GVS

FILTER TECHNOLOGY

PRODUCT COLLECTION HEALTHCARE LIQUID FILTRATION

Introduction

This catalog is designed to provide complete information about the full range of GVS medical components and filters.

For the sake of simplicity and clarity, the catalog is divided into product categories, consisting of a set of entries illustrating the general characteristics, the field of application and the code of each item.
The products are accompanied by a brief description featuring the main technical specifications, the shape and dimensions, the quantity of packaging and a statement of correspondence to the required standards.

The wide range of filters and components made by GVS cover all the requirements of the medical device market. New made-to-measure molds may be manufactured on request in order to satisfy special needs, producing medical devices and articles with special dimensions, shape and purpose.

CAUTION:
The data in this catalog may vary according to the different types of materials used in the molding. This means that the product design may sometimes require analysis before orders are carried out.

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The GVS Group

In 40 years' activity, the GVS Group has grown to become one of the leading worldwide manufacturers of filters and components for the Healthcare Liquid & Air Filtration, Life Sciences, Automotive , Appliance, Safety, and Commercial & Industrial Filtration. Technological innovation has always had top priority on GVS's corporate agenda, as well as constant commitment and dedication towards product and process quality improvement. That's why GVS is in an ideal position today to successfully meet the new and increasingly demanding challenges of the global market.

Healthcare Filters & Components

GVS is equipped and specialized to develop OEM products in partnerships with several of the most important manufacturers around the world. We give our customers full assistance throughout all stages of product design and development, from the initial conception of the item according to requested specifications, through to prototype testing and large-scale industrial production.

GVS has the right filtration solution for all medical requirements, including infusions, transfusions, blood treatments, hemodialysis and respiratory therapy. In addition, GVS has recently introduced a number of new products and components to complement our more traditional extracorporeal lines, supplying our customers with a complete range of products.

GVS's highly innovative medical device production technologies include multi-cavity insert and over-molding, high-speed molding, ultrasonic, heat aned radio-frequency welding, and automatic assembly of multi-part items. That's why GVS is known to be highly technical, without detracting in any way from our competitiveness, but actually strengthening it.

All In-Mold technology is a revolutionary manufacturing technology combining injection molding and robotic assembly all within the molding tool. This technology has been developed by GVS over three years of research and development. This new technology gives GVS the capability of increasing quality levels of new products as compared with previous technologies. GVS has applied this technology with impressive results to applications in the Medical, Pharmaceutical and Automotive industrial sectors.

During last three year of research and industrial development, GVS S.p.A. has reached several target and an immediately very interesting feed back in production process.

All In-Mould technology, really represents a new way to carry out the product under development.

All phases, necessary to achieve the product, when injection is needed , are concentrated in one robotized tool and the composition of the product is obtained in one shot only.

AIM has been already introduced in different industrial application with impressive results as: Medical; Pharmaceutical and Automotive, where GVS S.p.A. has been well introduced.

Quality & Innovation

The GVS group has obtained ISO 9001 certification in 1995 after more than 17 years experience in dealing with quality certifications today our Medical Division has qualified for ISO13485: 2003 certification, plus several of our medical devices have been qualified for CE marking according to E.U. Directive 93/42/EEC, and recently GVS acheved the UNI EN ISO 14001:2004 certification for its Environmental Management System (EMS).

GVS is continually improving our organizational setup and procedures by developing and closely monitoring our quality system and ensuring high standards of performance, products, and services. On-going personnel training is an essential

prerequisite for keeping up with the stringent standards the Group has set for ourselves.
No less important to quality maintenance is a frank and open dialogue with our customers so as to best comprehend and adapt to needed requirements. Finally, results optimization is further guaranteed by the use of advanced product design systems, error prevention procedures, and control systems.

Filter Construction Materials

A variety of resins, including ABS, nylon, polypropylene, polyethylene, PVC and polycarbonate are normally used in the production of our filter housings. A wide range of thermoplastics, elastomers and technologically advanced materials are employed to fully satisfy customer specifications.
The filter media we use includes screens of different materials such as monofilament nylon fabric, polyester and/or metal, hydrophobic and hydrophilic microporous membranes with pore sizes from 0.02 to 10 micron.
GVS's insert molding know-how and production technology make it possible to use many other metals, from brass or steel to more advanced alloys.

Research & Development

GVS's Research Laboratory ensures that the company's various divisions receive all the R&D resources they need. With its pioneering tools and facilities and highly sophisticated analytic techniques, this lab also works in close conjunction with a large number of hospitals and academic bodies of international acclaim. Without it, the Group's strongly innovation-oriented policy and commitment to growth would not be nearly as effective.
Large investments in R&D have gone into the development of some of our most successful products. OEM customers are closely followed, step by step, from the design through to industrial production, while proprietary products are fully developed in-house.

GVS Global Presence

GVS's global business network ensures the Group's presence in major markets across the world. GVS is in fact strongly committed to guaranteeing our customers the best service possible, providing them with efficient and effective support and assistance at all times. Wherever our customer is located, a GVS plant has a strategic presence in both geographic and organizational terms. GVS's presence gives us the chance to meet specific requirements in different market segments, enriching the Group's overall product experience and strengthening our business profile.

For more information, visit www.gvs.com

Basics of filtration

GVS would like to share some basic concepts about filtration with our customers. The following clarifies some key aspects of filtration technology applied to the specific applications. Our Sales Engineers are always at your disposal for any further explanation. The following properties should be considered at the time of selecting the proper filter media for your application.

SCREEN OR MESH FILTRATION

Filtration through a mesh means that the screen will stop particles larger than the mesh size rating. Medical meshes adopted by GVS are medical grade and comply with the very strict international requirements for cleanliness. The screens are composed of monofilaments. Standard material is polyamide (PA6.6) or polyester (PE). Filtration through a mesh is mechanical filtration. Mesh does not have the ability to stop air, except in special situations. Mesh is specified by its mesh size, which is just one of the several key characteristics.
According to ISO1135, blood transfusion filters should have a mesh size of 200 micron and efficiency higher than 80%. Specific markets are using 170 micron mesh for this application. According to ISO8536, the IV drip chamber disc filters should have mesh size of 15 micron, and efficiency higher than 80%.
Note: Some of our filters are manufactured with different media instead of mesh. We use many hydrophobic and hydrophilic membranes, which are normally dedicated to very special applications. You can find these in our catalog.

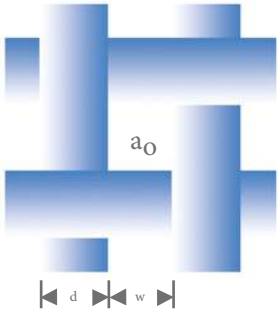
Mesh characteristics

The mesh used by GVS for our medical filter products is manufactured with uniform weave and accurate open-mesh structure which guarantees the lowest possible flow restriction. The “windows” of the mesh normally have a square shape.
Raw materials used for the monofilament are polyamide (PA 6.6) or polyester (PE). Other raw materials are available but not very popular.

- Mesh opening (micron): this is the size of any window or opening. The openings are tested by electronic analysis image systems during production.
- Open area: this is a percentage (%) of the total mesh area which is “open” to let the flow go through.
  It's important to have high open area percentage to reduce flow restriction. This is also tested by electronic analysis image systems during production.
- Mesh count: this is the quantity of threads per cm or per inch (n/cm) or (n/in).
- Thread diameter (micron): this is the diameter of the filament. It is also tested by electronic analysis image systems during production.
- Weight of the mesh (g / m^2) or (oz /yd^2): important to qualify the quality of the mesh.
- Thickness of the mesh. Thickness is expressed in microns (µm) and its stability is very important to achieve the proper handling of the mesh during production.
- Mesh used by GVS have efficiency which is always higher than that of international standards.

Sterilization Stability

This characteristic allows proper performance at elevated temperatures. The mesh used in GVS filters is usually compatible with any of the current sterilization methods: EtO, Gamma or e-beam radiation, or steam sterilization with no adverse affects.



a_o = Open Area
d = Thread Diameter
w = Mesh Opening

Biosafety
These tests are conducted in compliance with ISO-10993 and USP Class VI.
Tests conducted are:
Cytotoxicity, Sensitization, Irritation or Intracutanous Reactivity, Systemic Toxicity (Acute), Hemocompatibility (Hemolysis)

Pyrogenicity
Pyrogens are chemical or biological agents that can be present on the filters mesh or other components, if they're introduced into the human body, they mainly cause the rise in temperature. Pyrogens may also be related to disintegration or death of bacteria. Filters that are pyrogenic can make solutions pyrogenic. They cannot be removed by sterilization, so it is very important that non-pyrogenic filter media and components are used in the production of medical filter devices. The test to determine the pyrogenicity is the LAL test (Limulus Amebocyte Lysate test).

Extractables
Extractables are contaminants (typically chemicals) that elute from filters which might affect quality of the effluent. Wetting agents (surfactants) or manufacturing or sterilization residuals are the main cause of undesired extractables. Typical problems caused by extractables are found in the following applications:
- HPLC analysis (strange result)
- Cell culture (cytotoxicity)
- Microbiological analysis (affects the microorganism)
- Environmental analysis (contaminants)

Flushing of the line prior to use can reduce Extractables and their adverse effects.
The amount of extractables allowed for mesh filters are described in following regulations:
21CFR177.1500 (PA)
21CFR177.1630 (PE)

Filter Efficiency (FE)
This is the quantity of particulate retained compared to the total quantity of particulate to which the filter is challenged. It is expressed in % and refers to a specific size of particles.

Effective Filtration Area (EFA)
This is the actual filtration area in a device that is subject to filtration. For instance, in a tubular filter, the frame (socket, two ribs and top cover) made by plastics should be eliminated from the calculations of the device EFA. In mesh filters you should only eliminate the seal area.

Basics of filtration

MEMBRANE FILTRATION

Filtration through a membrane means that the filter material will stop particles larger than the pore size rating. This enables an absolute pore size rating for the membranes for which they are clearly classified. Bacterial retention claims can be made based on the pore size of the membrane.

Hydrophilic – Hydrophobic Membranes

- Hydrophilic membranes have permeability of aqueous solutions and once wetted, they stop gasses. This means that aqueous solutions pass through hydrophilic membranes but gas is stopped when the membrane is wet until the applied pressure exceeds the "bubble point", at which time the air will evacuate the pore, the liquid is expelled, and the gas will go through. Dry hydrophilic membrane allows gas to pass through. Our HI-FLO PES membranes are hydrophilic membranes.
- Hydrophobic membranes have permeability to the gas, but they stop aqueous solutions. In other words, they do the opposite job when compared to hydrophilic membranes. This means that gas will pass through these membranes, but aqueous solutions will be stopped. If air or gas can reach the hydrophobic membrane, it will go through, but if the contact with the hydrophobic membrane is not possible, then the gas will not pass through. The pressure at which aqueous solutions will pass through a hydrophobic membrane is called the water breakthrough (WBT) or water intrusion pressure (WIP).

PTFE membranes are hydrophobic membranes. PES membranes are hydrophilic membranes.

Pore size

Pore size is determined by the size of the particle that is expected to be retained with a defined with a high degree of efficiency. Pore size is typically stated in micrometers or microns (µm), and should clearly be designated as either nominal or absolute.

Nominal pore size is the ability to retain a majority (60% – 98%) of particles having a specific dimension.

Retention efficiency is also depending on such process conditions as concentration, operating pressure etc.

Rating parameters can vary among manufacturers. When the pore size, or retention, is "nominal", it should be stated at a particle size and a percent, i.e., 99.97% retention of 0.3 µm particles.

Absolute pore size is the ability to retain the 100% of particles of a specific dimension under defined test conditions (particle size, challenge pressure, concentration, detection method).

Pore size and challenge organism

Pore Size	Challenge Organism
0.1 micron	Acholeplasma laidlawii
0.2 micron	Brevundimonas diminuta
0.45 micron	Serratia marcescens
0.8 micron	Lactobacillus species
1.2 micron	Candida albicans

The above table shows proper pore size of hydrophilic membranes to be used to retain the corresponding bacteria. Hydrophobic membranes are about ten times more efficient in retaining bacteria in air than they are in liquids using the same pore size.

Chemical compatibility

This is the ability of the membrane to resist to chemicals without mechanical or chemical damage from chemical exposure. Information about the liquid used with a specific filter material should be outlined before application to determine compatibility, GVS can assist customers in choosing the proper filter (and housing) materials.

Extractables

Extractables are contaminants (typically chemicals) that elute from the filter which might affect quality of the effluent. Wetting agents (surfactants), manufacturing or sterilization residuals are the main cause of undesired extractables.

Typical problems caused by extractables are found in the following applications:

- HPLC analysis (strange result)
- Cell culture (cytotoxicity)
- Microbiological analysis (affects the microorganism)
- Environmental analysis (contaminants)

Flushing of the line prior to use can reduce Extractables and their adverse effects.

Binding

This is the property of substances to be filtered having affinity with membranes. This could be a positive effect in some circumstances, but most of the time it can create adverse effects. Particularly it could lead to loss of active components of the liquid to be filtered reducing its beneficial effect. Our PES HI-FLO membrane is low protein binding.

Thermal Stability

This characteristic allows unchanged performance at elevated temperatures.

Some membranes can only be sterilized by EtO. Others can be gamma, beta or e-beam sterilized, as well as EtO. Others

can be also steam sterilized with no adverse affects. Membrane performance is sometimes reduced at temperature higher than 25°C, and high temperatures can also reduce chemical stability. PTFE membrane is widely stable (any type of sterilization) if the product is designed properly. PES membrane is suggested for EtO and irradiation (no steam sterilization).

Biosafety

These tests are conducted in compliance with ISO-10993 and USP class VI, see specifications Tests that are conducted are: – Cytotoxicity – Sensitization – Irritation intracutaneous reactivity – Systemic toxicity (acute) – Hemocompatibility (Hemolysis)

Pyrogenicity

Pyrogens are chemicals on the filter media and other components that are caused by the waste of dead bacteria. When introduced to a patient, they can elevate the patient's temperature, and can cause complications – even death. Filters that are pyrogenic can make solutions pyrogenic. They cannot be removed by sterilization, so it is very important that non-pyrogenic filter media and components are used in the production of medical filter devices.

The test to determine the pyrogenicity is the LAL test (Limulus Amebocyte Lysate test).

Bubble Point (BP)

Typically this test is performed on hydrophilic membranes and its aim is to verify the membrane filter integrity. This test is typically performed with water; however, it can be conducted on hydrophilic membranes using liquids other than water that will wet the membrane. The BP is an indication of the membrane pore size, as related to actual bacterial retention. This test can also be performed on hydrophobic membranes if the correct solvent (instead of aqueous solution) is used, and is compatible with the entire product.

Water Breakthrough (WBT)

This is the test performed on hydrophobic membranes, and it is also related to the pore size of the membrane. The WBT pressure (sometimes referred to as water intrusion pressure) is the pressure it takes to force an aqueous solution through a hydrophobic membrane.

Water Flow Rate (WFR)

Typically this test is performed on hydrophilic membranes. The WFR has the aim to measure the flow of a liquid through a wetted hydrophilic membrane, at a fixed test pressure and time. This test is typically performed with water; however, it can be performed with other solutions, as long as the filter media is compatible with the liquid.

Air Flow (AF)

This is a flow rate typically related to hydrophobic membranes. It is the amount of air that passes through a fixed surface of membrane with a specific applied pressure.

Filter Efficiency (FE)

Quantity of particulate or bacteria retained compared to the total quantity of particulate or bacteria to which the filter is challenged. It is expressed in % and referred to a specific size of particles.

Effective Filtration Area (EFA)

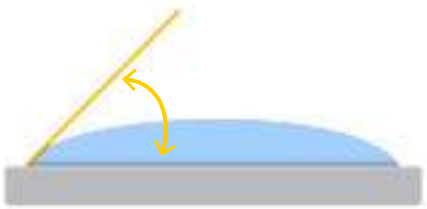
This is the actual filtration area in a device that is subject to filtration. For instance, whereas a 25 mm device may start out with a disc of filter media that is cut to 25 mm, the sealing surfaces should be eliminated from the calculations of the device EFA.

Difference between Hydrofobic and Hydrofilic membranes.

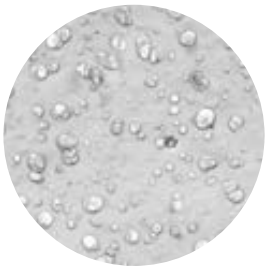
For liquid filtration, a membrane must be wettable with the fluid being filtered. The wettability of a membrane is tied to the chemical properties of the membrane surface. Most polymers used to manufacture microporous membranes are naturally hydrophobic, meaning they will not wet out with water.

Some exceptions are nylon and cellulose which are naturally hydrophilic and will wet out with water. A rough distinction between hydrophobic and hydrophilic relates to the surface tension of the membranes. If the surface tension is >70 dynes/cm, the polymer is hydrophilic. Below 70 dynes/cm, the polymer is hydrophobic.

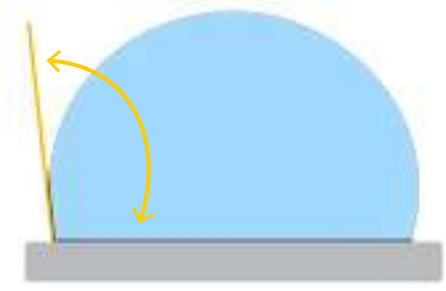
The Wetting Angle is very important to define and understand the physical difference between the 2 kind of membranes, if this Angle is less than 90 degrees we are facing an Hydrophilic membrane, if instead the wetting Angle exceeds the 90 degrees it means that the membrane is Hydrophobic.



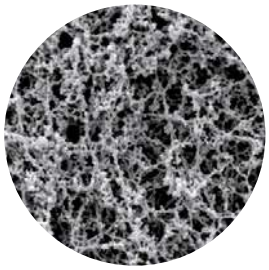
Wetting Angle < 90°
Hydrophilic

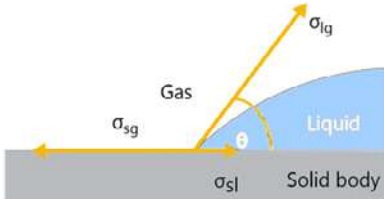


How to find the contact Angle



Wetting Angle > 90°
Hydrophobic





POLYMERS FOR INJECTION

Thermoplastics and thermosets are the two basic groups of plastic materials. Thermoplastic resins can be repeatedly melted and solidified by heating and cooling so that any scrap generated in processing can be theoretically reused. No chemical change generally takes place during forming. Usually, thermoplastic polymers are supplied in the form of pellets, which often contain additives to enhance processing or to provide necessary characteristics in the finished product (e.g., color, conductivity, etc.). The temperature service range of thermoplastics is limited by their loss of physical strength and eventual melting at elevated temperatures.

