreases the potential for premature fouling.
- 100% integrity tested cartridge before shipment.
- Fully validated and supported with a certification of quality, integrity test procedure and validation guide.
- Microbial retention of up to 10⁷ organisms (B. diminuta) per HIMA guidelines
- 0.2 μ & 0.45 μ cartridges available in lengths of 10" 20", 30" & 40" with variety of end fittings to suit existing housings.
- Steam sterilizable and sanitizable.



PLEATED PTFE CARTRIDGES:

- PTFE membrane with all -Fluoropolymer construction for high temperature applications.
- PTFE cartridge is available in micron ratings from 0.05 to 1.0 m and length from 4" (10 cm) to 20" adapted to fit virtually all commercially available filter housings.
- Extremely low extractables & excellent chemical compatibility. Integrity testable cartridge - thermally bonded.
- Fully validated and supported with a certification of quality, integrity test procedure and validation guide.
- Bacteria retention greater than 10⁷/cm² per HIMA methodology for 0.2 micron sterilizing grade filters using Brevundimonas diminuta.
- Each cartridge is given a unique serial number to provide immediate product traceability.
- Cartridge may be Steamed or Autoclaved for over 100 one -hour cycles @ 145° C (275° F).
- Total filtration area of 9.3 Ft² (0.86 m²) gives high air flow rates.
- Maximizes fermentation yields and lower operating costs.



OTHER CARTRIDGES

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S.S. CARTRIDGES:

S.S. cartridges are widely used due to temperature, chemical compatibility, cleanability, pressure and corrosion resistance. This is available in Sintered S.S., Pleated Wire-Mesh and S.S. filament media.

S.S. SINTERED CARTRIDGE:

Various grade S.S. powder is used to make sintered S.S. cartridge. Sintered S.S. cartridges are produced by cold isostatic pressing, which gives the high porosity material, its shape stability and properties of a metallically strong component. Apart of filtration, the cartridges are used in other specific areas such as solids recovery or separation, gas sparging and fluidised bed support.

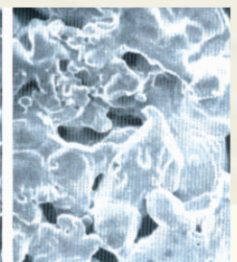
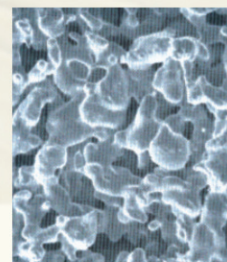
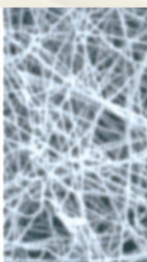
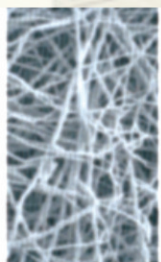
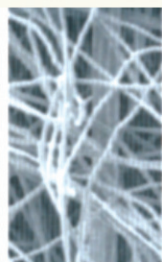


S.S. WIREMESH CARTRIDGE:

