Remember When You Built Things with Blocks?

Things change.

Now Housings Come Hassle–Free and Ready–to–Use
**About Sartorius**

Sartorius Corporation is located in Edgewood, New York with its corporate office in Goettingen, Germany.

Sartorius is an internationally leading process technology supplier covering the segments of biotechnology and mechatronics. The company was founded in 1870 and currently employs over 3,000 employees worldwide. Sartorius has its own production facilities in Europe, Asia and America as well as sales subsidiaries and local commercial agencies in more than 110 countries. Its biotechnology segment focuses on filtration and separation applications, fermenters and proteomics.

Sartorius and the Sartorius group of companies, including Sartorius BBI Systems and Vivascience, specialize in the manufacture and support of separation and purification equipment in the pharmaceutical and biotech industries scaleable from pre-clinical to pilot plant to production levels.

Filter cartridge and capsule filters, and micro- & ultrafiltration cassettes are available in a broad range of filter materials and retention ratings for pre-filtration, sterile filtration, concentration and purification steps. Filter materials include cellulose acetate, poly-ethersulfone, nylon, PTFE, polypropylene and others, which excel in a variety of applications where low protein binding, high throughput, and broad pH compatibility are critical. Additional products include new integrity test instruments, membrane chromatography filters, gamma-capsules, MaxiCaps®, and FACTS® validation testing/training/support services. We have also collaborated to form the BioPharm-Alliance® which provides a multitude of services that address the critical success factors facing the biopharmaceutical industry. These factors include time-to-market, cost of goods, production capacities, and regulatory compliance. We evaluate, analyze and optimize each individual success factor for potential impact to regulatory compliance.

**Customize your Housing Without the Hassle**

Sartorius has the flexibility to manufacture housings with a variety of options, from steam jackets to special vent and drain locations. All customized designs are reviewed and evaluated by Sartorius Engineering to ensure the best possible design. Sartorius provides a full range of services from welded tag numbers for easier identification to thermal mapping studies which will ensure sterility when steaming. Sartorius also provides sprayball and the proper FAT parameters to ensure maximum cleanability. Options include passivation of housings, electric heat tracing of units complete with controller, and split-bell domes for ease of removing filter elements. A variety of sealing materials, including FDA-approved peroxide-cured silicone, platinum-cured silicone, and PTFE encapsulated Viton are also available. We will work with you to guarantee compatibility with your process. To place an order or request information such as drawings, availability of special modifications, or other information, please contact Sartorius at (800) 368-7178.
Quality and Service

Sartorius has the Blueprint for Quality and Service in Sanitary Design of Filter Housings

Sartorius has the capability to meet the stringent requirements of the food & beverage, pharmaceutical, biopharmaceutical and biotech industries. With a variety of housing styles, we are sure to have one to fit your application needs from sterile tank venting to sterile liquid delivery. We take pride in manufacturing and supporting our housings from design to installation and cleaning.

Sartorius filter housings are designed with several key benefits and meet the increasing product quality and purity requirements of the pharmaceutical and beverage industries. Choose from three lines: Sanitary, Industrial and ASME rated vessels. All units have a standard 150 psig to full vacuum @ 300°F rating and are manufactured of 316L stainless steel. Product contact surfaces are polished to less than 20 µ-in Ra. Interior and exterior surfaces on all sanitary units are electropolished. Housings are designed for maximum cleanability while delivering unimpeded flow. These benefits, combined with shorter lead times, make it easy to see that Sartorius understands your needs.

Our Quality is Unparalleled

As a manufacturer of membrane technology for bioprocess, Sartorius emphasizes the performance and quality standards of all its products. Sartorius manufactures in accordance with ISO 9001 and ASME standards, supplying units for operation in all cGMP areas.

Sartorius stands behind all of its products and ensures that all products are fully supported in the field. Support is provided to our customers regardless of the scale or scope of the project, even well after the project has been commissioned and installed. At Sartorius, we are always here to support our customers.

Our goal as a full-service provider is to ensure that your processes are successful and executable for the full term.
Cartridge Filter Housings

Single Round
Junior, Mini and Single Element Filter Housings

Introduction
There has been, and is, an increasing demand for quality filter cartridge systems for sterilizing and polishing filtration processes. A large emphasis has been placed on the integrity of construction of the filter cartridges. However, the filter cartridge housing is just as important a part as any cartridge filtration system. Without a proper housing, the cartridge is useless. Even the best cartridge cannot do the job if enclosed in a housing that allows fluid to bypass the filter, has external leaks or is not chemically or mechanically compatible with the application. Quality gas or liquid filtration systems require both quality housings and quality filter cartridges. To meet this need, Sartorius offers a sanitary line of housings with quality as the primary objective.

Quality of Materials
Only 316L stainless steel is used for all wetted surfaces to provide maximum durability. Supplied O-rings and gaskets are manufactured only from FDA approved Class VI materials that meet requirements for direct contact with food and pharmaceutical products.

Quality Surface Finishes
All Sartorius sanitary housings come standard with internal finishes of at least 20 micro-inch Ra and are electropolished. Electropolishing removes surface impurities in stainless steel left over from the machining and the finishing processes. Such impurities are potential sites of corrosion and possible sources of contaminants leaching into the product. Electropolishing also smoothes the micro-scratches left by mechanical polishing, thus reducing the total surface area the product will contact, and making it harder for bacteria or contaminants to adhere to the housing surface.

Finally, electropolishing leaves a corrosion resistant, passive film on the surface of the steel (passivation). Thus electropolishing is the recommended finish for all applications where cleanliness and corrosion resistance are critical.

Ease of cleaning
Sartorius utilizes a unique filter cup design that is conducive to a thorough cleaning. The raised filter cup design eliminates small grooves and tight spaces that might be difficult to validate for cleaning, while still allowing complete drainage of the housing.