Main Thermoplastic resin used in Medical Applications

Thermoplastic Elastomers (TPE)

TPEs are a family of polymers that can be repeatedly stretched without permanently deforming the shape of the part. Unlike rubber-like elastomers, they do not require curing or vulcanization, as they are true thermoplastics. Thermoplastic elastomers (TPEs) may be processed by conventional thermoplastic techniques such as injection molding, extrusion and blow molding. Thermoplastic elastomers have replaced rubber in many applications. There are six main thermoplastic elastomer groups found commercially; styrenic block copolymers, polyolefin blends (TPOs), elastomeric alloys, thermoplastic polyurethanes (TPUs), thermoplastic copolyesters and thermoplastic polyamides.

TYPICAL PROPERTIES OF TPE ARE:
- Low coefficient of friction
- Improved physical properties
- Non-sticking, even at 40 shore A
- Excellent resiliency for product requiring peristaltic motion

Acrylonitrile Butadiene Styrene (ABS)

ABS is an impact-modified acrylic-based multi-polymer for molding and extrusion of medical applications, used for injection molding and extrusion of medical devices, medical packaging, as well as food packaging, toys and appliance parts.
ABS has perhaps the best balance of properties when cost is a factor. It has good chemical and stress-resistance as well as a combination of toughness with rigidity and creep resistance. It is chemically resistant to water, aqueous salt solutions, dilute acids and alkalis, saturated hydrocarbons and a wide variety of vegetable and animal fats and oils.

TYPICAL PROPERTIES OF ABS ARE:
- Improved chemical resistan
- High impact strength
- Good mechanical strength and stiffness
- Good environmental stress cracking resistance (ESCR)
- Outstanding surface quality, excellent feel and appearance
- Good processability
- High scratch resistance

Methacrylate acrylonitrile butadiene styrene polymer (MABS)

Is a transparent, amorphous thermoplastic based on an MABS polymer (also called "transparent ABS"). Grades are designed primarily for injection moulding, but can also be extruded. MABS gains its impact strength from a rubber phase made from polybutadiene, embedded submicroscopically into the matrix of styrene, acrylonitrile and methyl methacrylate. These basic building blocks are precisely balanced so that, despite its high impact strength and good rigidity, MABS has excellent transparency, setting it apart from most impact-modified thermoplastics. MABS offers an ideal combination of properties typical of ABS, such as a balanced stiffness/toughness ratio and the high transparency well known in PMMA moulding compositions. This special combination of properties makes MABS unique among transparent thermoplastics.

TYPICAL PROPERTIES OF MABS ARE:
- Excellent transparency – even after sterilization
- Good tensile strength and stiffness
- High impact strength (better than PMMA)
- Good resistance to chemicals and environmental stress cracking (superior to polycarbonate)
- Outstanding surface quality, excellent feel and appearance
- Easy processing (like ABS and much better than polycarbonate)

Polymethyl-methacrylate (PMMA)

PMMA (polymethyl-methacrylate) is an amorphous thermoplastic material with very good optical properties. PMMA is hard, stiff and medium strong, easy to scratch, notch sensitive, but easy to polish. Exceptional outdoor performance, such as weather and sunlight resistance, without reduction of optical or mechanical properties.

TYPICAL PROPERTIES OF PMMA ARE:
- Tough
- Transparent
- Bondable
- Gamma, e-beam and EtO sterilizable
- Easy to process
- Chemically resistant.
- Alcohols and lipid resistant
- Resistant to plasticizers found in flexible PVC tubing
- Free of Bis-Phenol A (BPA) Nonyl Phenols

Polyvinyl Chloride (PVC)
It is similar in structure to polyethylene but each unit contains a chlorine atom. The chlorine atom renders it vulnerable to some solvents, but also makes it more resistant in many applications (PVC has extremely good resistance to oils and very low permeability to most gases). Polyvinyl chloride is transparent and has a slight bluish cast. When blended with phthalate esters plasticizers, PVC becomes soft and pliable, providing tubing of any dimension. PVC is the most widely used member of the vinyl family. Common applications include chemical processing tanks, valves, fittings & piping systems. PVC Sheets, Rods & Tubes offer excellent corrosion and weather resistance. It has a high strength-to-weight ratio and is a good electrical and thermal insulator. PVC is also self-extinguishing per UL flammability tests. PVC may be used to temperatures of 140°F (60°C).

TYPICAL PROPERTIES OF PVC ARE:
- Good Flexibility
- Good Thermal Stability
- Good Processability
- Acceptable Food Contact
- High Impact Resistance

Polypropylene (PP)
It is similar to polyethylene, but each unit of the chain has a methyl group attached. It is translucent, autocavable, and has no known solvent at room temperature. It is slightly more susceptible to strong oxidizing agents than conventional polyethylene because of its many branches (methyl groups, in this case). Polypropylene is noted for its excellent chemical resistance in corrosive environments. This polymer is easily welded and machined. Homopolymer and copolymer grades, as well as a popular heat-stabilized formulation, are used in various applications throughout the chemical and sem nductor industries.

TYPICAL PROPERTIES OF PP ARE:
- Clean/High Purity
- Good Dimensional Stability
- Good Organoleptic Properties
- High Clarity
- High Flow
- High Stiffness
- Homopolymer
- Low Warpage
- Narrow Molecular Weight Distribution
- Nucleated

Nylon (PA6)
This is a group of linear polymers with repeated amide linkages along the backbone. These are produced by an amidation of diamines with dibasic acids, or polymerisation of amino acids. Nylon is strong and tough. It resists abrasion, fatigue and impact. Nylon offers excellent chemical resistance with negligible permeation rates when used with organic solvents. However, it has poor resistance to strong mineral acids, oxidizing agents and certain salts.

TYPICAL PROPERTIES OF PA 6 ARE:
- Good Chemical Resistance
- Good Colorability
- Good Corrosion Resistance
- Good Processability
- Good Toughness
- Good Wear Resistance
- High Rigidity
- High Strength
- Low Friction

Polycarbonates (PC)
This is a special type of polyester, in which dihydric phenols are joined through carbonate linkages (O-CO-O). These linkages are subject to chemical reaction with bases, concentrated acids, etc. and make PC soluble in various organic solvents. PC is window-clear, amazingly strong, and rigid. It is autoclavable, non-toxic and the toughest of all thermoplastics. PC maintains its resistance to impact in a wide range of temperatures and even under very severe environmental conditions. It withstands both low and high temperature from -50°C up to +130°C and has extremely good optical properties together with a high resistance to sunlight exposure (UV radiation).

TYPICAL PROPERTIES OF PC COPOLYMER ARE:
- Good Dimensional Stability
- Good Thermal Stability
- High Clarity
- High Heat Resistance
- High Impact Resistance

Polyoxymethylene (POM)
It is produced by polymerization of formaldehyde. Acetal retains its dimensions and other properties at elevated temperatures. It offers excellent resistance to strong acids and bases. Naturally opaque, Acetal (POM) copolymer provides high strength and stiffness coupled with enhanced dimensional stability and ease of machining. As a semi-crystalline material, acetal is also characterized by a low coefficient of friction and good wear properties especially in wet environments. Because of its high strength, modulus, and resistance to impact and fatigue, Acetal is used as a weight-saving metal replacement.

TYPICAL PROPERTIES OF POM COPOLYMER ARE:
- High crystallinity
- Ideal combination of strength, stiffness and toughness
- Outstanding tribological properties, i.e. low friction and wear
- Low fatigue under mechanical stress
- Excellent chemical and hydrolysis resistance
- Withstands sterilization with hot steam, plasma and ethylene oxide
- High dimensional stability
- Good processability

MATERIAL ABBREVIATION

PLASTICS

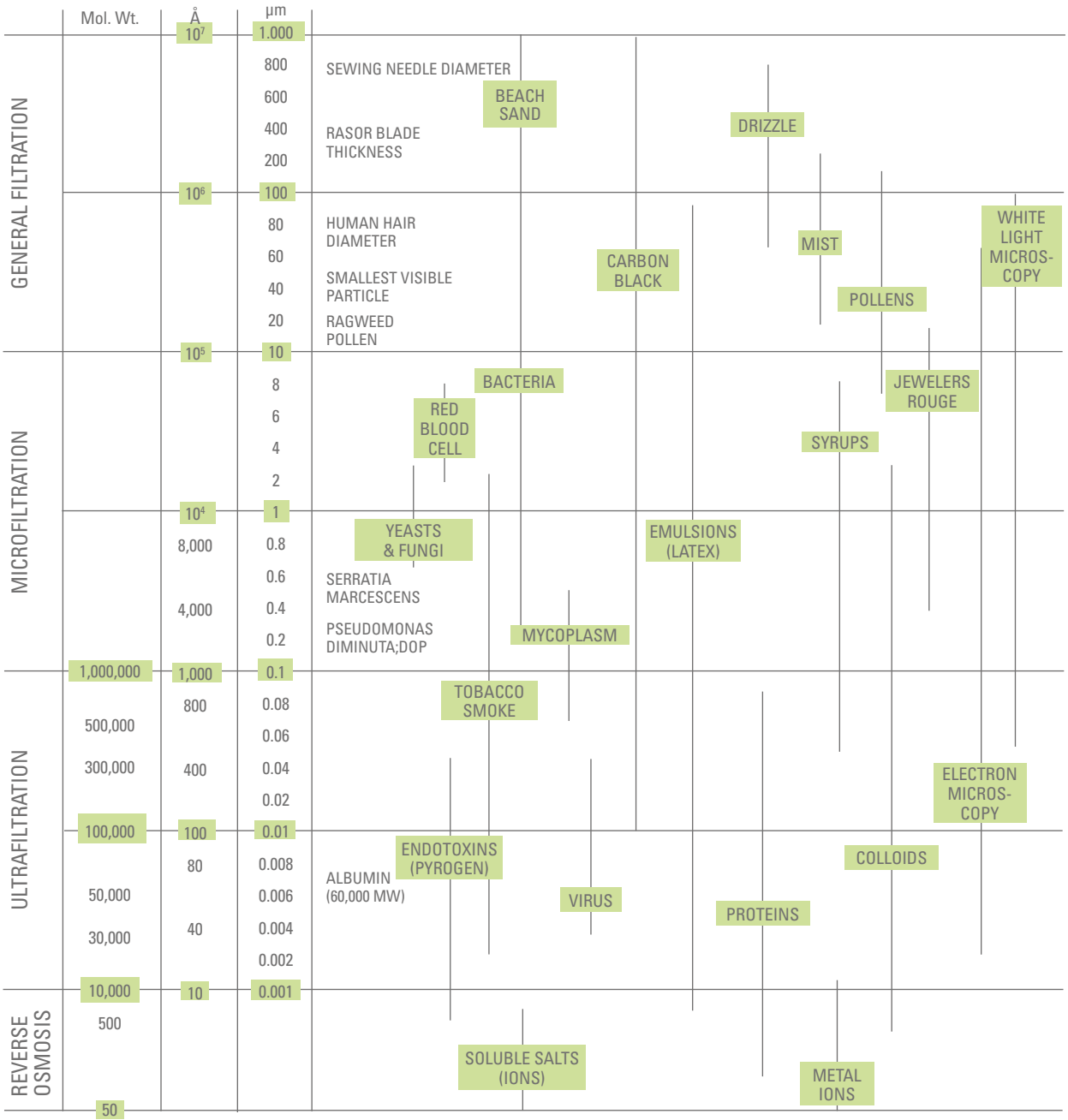
ABS	Acrylonitrile-butadiene-styrene	PS	Polystyrene
		PUT	Polyurethane Terephthalate
HDPE	High-density polyethylene	PVC	Polyvinyl chloride
LDPE	Low-density polyethylene	SAN	Styrene acrylonitrile copolymer
PA	Polyamide	SEBS	Styrene-Ethylene-Butylene-Styrene
PC	Polycarbonate		
PP	Polypropylene	TPE	Thermoplastic elastomer

MESH / MEMBRANE

TPO	Thermoplastic Polyolefin
PA 6.6	Polyamide
PES	Polyethersulfone
PTFE	Polytetrafluoroethylene
AC	Acrylic
PVDF	Polyvinylidene fluoride
PE	Polyester

Basics of filtration

RELATIVE SIZE OF SMALL PARTICLES



Å, ANGSTROM = 10^8 cm µm, MICROMETER (MICRON) = 10^4Å 1 mil = 0,001 inch = 25,4 µm

Differential pressure increases with reduced micron ratings; dirt holding capacity and relative flow rates decrease with reduced micron ratings

IV and Liquid Filters

SPEEDFLOW® IV FILTERS CHARACTERISTICS

Compact size
The special design of Speedflow® filters is an extremely innovative solution to problems in the IV market. We have developed the product with two opposing layers of hydrophilic membrane in a small package, thus miniaturizing the product and guaranteeing superior flow rates and fast priming performance, better mechanical resistance with pump applications as well as improved specifications for high-pressure applications.

Air elimination
Speedflow® has the best venting performance, regardless the filter positioning. Incorporated are four vents in our Speedflow® Adult, (two for Speedflow® Kids) which guarantee total safety against air embolism due to entrapped air that could be overlooked during priming or set-up of an IV line. We also have studied priming performance, which eliminates 5cc of air 25% to 40% faster than our competitors.

Particle retention
When IV lines are not equipped with a 15µm disc filter for particle retention, Speedflow® becomes the only barrier to stop potential glass and/or plastic fragments that can be found on the fluid path. Speedflow® also eliminates the large size globules, principally present in liquids with lipids that can generate dangerous immune reactions, and also removes drug precipitates that can cause phlebitis or infection. Speedflow® is an effective barrier to help ensure patient health.

Bacterial retention
Drug delivery and parenteral solutions can introduce bacterial contamination and/or fungi to patients. These unwanted contaminants cause phlebitis and infections. Speedflow® is an ideal barrier against these bacteria and fungi reaching the patient. Although no one should knowingly use a contaminated solution, our 0.2 µm HI-FLO PES will eliminate Brevundimonas diminuta, and our 1.2 µm HI-FLO PES eliminates Candida albicans.

Endotoxin retention
When administration of drugs is extended over time, endotoxins can become a potential risk for patient health. Endotoxins are generated by break down of bacteria and can cause fever and infections. Endotoxins are negatively charged. Standard 0.2 µm filters cannot retain large amount of endotoxins, therefore, the right solution to the problem is to have a positively charged membrane which electrostatically attracts/retains the endotoxins. Speedflow® Positive 0.2 µm has bacterial retention capability for 120 hours.

HI-FLO membrane advantages
GVS's IV filter SPEEDFLOW® family is equipped with HI-FLO PES membrane to guarantee superior performance in flow rate and contamination protection. Our HI-FLO PES membrane is designed to meet the very different requirements of medical filtration and provide higher performance compared with other products in the market.

KEY CHARACTERISTICS

Biocompatibility

HI-FLO PES membranes comply with ISO 10993 standard for external communicating devices – blood path indirect – prolonged contact duration.

Drug compatibility

Our HI-FLO PES membranes have low protein-binding characteristics that ensure minimal adsorption of drugs and they have proven bacterial retention. Studies have been completed that verify Speedflow's® compatibility with the following drugs:

- 5-Flourouracil
- Amphotericin B
- Bupivacaine HCL
- Dobutamine HCL
- Dopamine HCL
- Insulin
- Lidocaine HCL
- Nitroglycerin
- Paclitaxel

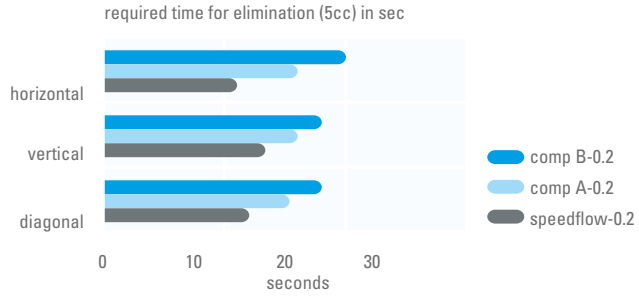
High flow rate, longer life time

Thanks to the special design of our housing and the structure of our HI-FLO PES membrane, Speedflow® IV filters have high flow rates, which relates to longer product life before plugging. Under most circumstances, Speedflow® will maintain flow without degradation over 120 hours of administration.

Wide choice

A full range of pore sizes and connector fittings is available to satisfy your application.