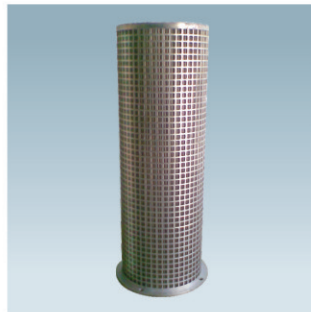
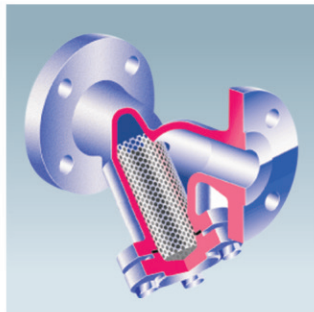
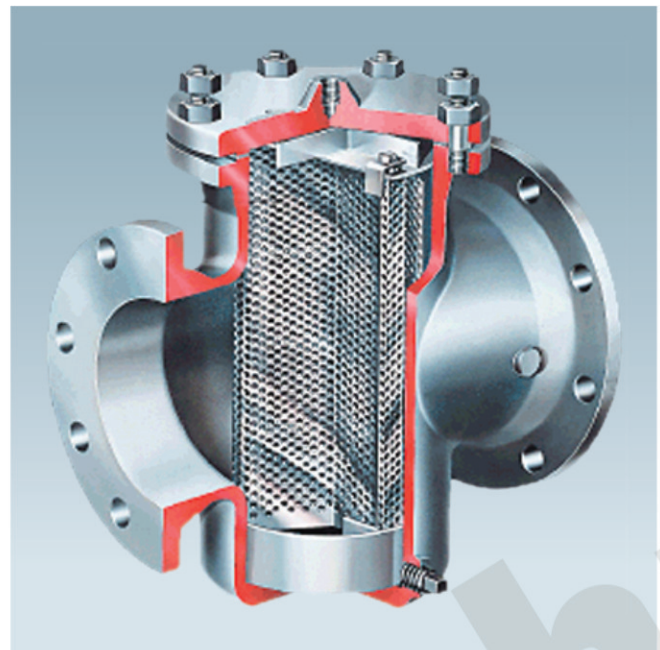
S.S. wire-mesh cartridges are made from S.S. wire-mesh media by pleating it to give you more surface area. The cartridges can be made by welding technology or by using epoxy joints, depending on the applications. Wire diameter is the limit of wire-mesh media. Below 10 micron media is difficult in wire-mesh media. Pore opening will be too less in case of below 10 micron cartridges.

S.S. FILAMENT CARTRIDGE:

To over come above problem, now a day's multi filament S.S. media is being used for fine filtration. This media is made from very fine S.S. filaments (up to 5-20 microns). This media is flexible and hence any sized raped or pleated cartridge is possible with this media.



STRAINERS

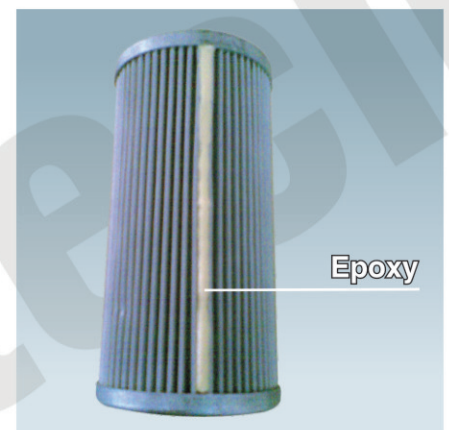


STRAINERS:

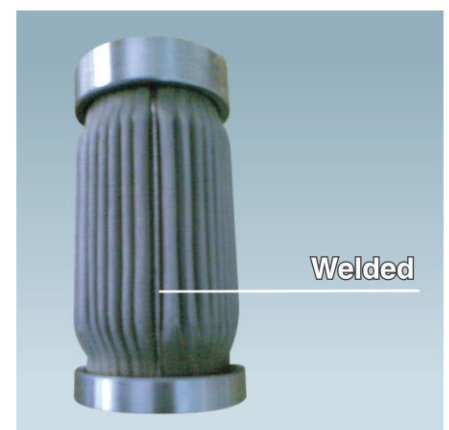
Strainers are widely used in almost all process industry. One can classify strainers as filtration up to 150 to 1000 microns. S.S. wire-mesh media is rapped in side of perforated basket with the help of spot welding and housed it in M.S. housing. The filtration is generally in to out.

However for specific requirements, we provide pleated strainers where filtration is out to in. The advantage of this is more filtration area resulting longer service life of the strainers. We provide such strainers as pre-filters up to 25 microns to remove major load on final filters and make total system economical.

Strainer element can be made from epoxy joint, where temperature in not constrain. However for specific requirement (chemical compatibility and higher temperature applications), we can make complete S.S. strainer element in welding constructions.