Flexibility
Sartorius offers the widest range of housing sizes and design options to exactly match your flow rate and pressure differential requirements. Connections are available in many styles and sizes. Custom designs and unique configurations are available upon request.

Specifications

<table>
<thead>
<tr>
<th>Materials</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>All Wetted Surfaces</td>
<td>316L</td>
</tr>
<tr>
<td>Clamps</td>
<td>304</td>
</tr>
<tr>
<td>Seals</td>
<td>Silicone (Viton or EPDM optional)</td>
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<table>
<thead>
<tr>
<th>Available Heights</th>
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<tbody>
<tr>
<td>Junior, Mini</td>
<td>5&quot;</td>
</tr>
<tr>
<td>Single Round</td>
<td>5&quot;, 10&quot;, 20&quot;, 30&quot;</td>
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<table>
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<tr>
<th>Surface Finishes</th>
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<tbody>
<tr>
<td>Interior (wetted)</td>
<td>&lt;20 µ-inch Ra, EP</td>
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<tr>
<td>Exterior</td>
<td>35 µ-inch Ra, EP</td>
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<table>
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<tr>
<th>Housing Ratings</th>
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<tr>
<td>Pressure</td>
<td>F.V. to 150 PSI</td>
</tr>
<tr>
<td>Temperature</td>
<td>&lt;300°F</td>
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</table>

Quality Control and Documentation
An important feature of the process validation is documentation. All housings are given stringent inspections during and after manufacturing including dimensional checks, weld inspections, surface measurements and hydrostatic testing. Each housing is electroetched with a matching serial number on the bell and base. This serial number provides complete traceability for the Quality Control Certificate, Material Test Reports, and Weld Logs.

Ease of Installation
Sartorius housings are sold ready-to-install with all gaskets, O-rings and clamps. All that is required are the components needed to connect to your existing hardware.
### Cartridge Filter Housings

#### Junior Housings
**Sterile Gas/ Air Filtration**

**Technical Specifications**
- Cartridge Height: 2.0 inches
- Diameter of Bell: 2.0 inches
- Head Clearance: 3.0 inches
- Volume: 0.13 Liters
- Empty Weight: 1.5 lbs
- Full Weight (Water): N/A
- Shipping Weight: 2.2 lbs
- Inlet/Outlet Connection (Std): 1/2" Fractional Ferrule

**Replacement Parts**
- Bell/Base Gasket: SP-GSK020S
- Clamp: SP-CLP020

#### Mini Housings
**Gas/ Air & Liquid Filtration**

**Technical Specifications**
- Cartridge Height: 2", 3.3", 5.3"
- Diameter of Bell: 2.5 inches
- Head Clearance: 6.0 inches
- Volume: 0.2 Liters
- Empty Weight: 4.0 lbs
- Full Weight (Water): 4.0 lbs
- Shipping Weight: 4.0 lbs
- Inlet/Outlet Connection (Std): 3/4" SF (T-Style), 1" SF (Inline)

**Replacement Parts**
- Bell/Base Gasket: SP-GSK025S
- Clamp: SP-CLP025
- Valve: SP-HVL-US
- Valve Tip: SP-HVL-UTIP
- Valve 0-ring: SP-ORG008S

#### Single Round Housings
**Gas/ Air & Liquid Filtration**

**Technical Specifications**
- Cartridge Height: 10"
- Diameter of Bell: 4 inches
- Head Clearance: 13"
- Volume: 1.7 Liters
- Empty Weight: 16.1 lbs
- Full Weight (Water): 16.1 lbs
- Shipping Weight: 12.0 lbs
- Inlet/Outlet Connection (Std): 1" FF I/O, 1.5" SF I/O

**Replacement Parts**
- Bell/Base Gasket: SP-GSK040S
- Clamp: SP-CLP040
- Valve: SP-HVL-US
- Valve Tip: SP-HVL-UTIP
- Valve 0-ring: SP-ORG008S
- Legs: SP-LGS-S1

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#### Constructing a Filter Housing Part Number

<table>
<thead>
<tr>
<th>Housing</th>
<th>Surface Finish</th>
<th>Round</th>
<th>Height</th>
<th>Series</th>
<th>Adaption</th>
<th>Style</th>
<th>Drain</th>
<th>Vent</th>
<th>Line Connection</th>
<th>Jacket</th>
<th>Sealing Material</th>
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</thead>
<tbody>
<tr>
<td>H</td>
<td>H= Housings</td>
<td>U= &lt;20 Ra ID</td>
<td>T= 1 Round</td>
<td>0= &lt;5&quot;</td>
<td>7= Jun In</td>
<td>5= None</td>
<td>0= Drain Valve</td>
<td>4= None</td>
<td>0= Steam Jacket</td>
<td>0= Silicone</td>
<td>0= EPDM V= Viton</td>
</tr>
<tr>
<td>U</td>
<td>U= &lt;15 Ra ID</td>
<td>1= 1 Round</td>
<td>0= &lt;5&quot;</td>
<td>6= Mini</td>
<td>1= Inline</td>
<td>T= T-Style</td>
<td>S= None</td>
<td>5= None</td>
<td>1= 1/2&quot; FF</td>
<td>1= 1/2&quot; FF in Base</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>T= 1 Round</td>
<td>0= &lt;5&quot;</td>
<td>6= Mini</td>
<td>1= 1 Round</td>
<td>0= Drain Valve</td>
<td>4= None</td>
<td>S= None</td>
<td>6= 1/2&quot; FF in Base</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>Y= 7 Type 25 (Code J)</td>
<td>8= Type 26 (Code K)</td>
<td>5= None</td>
<td>1= 1/2&quot; FF in GP</td>
<td>4= None</td>
<td>5= None</td>
<td>6= 1/2&quot; FF in Base</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Notes:**
1. SF = Sanitary Ferrule
2. The technical data for the single round shown are for a 10" filter housing.
3. Not all part number combinations are available or possible.
4. Actual spare parts may vary depending on design.
5. Spare parts shown are for silicone seals.
Single Round Mini - In Line