AIR ELIMINATION

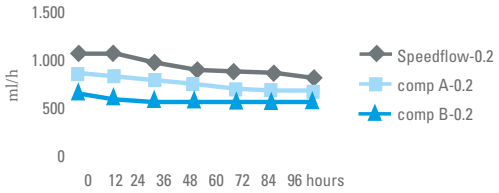


BACTERIAL RETENTION

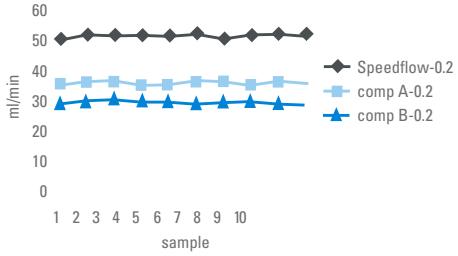
- Speedflow® IV filters 0.2 µm retain Brevundimonas diminuta bacteria.
  Test was performed based on DIN 58355 Part 3 Nov 1990 and HIMA regulation No. 3 Vol. 4 1982.
  Application of 1.3 x 108 CFU / cm^2
  (test organism x cm^2)
  Resulting LRV Log Reduction Value (7)
- Speedflow® IV filters 1.2µm retain Candida albicans fungus.
  Test was performed based on DIN 58355 Part 3 Nov 1990 and HIMA regulation No. 3 Vol. 4 1982.
  Application of 1.3 x 108 CFU / cm^2
  (test organism x cm^2)
  Resulting LRV Log Reduction Value (7)

FLOW RATE

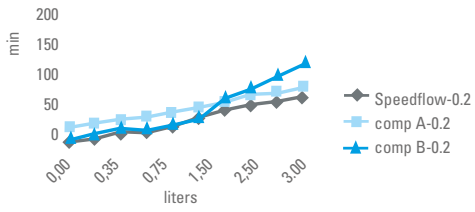
flow rate comparison for TPN solution through 0.2 micron IV filters



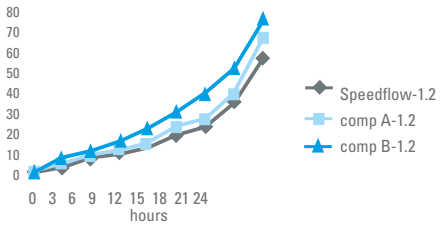
Gravity IV – NaCl 0.9% – 80 mm head pressure



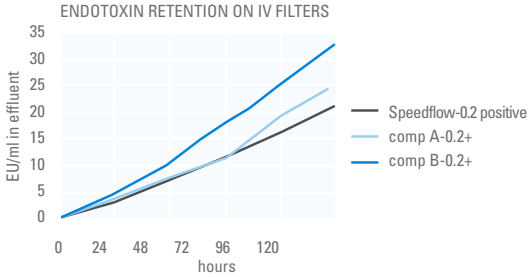
Gravity IV – NaCl 0.9% – 80 mm head pressure
Measured time to empty a 3 liters solution bowl



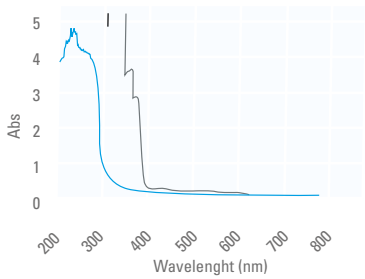
Pressure required to deliver TPN + lipids at 125ml/h x 24 hours



ENDOTOXIN RETENTION ON IV FILTERS



UV LIGHT ABSORPTION RATE WITH SPEEDFLOW AMBER



Absorption rate (Abs)

1 = 10 times - reduction 90%
2 = 100 times - reduction 99%
3 = 1.000 times - reduction 99.9%
4 = 10.000 times - reduction 99.99%
5 = 100.000 times - reduction 99.999%

IV and Liquid Filters

SPEEDFLOW® ADULT LIQUID FILTER

APPLICATIONS

Speedflow® Adult IV filters are particularly suitable for the following filtration applications:
- Aqueous IV solutions
- IV therapy
- Chemotherapy
- Antibiotic therapy
- Nutrient admixture, TPN and lipid solutions (1.2 µm)
- Drug delivery therapy (recommended for oncology drugs)
- Apheresis solutions
- Dialysate for kidney dialysis

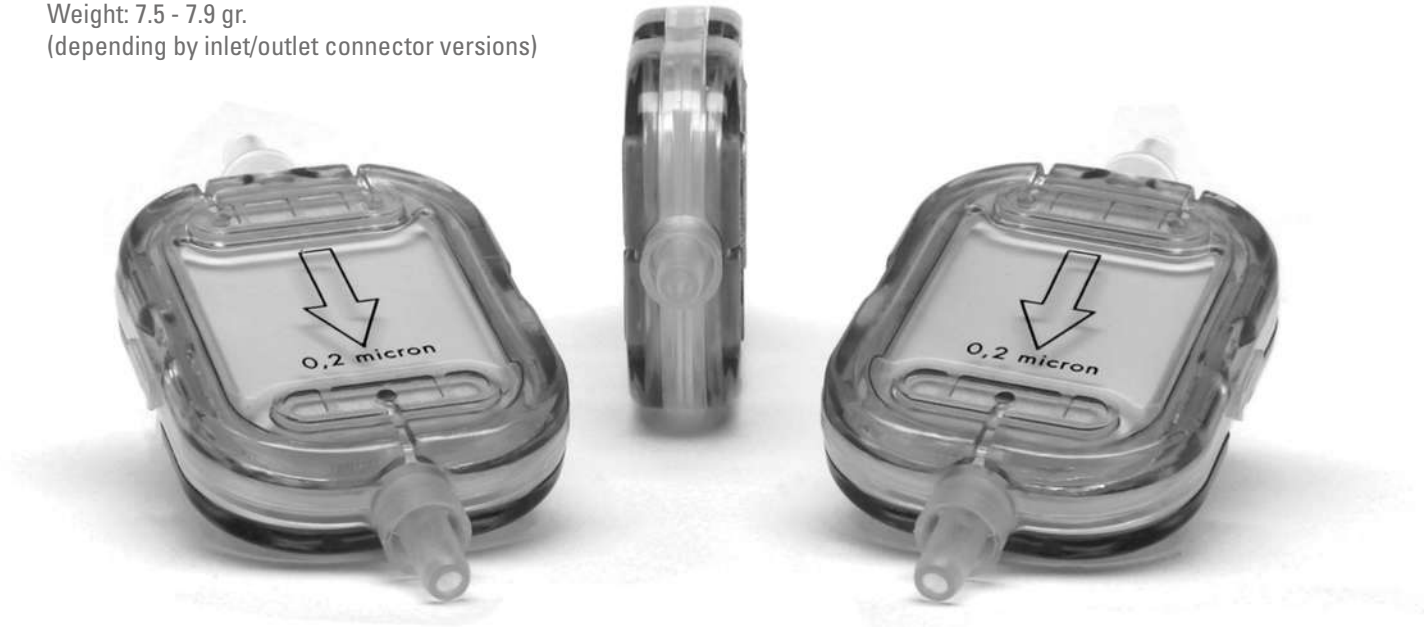
Features
- Four vents for faster air elimination during priming
- Wide range of connectors
- Custom printing option – tinted housings available
- Amber tinted housing for photosensitive drugs
- Latex, PVC and free of animal origin substances

SPECIFICATIONS

Biosafety
Materials comply with USP class VI-121°C test and ISO 10993
Dimensions
WxLxD: 30.0 x (60.0 - 62.8) x 9.6 mm
(depending by inlet/outlet connector versions)
40.2 mm (1.6") filter body
Weight: 7.5 - 7.9 gr.
(depending by inlet/outlet connector versions)

Effective filtration area
10.0 cm^2 PES
1.0 cm^2 PTFE
Inlet/Outlet connectors
Inlet: Tube 3x4.1 mm or female luer lock (FLL)
Outlet: Tube 3x4.1 mm (connector ID=2.0 mm),
rotating male luer lock (RMLL) or male luer slip (MLS)
Materials of construction
Filter media: Hydrophilic HI-FLO PES membrane 0.2, 1.2 or 5.0µm
Vent: High Pressure Hydrophobic PTFE membrane 0.03 µm
Housing
Clear or Amber Modified Acrylic
Max operating pressure
3.2 bar (46.4 psi)
Operating temperature
5-40° C
Pore Size
0.2µm, 1.2µm, 5.0µm. Other size available upon request

Minimum Water Bubble Point
0.2µm: 3.7 - 4.8 bar
1.2µm: 0.7 - 1.0 bar
5.0µm: 0.15 - 0.3 bar



Minimum Water Flow Rate
0.2pos µm: > 20 ml / min @ 80 cm (31.5 in) water head pressure
0.2 µm: > 32 ml / min at 80 cm (31.5 in.) water head pressure
1.2 µm: > 180 ml / min at 80 cm (31.5 in.) water head pressure
5.0 µm: > 340 ml / min at 80 cm (31.5 in.) water head pressure

Air Flow
PTFE Hydrophobic membrane:
1.2 µm: > 100 scc/min @ 100mbar
High Pressure filters, PTFE Hydrophobic membrane 0.03µm:
2LPM/3.7 cm^2 @ ΔP=6000mm/H_2O

Water Breakthrough
>40m/ H_2O

Bacterial Retention
Speedflow Adult® 0.2 – Brevundimonas diminuta
Test: STS M04-1964 Bacterial filter retention test infusion pump challenge
Test: STS M04-1968 Bacterial filter retention test high pressure challenge
Speedflow® Adult 1.2 – Candida albicans
Speedflow® Adult is also available as Speedflow® Adult Positive 0.2 µm for 120 h endotoxin retention

Priming Volume
<2.4 ml

Pyrogenicity
<0.25 EU/ml using the LAL test method

120-Hours Throughput
Speedflow® Adult filters do not show relevant loss in flow rate during 120-hour test

Sterilization Compatibility
EtO or Gamma (25 kGy), e-beam

Self-priming instructions
For fastest priming procedure, keep Speedflow® Adult in vertical position with the flow arrows pointed up, i.e., invert to prime. The filter will eliminate air faster that way. After priming is completed, Speedflow® Adult will eliminate air in any position.

Drug Compatibility
Speedflow® Adult shows total compatibility with following drugs:
- 5-Flourouracil
- Amphotericin B
- Bupivacaine HCL
- Dobutamine HCL
- Dopamine HCL
- Insulin
- Lidocaine HCL
- Nitroglycerin
- Paclitaxel – Test STS A04-265 dated 08.11.2004
- Piperacillin – Test STS A04-201 dated 18.11.2004
- Sodium Citrate – Test STS A02-483 dated 22.01.2003

Ordering Information:

Adult Speedflow 0.2 µm

Product Code	Description
RS041BCYRH002A02	Speedflow Adult 0.2 µm Tube IN/Tube OUT ID 2mm
RS070BCYRH002A00	Speedflow Adult 0.2 µm Tube IN/ tube OUT ID 3mm
RS074BCYRH002A00	Speedflow Adult 0.2 µm Tube IN/ tube OUT ID 3.4mm
RS073BCYRH002A00	Speedflow Adult 0.2 µm Tube IN/ tube OUT ID 3.6mm
RS038BCYRH002A02	Speedflow Adult 0.2 µm FLL IN/Tube OUT
RS049BCYRH002A00	Speedflow Adult 0.2 µm FLL IN/RMLL OUT

Adult Speedflow 1.2 µm

Product Code	Description
RS041BCYRH012A02	Speedflow Adult 1.2 µm Tube IN/Tube OUT ID 2mm
RS070BCYRH012A00	Speedflow Adult 1.2 µm Tube IN/Tube OUT ID 3mm
RS074BCYRH012A00	Speedflow Adult 1.2 µm Tube IN/Tube OUT ID 3.4mm
RS073BCYRH012A00	Speedflow Adult 1.2 µm Tube IN/Tube OUT ID 3.6mm
RS038BCYRH012A02	Speedflow Adult 1.2 µm FLL IN/Tube OUT
RS049BCYRH012A00	Speedflow Adult 1.2 µm FLL IN/RMLL OUT

Adult Speedflow 5.0 µm

Product Code	Description
RS041BCYRH050A02	Speedflow Adult 5.0 µm Tube IN/Tube OUT
RS070BCYRH050A00	Speedflow Adult 5.0 µm Tube IN/ tube OUT ID 3mm
RS074BCYRH050A00	Speedflow Adult 5.0 µm Tube IN/ tube OUT ID 3.4mm
RS073BCYRH050A00	Speedflow Adult 5.0 µm Tube IN/ tube OUT ID 3.6mm
RS038BCYRH050A02	Speedflow Adult 5.0 µm FLL IN/Tube OUT
RS049BCYRH050A00	Speedflow Adult 5.0 µm FLL IN/RMLL OUT

Adult Speedflow 0.2 µm Positive

Product Code	Description
RS041BCYCH002A02	Speedflow Adult 0.2 positive Tube IN/Tube OUT
RS070BCYCH002A00	Speedflow Adult 0.2 positive Tube IN/ tube OUT ID 3mm
RS074BCYCH002A00	Speedflow Adult 0.2 positive Tube IN/ tube OUT ID 3.4mm
RS073BCYCH002A00	Speedflow Adult 0.2 positive Tube IN/ tube OUT ID 3.6mm
RS038BCYCH002A02	Speedflow Adult 0.2 positive FLL IN/Tube OUT
RS049BCYCH002A00	Speedflow Adult 0.2 positive FLL IN/RMLL OUT

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	16.0 kg	2,000 units

Speedflow® Adult Liquid filters in Amber Modified Acrylic for photosensitive drugs are available upon request
To know more about product availability, please contact GVS Sales Medical Division.

IV and Liquid Filters

SPEEDFLOW® KIDS LIQUID FILTER

APPLICATIONS

Speedflow Kids IV filter is particularly suitable for the following filtration applications:
- Aqueous IV solutions
- Neonate and pediatric IV therapy
- Chemotherapy
- Antibiotic therapy
- Nutrient admixture, TPN and lipid solutions (1.2 µm)
- Drug delivery therapy (recommended for oncology drugs)
- Apheresis solutions
- Dialysate for kidney dialysis

Features

- Two vents for faster air elimination during priming
- Wide range of connectors
- Custom printing option – tinted housing available
- Amber tinted housing for photosensitive drugs
- Latex, PVC and free of animal origin substances

SPECIFICATIONS

Biosafety
Materials comply with USP class VI-121°C test and ISO 10993

Dimensions
WxLxD: 30.0 x (60.0 - 62.8) x 7.9 mm
(depending by inlet/outlet connector versions)
Weight: 6.2 - 6.6 gr.

Effective filtration area
5.0 cm^2 PES
0.5 cm^2 PTFE

Inlet/Outlet connectors
Inlet: Tube 3x4.1 mm or FLL female luer lock
Outlet: Tube 3x4.1 mm (connector ID=2.0 mm),
or RMLL rotating male luer lock

Materials of construction
Filter media: Hydrophilic HI-FLO PES membrane 0.2 or 1.2 µm
PES membrane 5.0 µm
Vent: Hydrophobic PTFE membrane 0.03 µm

Housing
Clear or Amber Modified Acrylic

Max operating pressure
3.2 bar (46.4 psi)

Operating temperature
5 - 40°C

Air Flow Rate
> 50 scc/min @ 100mbar (hydrophobic membrane)

Minimum Water Bubble Point
0.2/0.2pos µm: 3.7 - 4.8 bar
1.2 µm: 0.7 - 1.0 bar
5.0 µm: 0.15 - 0.3 bar

Minimum Water Flow Rate
0.2pos µm : > 10 ml/min @ 80 cm (31.5 in) water head pressure
0.2 µm : > 15 ml/min @ 80 cm (31.5 in) water head pressure
1.2 µm : > 90 ml/min @ 80 cm (31.5 in) water head pressure
5.0 µm : > 170 ml/min @ 80 cm (31.5 in) water head pressure

Pore Size
0.2 µm, 1.2 µm, 5.0, other size available upon request

Bacterial Retention
Speedflow® Kids 0.2 – Brevundimonas diminuta
Speedflow® Kids 1.2 – Candida albicans
Speedflow® Kids is also available as Speedflow® Kids Positive 0.2 µm for 120 h endotoxin retention

Priming volume
1.3 ml

Pyrogenicity
<0.25 EU/ml using the LAL test method

120-Hours Throughput
Speedflow® Kids filters do not show relevant loss in flow rate during 120-hour test
Sterilization Compatibility
EtO or Gamma (25 kGy), e-beam

Self-priming instructions
For fastest priming procedure, keep Speedflow® Kids in vertical position with the flow arrow pointed up, i.e., invert to prime. The filter will eliminate air faster that way. After priming is completed, Speedflow® Kids will eliminate air in any position.

Drug Compatibility
Speedflow® Kids shows total compatibility with following drugs:
5-Flourouracil
Amphotericin B
Bupivacaine HCL
Dobutamine HCL
Dopamine HCL
Insulin
Lidocaine HCL
Nitroglycerin
Paclitaxel
Piperacillin
Sodium Citrate

Ordering Information:

Speedflow Kids 0.2 µm

Product Code	Description
RS042BCYRH002A02	Speedflow Kids 0.2 µm Tube IN/Tube OUT
RS040BCYRH002A02	Speedflow Kids 0.2 µm FLL IN/Tube OUT
RS050BCYRH002A00	Speedflow Kids 0.2 µm FLL IN/RMLL OUT

Speedflow Kids 1.2 µm

Product Code	Description
RS042BCYRH012A02	Speedflow Kids 1.2 µm Tube IN/Tube OUT
RS040BCYRH012A02	Speedflow Kids 1.2 µm FLL IN/Tube OUT
RS050BCYRH012A00	Speedflow Kids 1.2 µm FLL IN/RMLL OUT

Speedflow Kids 5.0 µm

Product Code	Description
RS042BCYRH050A02	Speedflow Kids 5.0 µm Tube IN/Tube OUT
RS040BCYRH050A02	Speedflow Kids 5.0 µm FLL IN/Tube OUT
RS050BCYRH050A00	Speedflow Kids 5.0 µm FLL IN/RMLL OUT

Speedflow Kids 0.2 µm Positive

Product Code	Description
RS042BCYCH002A02	Speedflow Kids 0.2 positive Tube IN/Tube OUT
RS040BCYCH002A02	Speedflow Kids 0.2 positive FLL IN/Tube OUT
RS050BCYCH002A00	Speedflow Kids 0.2 positive FLL IN/RMLL OUT

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	14.0 kg	2,000 units

Speedflow® Kids Liquid Filters in Amber Modified Acrylic for photosensitive drugs are available upon request.
To know more about product availability, please contact GVS Sales Medical Division.

IV and Liquid Filters

SPEEDFLOW® BABY

APPLICATIONS

Speedflow® Baby IV filter is particularly suitable for the following filtration applications:

- Neonate IV therapy
- Chemotherapy
- Antibiotic therapy
- Nutrient admixture, TPN and lipid solutions (1.2 µm)
- High accuracy drug delivery therapy (home infusion therapy, alternate-site infusion therapy)
- Portable pumps
- PCA pumps
- Syringe Filter

Features

- Two wide venting windows for faster air elimination in any position
- Non-vented version available
- Wide range of connectors (microbore IV tubing and double luer lock - FLL/RMLL)
- Custom printing option – tinted housing available
- Amber tinted housing for photosensitive drugs
- Latex Free, PVC Free, and free of substances of animal origin.