Epoxy



Welded

BAG FILTER:

BAG FILTER:

Economics is very important in almost all the area. When contamination level is high, it is better to use pre-filter. Bag filter is proven economical pre-filter. Many times it can be used as a final filter too. The advantage of bag filters are

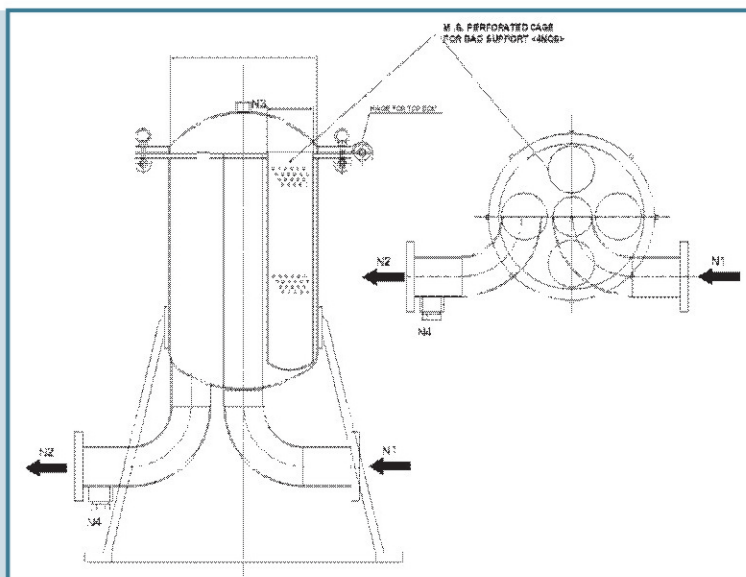
- 1 High solids collection capacity
- 2 Easy change out saves manpower
- 3 Cheapest solution
- 4 Contaminant retained in bag is easy for disposal
- 5 Minimum loss of processing fluids etc.



Bags are made from polypropylene or polyester. Normally woven material is used for making bags. For finer filtration non-woven media is preferable. We give heat-sealed bags with polypropylene collar. Collor is used to hold the bag in the housing as shown here in the picture. The bag is rested on perforated cylinder.

The filtration is in to out in bag filter. Fluid enters from the top of the housing in to the bag. Contamination retains on the bag and clear fluid passes from bag through perforated cylinder. Once bag is full of contamination, one needs to clean it by taking it out from the housing or replace it with new one.

Standard size of the bags are 7" x 33" and 7" x 14". However it can be made of any size as per the requirement. In case of high flow rate, multi bag housing can be provided to take care of the flow. Standard bags are available from 5 to 100 micron cut-off range.



FILTER HOUSING

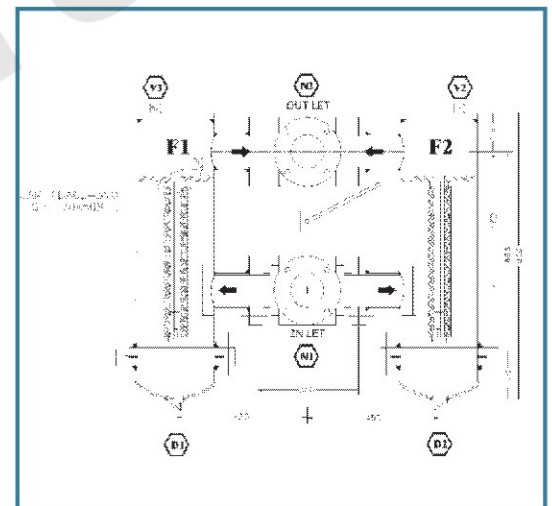
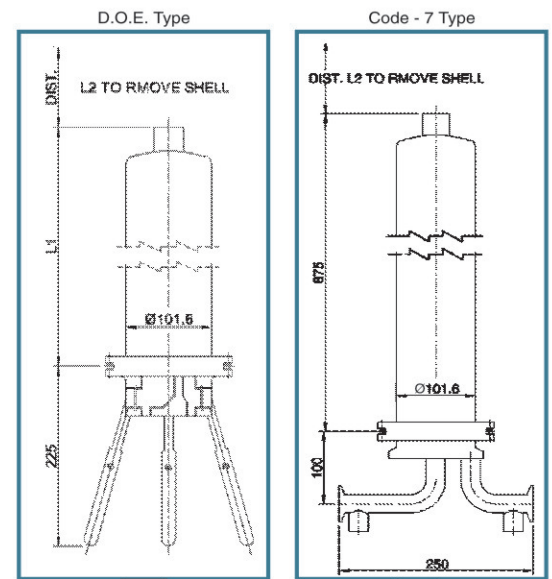
FILTER HOUSINGS :

Filter housing is the hardware to house the cartridge. It is not that simple. Design of filter housing needs lot of skill to consider many parameters like: Operating pressure, Operating Temperature, Material of Construction, Design of minimum pressure drop, Ease of use, proper sealing, Sealing material etc.