NOTES AND SPECIFICATIONS

1. Design Parameters
   ASME Code: NON-CODED VESSEL
   Temperature & Pressure Rating: Full Vac. to 150 PSIG at 300°F
   Corrosion Allowance: NONE
   Hydrostatic Test: 225 PSIG

2. Material of Construction
   All Wetted Metal Surfaces: 316L
   Clamp: 304
   Gaskets: SEE CHART "K"

3. Finish ID.: 20 u in. Ra and Electropolish
4. Finish O.D. 35 u in. Ra and Electropolish
5. Head Clearance Required to Remove Bell: 6.0 IN.
6. Weight of Housing:
   Empty: 3 LBS
   Full: 4 LBS
   Shipping: 4 LBS

CHART I (Pipe Connections)

CHART H (Bell/Vent)

CHART J (Steam Jacket Type)

CHART G (Base/Drain)

CHART K (Seal Material)

HU105S6IX

Sartorius

List of Materials

MINI IN-LINE FILTER HOUSING
Single Round Mini – T Style

**NOTES AND SPECIFICATIONS**

1. **DESIGN PARAMETERS**
   - **ASME CODE:**
   - **TEMPERATURE & PRESSURE RATING:**
   - **CORROSION ALLOWANCE:**
   - **HYDROSTATIC TEST:**
   - **NON-CODED VESSEL**
   - **FULL VAC. TO 150 PSIG AT 300° F**
   - **NONE**
   - **225 PSIG**

2. **MATERIAL OF CONSTRUCTION**
   - **ALL WETTED METAL SURFACES:**
   - **316L**
   - **CLAMP:**
   - **304**
   - **GASKETS:**
   - **SEE CHART “K”**

3. **FINISH I.D.:** 20 u in. Ra and ELECTROPOLISHED
4. **FINISH O.D.** 35 u in. Ra and ELECTROPOLISHED
5. **HEAD CLEARANCE REQUIRED TO REMOVE BELL:** 6.0 IN.
6. **WEIGHT OF HOUSING:**
   - **EMPTY:** 3 LBS
   - **FULL:** 4 LBS
   - **SHIPPING:** 4 LBS

**CHART H (BELL/VENT)**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot; FERRULE W/VALVE</td>
<td>0</td>
</tr>
<tr>
<td>1&quot; FERRULE W/1/2&quot; FERR.</td>
<td>4</td>
</tr>
<tr>
<td>1&quot; FERRULE ONLY</td>
<td>5</td>
</tr>
<tr>
<td>NO PORTS</td>
<td>9</td>
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**CHART I (PIPE CONNECTIONS)**

<table>
<thead>
<tr>
<th>OPTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>3/4&quot; FRACTIONAL FERRULE</td>
</tr>
<tr>
<td>R</td>
<td>3/4&quot;-1&quot; SANITARY FERRULE</td>
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**CHART G (BASE/DRAIN)**

<table>
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<tr>
<th>DESCRIPTION</th>
<th>OPTION</th>
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<tbody>
<tr>
<td>STRAIGHT FERR ON BASE</td>
<td>6</td>
</tr>
<tr>
<td>VALVE ON BASE</td>
<td>0</td>
</tr>
<tr>
<td>NO DRAIN</td>
<td>5</td>
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**CHART J (STEAM JACKET TYPE)**

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<th>OPTION</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>D</td>
<td>NO JACKET</td>
</tr>
<tr>
<td>G</td>
<td>W/1/2&quot; FPT I/O OPPOSITE SIDE</td>
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**CHART K (SEAL MATERIAL)**

<table>
<thead>
<tr>
<th>OPTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>EPDM</td>
</tr>
<tr>
<td>S</td>
<td>SILICONE</td>
</tr>
<tr>
<td>V</td>
<td>VITON</td>
</tr>
</tbody>
</table>

**HU10S6□X□□□□**
Single Round Junior - In Line

NOTES AND SPECIFICATIONS
1. DESIGN PARAMETERS:
   ASME CODE: NON-CODED VESSEL
   TEMPERATURE & PRESSURE RATING: FULL VAC. TO 150 PSIG AT 300° F
   CORROSION ALLOWANCE: NONE
   HYDROSTATIC TEST: 225 PSIG
2. MATERIAL OF CONSTRUCTION:
   ALL WETTED METAL SURFACES: 316L
   CLAMPS: 304
   GASKETS: SILICONE
   VALVE SEATS: KYNAR
3. FINISH I.D. TO 20 u in Ra AND ELECTROPOLISH
4. FINISH O.D. TO 35 u in Ra AND ELECTROPOLISH
5. WEIGHT OF HOUSING:
   EMPTY: 2.0 LBS  FULL: 2.0 LBS  SHIPPING: 2.5 LBS
6. HEAD CLEARANCE REQUIRED TO REMOVE BELL: 3.0 INCHES
7. GASKET SEATING DIMENSIONS MANUFACTURED IN ACCORDANCE WITH TIGHTEST TOLERANCE BY THE INDUSTRY LEADER OF THE FDA APPROVED SANITARY GASKETS
8. HIGH STRENGTH STAINLESS STEEL 3-PIECE CLAMP
9. GASKET MATERIALS MEET REQUIREMENTS OF FDA, TITLE 21, PARAGRAPH 177.2600 AS A DIRECT CONTACT MATERIAL WITH FOOD AND PHARMACEUTICAL PRODUCTS.
10. EACH HOUSING IS ETCHED WITH IT’S OWN SERIAL # FOR TRACEABILITY

Sartorius

MAXIMUM OPERATING PRESSURE
150 PSIG @ 300 °F

HU10GJIX05Q0S

sartorius

REVISIONS

LIMITED
DESCRIPTION
DATE
APPR.