SPECIFICATIONS

Biosafety

Materials comply with ISO 10993-1 and USP class VI-121°C test

Dimensions

WxLxD: 15.3 x 21.9 x 4.0 mm (filter body)
Weight: 1.35 g (1.7 g for FLL/RMLL configuration)

Filtration area

1.45 cm^2 PES Hydrophilic membrane
0.25 cm^2 PTFE Hydrophobic membrane

Inlet/Outlet connectors

Inlet: Microbore IV tubing connectors (2.0-2.2-2.3-2.4-2.5-2.8 or 3.0 mm) or FLL female luer lock
Outlet: Microbore IV tubing connectors (see above) or RMLL rotating male luer lock

Materials of construction

Filter media: Hydrophilic HI-FLO PES membrane 0.2, 1.2 or 5.0 µm
Vent: Hydrophobic PTFE membrane 0.03 µm
Housing: Clear Modified Acrylic

Pore Size

0.2 µm, 1.2 µm, 5.0 µm (hydrophilic membrane).
Other size available upon request

Max bursting pressure

5.2bar (75.4psi)

Max operating temperature

5 - 40°C

Minimum Water Bubble Point (hydrophilic membrane)

0.2/0.2pos µm: 3.7- 4.8 bar
1.2 µm: 0.7 - 1.0 bar
5.0 µm: 0.15 - 0.3 bar

Minimum Water Flow Rate (hydrophilic membrane)

0.2pos µm: ≥ 3.5 ml/min @ 80 cm (31.5 in) water head pressure
0.2 µm: ≥ 4 ml/min @ 80 cm (31.5 in) water head pressure
1.2 µm: ≥ 30 ml/min @ 80 cm (31.5 in) water head pressure
5.0 µm: ≥ 55 ml/min @ 80 cm (31.5 in) water head pressure

Air Flow (hydrophobic membrane)

~ 20 scc/min @ 100mbar

Water Break Through (hydrophobic membrane)

> 40m/ H_2O

Bacterial Retention

Speedflow® Baby 0.2 – Brevundimonas diminuta
Speedflow® Baby 1.2 – Candida albicans
Speedflow® Baby is also available as Speedflow® Baby Positive 0.2 µm for 120h endotoxins retention

Priming volume

<0.35ml

Pyrogenicity

<0.25 EU/ml using the LAL test method

96-Hours Throughput

Speedflow® Baby filters do not show relevant loss in flow rate during 96-hour test

Sterilization Compatibility

EtO or Gamma (max 25 kGy)

Self-priming instructions

For fastest priming procedure, keep Speedflow® Baby in vertical position with the flow arrow pointed up, (i.e., invert to prime). The filter will eliminate air faster that way. After priming is completed, Speedflow® Baby will eliminate air in any position.

Drug Compatibility

Speedflow® Baby is compatible with the following drugs:
5-Flourouracil
Amphotericin B
Bupivacaine HCL
Dobutamine HCL
Dopamine HCL
Insulin
Lidocaine HCL
Nitroglycerin
Paclitaxel
Piperacillin
Sodium Citrate

Ordering information:

Baby Speedflow 0.2 µm

Product Code	Description
RS051BCYRH002A00	Baby Speedflow 0.2 µm logo tube/tube version ID 2.0 mm
RS052BCYRH002A00	Baby Speedflow 0.2 µm logo tube/tube version ID 2.2 mm
RS053BCYRH002A00	Baby Speedflow 0.2 µm logo tube/tube version ID 2.3 mm
RS054BCYRH002A00	Baby Speedflow 0.2 µm logo tube/tube version ID 2.4 mm
RS055BCYRH002A00	Baby Speedflow 0.2 µm logo tube/tube version ID 2.5 mm
RS079BCYRH002A00	Baby Speedflow 0.2 µm logo tube/tube version ID 2.7 mm
RS056BCYRH002A00	Baby Speedflow 0.2 µm logo tube/tube version ID 2.8 mm
RS061BCYRH002A00	Baby Speedflow 0.2 µm logo tube/tube version ID 2.85 mm
RS057BCYRH002A00	Baby Speedflow 0.2 µm logo tube/tube version ID 3.0 mm
RS078BCYRH002A00	Baby Speedflow 0.2 µm logo tube/tube version ID 3.175 mm
RS058BCYRH002A00	Baby Speedflow 0.2 µm logo double luer lock

Baby Speedflow 1.2 µm

Product Code	Description
RS051BCYRH012A00	Baby Speedflow 1.2 µm logo tube/tube version ID 2.0 mm
RS052BCYRH012A00	Baby Speedflow 1.2 µm logo tube/tube version ID 2.2 mm
RS053BCYRH012A00	Baby Speedflow 1.2 µm logo tube/tube version ID 2.3 mm
RS054BCYRH012A00	Baby Speedflow 1.2 µm logo tube/tube version ID 2.4 mm
RS055BCYRH012A00	Baby Speedflow 1.2 µm logo tube/tube version ID 2.5 mm
RS079BCYRH012A00	Baby Speedflow 1.2 µm logo tube/tube version ID 2.7 mm
RS056BCYRH012A00	Baby Speedflow 1.2 µm logo tube/tube version ID 2.8 mm
RS061BCYRH012A00	Baby Speedflow 1.2 µm logo tube/tube version ID 2.85 mm
RS057BCYRH012A00	Baby Speedflow 1.2 µm logo tube/tube version ID 3.0 mm
RS078BCYRH012A00	Baby Speedflow 1.2 µm logo tube/tube version ID 3.175 mm
RS058BCYRH012A00	Baby Speedflow 1.2 µm logo double luer lock

Baby Speedflow 5.0 µm

Product Code	Description
RS051BCYRH050A00	Baby Speedflow 5.0 µm logo tube/tube version ID 2.0 mm
RS052BCYRH050A00	Baby Speedflow 5.0 µm logo tube/tube version ID 2.2 mm
RS053BCYRH050A00	Baby Speedflow 5.0 µm logo tube/tube version ID 2.3 mm
RS054BCYRH050A00	Baby Speedflow 5.0 µm logo tube/tube version ID 2.4 mm
RS055BCYRH050A00	Baby Speedflow 5.0 µm logo tube/tube version ID 2.5 mm
RS079BCYRH050A00	Baby Speedflow 5.0 µm logo tube/tube version ID 2.7 mm
RS056BCYRH050A00	Baby Speedflow 5.0 µm logo tube/tube version ID 2.8 mm
RS061BCYRH050A00	Baby Speedflow 5.0 µm logo tube/tube version ID 2.85 mm
RS057BCYRH050A00	Baby Speedflow 5.0 µm logo tube/tube version ID 3.0 mm
RS078BCYRH050A00	Baby Speedflow 5.0 µm logo tube/tube version ID 3.175 mm
RS058BCYRH050A00	Baby Speedflow 5.0 µm logo double luer lock

Speedflow Baby 0.2 µm Positive

Product Code	Description
RS051BCYCH002A00	Baby Speedflow 0.2 µm positive logo tube/tube version ID 2.0 mm
RS052BCYCH002A00	Baby Speedflow 0.2 µm positive logo tube/tube version ID 2.2 mm
RS053BCYCH002A00	Baby Speedflow 0.2 µm positive logo tube/tube version ID 2.3 mm
RS054BCYCH002A00	Baby Speedflow 0.2 µm positive logo tube/tube version ID 2.4 mm
RS055BCYCH002A00	Baby Speedflow 0.2 µm positive logo tube/tube version ID 2.5 mm
RS079BCYCH002A00	Baby Speedflow 0.2 µm positive logo tube/tube version ID 2.7 mm
RS056BCYCH002A00	Baby Speedflow 0.2 µm positive logo tube/tube version ID 2.8 mm
RS057BCYCH002A00	Baby Speedflow 0.2 µm positive logo tube/tube version ID 3.0 mm
RS078BCYCH002A00	Baby Speedflow 0.2 µm positive logo tube/tube version ID 3.175 mm
RS058BCYCH002A00	Baby Speedflow 0.2 µm positive logo double luer lock

Packaging	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	13.0 kg	6,000 units (3 x 2,000 bags)

Speedflow® Baby Filters in Amber Modified Acrylic for photosensitive drugs are available upon request

SPEEDFLOW® ULTRA

APPLICATIONS
Speedflow ULTRA is particularly suitable for filtration in every application in which an "ultrapure" fluid has to be obtained under higher flow rate and for large volumes.
Speedflow ULTRA filter could work as a barrier to endotoxins and bacterial contaminants prior to IV medical administration and for filtration of:
- Large volumes aqueous IV solutions
- Drug preparation in pharmaceutical applications
- TPN preparation
- Ultrafiltration in on-line HDF

FEATURES
> Two vents for faster air elimination during priming and re-priming operation
> Free of latex, PVC, and substances of animal origin.

SPECIFICATIONS
Biosafety
Materials comply with USP class VI-121°C test, ISO 10993, REACH, RoHS

Dimensions
WxLxD: 59.0 x (75.0-100.0) x 25.4 mm
Weight:35.8 gr

Filtration Area
44.0 cm^2 PES
2.2 cm^2 PTFE

Inlet/Outlet Connectors
Inlet: tube ID 4.8 x OD 6.8
Outlet: tube ID 4.8 x OD 6.8
Other tubing connections available upon request.

Materials Of Construction
Filter media: Hydrophilic HI-FLO PES 0.2 µm and 0.2 µm positive charged, or 1.2 µm, and 5 µm
Vent: Hydrophobic PTFE membrane 0.03 µm
Housing: Clear Modified Acrylic

Max Operating Pressure
2.0bar (29.00psi)

Operating Temperature
5-40°C

Minimum water flow rate
0.2 µm: 280ml/min at 80cm (31.5") head pressure
1.2 µm: 1,08lt/min at 80cm (31.5") head pressure
5.0 µm: 2,04lt/min at 80 cm (31.5") head pressure
0.2 µm positive membrane: (pressure drop measured between inlet and outlet, flow on peristaltic pump)
200 ml/min at 80cm (31.5") head pressure
420 ml/min at 255cm (100,4") head pressure

Air flow
>400 cc/min@100mbar

Minimum water bubble point
0.2 µm: 3.7-4,8 bar (54-70psi)
1.2 µm: 0.7-1.0 bar (10-15psi)
5.0 µm: 0.15-0,3 bar (2.2-4.5psi)

Water breakthrough
PTFE Hydrophobic membrane: 3.0bar (43.5psi)

Pyrogenicity
<0.25 EU/ml using the LAL test method

Sterilization compatibility
EtO or Gamma (25kGy)

Bacterial retention
0.2 µm, 0.2 µm positive charged –>7LRV – Brevundimonas diminuta
1.2 µm - Candida albicans

Ordering Information:

Part Number	Description
RS075ACYRH002A00	Speedflow ULTRA 0.2, 1.2, 5.0 µm PES - IV Vented adult filter (PTFE), Tube IN/Tube OUT

IV and Liquid Filters

SPEEDFLOW® MESH

New GVS Speedflow® Mesh IV and liquid filters range from 5 to 300 µm, ensures no more air bubble troubles, very high flow rate and high particle retention, and allows easy connection. GVS® manufacture with customer's logo, offer clear, green and blue housings, and amber housing for photosensitive drugs.

APPLICATIONS

Speedflow IV filters are particularly suitable for the following filtration applications:

- Aqueous IV solutions
- IV therapy
- Chemotherapy
- Antibiotic therapy
- Nutrient admixture, TPN and lipid solutions (1.2 µm)
- Drug delivery therapy (recommended for oncology drugs)
- Apheresis solutions
- Dialysate for kidney dialysis
- Blood warming circuit applications
- Fluid warming circuit applications

Features

- Four vents Speedflow Adult, Two vents Speedflow Kids and Baby, for faster air elimination during priming
- Wide range of connectors
- Custom printing option – tinted housings available
- Amber tinted housing for photosensitive drugs
- Latex and PVC free. Free of animal origin substances

SPECIFICATIONS

Biosafety

Materials comply with USP class VI-121°C test and ISO 10993

Dimensions

Speedflow Adult WxLxD: 30.0 x (60.0 - 62.8) x 9.6 mm
Speedflow Kids WxLxD: 30.0 x (60.0 - 62.8) x 7.9 mm
Speedflow Baby WxLxD: 15.3 x 21.9 x 4.0 mm

Weight:

Speedflow Adult: 7.5 - 7.9 gr.
Speedflow Kids: 6.2 - 6.6 gr.
Speedflow Baby: 1.35 (1.7 gr. for FLL/RMLL configuration)

Effective filtration area

PES: Speedflow Adult 10.0 cm^2, Speedflow Kids 5.0 cm^2, Speedflow Baby 1.45 cm^2
PTFE: Speedflow Adult 1.0 cm^2, Speedflow Kids 0.5 cm^2, Speedflow Baby 0.25 cm^2

Inlet/Outlet connectors

Speedflow Adult & Kids
Inlet: Tube 3x4.1 mm or female luer lock (FLL)
Outlet: Tube 3x4.1 mm (connector ID=2.0 mm), rotating male luer lock (RMLL) or male luer slip (MLS)
Speedflow Baby
Inlet: Microbore IV tubing connectors (2.0-2.2-2.3-2.4-2.5-2.8 or 3.0 mm) or FLL female luer lock
Outlet: Microbore IV tubing connectors (see above) or RMLL rotating male luer lock

Materials of construction
Filter media: Nylon or Polyester Mesh
Vent: High Pressure Hydrophobic PTFE membrane 0.03 µm
Housing
Clear or Amber Modified Acrylic
Max Burst pressure
3.1 bar (45 psi)
Operating temperature
5 - 40°C
Pore Size
Customized applications from 5 to 300 µm
Minimum Water Bubble Point
5.0 µm: 60 mbar (0.8psi)
Minimum Water Flow Rate
Speedflow Baby 5.0 µm : ≥ 90 ml/min @ 80 cm (31.5 in) water head pressure
All other models have flow rate limited by tubing size and pressure applied
Air Flow
Speedflow Adult PTFE Hydrophobic membrane:
1.2 µm: > 100 scc/min @ 100mbar
High Pressure filters 0.03 µm: 2LPM/3.7 cm^2 @ΔP=6000mm/H_2O
Speedflow Kids
> 50 scc/min @ 100mbar
Speedflow Baby
~ 20 scc/min @ 100mbar

Water Breakthrough
High Pressure filters, PTFE 0.03 µm: >40m/ H_2O
Priming Volume
Speedflow Adult: 2.3 ml
Speedflow Kids: 1.3 ml
Speedflow Baby: <0.35ml
Pyrogenicity
<0.25 EU/ml using the LAL test method
120-Hours Throughput
Speedflow® Adult, Kids and Baby filters do not show relevant loss in flow rate during 120-hour test
Sterilization Compatibility
EtO or Gamma (25 kGy), e-beam
Self-priming instructions
For fastest priming procedure, keep Speedflow® in vertical position with the flow arrows pointed up, i.e., invert to prime. The filter will eliminate air faster that way.
After priming is completed, Speedflow® will eliminate air in any position.

Ordering Information:
Please contact GVS Sales Medical Division for detailed ordering Information.

Packaging:	Dimension	Weight	Quantity / Box
Speedflow Adult	60 x 40 x 25 cm	16.0 kg	2,000 units
Speedflow Kids	60 x 40 x 25 cm	14.0 kg	2,000 units
Speedflow Baby	60 x 40 x 25 cm	13.0 kg	6,000 units (3 x 2,000 bags)

Speedflow® Mesh in Amber Modified Acrylic for photosensitive drugs are available upon request

IV and Liquid Filters

EPICARE® BABY

APPLICATIONS

Epicare Baby filter is particularly suitable for the following filtration applications:

• Epidural or Local Anaesthesia and Syringe Filter

Features

• Compact size High-Flow / High-Pressure Epidural filter

• Connectors (inlet Female Luer Lock // outlet Rotating Male Luer Lock) / ISO 594

• Custom printing option – tinted housing or male connector available. Amber tinted housing for photosensitive drugs

• Latex Free, PVC Free, and free of substances of animal origin.

SPECIFICATIONS

Biosafety

Materials comply with ISO 10993-1 and USP class VI-121°C test

Dimensions

WxLxD: 15.3 x 21.9 x 3.9 mm (filter body)

Weight: 1.7 gr.

Hydrophilic filtration area (PES membrane)

1.45 cm^2

Inlet/Outlet connectors

Inlet: FLL female luer lock

Outlet: RMLL rotating male luer lock

Materials of construction

Filter media: Hydrophilic HI-FLO PES membrane

Housing: Clear Modified Acrylic

Pore Size

0.2, 1.2, 5.0 µm

Max bursting pressure

8.0 bar (116 psi)

Max operating temperature

55°C (131°F)

Minimum Water Bubble Point

0.2/0.2pos µm: 3.7- 4.8 bar

1.2 µm: 0.7 - 1.0 bar

5.0 µm: 0.15 - 0.3 bar

Minimum Water Flow Rate

0.2pos µm: ≥ 3,5 ml/min @ 80 cm (31.5 in) water head pressure

0.2 µm: ≥ 4 ml/min @ 80 cm (31.5 in) water head pressure

1.2 µm: ≥ 30 ml/min @ 80 cm (31.5 in) water head pressure

5.0 µm: ≥ 55 ml/min @ 80 cm (31.5 in) water head pressure

Bacterial Retention

0.2 µm: brevundimonas diminuta

0.2 µm positive: endotoxins

1.2 µm: candida albicans

Priming volume

<0.35ml

Pyrogenicity

<0.25 EU/ml using the LAL test method

96-Hours Throughput

Speedflow® Baby filters do not show relevant loss in flow rate during 96-hour test

Sterilization Compatibility

EtO (55° C) or Gamma (max 25 kGy)

Drug Compatibility

Speedflow® Baby is compatible with the following drugs:

5-Flourouracil
Amphotericin B
Bupivacaine HCL
Dobutamine HCL
Dopamine HCL
Insulin
Lidocaine HCL
Nitroglycerin
Paclitaxel
Piperacillin
Sodium Citrate

Self-priming instructions

For an easy priming procedure, start with a dry Epicare Baby in a vertical position with the flow arrow pointed up, i.e. invert to prime. The liquid will push the air through the filter before flow begins. After priming is complete (all air is evacuated from the housing),Epicare Baby can stay any position.

Advices

Do not use with syringes smaller than 10 ml.

Do not apply pressure higher than 8 bar.