We design the filter housing considering all the above factors. We give filter housings in Polypropylene, Polycarbonate, C.S., M.S., M.S.R.L, S.S. 304, S.S.316, S.S.316L etc,. Also for specific requirements, we can provide the filter housings as per ASME Sec VIII, Div I.

I. SINGLE BORE HOUSINGS :

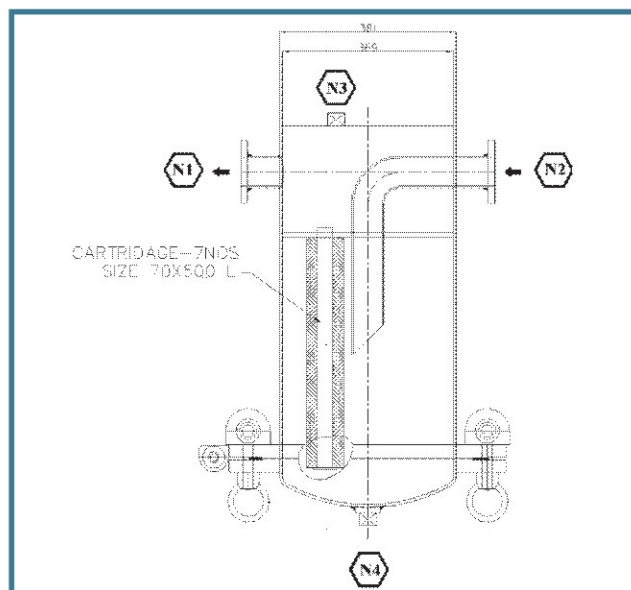
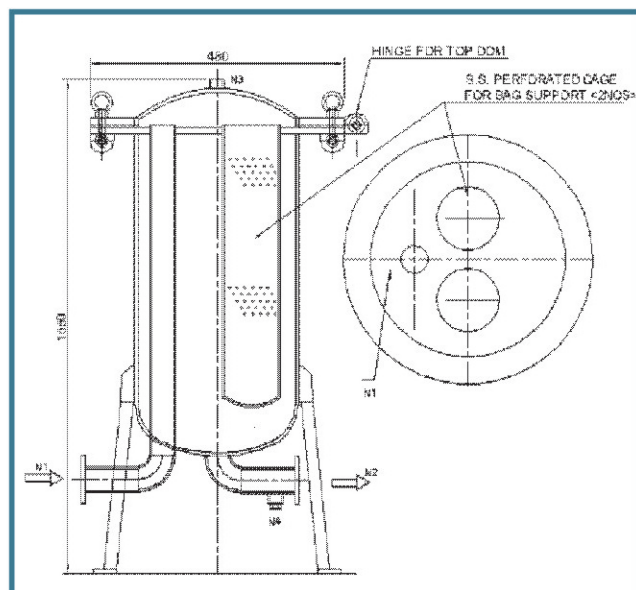
Following are our standard single bore housings:





NON STANDARD MULTI BORE HOUSINGS :

We make C.S., M.S., MSRL, MS with polymer lining, S.S.304, S.S. 316 and S.S. 316L filter housings for multi-bore and multi-length cartridges. Also we make the same housings for multi bags.



A P P L I C A T I O N

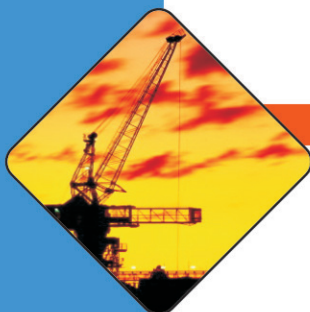
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