---

ITEM | QTY | PART NO. | DATE | CHECKED

---|---|---|---|---
1. | | | | 5.15.2004
2. | | | | 5.15.2004
3. | | | | 5.15.2004
4. | | | | 5.15.2004

HU10GJIX05Q0S

1 OF 1

HU10GJIX05Q0S
Single Round Junior - T Style

NOTES AND SPECIFICATIONS

1. DESIGN PARAMETERS
   ASME CODE: NON-CODED VESSEL
   TEMPERATURE & PRESSURE RATING: FULL VAC. TO 150 PSIG AT 300° F
   HYDROSTATIC TEST: 225 PSIG

2. MATERIAL OF CONSTRUCTION
   ALL WETTED METAL SURFACES: 316L
   CLAMP: 304
   GASKETS: SILICONE
   3/4" FRACTIONAL FERRULE

3. FINISH I.D. TO 20 u in. Ra AND ELECTROPOLISH
4. FINISH O.D. TO 35 u in. Ra AND ELECTROPOLISH
5. HEAD CLEARANCE REQUIRED TO REMOVE BELL: 3.0 IN.
   HIGH STRENGTH STAINLESS STEEL THREE SEGMENT CLAMP
   GASKET MATERIALS MEET REQUIREMENTS OF FDA,
   TITLE 21, PARAGRAPH 177.2600 AS A DIRECT
   CONTACT MATERIAL WITH FOOD AND PHARMACEUTICAL
   PRODUCTS.
   EACH HOUSING IS ETCHED WITH ITS OWN SERIAL # FOR TRACEABILITY

3/4" FRACTIONAL FERRULE

5.13

5.25

2.0

2.0
Single Round – In Line

NOTES AND SPECIFICATIONS

1. DESIGN PARAMETERS
   ASME CODE: NON-CODIFIED VESSEL
   TEMPERATURE & PRESSURE RATING: FULL VAC. TO 150 PSIG AT 300° F
   CORROSION ALLOWANCE: NONE
   HYDROSTATIC TEST: 225 PSIG

2. MATERIAL OF CONSTRUCTION
   ALL WETTED METAL SURFACES: 316L
   CLAMP: 304
   GASKETS: SEE CHART "K"

3. FINISH I.D.: 20 u in. Ra ELECTROPOLISHED
4. FINISH O.D. 35 u in. Ra ELECTROPOLISHED
5. HEAD CLEARANCE REQUIRED TO REMOVE BELL: SEE CHART "B"
6. WEIGHT OF HOUSING: SEE CHART "B"

CHART H (BELL/VENT)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>OPTION</th>
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</thead>
<tbody>
<tr>
<td>FERRULE W/VALVE</td>
<td>0</td>
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<tr>
<td>FERRULE W/1/2 FERR.</td>
<td>4</td>
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<tr>
<td>FERRULE ONLY</td>
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CHART I (PIPE CONNECTION)

<table>
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<tr>
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<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>1.0&quot; SANITARY FERRULE</td>
</tr>
<tr>
<td>T</td>
<td>1.5&quot; SANITARY FERRULE</td>
</tr>
<tr>
<td>U</td>
<td>2&quot; SANITARY FERRULE</td>
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CHART J (STEAM JACKET TYPE)

<table>
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<tr>
<th>OPTION</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>NO JACKET</td>
</tr>
<tr>
<td>1</td>
<td>W/1/2&quot; FNPT I/O OPPOSITE SIDE</td>
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CHART K (SEAL MATERIAL)

<table>
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<tr>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>EPDM</td>
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<tr>
<td>SILICONE</td>
</tr>
<tr>
<td>VITON</td>
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</tbody>
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CHART B (VESSEL/CARTRIDGE HEIGHT)

HU1 U7IX
Multi-Rounds and ASME

Multi-Rounds and ASME Filter Housings

Introduction
Quality gas or liquid filtration systems require both quality housings and quality filter cartridges. To meet this need, Sartorius offers producing a sanitary line of housings with quality as the primary objective. Sartorius multi-round housings have been designed to meet the scale-up requirements of pharmaceutical and biotechnology processing. These housings are designed specifically for sterile filtration with special attention given to the materials of construction, durability, cleanliness, ease-of-use, and quality control.

Quality of Materials
Only 316L stainless steel is used for all wetted surfaces to provide maximum durability. Supplied O-rings and gaskets are manufactured only from FDA approved Class VI materials that meet requirements for direct contact with food and pharmaceutical products.

Quality Surface Finishes
All Sartorius sanitary housings come standard with internal finishes of at least 20 micro-inch Ra and are electropolished. Electropolishing removes surface impurities in stainless steel left over from the machining and the finishing processes. Such impurities are potential sites of corrosion and possible sources of contaminants leaching into the product. Electropolishing also smooths the micro-scratches left by mechanical polishing, thus reducing the total surface area the product will contact, and making it harder for bacteria or contaminants to adhere to the housing surface.

Finally, electropolishing leaves a corrosion resistant, passive film on the surface of the steel (passivation). Thus electropolishing is the recommended finish for all applications where cleanliness and corrosion resistance are critical.

Ease in cleaning
Sartorius utilizes a unique filter cup design that is conducive to thorough cleaning. The raised filter cup design eliminates small grooves and tight spaces that might be difficult to validate for the cleaning, while still allowing complete drainage of the housing. All of our multi-round housings have successfully passed Riboflavin testing utilizing a sprayball. The entire housing is cleanable, even under the receiver plate. CIP caps are also available.