Ordering Information:

Product Code	Description
RS059BCYRH002A00	Epicare Baby 0.2 µm logo double luer lock
RS059BCYRH012A00	Epicare Baby 1.2 µm logo double luer lock
RS059BCYRH050A00	Epicare Baby 5.0 µm logo double luer lock
RS059BMEDH002A00	Epicare Baby 0.2 µm logo double luer lock, detergent proof

Packaging	Dimension	Weight	Quantity / Box
	60x40x25cm	13 kg	6.000 units (3x2.000bags)

EPI-MAX - EPIDURAL FILTER

APPLICATIONS
Epi-Max filter is particularly suitable for the following filtration applications:
Ampoule drug injection
Epidural anesthesia, local anesthesia
Intraocular injectables
TPN solutions additives
Low volume pain control
Small volume sterilization
Pharmacy admixture

SPECIFICATIONS
Biosafety
Materials comply with USP class VI-121°C test and ISO 10993
Dimensions
WxLxD: 30.0 x 62.8 x 7.2 mm
Weight: 7.0 g
Hydrophilic filtration area
5.00 cm^2
Inlet/Outlet connectors
Inlet: FLL female luer lock
Outlet: RMLL rotating male luer lock
Materials of construction
Housing: Clear / Amber Modified Acrylic
Filter media: Hydrophilic HI-FLO PES membrane 0.2 and 1.2 µm
PES membrane 5.0 µm
Max bursting pressure
8 bar (116 psi)
Max operating temperature
5 - 40°C
Minimum Water Bubble Point
0.2/0.2pos µm: 3.7 - 4.8 bar
1.2 µm: 0.7 - 1.0 bar
5.0 µm: 0.15 - 0.3 bar
Minimum Water Flow Rate
0.2pos µm: > 10 ml/min @ 80 cm (31.5 in) water head pressure
0.2 µm: > 15 ml/min @ 80 cm (31.5 in) water head pressure
1.2 µm: > 90 ml/min @ 80 cm (31.5 in) water head pressure
5.0 µm: > 95 ml/min @ 80 cm (31.5 in) water head pressure
Pore Size
0.2 µm, other size available upon request
Bacterial Retention
0.2 µm – Brevundimonas diminuta
0.2 µm positive – Endotoxin
1.2 µm – Candida albicans
Priming volume
1.2 ml
Pyrogenicity
<0.25 EU/ml using the LAL test method
Sterilization Compatibility
EtO or Gamma (25 kGy)
Priming instructions
For an easy priming procedure, start with a dry Epi-Max in a vertical position with the flow arrow pointed up, i.e. invert to prime. The liquid will push the air through the filter before flow begins. After priming is complete (all air is evacuated from the housing), Epi-Max can stay any position.
Drug Compatibility
Epi-Max shows total compatibility with following drugs:
5-Flourouracil
Amphotericin B
Bupivacaine HCL
Dobutamine HCL
Dopamine HCL
Insulin
Lidocaine HCL
Nitroglycerin
Paclitaxel
Piperacillin
Sodium Citrate

Ordering Information:

Product Code	Description
RS065DCYRH002A01	Epi-Max 0.2 µm logo double luer lock
RS065DCYRH012A01	Epi-Max 1.2 µm logo double luer lock

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	14.0 kg	2,000 units

Epi-Max filters in Amber Modified Acrylic for photosensitive drugs are available upon request

IV and Liquid Filters

IVEX™, NUTRIVEX™ AND 5-IVEX™

The GVS family of IV Filtration products features the most trusted designs, manufactured with the highest throughput membranes in the industry.
IV Express™ filter unit features high throughput, 0.22 µm PES hydrophilic membrane. It remains the largest selling 0.22 µm in-line IV filter design in the world.
Nutrivex™ filter unit houses a 1.2 µm, PES hydrophilic membrane for the quantitative removal of Candida albicans in nutrient admixture, TPN and lipid solutions, and 5-Ivex™ is providing a 5.0 µm PES hydrophilic membrane.
All of them comprise a PVDF 0.1 µm, hydrophobic vent membrane for reliable air elimination.

Their housing, with a clear core and sleeve, is manufactured with co-polyester.
All materials meet ISO 10993 requirements for external communicating devices, blood path indirect.

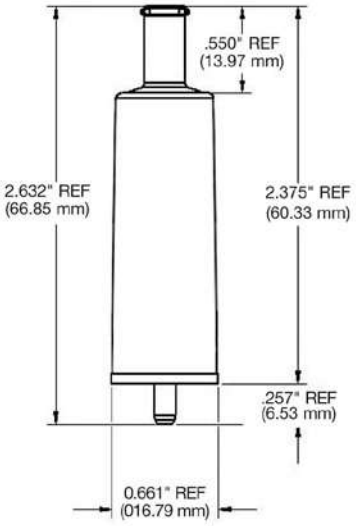
GVS's upstream, high volume, fully automated manufacturing capabilities ensure on-time delivery of precise components. All GVS products are manufactured in an ISO Class 8, 100,000 cleanroom under GMP guidelines, offering complete manufacturing traceability and meeting ANSI/ISO standards. GVS is an ISO 13485 registered manufacturer.

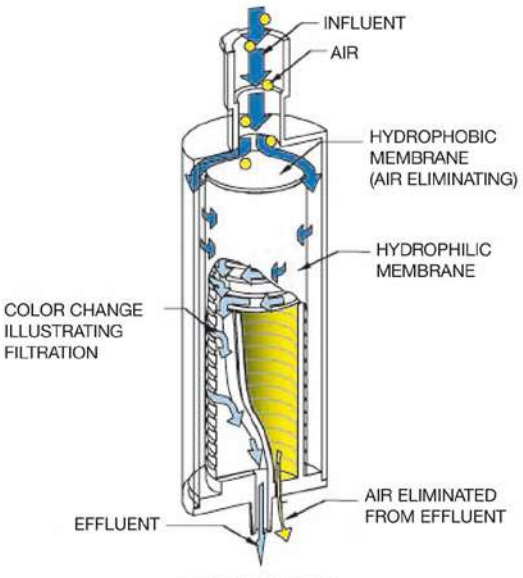
ivexpress

KEY CHARACTERISTICS
- Fast flow rates
- 96 hours throughput
- Compact size
- Unique cylindrical shape

BENEFITS
- Quantitative removal of particles and microorganisms greater than 0.22 µm
- Rated for 96 hour use
- Reliable air elimination
- Can be used with either a gravity or pump feed
- Proven clinical field performance

APPLICATIONS
Ivex, Nutrivex and 5-Ivex IV Filters are particularly suitable for the following filtration applications:
- Aqueous IV solutions
- IV therapy
- Chemotherapy
- Antibiotic therapy
- Nutrient admixture, TPN and lipid solutions (Nutrivex)
- Drug delivery therapy (recommended for oncology drugs)
- Apheresis solutions
- Dialysate for kidney dialysis





FLOW DIAGRAM

IVEX™, NUTRIVEX™ and 5-IVEX™ SPECIFICATIONS

Biosafety
Materials comply with USP class VI-121°C test and ISO 10993
Dimensions
6.7 cm (2.6") inlet to outlet
4.66 cm (1.8") filter body
Diameter: 1.7 cm (0.67")
Weight: 6.5 gr.
Effective filtration area
10.0 cm² PES
0.5 cm² PVDF
Inlet/Outlet connectors
Inlet: FLL
Outlet: Tube 3x4.1 mm
Materials of construction
Filter media: Hydrophilic PES, 0.22, 1.2 µm membrane
Hydrophobic PVDF 0.1 µm
Housing
Clear PETG material (yellow core for Nvex)
Max operating pressure
3.1bar (45psi) for 60 seconds
Operating temperature
55°C (131 °F)
Pore Size
0.2µm, 1.2µm, 5.0 µm

Minimum Water Bubble Point
Ivex: 0.2µm: ≥ 3.1 bar
Nutrivex: 1.2µm: ≥ 0.5 bar
5-Ivex: 5.0µm: ≥ 0.15 bar
Minimum Water Flow Rate
0.2 µm: ≥17ml/min @76cm (30°) water head height
1.2 µm: ≥167ml/min @76cm (30°) water head height
5.0 µm: ≥ 340 ml/min at 76 cm (30°) water head height
Air Flow
PVDF membrane: 70÷90 scc/min @ 190mbar
Water Breakthrough
PVDF ≥ 5bar
Bacterial Retention
Ivex: Brevundimonas diminuta
Nutrivex: Candida albicans
Priming Volume
≤ 3ml
Pyrogenicity
<0.25 EU/ml using the LAL test method 96-Hours Throughput Ivex and Nutrivex filters do not show relevant loss in flow rate during 96-hour test
Sterilization Compatibility
EtO or Gamma (50kGy), e-beam

Self-priming instructions
For fastest priming procedure let the IVEX, Nutrivex and 5-Ivex filters free hanging in vertical position with the inlet connector in upper position than the outlet connector. Filter will be filled-up of liquid and eliminate air through the vent. After IVEX is filled-up of liquid it can work in any position.

Drug Compatibility
Ivex, Nutrivex and 5-Ivex show total compatibility with the most popular drugs:
Paclitaxel; Human Insulin; Heparin; Lidocaine Hydrochloride; Bupivacaine; Mannitol; 5-Fluorouracil

Ordering Information:

Ivex 0.2 µm

Product Code	Description
RS201AEAS9W02A01	IV Express 0.22 µm PES - IV Vented adult filter (PVDF), female luer lock, male tube 3.3mm

Nutrivex 1.2 µm

Product Code	Description
RS201AEASHW12F01	Nutrivex 1.2 µm PES - IV Vented adult filter (PVDF), yellow core, female luer lock, male tube 3.3mm

5-Ivex 5.0 µm

Product Code	Description
RS201AEASHW50A01	5-Ivex 5.0 µm PES - IV Vented adult filter (PVDF), female luer lock, male tube 3.3mm

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	14.4 kg	2,000 units

IV and Liquid Filters

SYRINGE FILTERS 25 MM, 26 MM, 27 MM AND 28 MM

APPLICATIONS

The GVS range of syringe filters is suitable for the following filtration applications:
Low volume pain control
Low volume injectables
Drug reconstitution
Small volume sterilization
Pharmacy admixture
Solution clarification
Particle elimination
Sterilizing ophthalmic solutions
Sterilizing oral surgery solutions

Features

Wide range of connectors
Tinted housings available
Blister packaging available
Modified acrylics or polycarbonate housings available upon request

SPECIFICATIONS

Biosafety
Materials comply with USP class VI-121°C test and ISO 10993
Dimensions
LxD 21.5 x 27.4 mm (connectors included).
Difference can apply for different connectors
Weight: 2.30 g

Hydrophilic filtration area
3.60 cm^2
Inlet/Outlet connectors
Inlet: FLL Female Luer Lock (TP25/TP28 model)
FLS Female Luer Slip (TP32 model)
MLS Male Luer Slip (TP26/TP27 model)
Outlet: MLS Male Luer Slip (all models)
Materials of construction
Filter media
Membrane – Hydrophilic Acrylic Copolymer 0.2 / 1.2 µm – HI-FLO PES 0.2 / 1.2 µm.
Mesh – Nylon or Polyester, different mesh opening available upon request.
Housing: Rigid clear PVC – tinted housings available (blue, green, red, yellow).
Prefilter – Prefilter can be added for high particulate volume removal.
Air flow specifications refer to the raw membrane material.
Max operating pressure
5.2 bar (75 psi)
Max operating temperature
55°C (131°F)
Priming volume
0.7 ml
Pyrogenicity
<0.25 EU/ml using the LAL test method
Sterilization Compatibility
EtO

Self-priming instructions

For an easy priming procedure, start with a dry Syringe Filter in a vertical position with outlet connector (MSL male slip luer) pointed up, i.e. invert to prime. The liquid will push the air through the filter before flow begins. After priming is complete (all air is evacuated from the housing), Syringe Filter can stay any position.

Ordering Information

Please contact GVS Sales Medical Division for detailed ordering Information.
For more information on Syringe Filters, please refer to GVS Life Sciences catalog.

MEMBRANE TUBULAR FILTERS
FI108

Dimensions
Socket OD: 16.00 mm
Socket H: 7.90 mm
Total Height: 60.90 mm
Hydrofilic Filtration Area
17.0 cm^2
Efficiency of Filtration
100%
Ref. Standard
ISO8536-4
Application
Infusion; Laboratory
Assembly Method
Interference

Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO
Maximum Operating Temperature
50°C
Minimum Water Bubble Point
>1.7 bar
Bacterial Retention
Brevundimonas diminuta
Biosafety
Materials comply with USP class VI-121°C test and ISO 10993

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size (µm)	Water Flow Rate (%)
FI108PPWWA200	PP	Clear	Membrane - Hydrophilic Acrylic Copolymer	0,2	<31.1ml/min/cm^2 @ 0.7 bar

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	14.0 kg	9,000 units

MEMBRANE TUBULAR FILTERS
FI114

Dimensions
Socket OD: 17.00 mm
Socket H: 7.10 mm
Total Height: 92.13 mm
Hydrofilic Filtration Area
28.0 cm^2
Efficiency of Filtration
100%
Ref. Standard
ISO8536-4
Application
Infusion; Laboratory
Assembly Method
Interference

Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO
Maximum Operating Temperature
50°C
Minimum Water Bubble Point
>0.4 bar
Biosafety
Materials comply with USP class VI-121°C test and ISO 10993
Bacterial Retention
Candida albicans

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size (µm)	Water Flow Rate (%)
FI114ABSWWA1200	ABS	White	Membrane – Hydrophilic Acrylic Copolymer	1.2	<592ml/min/cm^2 @ 0.7 bar

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	14.0 kg	5,000 units

Infusion Disc Filters

DISC FILTERS CHARACTERISTICS

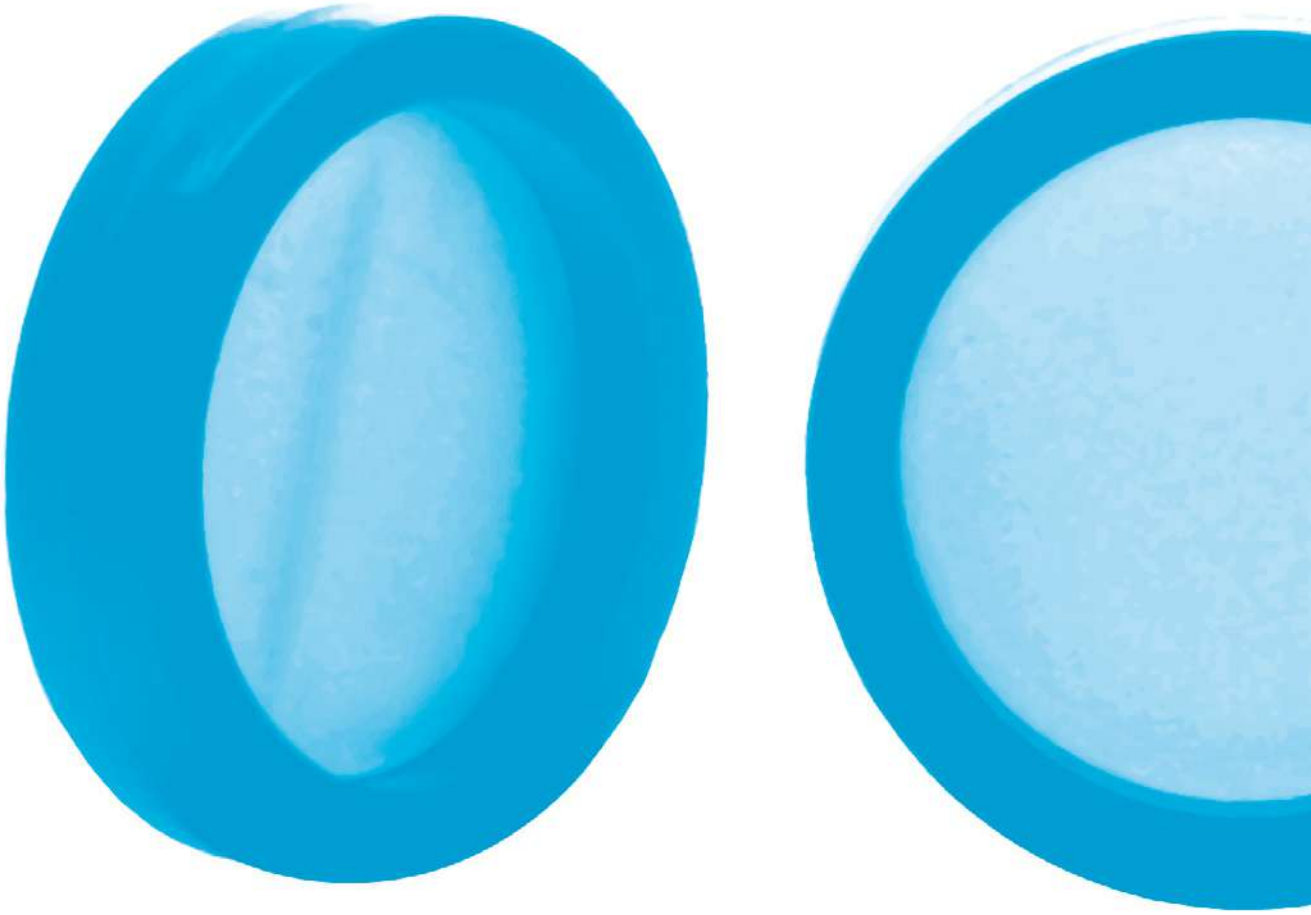
Disc filters manufactured by GVS are especially dedicated to the infusion market but they can easily meet the requirements of many other applications. Most important are:
- Disc filter for IV drip chambers
- Air vent for bags / containers
- Liquid filters for general purpose applications

Overmolding technology
All the GVS disc filters are manufactured with automatic over-molding technology that guarantees superior quality in manufacturing parts with high cavity molds.

Wide choice
The several models listed below enable customers to find the suitable product for their application. The wide range of available media (PA 6.6 and PE mesh and hydrophilic / hydrophobic membranes) provide high flexibility and covers many requirements of the market.
Thanks to the wide choice of sizes and the wide variety of materials and media used, GVS disc filters are compatible with most existing or new devices. Available mesh sizes are from 1 to 500 µm as well as membranes are available from 0.02 to 10 µm).

Assembly method
The diversity of our filter ring raw materials provides the possibility for a mechanical interference seal or bonding (standard with cyclohexanone, methyl cyanoacrylate and methyl ethyl ketone).

Quality standard
GVS disc filters are manufactured according to ISO8536 standards. They are manufactured following the ISO 9001 and ISO13485 standards, in a class 100.000 cleanroom, with medical grade materials (plastics and mesh / membrane), and pass USP plastics class VI and ISO10993 tests for biocompatibility (standard for external communicating device – blood path indirect – prolonged contact duration). Our discs have low extractable levels and wide drug compatibility. They are non-pyrogenic (<0.25 EU / ml) using the LAL test method, latex, PVC and free of animal origin substances.