Flexibility
Sartorius offers the widest range of housing sizes and design options to exactly match your flow rate and pressure differential requirements. Connections are available in many styles and sizes. Custom designs and unique configurations are available upon request.

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<table>
<thead>
<tr>
<th>Available Heights</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>3-Round</td>
<td>10&quot;, 20&quot;, 30&quot;</td>
</tr>
<tr>
<td>5, 6 &amp; 7 Round</td>
<td>20&quot;, 30&quot;</td>
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<table>
<thead>
<tr>
<th>Surface Finishes</th>
<th></th>
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<tbody>
<tr>
<td>Interior (wetted)</td>
<td>&lt;20 µ-inch Ra, EP</td>
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<td>35 µ-inch Ra, EP</td>
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<table>
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<tr>
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<tr>
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<td>F.V. to 150 PSI</td>
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Ease of Installation
Sartorius housings are sold ready to install with all gaskets, O-rings and clamps. All that is required are the components needed to connect to your existing hardware.

ASME Housings
When ASME housings are required (i.e. steam applications), Sartorius multi-round housings are available with ASME certifications and related documentation. Sartorius’ housings are stamped in accordance with ASME section VIII, Division I with a ‘UM’ stamp (<5 ft³ volume) or a ‘U’ stamp (>5 ft³ volume) where applicable.
Cartridge Filter Housings

3-Round Housings
Gas/ Air & Liquid Filtration

Technical Specifications
Cartridge Height 30"
Diameter of Bell 6.6 inches
Head Clearance 33.0 inches
Volume 17.6 Liters
Empty Weight 44.0 lbs
Full Weight (Water) 70.0 lbs
Shipping Weight 60.0 lbs
Inlet/Outlet Con. (Std) 2.0” SF

Replacement Parts
Bell/Base Gasket SP-GSK072S
Rod O-Ring SP-ORG015P
Retainer Clip SP-HCL-PIN
Valve SP-HVL-US
Valve Tip SP-HVL-UTIP
Valve O-ring SP-ORG008S

Notes:
1. SF = Sanitary Ferrule
2. The technical data shown are for 30” filter housings.
3. Not all part number combinations are available, or possible.
4. Actual spare parts may vary depending on design.
5. Spare parts shown are for silicone seals.
6. Larger-round housings are available upon request.
Multi Round - In Line

NOTES AND SPECIFICATIONS

1. DESIGN PARAMETERS
   - ASC CODE:
   - FULL VAC TO 150 PSIG AT 300° F
   - CORROSION ALLOWANCE:
   - HYDROSTATIC TEST:

2. MATERIAL OF CONSTRUCTION
   - ALL METAL SURFACES:
   - GLAUNCH:
   - WELDING:
   - FINISH:
   - EPOXY:
   - ELECTROPOLISHED:

3. FINISH D. O. 20 u. 35 u. 40u. ELECTROPOLISHED

4. WEIGHT OF HOUSING:

HEAD CLEARANCE REQUIRED TO REMOVE BELL.

CHART H. (BELL/VENT)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAMPLE VALVE</td>
<td>0</td>
</tr>
<tr>
<td>1.5&quot; FERRULE</td>
<td>1</td>
</tr>
<tr>
<td>1.2&quot; FERRULE</td>
<td>2</td>
</tr>
<tr>
<td>W/1/2&quot; TERR</td>
<td>3</td>
</tr>
<tr>
<td>FERRULE ONLY</td>
<td>4</td>
</tr>
<tr>
<td>BELL/VENT</td>
<td>5</td>
</tr>
</tbody>
</table>

CHART G. (BASE/DRAIN)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; SAMPLE VALVE</td>
<td>0</td>
</tr>
<tr>
<td>1/2&quot; FERRULE/CLAMP</td>
<td>1</td>
</tr>
<tr>
<td>NO DRAIN</td>
<td>2</td>
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</tbody>
</table>

CHART I. (PIPE CONNECTIONS)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>T 1.5&quot; SANITARY FERRULE</td>
<td>0</td>
</tr>
<tr>
<td>U 2&quot; SANITARY FERRULE</td>
<td>1</td>
</tr>
<tr>
<td>V 3&quot; SANITARY FERRULE</td>
<td>2</td>
</tr>
</tbody>
</table>

CHART J. (STEAM JACKET TYPE)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO JACKET</td>
<td>0</td>
</tr>
<tr>
<td>BOLT O.I/2&quot;</td>
<td>1</td>
</tr>
</tbody>
</table>

CHART K. (SEAL MATERIAL)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPDM</td>
<td>E</td>
</tr>
<tr>
<td>SILICONE</td>
<td>S</td>
</tr>
<tr>
<td>VITON</td>
<td>V</td>
</tr>
</tbody>
</table>

CHART L. (EPOXY)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPL</td>
<td>F</td>
</tr>
<tr>
<td>FULL</td>
<td>F</td>
</tr>
<tr>
<td>SHR</td>
<td>F</td>
</tr>
<tr>
<td>N/A</td>
<td>N</td>
</tr>
</tbody>
</table>

CHART M. (FILTER HOUSING, 1-3 HIGH)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>HU3U7IX</td>
</tr>
</tbody>
</table>

SARTORIUS
Multi Round – T Style
**Industrial Filter Housings**

### Introduction

Whether used for air or liquid filtration, our industrial line of filter housings offers an economical alternative, especially for applications that are not bound by as rigorous requirements as those found in the pharmaceutical industry. While designed for less critical applications as well as the food and beverage markets, Sartorius’ industrial housings are manufactured under the same procedures as the sanitary units. The same quality standards run throughout our housing lines. When higher throughputs are needed, Sartorius’ industrial multi-round housings have been designed to meet the requirements of higher flow systems and will yield the flow rates that are required.

### Quality of Materials

Only 316L stainless steel is used for all wetted surfaces to provide maximum durability. Supplied O-rings and gaskets are compounded only from FDA approved Class VI materials that meet requirements for direct contact with food and pharmaceutical products.

### Quality Surface Finishes

All of Sartorius’ industrial housings are supplied with a standard Mill Finish, very similar to a 120 grit finish or about 50 micro-inch Ra. After manufacturing, all housings are rinsed with DI water and electropolished. Electropolishing removes surface impurities in stainless steel left over from the machining and the finishing processes. Such impurities are potential sites of corrosion and possible sources of contaminants leaching into the product. Electropolishing also smoothes the micro-scratches left by mechanical polishing, thus reducing the total surface area the product will contact, and making it harder for bacteria or contaminants to adhere to the housing surface.

Finally, electropolishing leaves a corrosion resistant, passive film on the surface of the steel (passivation). Thus electropolishing is the recommended finish for all applications where cleanliness and corrosion resistance are critical.

### Flexibility

Sartorius offers the widest range of housing sizes and design options to exactly match your flow rate and pressure differential requirements. Connections are available in many styles and sizes. Custom designs and unique configurations are available upon request.

### Quality Control and Documentation

All our housings are given stringent inspections during and after manufacturing including dimensional checks, weld inspections, surface measurements and hydrostatic testing. Each housing is electro-etched with a matching serial number on the bell and base. This serial number provides complete traceability for the Quality Control Certificate, Material Test Reports, and Weld Logs.

### Specifications

#### Materials

<table>
<thead>
<tr>
<th>Surface</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Wetted Surfaces</td>
<td>316L</td>
</tr>
<tr>
<td>Clamps</td>
<td>304</td>
</tr>
<tr>
<td>Seals</td>
<td>Silicone (Viton or EPDM optional)</td>
</tr>
</tbody>
</table>

#### Available Heights

- 3-Round: 10", 20", 30"
- 5, 7 Round: 20", 30"

#### Surface Finishes

<table>
<thead>
<tr>
<th>Location</th>
<th>Ra Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior (wetted)</td>
<td>~50 μ-inch Ra &amp; EP</td>
</tr>
<tr>
<td>Exterior</td>
<td>~50 μ-inch Ra &amp; EP</td>
</tr>
</tbody>
</table>

#### Housing Ratings

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>F.V. to 150 PSI</td>
</tr>
<tr>
<td>Temperature</td>
<td>&lt; 300°F</td>
</tr>
</tbody>
</table>

### Ease of Installation

Sartorius housings are sold ready to install with all gaskets, O-rings and clamps. All that is required are the components needed to connect to your existing hardware.

### ASME Housings

When ASME housings are required (i.e. steaming applications), Sartorius multi-round housings are available with ASME certifications and related documentation. Sartorius’ housings are stamped in accordance with ASME section VIII, Division I with a ‘UM’ stamp (<5 ft³ volume) or a ‘U’ stamp (>5 ft³ volume) where applicable.
## Cartridge Filter Housings

### 1-Round Housings
Gas/ Air & Liquid Filtration

**Technical Specifications**
- Cartridge Height: 10"
- Diameter of Bell: 4.0 inches
- Head Clearance: 13.0 inches
- Volume: 1.7 liters
- Empty Weight: 11.0 lbs
- Full Weight (Water): 17.5 lbs
- Shipping Weight: 13.4 lbs
- Inlet/Outlet Con. (Std): 3/4" FNPT

**Replacement Parts**
- Bell/Base Gasket: SP-GSK072E
- Clamp: SP-CLP040

### 3-Round Housings
Gas/ Air & Liquid Filtration

**Technical Specifications**
- Cartridge Height: 30"
- Diameter of Bell: 8.6 inches
- Head Clearance: 33.0 inches
- Volume: 19.2 liters
- Empty Weight: 44.0 lbs
- Full Weight (Water): 70.0 lbs
- Shipping Weight: 51.0 lbs
- Inlet/Outlet Con. (Std): 2.0" Raised Face Flange

**Replacement Parts**
- Bell/Base Gasket: SP-GSK072E
- Clamp: SP-QRV3RD
- Retainer Rod Nut: SP-NUT-005

### 7-Round Housings
Gas/ Air & Liquid Filtration

**Technical Specifications**
- Cartridge Height: 30"
- Diameter of Bell: 10.8 inches
- Head Clearance: 33.0 inches
- Volume: 53.8 liters
- Empty Weight: 75.0 lbs
- Full Weight (Water): 195.0 lbs
- Shipping Weight: 105.0 lbs
- Inlet/Outlet Con. (Std): 2.0" Raised Face Flange

**Replacement Parts**
- Bell/Base O-ring: SP-QRG276E
- Clamp: SP-QRV7RD
- Retainer Rod Nut: SP-NUT-005

### Constructing a Filter Housing Part Number

<table>
<thead>
<tr>
<th>Housing</th>
<th>Surface Finish</th>
<th>Round Height</th>
<th>Series</th>
<th>Adaption</th>
<th>Style</th>
<th>Drain</th>
<th>Vent</th>
<th>Line Connection</th>
<th>Jacket</th>
<th>Sealing Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>I: Std Mill (≈50 Ra)</td>
<td>1: Round</td>
<td>1: Industrial</td>
<td>7: Type 25 (Code 7)</td>
<td>T: T-Style</td>
<td>8: FNPT in Base</td>
<td>3: Inlet FNPT</td>
<td>S: None</td>
<td>D: 1.0&quot; ANSI Flange</td>
<td>O: None</td>
</tr>
</tbody>
</table>