Sterilization method
Depending on raw materials, GVS discs are suitable for EtO, Gamma or e-beam.

Particle retention
IV lines as well as any other device equipped with one of our GVS disc filters are used for particle retention (size of retained particle is depending on the media used). Especially for IV lines, disc filters with 15 µm mesh become a barrier for potential glass and/or plastic fragments that can be found in the fluid path. They also eliminate large size globules, principally present in lipids suspensions that can generate dangerous immune reactions, and they also remove drug precipitates that cause phlebitis or infections. According to ISO 8536-4 the disc filter is an effective barrier to help ensure patient health.

Materials of construction
Filter media: see tables
(PA6.6 or PE mesh / Hydrophilic or Hydrophobic membrane)
Ring: see tables (ABS, PA, PP)

Max operating temperature
55°C (131°F)

Biosafety
Materials comply with USP class VI-121°C test and ISO 10993

DISC FILTERS GUIDE TABLE

Family	Filtration Area cm^2	OD mm	ID mm	Height mm
FD86	1.30	16.20	12.90	3.60
FD87	0.83	13.05	10.30	3.65
FD106	1.03	14.20	11.50	3.75
FD142	1.04	15.10	11.50	3.50
FD229	0.82	12.60	10.20	4.00
FD230	1.20	15.70	12.40	3.00
FD231	0.79	12.35	10.00	3.66
FM134	5.72	32.10	27.00	2.50
FD234	0.07	4.00	31.40	1.40

Infusion disc filters

FD234

Dimensions mm
Outside diameter: 4 mm
Inside diameter : 3 mm
Overall height: 1.4 mm
Effective Filtration Area
0.07 cm^2
Efficiency of Filtration
98%
Application
Infusion
Ref. Standard
ISO 8536-4
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)
FD234APURN005A00	PE	Clear	NY	5
FD234APURN010A00	PE	Clear	NY	10
FD234APURN015A00	PE	Clear	NY	15
FD234APURN150A00	PE	Clear	NY	150
FD234APURR050A00	PE	Clear	Hydrophobic Acrylic membrane	5

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	17.2 kg	50,000 units

FD86

Dimensions mm
Outside diameter: 16.20
Inside diameter: 12.90
Overall height: 3.60
Effective Filtration Area
1.30 cm^2
Efficiency of Filtration
98%
Application
Infusion
Ref. Standard
ISO 8536-4
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam

Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FD086BPURN015A00	PE	White	Mesh PA 6.6	15	10
FD086BPURN025A00	PE	White	Mesh PA 6.6	25	19
FD086BPURN050A00	PE	White	Mesh PA 6.6	50	31
FD086BPURP050A00	PE	White	Mesh PE	50	33

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	17.2 kg	50,000 units

FD87

Dimensions mm
Outside diameter: 13.05
Inside diameter: 10.30
Overall height: 3.65
Effective Filtration Area
0.83 cm^2
Efficiency of Filtration
PA 6.6: 98%

Ref. Standard
PA 6.6: ISO 8536-4
Application
Infusion
Assembly Method
Interference
Maximum Operating Temperature
50°C

Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening	Open Area
FD87ABSNY5	ABS	White	Mesh PA 6.6	5	1
FD87ABSNY15	ABS	White	Mesh PA 6.6	15	10
FD87ABSNY25	ABS	White	Mesh PA 6.6	25	19
FD87ABSNY50	ABS	White	Mesh PA 6.6	50	31

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	20.8 kg	50,000 units

FD106

Dimensions mm
Outside diameter: 14.20
Inside diameter: 11.50
Overall height: 3.75
Effective Filtration Area
1.03 cm^2
Efficiency of Filtration
98%

Ref. Standard
ISO 8536-4
Application
Infusion
Assembly Method
Interference
Pyrogenicity
<0.25 EU/ml

Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening/Pore Size (µm)	Open Area/Air Flow (%)
FD106ABSNY15	ABS	Natural	Mesh PA 6.6	15	10

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	12.7 kg	50,000 units

FD142

Dimensions mm
Outside diameter: 15.10
Inside diameter: 11.50
Overall height: 3.50
Effective Filtration Area
1.04 cm^2
Efficiency of Filtration
98%
Application
Infusion

ISO 8536-4
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam, steam
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FD142AAKUN005B02	PA6	White	Mesh PA 6.6	5	1
FD142AAKUN015A02	PA6	Clear	Mesh PA 6.6	15	10

Ref. Standard

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	15.0 kg	50.000 units

Infusion disc filters

FD229

Dimensions mm
Outside diameter: 12.60
Inside diameter: 10.20
Overall height: 4.00
Effective Filtration Area
0.82 cm^2
Efficiency of Filtration
98%

Application
Infusion
Ref. Standard
ISO 8536-4
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam, steam

Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FD229AV29N015A01	PP	Clear	Mesh PA 6.6	15	10
FD229AV29N015B01	PP	White	Mesh PA 6.6	15	10

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	9.8 kg	50,000 units

FD230

Dimensions mm
Outside diameter: 15.70
Inside diameter: 12.40
Overall height: 3.00
Effective Filtration Area
1.2 cm^2
Efficiency of Filtration
98%
Application
Infusion

Ref. Standard
ISO 8536-4
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam, steam
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FD230AAKUN015B02	PA 6.6	White	Mesh PA 6.6	15	10
FD230AAKUN025B02	PA 6.6	White	Mesh PA 6.6	25	19
FD230AAKUN050B02	PA 6.6	White	Mesh PA 6.6	50	31

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	13.5 kg	50,000 units

FD231*

Dimensions mm
Outside diameter: 12.35
Inside diameter: 10.0
Overall height: 3.66
Effective Filtration Area
0,79 cm^2
Efficiency of Filtration
98%

Application
Infusion
Ref. Standard
ISO 8536-4
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam, steam

Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FD231BAKUP015A00	PA6	Clear	Mesh PE	15	9
FD231AAKUN015A00	PA6	Clear	Mesh PA 6.6	15	10
FD231BAKUN180A00	PA6	Clear	Mesh PA 6.6	180	41

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	9.7 kg	50,000 units

FM134

Dimensions
Outside diameter: 32.10
Inside diameter: 27.00
Overall height: 2.50
Effective Filtration Area
5,72 cm^2
Efficiency of Filtration
98%
Application
Hemodialysis

Ref. Standard
ISO 8638
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam, steam
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FM134AEPTN080A00	PP	Clear	Mesh PA 6.6	80	32

Packaging:	Dimension	Weight	Quantity / Box
	50 x 40 x 60 cm	13.5 kg	20,000 units

Mesh and Blood Tubular Filters

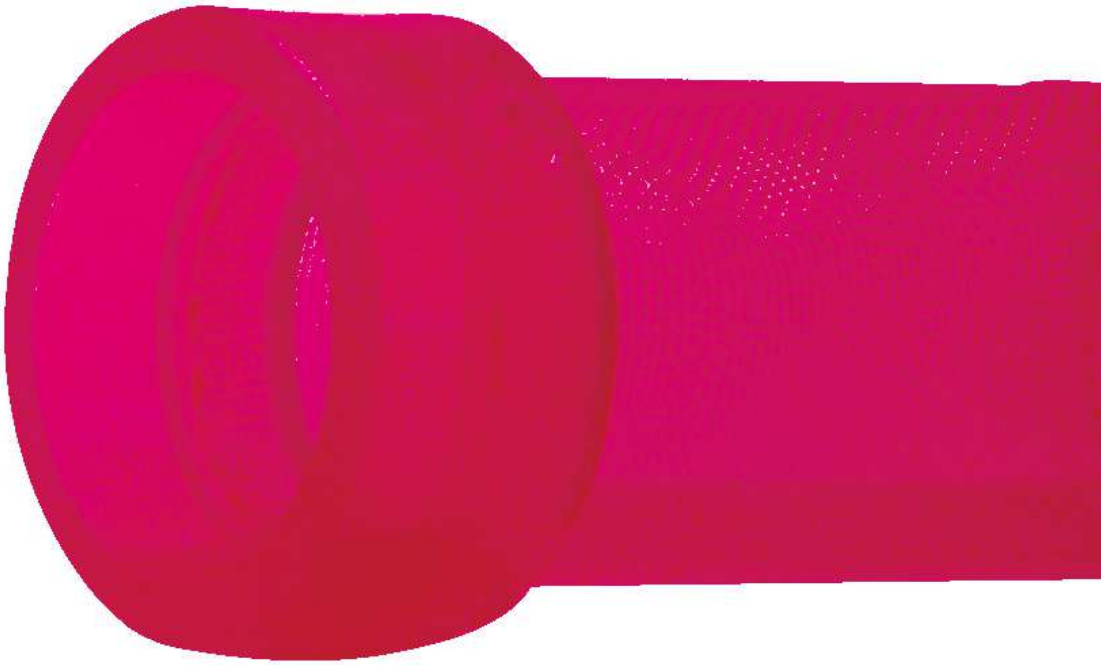
MESH AND TUBULAR FILTER CHARACTERISTICS

Mesh and Tubular filters manufactured by GVS are especially dedicated to the transfusion market but they can easily meet the requirements of many other different applications.
Most important are:
- Blood filters for transfusion drip chambers
- Blood filters for hemodialysis drip chambers
- High volume liquid filters for general purpose applications

Manufacturing technology
GVS tubular filters are manufactured with automatic or semi-automatic over-molding technology that guarantees superior quality in manufacturing parts with high cavity molds. GVS mesh filters are manufactured with automatic ultrasonic welding processes.

Wide choice
The several models listed below enable customers to find the suitable product for their application. The wide range of available media (PA6.6 and PE mesh and hydrophilic / hydrophobic membranes) provide high flexibility and covers many requirements of the market. Thanks to the wide choice of sizes and wide variety of materials and media used, GVS tubular filters are compatible with most existing or new devices. Available mesh sizes are from 1 to 500 µm as well as membranes are available from 0.02 to 10 µm).

Assembly method
The diversity of our frame raw materials provides the possibility for a mechanical interference seal or bonding (standard with cyclohexanone, methyl cyanoacrylate and methyl ethyl ketone). Mesh filter are usually welded to soft PVC chambers by RF welding.



Quality standard
GVS mesh and tubular filters are manufactured according to ISO1135 standard They are manufactured following the ISO 9001 and ISO13485 standards, in class 100.000 cleanrooms with medical grade materials (plastics and mesh/membrane), and pass USP plastics class VI and ISO10993 tests for biocompatibility (standard for external communicating device – blood path indirect – prolonged contact duration). Our tubular filters have low extractable levels and wide drug compatibility. They are non-pyrogenic (<0.25 EU/ml) using the LAL test method, and they are latex, PVC and free of animal origin substances.

Sterilization method
Depending on raw materials, GVS tubular filters are suitable for EtO, Gamma or e-beam.

Particle retention
Blood transfusion lines as well as other devices equipped with one of our GVS mesh or tubular filters are used for particle retention (size of retained particles is depending on the media used). Especially in a blood transfusion line, the mesh or tubular filter with its 200ºm mesh becomes a barrier for blood clots. According to ISO 1135 mesh or tubular filters are an effective barrier to help ensure patient health.

Materials of construction
Filter media: see tables (PA6.6 or PE mesh / Hydrophilic or Hydrophobic membrane)
Frame: see tables (ABS, PA, PP)

Max operating temperature
55°C (131°F)

Biosafety
Materials comply with USP class VI-121°C test and ISO 10993

Blood Tubular Filters

MESH & TUBULAR FILTER GUIDE TABLE

Tubular FILTER

Family	Filtration Area cm²	Base OD mm	Base H mm	Total H mm
FI644	16.00	17.42	8.00	62.64
FI78	11.00	16.26	4.00	40.55
FI81	15.00	16.33	4.00	52.44
FI83	8.20	17.52	9.80	39.20
FI89	7.00	13.50	5.60	32.30
FI94	11.00	16.26	8.22	44.75
FI104	15.00	15.40	7.90	57.51
FI108	17.00	16.21	8.00	61.44
FI110	9.00	16.21	8.00	38.43
FI111	24.00	15.74	3.44	79.34
3.70	79.37			
FI114	28.00	17.00	7.10	92.13
FI116	10.50	16.42	4.05	40.95
FI118	6.00	16.33	4.00	24.40
FI119	28.00	17.43	8.00	93.58
FI120	32.40	16.20	4.00	59.00
FI135	17.00	16.33	4.00	57.44
FI146	29.85	19.25	4.85	75.44
FI148	11.00	15.06	3.48	40.43
FI152	176.80	62.99	8.62	129.50
FI157	6.00	17.43	8.00	28.40
FI158	6.00	15.74	3.44	23.85
FI162	18.40	17.35	7.40	66.50
FI176	11.00	15.38	3.46	41.03
FI219	1.52	6.25	4.45	28.00
FI231	5.60	15.40	7.97	28.50
FI232	66.80	oval base 36.44 x 23.99	8.76	101.60
FI242	25.10	15.88	3.10	76.20

PLASTIC CONICAL FILTERS

	Base H mm	Total H mm
Plastic Conical Filter - small size	16.20	23.00
Plastic Conical Filter - medium size	16.20	29.00
Plastic Conical Filter - large size	16.20	40.00

MESH (SOCK) FILTERS

Family	Filtration Area cm²	Length mm	Width mm
RN091	30.75	67.00	23.80
RN131	51.51	76.20	34.90
RN136	15.47	34.90	23.80

FI644

Dimensions
Socket OD: 17.42 mm
Socket H: 8.00 mm
Total Height: 62.64 mm
Effective Filtration Area
16.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI644AAKUN040A00	PA6	Clear	Mesh PA 6.6	40	31
FI644PPNY200	PP	Clear	Mesh PA 6.6	200	43
FI644PPNY263	PP	Clear	Mesh PA 6.6	263	47

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	14.7 kg	8,000 units

FI78

Dimensions
Socket OD: 16.26 mm
Socket H: 4.00 mm
Total Height: 40.55 mm
Effective Filtration Area
11.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam; PA6 + steam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI78TERNY263	ABS	Clear	Mesh PA6.6	263	47

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	15.7 kg	10,000 units

Blood Tubular Filters

FI81

Dimensions
Socket OD: 16.33 mm
Socket H: 4.00 mm
Total Height: 52.44 mm
Effective Filtration Area
15.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam; PA6: + steam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI081AAKUN040A00	PA6	Clear	Mesh PA6.6	40	31
FI81ABSNY200	ABS	White	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	15.5 kg	10,000 units

FI83

Dimensions
Socket OD: 17.52 mm
Socket H: 9.80 mm
Total Height: 39.20 mm
Effective Filtration Area
8.20 cm^2
Efficiency of Filtration
98%
Application
Hemodialysis

Ref. Standard
ISO 8638
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam; PA6 + steam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI83ABSPE150	ABS	White	Mesh PE	150	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	14.0	7,000 units

FI89

Dimensions
Socket O: 13.50 mm
Socket H: 5.60 mm
Total Height: 32.30 mm
Effective Filtration Area
7.00 cm^2
Efficiency of Filtration
98
Application
Hemodialysis

Ref. Standard
ISO 8638
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam; PA6 + steam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI089AAKUN040A00	PA6	Clear	Mesh PA6.6	40	31
FI89TERNY200	ABS	Clear	Mesh PA6.6	200	43
FI89TERNY300	ABS	Clear	Mesh PA6.6	300	51

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	9.5 kg	10,000 units

FI94

Dimensions
Socket OD: 16.26 mm
Socket H: 8.22 mm
Total Height: 44.75 mm
Effective Filtration Area
11.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI94PPNY263	PP	Clear	Mesh PA6.6	263	47

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	15.5 kg	10,000 units

Blood Tubular Filters

FI104

Dimensions
Socket OD: 15.40 mm
Socket H: 7.90 mm
Total Height: 57.51 mm
Effective Filtration Area
15.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO,Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI104TERNY200	ABS	Clear	Mesh PA6.6	200	43
FI104TERPE200	ABS	Clear	Mesh PE	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	14.6 kg	9,000 units

FI108

Dimensions
Socket OD: 16.00 mm
Socket H: 7.90 mm
Total Height: 60.90 mm
Effective Filtration Area
17.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO,Gamma, e-beam, steam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI108AAKUN040A00	PA6	Clear	Mesh PA6.6	40	31
FI108AV29P150A00	PP	Clear	Mesh PE	150	43
FI108PPNY200	PP	Clear	Mesh PA6.6	200	43
FI108PPNY263	PP	Clear	Mesh PA6.6	263	47

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	14.0 kg	9,000 units

FI110

Dimensions
Socket OD: 16.21 mm
Socket H: 8.00 mm
Total Height: 38.43 mm
Effective Filtration Area
9.00 cm^2
Efficiency of Filtration
98%
Application
Hemodialysis

Ref. Standard
ISO 8638
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam, steam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI110PPNY200	PP	Clear	Mesh PA6.6	200	43
FI110PPNY263	PP	Clear	Mesh PA6.6	263	47

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	10.8 kg	8,000 units

FI111

Dimensions
Socket OD: 15.74 mm
Socket H: 3.44 mm
Total Height: 79.34 mm
Effective Filtration Area
24.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam; PA6 + steam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI111CAKUN040A00	PA6	Clear	Mesh PA6.6	40	31
FI111CTERN200A02	ABS	Clear	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	9.8 kg	6,000 units

Blood Tubular Filters

FI114

Dimensions
Socket OD: 17.00 mm
Socket H: 7.10 mm
Total Height: 92.13 imm
Effective Filtration Area
28.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam,
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI114ABSPE150Z	ABS	White	Mesh PE	150	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	14.0 kg	5,000 units

FI116

Dimensions
Socket OD: 16.42 mm
Socket H: 4.05 mm
Total Height: 40.95 mm
Effective Filtration Area
10.50 cm^2
Efficiency of Filtration
98%
Application
Hemodyalisis

Ref. Standard
ISO 8638
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI116AV29N170A00	PP	Clear	Mesh PA6.6	170	42
FI116ATERP265A00	ABS	Clear	Mesh PE	265	53

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	12.5 kg	8,000 units

FI118

Dimensions
Socket OD: 16.33 mm
Socket H: 4.00 mm
Total Height: 24.40 mm
Effective Filtration Area
6.00 cm^2
Efficiency of Filtration
98%
Application
Hemodyalisis

Ref. Standard
ISO 8638
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI118ATEKP150B00	ABS	White	Mesh PE	150	43
FI118APURP200A00	PE	Clear	Mesh PE	200	43
FI118TERNY263	ABS	Clear	Mesh PA6.6	263	47

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	10.8 kg	10,000 units

FI119

Dimensions
Socket OD: 17.43 mm
Socket H: 8.00 mm
Total Height: 93.58 mm
Effective Filtration Area
28.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI119ATEKN170B01	ABS	White	Mesh PA6.6	170	42
FI119ATEKN200B01	ABS	White	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	14.0 kg	5,000 units

Blood Tubular Filters

FI120

Dimensions
Socket OD: 16.20 mm
Socket H: 4.00 mm
Total Height: 59.00 mm
Effective Filtration Area
32.40 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI120ABSNY200	ABS	White	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	10.7 kg	6,000 units

FI135

Dimensions
Socket OD: 16.33 mm
Socket H: 4.00 mm
Total Height: 57.44 mm
Effective Filtration Area
17.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<025 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI135ABSNY200	ABS	White	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	15.5 kg	10,000 units

FI148

Dimensions
Socket OD: 15.06 mm
Socket H: 3.48 mm
Total Height: 40.43 mm
Effective Filtration Area
11.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam, steam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI148AV29N170A00	PP	Clear	Mesh PA6.6	170	42
FI148APS4N200B03	PS	White	Mesh PA6.6	200	43
FI148AV29N200A00	PP	Clear	PA 6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	10.0 kg	8,000 units

FI157

Dimensions
Socket OD: 17.43 mm
Socket H: 8.00 mm
Total Height: 28.40 mm
Effective Filtration Area
6.00 cm^2
Efficiency of Filtration
98%
Application
Hemodialysis

Ref. Standard
ISO 8638
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI157ATEKN263B01	ABS	White	Mesh PA6.6	263	47

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	17.7 kg	10,000 units

Blood Tubular Filters

FI158

Dimensions
Socket OD: 15.74 mm
Socket H: 3.44 mm
Total Height: 23.85 mm
Effective Filtration Area
6.00 cm^2
Efficiency of Filtration
98%
Application
Hemodialysis

Ref. Standard
ISO 8638
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI158TERNY200	ABS	Clear	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	13.0 kg	15,000 units

FI162 Round Head

Dimensions
Socket OD: 17.35 mm
Socket H: 7.40 mm
Total Height: 66.50 mm
Effective Filtration Area
18.40 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI162APPNY200A00	PP	Clear	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	14.0 kg	8,000 units

Note: Filter with no top cover for better priming procedure.