### Notes:
1. SF = Sanitary Ferrule
2. The technical data given are for housings whose heights match the cartridge height shown.
3. Not all part number combinations are available or possible.
4. Actual spare parts may vary depending on design.
5. Spare parts shown are for EPDM seals.
6. Larger-round housings are available upon request.
Industrial - Multi

NOTES AND SPECIFICATIONS
1. DESIGN PARAMETERS
   ASME CODE: NON-CODED VESSEL
   TEMPERATURE & PRESSURE RATING: 150 PSIG AT 300° F
   CORROSION ALLOWANCE: NONE
   HYDROSTATIC TEST: 225 PSIG
2. MATERIAL OF CONSTRUCTION
   ALL WETTED METAL SURFACES: 316L
   CLAMP: 304
   GASKETS: SILICONE
   VALVE SEATS: N/A
3. FINISH I.D. TO WALL FINISH AND ELECTROPOLISH
4. FINISH O.D. TO WALL FINISH AND ELECTROPOLISH
5. WEIGHT OF HOUSING:
   EMPTY: 117 LBS
   FULL: 277 LBS
   SHIPPING: 153 LBS
6. HEAD CLEARANCE REQUIRED TO REMOVE BELL: N/A
7. GASKET SEATING DIMENSIONS MANUFACTURED IN ACCORDANCE WITH TIGHTEST TOLERANCE
   BY THE INDUSTRY LEADER OF THE FDA APPROVED SANITARY GASKETS
8. HIGH STRENGTH STAINLESS STEEL 3-PIECE CLAMP
9. GASKET MATERIALS MEET REQUIREMENTS OF FDA, TITLE 21, PARAGRAPH 177.2600 AS A
   DIRECT CONTACT MATERIAL WITH FOOD AND PHARMACEUTICAL PRODUCTS.
10. EACH HOUSING IS ETCHED WITH ITS OWN SERIAL # FOR TRACEABILITY
11. ELECTROetch AS SHOWN

#5.75 WTS HOLE
#10.4 B.C.
A PLACES

MAXIMUM OPERATING PRESSURE
150 PSIG @ 300° F
HIO3471W3330S

11. ETCH DETAIL:

Sartorius

12. ETCHED DETAIL:

Sartorius

NOTES UNLESS OTHERWISE SPECIFIED
DRAWING
A. ZAMORA
DATE
05/23/04
CHECK
APPROVE
NEXT ASSEMBLY

ASSY, 12-RND 3-HI C7 T-STY I-SER
W/ 3" R.F. I/O'S 1/2" NPT VNT & ORN

DIMENSIONS IN INCHES
TOLERANCES +0.005/-0.007
SCALE
SIZE
NTS
DRAWING NO.
REV.

B
HIO3471W3330S
T
Cartridge Filter Housings

Sartoclear P Filter Housings
Housings for the Sartoclear P

Introduction
Sartoclear P stainless steel filter housings have been specifically designed for the use in the biopharmaceutical industry. This new housing line combines Sartorius experience with state-of-the-art technology to provide a high quality product for any of the following applications:
- Separation of cells or cell debris
- Separation of precipitants
- Downstream processing of protein solutions
- Growth media purification
- Removal of particulates and lipids from sera and plasma solutions
- Retention of particles from bulk pharmaceuticals
- High flow rates and coarse filtration

Quality of Materials
Only 316L stainless steel is used for all wetted surfaces to provide maximum durability. Supplied O-rings and gaskets are manufactured only from FDA approved Class VI materials that meet requirements for direct contact with food and pharmaceutical products.

Quality Surface Finishes
All Sartorius Sartoclear P housings come standard with internal finishes of less than 20 micro-inch Ra and are electropolished inside and out. Electropolishing removes surface impurities in stainless steel left over from the machining and the finishing processes. Such impurities are potential sites of corrosion and possible sources of contaminants leaching into the product. Electropolishing also smoothes the micro-scratches left by mechanical polishing, thus reducing the total surface area the product will contact, and making it harder for bacteria or contaminants to adhere to the housing surface.

Finally, electropolishing leaves a corrosion resistant, passive film on the surface of the steel (passivation). Thus electropolishing is the recommended finish for all applications where cleanliness and corrosion resistance are critical.

Ease of Cleaning
Sartoclear P housings were designed to allow for a thorough cleaning. The center post assembly conceals small grooves and threads from the process fluid making cleaning easier. While some of the internal components must be washed separately, riboflavin testing utilizing a sprayball is available for all the Sartoclear P housings. CIP caps are also available.

Quality Control and Documentation
An important feature of pharmaceutical process validation is documentation. All housings are given stringent inspections during and after manufacturing including dimensional checks, weld inspections, surface measurements and hydrostatic testing. Each housing is electro-etched with a matching serial number on the bell and base. This serial number provides complete traceability for the Quality Control Certificate, Material Test Reports, and Weld Logs.

Specifications

<table>
<thead>
<tr>
<th>Materials</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>All Wetted Surfaces</td>
<td>316L</td>
</tr>
<tr>
<td>Clamps</td>
<td>304</td>
</tr>
<tr>
<td>Seals</td>
<td>Silicone (Viton or EPDM optional)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Available Heights</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12” Diameter</td>
<td>10”, 20”, 30”, 40”</td>
</tr>
<tr>
<td>16” Diameter</td>
<td>10”, 20”, 30”, 40”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surface Finishes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior (wetted)</td>
<td>&lt;20 µ-inch Ra, EP</td>
</tr>
<tr>
<td>Exterior</td>
<td>35 µ-inch Ra, EP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Housing Ratings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>F.V. to 150 PSI</td>
</tr>
<tr>
<td>Temperature</td>
<td>&lt;300°F</td>
</tr>
</tbody>
</table>

Ease of Installation
Sartorius housings are sold ready to install with all gaskets, O-rings and clamps. All that is required are the components needed to connect to your existing hardware.