FI176

Dimensions
Socket OD: 15.38 mm
Socket H: 3.46 mm
Total Height: 41.03 mm
Effective Filtration Area
11.00 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI176BTERN200A00	ABS	Clear	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	12.0 kg	10,000 units

FI219

Dimensions
Socket OD: 6.25 mm
Socket H: 4.45 mm
Total Height: 28.00 mm
Effective Filtration Area
1.52 cm^2
Efficiency of Filtration
98%
Application
Infusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI219AHP3P125B00	PP	White	Mesh PE	125	41

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	10.1 kg	50,000 units

Blood Tubular Filters

FI231

Dimensions
Socket OD: 15.40 mm
Socket H: 7.97 mm
Total Height: 28.50 mm
Effective Filtration Area
5.60 cm^2
Efficiency of Filtration
98%
Application
Blood Treatement

Ref. Standard
ISO 10933-11
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI231PVCPE200	PVC soft	Clear	Mesh PE	200	43
FI231ACOLP200A00	PVC soft DEHPC - free	Clear	Mesh PE	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	13.0 kg	8,000 units

FI232*

Dimensions
Oval Base OD:
36.44 x 23.99 mm
Base H: 8.76 mm
Total H: 101.60 mm
Effective Filtration Area
66.8 cm^2
Application
Transfusion
Ref. Standard
ISO 10933-1
Application
Blood Treatement

Efficiency of Filtration
98%
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI232ALUSN200B01	ABS	White	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	5.8 kg	600 units

* Proprietary Product

FI242

Dimensions
Socket OD: 15.88 mm
Socket H: 3.10 mm
Total Height: 76.20 mm
Effective Filtration Area
25.10 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI242ALUSN170B00	ABS	White	Mesh PA6.6	170	42

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	9.5 kg	6,000 units

FI243

Dimensions
Socket OD: 14.8mm
Socket H: 3.95 mm
Total Height: 39.5 mm
Filtration Area
10.5 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FI243AV29N200A00	PP	Clear	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	9.0 kg	10,000 units

Blood Tubular Filters

FI250

Dimensions
Socket OD: 17.0 mm
Socket H: 7 mm
Total Height: 61.2 mm
Filtration Area
16.4 cm^2
Efficiency of Filtration
98%
Application
Transfusion

Ref. Standard
ISO 1135-4
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Maximum Operating Temperature
50°C
Assembly Method
Interference

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Mesh Opening (µm)	Open Area (%)
FIAAKUN200A00	PA6	Clear	Mesh PA6.6	200	43

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60	13 Kg	8000 units

Conical Plastic Filters

Dimensions
Height
small size version: 23.00 mm
medium size version: 29.00 mm
large size version: 40.00 mm
Diameter: 16.20 mm
Raw Material
PP
Color
White

Ref. Standard
ISO 8638
Application
Hemodialysis
Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml

Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
FILTLU11118300L	Plastic Conical Filter small size (5.6 cm^2) - socket diameter 16.2mm in PP
RN253AALAP270A00	Plastic Conical Filter medium size (6.85 cm^2) - socket diameter 16.2mm in PP
FILTCO11108300L	Plastic Conical Filter large size (11.00 cm^2) - socket diameter 16.2mm in PP

Packaging:	Quantity / Box
	small size version: 10,000 units
	medium size version: 20,000 units
	large size version: 5,000 units

Mesh Filters

Efficiency of Filtration
98%
Maximum Operating Temperature
50°C

Application
Transfusion
Pyrogenicity
<0.25 EU/ml

Ref. Standard
ISO 1135-4
Sterilization Compatibility
EtO, Gamma, e-beam, steam
Assembly Method
RF welding

RN090

Product Code	Dimensions		Material	Mesh Opening	Open Area	Effective Filtration
	Length mm	Width mm		µm	%	Area cm²
RN090A000P200A00	71.43	23.80	Mesh PE	200	43	32.86

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	8.5 kg	25,000 units

RN131

Product Code	Dimensions		Material	Mesh Opening	Open Area	Effective Filtration
	Length mm	Width mm		µm	%	Area cm²
RN131A000P200A00	76.20	34.90	Mesh PE	200	43	51.51

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	8.5 kg	25,000 units

RN136

Product Code	Dimensions		Material	Mesh Opening	Open Area	Effective Filtration
	Length mm	Width mm		µm	%	Area cm²
RN136A000P200A00	34.90	23.80	Mesh PE	200	43	15.47

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 60 cm	5.7 kg	25,000 units

Bacterial Air Vents

AIR VENT CHARACTERISTICS

Range of application
Many medical devices require vents to keep their internal pressure balanced with the ambient pressure. This avoids deformation of rigid plastic containers and interruptions in flow of fluids. Our product must protect the fluid path from bacterial contamination (must maintain sterility). One good example of this is maintaining sterility of an IV set and glass solution bottle, and to equalize the internal pressure of the bottle via a vent on the spike. Venting characteristics can be obtained by using hydrophobic membranes. GVS has a wide range of air vent products that incorporate PTFE or hydrophobic acrylic membrane for this function.

Manufacturing technology
GVS air vents are manufactured with fully automatic over-molding technology that guarantees superior quality in manufacturing parts with high cavity molds.

Wide choice
There are several models listed below that typically enable customers to find a suitable product for the intended application. Our wide range of available media (PTFE and acrylic membranes) provides high flexibility and covers most market requirements. Because of our wide choice of pore sizes and varying filter media, it is possible that the GVS air vents will be compatible with an existing or new device. Available are membrane sizes are from 0.02 to 10 µm.

Assembly method
Because we use many different raw materials for the frames and/or housings of our products, it is possible to choose assembly methods of mechanical sealing (interference fit) or bonding (standard with cyclohexanone, methyl cyanoacrylate or methyl ethyl ketone). Available air vents have female luer locks or male luer slip connectors.

Air elimination
Air elimination is an important feature for an air vents. Customers always require small vents with very fast air elimination performance. Air elimination really depends on the effective filtration area and on the pore size of the membrane used. Air Flow is one of the key characteristics that should be considered when choosing an air vent.

Bacterial retention

Bacteria and/or fungi can create patient contamination. These unwanted contaminants cause phlebitis and infections. Our air vents are an ideal barrier to this contamination guarding against bacteria and fungi reaching the fluid path, and eventually the patient. Although no one should knowingly use a contaminated solution, our air vent equipped with membranes are bacterial retentive. For bacterial retention consideration, always keep in mind that filtering bacteria in air is about 10 times more efficient than in water, which means that this enables hydrophobic membranes of 1.2 or 3 µm to filter Brevundimonas diminuta (0.2µm by a hydrophilic membrane in liquid).

Biocompatibility

GVS air vents are comply with the ISO 10993 standard for external communicating devices - blood path indirect - prolonged contact duration.

Drug compatibility

Our air vents have low protein-binding characteristics that ensure minimal adsorption of drugs and they have proven bacterial retention. Drug compatibility depends on the membrane used.

AIR VENT GUIDE TABLE

Code	OD mm	ID mm	Total height	Body height
TA126	8.20	6.33	10.50	8.10
TA156	8.20	6.33	11.70	9.30
TA225	Female Luer Lock	-	18.60	-
TA228	6.10	4.00	8.50	5.96
TA128	8.80	6.25	14.10	10.10
TA140	8.80	6.15	14.10	10.10
TA160	6.27	4.00	9.83	5.10
TA161	8.41	6.00	5.15	4.35
TA224	6.35	4.25	8.75	4.95
TA222	Male Luer Slip	-	20.00	12.50
FD87	13.05	10.30	3.65	-
FD106	14.20	11.50	3.75	-
FD177	7,55	5.45	2.50	-
TP30	27.40	12.93	-	-
TP38	27.40	37.50	-	-

Bacterial Air Vents without Closing Cap

TA126

Dimensions
Outside Diameter: 8.20 mm
Inside diameter: 6.33 mm
Total height: 10.50 mm
Body height: 8.10 mm

Filter Material
Hydrophobic Acrylic Copolymer Membrane
Effective filtration area
0.363 cm^2
Efficiency of filtration
100%
Application
Multipurpose
Air Flow
>70ml/min @ΔP 20cm/H_2O
Water Breakthrough
800mm/ H_2O for 2 minutes
Ref. Standard
ISO 8536-4
Assembly method
Bonding/Interference

Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization
EtO, Gamma, e-beam
Bacterial retention
Lactobacillus species
Candida albicans

Ordering Information:

Product Code	Housing Material	Color	Pore Size (µm)
TA126ATEKG030B00	ABS	White	3.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	17.2 kg	50,000 units

Other membranes porosity available upon request

TA156

Dimensions
Outside Diameter: 8.20 mm
Inside diameter: 6.33 mm
Total height: 11.70 mm
Body height: 9.30 mm
Filter material
Hydrophobic Acrylic Copolymer Membrane
Effective filtration area
0.363 cm^2
Air Flow
0.2 µm: > 4 ml/min@100 cm H_2O
3.0 µm: > 70 ml/min@20 cm H_2O
5.0 µm: > 80 ml/min@10 cm H_2O
10.0 µm: >100 LPM @ ΔP 260mm Hg/3.7cm^2

Application
Multipurpose
Water Breakthrough
800mmH20 for 2 minutes
Efficiency of filtration
100%
Ref. Standard
ISO 8536-4
Assembly method
Bonding/Interference
Maximum Operating Temperature
50°C
Pyrogenicity
<0,25 EU/ml

Sterilization
EtO, Gamma, e-beam
Bacterial retention
Brevundimonas diminuta
Candida albicans

Ordering Information:

Product Code	Housing Material	Color	Pore Size (µm)
TA156ATEKG002B00	ABS	White	0.2
TA156AFLEG002B00	PE	White	0.2
TA156PEV1200RB	PE	White	1.2
TA156ATEKG030B00	ABS	White	3.0
TA156AFLEG030B00	PE	White	3.0
TA156ATEKR050B00	ABS	White	5.0
TA156AFLEG050B00	PE	White	5.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	15.4 kg	50,000 units

TA225 - PRIMING PURGE FILTERS

Dimensions
Outside Diameter: Female Luer Lock
Total height: 18,60 mm
Filter material
Hydrophobic Acrylic Copolymer Membrane
PVDF Membrane
Effective filtration area
0.107 cm^2
Air Flow
0.2 µm: >10 ml/min @153 cm H_2O
1.2 µm: >40 ml/min @ 20 cm H_2O
0.8 µm: >11ml/min @20 cm H_2O
Application
Infusion

Water Breakthrough
0.2 µm: 0.5 bar for 5 minutes
1.2 µm: 0.177 bar for 15 minutes
0.8 µm: 0.3 bar for 1 minute
Efficiency of filtration
100%
Ref. Standard
ISO 8536-4
Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity
<0,25 EU/ml

Sterilization
EtO, Gamma, e-beam, steam

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size (µm)
TA225BV29G002D01*	PP	Blue	Acrylic	0.2
TA225BV29G008D01*	PP	Blue	PVDF	0.8
TA225BV29G012D01*	PP	Blue	Acrylic	1.2
TA225R030D01	PP	Blue	Acrylic	3.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	18.0 kg	50,000 units

* Suitable for any type of Male Luer Slip, Male Luer Lock or Rotating Male Luer Lock

Bacterial Air Vents without Closing Cap

TA228*

Dimensions
Outside Diameter: 6.10 mm
Inside diameter: 4.00 mm
Total height: 8.50 mm
Body height: 5.96 mm

Filter material
Membrane Hydrophobic Acrylic Copolymer
Effective filtration area
0.093 cm^2
Air Flow
> 30ml/min @ 50 cm H_2O
Application
Multipurpose
Water Breakthrough
>310 mmHg for 1 min
Efficiency of filtration
100%

Ref. Standard
ISO 8536-4
Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity
<0,25 EU/ml
Sterilization
EtO, Gamma, e-beam
Bacterial retention
Lactobacillus species

Ordering Information:

Product Code	Housing Material	Color	Pore Size (µm)
TA228APURG008D00	PE	White	0.8

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	13.0 kg	50,000 units

*Proprietary Product

TA235

Dimensions
Outside Diameter: 8.10 mm
Inside diameter: 6.27 mm
Total height: 11.60 mm
Body height: 9.20 mm

Filter material
Membrane Hydrophobic Acrylic Co-polymer
Effective filtration area
0.19 cm^2
Air Flow
≥ 90 scc/min at pressure 69 mBar
Application
Multipurpose
Water Breakthrough
320 mm Hg for 3 min
Efficiency of filtration
100%

Ref. Standard
ISO 8536-4
Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity
<0,25 EU/ml
Sterilization
EtO, Gamma, e-beam
Bacterial retention
Lactobacillus species

Ordering Information:

Product Code	Housing Material	Color	Pore Size (µm)
TA235AFLER008B00	PE, AC	White	0.8

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	13.0 kg	50,000 units

BACTERIAL AIR VENTS WITH CLOSING CAP

TA128*

Dimensions
Outside Diameter: 8.80 mm
Inside diameter: 6.25 mm
Total height: 14.10 mm
Body height: 9.10 mm
Filter material
Hydrophobic Acrylic Copolymer Membrane
Effective filtration area
0.509 cm^2
Air Flow
75ml/min@15 cmH_2O
Water Breakthrough
800mm/H_2O for 5 min
Application
Infusion
Efficiency of filtration
100%
Ref. Standard
ISO 8536-4
Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization
EtO, Gamma, e-beam
Cap Seal
0.5 bar x 15 sec.