ASME Housings
When ASME housings are required (i.e. steaming applications), Sartoclear P housings are available with ASME certifications and related documentation. Sartorius’ housings are stamped in accordance with ASME section VIII, Division I with a ‘UM’ stamp (<5 ft³ volume) or a ‘U’ stamp (>5 ft³ volume) where applicable.
## Cartridge Filter Housings

### 12" Ø Round Housings

#### Liquid Filtration

#### Technical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cartridge Diameter</td>
<td>30&quot;</td>
</tr>
<tr>
<td>Diameter of Bell</td>
<td>12.8 inches</td>
</tr>
<tr>
<td>Head Clearance</td>
<td>41.0 inches</td>
</tr>
<tr>
<td>Volume</td>
<td>79.6 Liters</td>
</tr>
<tr>
<td>Empty Weight</td>
<td>131.0 lbs</td>
</tr>
<tr>
<td>Full Weight (Water)</td>
<td>296.0 lbs</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>181.0 lbs</td>
</tr>
<tr>
<td>Inlet/Outlet Con. (Std)</td>
<td>2.0&quot; SF</td>
</tr>
</tbody>
</table>

#### Replacement Parts

- Bell/Base O-ring: SP-ORG382S
- Rod O-Ring: SP-ORG015P
- Center post O-rings: SP-ORG016S
- Center post Assembly: SP-RRDCELL-1, SP-RRDCELL-2, SP-RRDCELL-3
- Valve: SP-HVL-US
- Valve Tip: SP-HVL-UTIP
- Valve O-ring: SP-ORG008S

### 16" Ø Round Housings

#### Liquid Filtration

#### Technical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cartridge Height</td>
<td>30&quot;</td>
</tr>
<tr>
<td>Diameter of Bell</td>
<td>16.8 inches</td>
</tr>
<tr>
<td>Head Clearance</td>
<td>41.0 inches</td>
</tr>
<tr>
<td>Volume</td>
<td>158 Liters</td>
</tr>
<tr>
<td>Empty Weight</td>
<td>150.0 lbs</td>
</tr>
<tr>
<td>Full Weight (Water)</td>
<td>360.0 lbs</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>240.0 lbs</td>
</tr>
<tr>
<td>Inlet/Outlet Con. (Std)</td>
<td>2.0&quot; SF</td>
</tr>
</tbody>
</table>

#### Replacement Parts

- Bell/Base O-ring: SP-ORG387S
- Rod O-Ring: SP-ORG015P
- Center post O-rings: SP-ORG016S
- Center post Assembly: SP-RRDCELL-1, SP-RRDCELL-2, SP-RRDCELL-3
- Valve: SP-HVL-US
- Valve Tip: SP-HVL-UTIP
- Valve O-ring: SP-ORG008S

### Constructing a Filter Housing Part Number

<table>
<thead>
<tr>
<th>Housing</th>
<th>Surface Finish</th>
<th>Round Height</th>
<th>Series</th>
<th>Adaptation Style</th>
<th>Drain</th>
<th>Vent</th>
<th>Line Connection</th>
<th>Jacket</th>
<th>Sealing Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>U</td>
<td>S</td>
<td>0</td>
<td>U</td>
<td>O</td>
</tr>
</tbody>
</table>

**Notes:**

1. SF = Sanitary Ferrule
2. The technical data shown are for 30" filter housings.
3. Actual spare parts may vary depending on design.
4. Spare parts shown are for silicone seals.
Filter Sizing

Unsure of What Filter to Use? Let Sartorius Help

Sartorius filter experts will pair the right filter housing and filter with your liquid or gas filtration application. Using your process parameters such as fluid specifications, desired initial pressure drop, volume, and flow rate, a Sartorius engineer will help you optimize your process.

Sartorius does not just offer off-the-shelf solutions, but customizes solutions based on your process. An experienced Sartorius engineer will evaluate your specific requirements during any phase of filtration... from the laboratory to full-scale production.

Process fluids high in solids and colloids, such as cell cultures, lysates, or serum can cause premature and costly filter plugging. Sartorius technical engineers can optimize and properly size your filtration train by conducting filterability trials on your fluid stream, under your processing conditions. Applications low in solids, such as buffer, water, gases, etc., can be sized in accordance with published and known flow curves.

In order to determine the appropriate housing size, consider the pertinent flow data associated with the filtrate, along with filter type and desired pore size. Most liquid applications require an initial pressure drop of 5 psi or less. In most cases, the housing’s contribution to this is quite low since the greatest limiting factor is usually the filter pore size. Differential pressure can be calculated using the following formula:

\[ \Delta P = \left( \frac{Q \cdot \frac{\mu}{0.982} \cdot S_g}{B \cdot N} \right) \]

Q = Flow Rate
\( \mu \) = Viscosity
B = Cartridge Factor
N = Number of Filters (Round)
Sg = Specific Gravity

In gas applications, an initial pressure drop of 2 psi or less is typically required. Gas filtration systems generally have much higher flow rates than those of liquid systems, causing the housing to contribute more to pressure drop than observed with larger volumes. Inlet / outlet connections should be considered and made large enough to eliminate unnecessary restrictions. To calculate differential pressure for a gas system, the following formula can be used:

\[ \Delta P = \left( \frac{Q \cdot \frac{\mu}{0.019} \cdot S_g}{C \cdot N} \right) \]

Q = Flow Rate
C = Cartridge Factor
N = Number of Filters (Round)
\( \mu \) = Viscosity [cP] = 0.019

Total throughput of a filtration system should be determined on a case-to-case basis employing small scale filterability trials. Contact your nearest Sartorius representative or office for information, or call (800) 368-7178.

Ferrule Schematic