Ordering Information:

Product Code	Housing Material	Color	Pore Size (µm)
TA128AFLEG030B00	PE	White	3.0
TA140AFLEG030D00	PE	Blue	3.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	13.0 kg	20,000 units

*Proprietary Product

TA140

Dimensions
Outside Diameter: 8.80 mm
Inside diameter: 6.15 mm
Total height: 14.10 mm
Body height: 10.10 mm
Filter material
Membrane Hydrophobic Acrylic Copolymer
Application
Infusion
Air Flow
75ml/min @ 15cm/H_2O
Water Breakthrough
800 mm/H_2O for 5 minutes
Effective filtration area
0.509 cm^2
Efficiency of filtration
100%
Ref. Standard
ISO 8536-4
Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization
EtO, Gamma, e-beam
Cap Seal:
0.5 bar x 15 sec

Ordering Information:

Product Code	Housing Material	Color	Pore Size (µm)
TA140AFLEG030B00	PE	White	3.0
TA140AFLEG030D00	PE	Blue	3.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	13.7 kg	20,000 units

Bacterial Air Vents with Closing Cap

TA160

Dimensions
Outside diameter: 6.27 mm
Inside diameter: 4.00 mm
Total height: 9.83 mm
Body height: 5.10 mm
Filter material
Membrane Hydrophobic
Acrylic Copolymer
Effective filtration area
0.520 cm^2
Application
Infusion
Air Flow
≥ 30 ml/min @ 15 cm H_2O

Water Breakthrough
800mm/H_2O for 2 min
Efficiency of filtration
100%
Ref. Standard
ISO 8536-4
Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization
EtO, Gamma, e-beam, steam

Bacterial retention
1.2 µm: Candida albicans
Cap Seal:
0.5 bar x 15 sec

Ordering Information:

Product Code	Housing Material	Color	Pore Size (µm)
TA160AEPTG012B00	PP	White	1.2
TA160AEPTG030B00	PP	White	3.0
TA160AEPTG030D00	PP	Blue	3.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	23.0 kg	50,000 units

TA161

Dimensions
Outside diameter: 8.41 mm
Inside diameter: 6.00 mm
Total height: 7.50 mm
Body height: 6.50 mm

Filter material
Membrane Hydrophobic
Acrylic Copolymer
Air Flow
1.2µm 65ml/min@20cmH_2O
3.0µm 40ml/min@10cmH_2O
Water Breakthrough
1.2 µm: 800mm H_2O for 2 min
3.0 µm: 800 mm H_2O for 5 min
Application
Infusion
Effective filtration area
0.317 cm^2

Efficiency of filtration
100%
Ref. Standard
ISO 8536-4
Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization
EtO, Gamma, e-beam, steam
Cap Seal:
0.5 bar x 15 sec

Air flow and water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product Code	Housing Material	Color	Pore Size (µm)
TA161BEPTG002B00	PP	White	0.2
TA161BEPTG012B00	PP	White	1.2
TA161BEPTG012C00	PP	Red	1,2
TA161BEPTG030B00	PP	White	3.0
TA161BEPTG030C00	PP	Red	3.0
TA161BEPTG030E00	PP	Green	3.0
TA161BEPTG030U00	PP	Blue	3.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	23.0 kg	50,000 units

TA224

Dimensions
Outside diameter: 6.35 mm
Inside diameter: 4.25 mm
Total height: 8.75 mm
Body height: 4.95 mm
Filter material
Hydrophobic Acrylic Copolymer Membrane
PVDF Membrane
Effective filtration area
0.297 cm^2
Application
Infusion

Air Flow
≥ 80ml/min@25cm/H_2O
Water Breakthrough
800mm/H_2O per 5min
Efficiency of filtration
100%
Ref. Standard
ISO 8536-4
Assembly method
Interference
Maximum Operating Temperature
50°C

Pyrogenicity
<0.25 EU/ml
Sterilization
EtO, Gamma, e-beam, steam
Cap Seal:
0.5 bar x 15 sec

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size (µm)
TA224BHP3G030B00	PP	White	Acrylic	3.0
TA224BHP3G030V00	PP	Blue	Acrylic	3.0
TA224BHP3G030V00	PP	Blue	PVDF	3.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	13.4 kg	50,000 units

IV CATHETER VENTS

TA222

Dimensions
Outside diameter: Male Luer Slip
Total height: 20.00 mm
Body height: 12.50 mm
Filter material
Membrane Hydrophobic Acrylic Copolymer

Effective filtration area
0.038 cm^2
Air Flow
1,2 µm: min 15ml/min@30mBar
max 15ml/min@30mBar
0.8 µm: >10ml/min @100cmH_2O
Application
Catheter Vents
Water Breakthrough
1.2 µm: 0.1 bar for 5 minutes
0.8 µm: >225mmHg
Efficiency of filtration
100%

Ref. Standard
ISO 8536-4
Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization
EtO, Gamma, e-beam, steam
Bacterial retention
1.2 µm: Candida albicans

Air flow and water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product Code	Housing Material	Color	Pore Size (µm)
TA222AV29G012A00	ABS	Clear	1.2
TA222AV29G008A00	PP	Clear	0.8

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	19.0 kg	25,000

Bacterial Air Vents
Disc Shape

FD106

Dimensions
Outside diameter: 14.20 mm
Inside diameter: 11.50 mm
Overall height: 3.75 mm

Effective Filtration Area
1.03 cm^2
Efficiency of filtration
100%
Application
Vent
Assembly method
Bonding
Pyrogenicity
<0.25 EU/ml
Air Flow
3.0µm: ≥54,8LPM@ΔP 260mmHg/3,7cm^2
5.0µm: ≥88LPM@ΔP 260mmHg/3,7cm^2

Maximum Operating
Temperature
50°C
Bacterial retention
Brevundimonas diminuta
Water Breakthrough
3.0µm: >= 3.0 psi@2100 mm H_2O
5.0µm: >= 2.0 psi@1400 mm H_2O
Sterilization Compatibility
EtO, Gamma, e-beam

Water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size µm	Air Flow
FD106ATEKG030B00	ABS	White	Membrane Hydrophobic Acrylic		3.0
FD106ATEKG050B00	ABS	White	Membrane Hydrophobic Acrylic		5.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	12.7 kg	50,000 units

FD177

Dimensions
Outside diameter: 7,55
Inside diameter: 5.45
Overall height: 2.50

Application
Vent

Effective Filtration Area
0,23 cm^2

Assembly method
Bonding

Efficiency of filtration
100%

Pyrogenicity
<0.25 EU/ml

Maximum Operating Temperature
50°C

Bacterial retention
Brevundimonas diminuta

Water Breakthrough
>155 mm Hg

Sterilization Compatibility
EtO, Gamma, e-beam

Water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size µm	Air Flow
FD177ABSV3000R	ABS	White	Membrane Hydrophobic Acrylic	3.0	>54.8 LPM @ ΔP 260 mm Hg/ 3.7cm^2

Packaging:	Dimension	Weight	Quantity / Box
	60 x 25 x 15 cm	1.1 kg	10,000 units

Bacterial Air Vents

Chemotherapy

TP30

Dimensions
Width: 27.40 mm
Length: 12.93 mm
Effective Filtration Area
3.60 cm^2
Weight
2.4 g
Ref. Standard
ISO 10993-1
Inlet / Outlet Connections
Inlet: FLS Female Luer Slip
Outlet: Hole
Efficiency of Filtration
100%
Application
Vent
Pressure
3.2 bar

Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Assembly Method
Bonding
Sterilization Compatibility
EtO
Bacterial Retention:
Brevundimonas diminuta

Air Flow
PTFE:
18-30 LPM/3.7 cm^2 @ ΔP=6000 mm H_2O
Acrylic Copolymer:
>4.7 LPM @ ΔP 700 mm Hg 3.7 cm^2
Water Breakthrough
PTFE: >25m H_2O
Acrylic Copolymer: >1.8bar

Air flow and water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size µm
TP030ANAV002AA02	PVC	clear / clear	PTFE	0.2
TP030BNAR002AA02	PVC + AC	clear / clear	Acrylic Copolymer	0.2
TP030BMAG002AA02	Polycarbonate + AC	clear / clear	Acrylic Copolymer	0.2

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	13.4 kg	5,000 units

TP38

Dimensions
Width: 27.40 mm
Length: 37.50 mm
Effective Filtration Area
3.60 cm^2
Weight
2.4 g
Application
Vent
Ref. Standard
ISO 1135-4
Inlet / Outlet Connections
Inlet: FLS Female Luer Slip
Outlet: Hole

Efficiency of Filtration
100%
Pressure
3.2 bar
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Assembly Method
Bonding
Sterilization Compatibility
EtO
Bacterial Retention
Candida albicans

Air Flow
>50 LPM @ ΔP 700 mm Hg/3.7 cm^2
Water Breakthrough
>1.38bar

Air flow and water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size µm
TP038ANAV010AA02	PVC	Clear / Clear	PTFE	1.0
TP038ANAV010AF02	PVC	Clear / Yellow	PTFE	1.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	11.5 kg	2,500 units

Transducer Protectors / Blood Catchers

TRANSDUCER PROTECTORS CHARACTERISTICS

Range of application
Transducer protectors are used in hemodialysis blood lines to keep the blood side of the circuit separated from the machine side, and to prevent contamination of the machine by the blood flowing through the circuit. This contamination could be very dangerous and can lead to patient cross contamination with hepatitis B or other virus. Transducer protectors let air pass while preventing the blood from passing through. TP's incorporate bacterial retentive membrane (0.2µm, if not otherwise requested).

Transducer protectors must guarantee a sufficient air flow to provide immediate reaction time if there is a change in patient blood pressure. If the TP does not react quickly enough, this can be very dangerous for the patient.
GVS transducer protectors are also suitable as air or gas vents. Venting characteristics are achieved by using hydrophobic membranes. GVS has a full range of transducer protector products which incorporate either highly hydrophobic PTFE or hydrophobic acrylic membranes.

Manufacturing technology
GVS transducer protectors are manufactured with fully automated assembly technology, and the sealing is done without any glues or solvents – they are ultrasonically welded. Automatic testing machines keep the manufacturing process consistent and guarantee superior quality.

Wide choice
There are several models listed below which enable customers to find the suitable product for the intended application. We use a variety of housing resins for different applications and sterilization methods. The wide range of available media (PTFE or acrylic membranes) provides high flexibility and covers almost any requirement of the market.
Because of our wide choice of shapes (Flat TP, TP "bell" shape and TP "dome") and the very different type of materials and media used, the GVS transducer protector line is suitable in any blood line or other medical device.
Available membrane sizes are from 0.02 to 10 micron. Pressure isolator with flexibe diaphragm are available for open heart surgery.

Assembly method
The available connections are Female Luer Lock / Male Slip Luer, Female Luer Lock / Male Luer Lock and Male Luer Slip. They can be assembled or bonded (standard with cyclohexanone, cyanoacrylate and methyl ethyl ketone).

Bacterial / Virus retention
Our transducer protectors equipped with membranes 0.2 µm to 3 µm can be considered bacterial retentive.

Biocompatibility
GVS transducer protectors comply with the ISO 10993 standard for external communicating device – blood path indirect – prolonged contact duration.

Drug compatibility
Our 25mm products have low protein binding characteristics that ensure minimal adsorption of drugs and they have proven bacterial retention. Drug compatibility is depending on membrane used.

Transducer Protectors

TP100

TP100 represents a new way to achieve a transducer protector for application in haemodialysis machines. The manufacturing concept of TP100 is to produce a complete, finished product during each molding cycle. This avoids secondary operations as well as saving energy during the production cycle. This leads to improved homogeneity, integrity, and design flexibility.

Homogeneity:
Using this process the TP100 has no weld or glue lines. It appears to be one piece.
Integrity:
The material integrity is assured by the chemical bond between the two parts of the housing during the molding cycle of the second part.
Design Flexibility:
The unique manufacturing process of TP100 allows GVS to design products from materials that may not be compatible with normal solvent or ultrasonic bonding processes.
TP100 has been introduced as a way to meet the requirements of customers seeking to meet the demands of specific markets. Currently the TP100 is specified when the customer seeks to meet the following needs:

- Wide adaptability on haemodialysis machines
- Stability after either gamma or beta irradiation
- High confidence of no leakage
- No deformation in the parts after storage
- Bacterial and viral barrier

Dimensions
Width: 23,5 mm
Length: 23.5 mm
Weight
2.1 g
Inlet / Outlet Connections
Inlet: MLL Male Luer Lock
Outlet: FLL Female Luer Lock
Pressure
2.5 bar for 15 sec.
Air Flow
≥30 ml min @ ΔP =12 mbar

Water Breakthrough
1 bar for 1 hour
Application
Hemodialysis
Ref. Standard
ISO 8638
Effective Filtration Area
1.44 cm^2
Efficiency of filtration
100 %
Maximum Operating Temperature
50 °C

Pyrogenicity
<0,25 EU/ml
Assembly Method
connectors/bonding
Sterilization Compatibility
EtO, Gamma, Beta
Bacterial Retention
Brevundimonas diminuta

Air flow and water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product code	Housing material	Color	Filter material	Pore size or micronage (µm)
TP100ACOG002AA00	PVC DEHP Free	Clear	PVDF	0,2

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 20 cm	9.2 kg	4,000 units

TP36

Dimensions
Width: 27.40 mm
Length: 21.60 mm
Effective Filtration Area
1.33 cm^2
Weight
2.40 g
Ref. Standard
ISO 8638
Inlet / Outlet Connections
Inlet: FLL Female Luer Lock
Outlet: MLS Male Luer Slip
Application
Hemodialysis

Efficiency of Filtration
100%
Pressure
3.2 bar
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Assembly Method
Connectors/Bonding
Sterilization Compatibility
EtO. With polycarbonate housing: EtO, Gamma, e-beam

Bacterial Retention
Brevundimonas diminuta
Air Flow
>60ml/min (pressure 500 mm/H_2O)
Water Breakthrough
> 0,4 bar for 1 minute

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size or µmage
TP036ANAG002AA01	PVC	clear / clear	Acrylic Copolymer	0.2

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	16.5 kg	5,000 units

TRANSDUCER PROTECTORS 20 MM DOME SHAPE

TP41 DOME

Dimensions
Width: 29.65 mm
Length: 24.50 mm
Effective Filtration Area
1.31 cm^2
Weight
2.4 g
Ref. Standard
ISO 8638
Inlet / Outlet Connections
Inlet FLL - Outlet MLL
Efficiency of Filtration
100%
Application
Hemodialysis

Pressure
3.2 bar
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Assembly Method
Connectors/Bonding
Sterilization Compatibility
EtO
Bacterial Retention
Brevundimonas diminuta
Air Flow
>4,7 LPM@ΔP 700 mm Hg/3,1 cm2
Water Breakthrough
>1,8 bar

Air flow and water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product Code	Description
TP041ANAG002AA00	Transducer Protector TP41 - PVC/0.2 µm PVDF - clear/clear

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	16.5 kg	4,000 units

Transducer Protectors

20 mm Dome Shape

TP42 DOME

Dimensions
Width: 29.65 mm
Length: 24.50 mm
Effective Filtration Area
1.31 cm^2
Weight
2.4 g
Ref. Standard
ISO 8638
Inlet / Outlet Connections
Inlet MLS - Outlet MLL
Application
Hemodialysis

Efficiency of Filtration
100%
Pressure
3.2 bar
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Assembly Method
Connectors/Bonding
Sterilization Compatibility
EtO

Bacterial Retention
Brevundimonas diminuta
Air Flow
>4,7 LPM@ΔP 700 mm Hg/3,1 cm2
Water Breakthrough
>1,8 bar

Air flow and water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product Code	Description
TP042ANAG002AA00	Transducer Protector TP42 - PVC/0.2 µm PVDF - clear/clear

Packaging:	Dimension	Weight	Quantity / Box
	30 x 50 x 35 cm	14.0 kg	4,000 units

TP43 DOME

Dimensions
Width: 29.65 mm
Length: 24.50 mm
Effective Filtration Area
1.31 cm^2
Weight
2.4 g
Ref. Standard
ISO 8638
Inlet / Outlet Connections
Inlet MLS – Outlet MLS
Efficiency of Filtration
100%

Application
Hemodialysis
Pressure
3.2 bar
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Assembly Method
Connectors/Bonding
Sterilization Compatibility
EtO*
Bacterial Retention
Brevundimonas diminuta

Air Flow
>4,7 LPM@ΔP 700 mm Hg/3,1 cm2
Water Breakthrough
>1,8 bar

Air flow and water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product Code	Description
TP043ANAG002AA00	Transducer Protector TP43 - PVC/0.2 µm PVDF - clear/clear

Packaging:	Dimension	Weight	Quantity / Box
	30 x 50 x 35 cm	14.0 kg	4,000 units

TP44 DOME

Dimensions
Width: 29.85 mm
Length: 24.50 mm
Effective Filtration Area
1.31 cm^2
Weight
2.4 g

Ref. Standard
ISO 8638
Inlet / Outlet Connections
Inlet FLL – Outlet MLS
Efficiency of Filtration
100%
Application
Hemodialysis
Pressure
3.2 bar
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml

Assembly Method
Connectors/Bonding
Sterilization Compatibility
EtO*
Bacterial Retention
Brevundimonas diminuta
Air Flow
>4,7 LPM@ΔP 700 mm Hg/3,1 cm^2
Water Breakthrough
>1,8 bar

Air flow and water breakthrough specifications refer to the raw membrane material, not to the finished product.

Ordering Information:

Product Code	Description		
TP044ANAG002AA00	Transducer Protector TP44 - PVC/0.2 µm PVDF - clear/clear		
Packaging:	Dimension	Weight	Quantity / Box
	30 x 50 x 35 cm	14.0 kg	4,000 units

TRANSDUCER PROTECTORS 25 MM FLAT SHAPE

TP25

Dimensions
Width: 27.40 mm
Length: 21.50 mm
Effective Filtration Area
3.6 cm^2
Weight
2.50 g
Ref. Standard
ISO 8638
Inlet / Outlet Connections
Inlet: FLL Female Luer Lock
Outlet: MLS Male Luer Slip
Efficiency of Filtration
100%
Pressure
3.2 bar
Application
Hemodialysis

Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Assembly Method
Connectors/Bondin
Sterilization Compatibility
EtO*
Bacterial Retention
0.2 µm: Brevundimonas diminuta
1.0 µm: Candida albicans
Air Flow
PTFE
0.2 µm >55 ml/min
1.0 µm >100 ml/min
Acrylic Copolymer
0.2 µm >15 ml/min

Water Breakthrough
PTFE
0.2 µm 1 bar/1 minute
1.0 µm 0,1 bar/1 minute

Acrylic Copolymer
0.2 µm 1 bar/1 minute

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size µm
TP025ANAV002AV01	PVC	clear / blue	PTFE	0.2
TP025ANAR002AV01	PVC	clear / blue	Acrylic Copolymer	0.2
TP025ANAV004AV01	PVC	Clear / blue	PTFE	0.45
TP025ANAV010AV01	PVC	clear / blue	PTFE	1.0
Packaging:	Dimension	Weight	Quantity / Box	
	60 x 40 x 25 cm	13.5 kg	5,000 units	

Transducer Protectors
25 mm Flat Shape

TP26

Dimensions
Width: 27.40 mm
Length: 21.64 mm
Effective Filtration Area
3.6 cm^2
Weight
2.50 g
Ref. Standard
ISO 8638
Efficiency of Filtration
100%
Inlet / Outlet Connections
MLS Male Luer Slip
Pressure
3,2 bar
Maximum Operating Temperature
50°C
Application
Hemodialysis
Pyrogenicity
<0,25 EU/ml
Assembly Method
Bonding

Sterilization Compatibility
EtO*
Bacterial Retention
0.2 µm: Brevundimonas diminuta
0.45 µm: Serratia marcescens
Air Flow
PTFE
0.2 µm >55 ml/min
0.45 µm >95 ml/min
Acrylic Copolymer
0.2 µm >15 ml/min

Water Breakthrough
PTFE
0.2 µm 1 bar/1 minute
0.45 µm 0,5 bar for 1 minute

Acrylic Copolymer
0.2 µm 1 bar/1 minute

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size µm
TP026ANAG002AA01	PVC	clear / clear	Acrylic Copolymer	0.2
TP026ANAV002AC01	PVC	clear / red	PTFE	0.2
TP026ANAV002AV01	PVC	clear / blue	PTFE	0.2
TP026ANAV004AV01	PVC	clear / blue	PTFE	0.45
TP026ANAV010AV01	PVC	clear / blue	PTFE	1.0

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	13.5 kg	5,000 units

TP31

Dimensions
Width: 27.40 mm
Length: 26.60 mm
Effective Filtration Area
3.6 cm^2
Weight
2.5 g
Ref. Standard
ISO 1135-4
Efficiency of Filtration
100%
Inlet / Outlet Connections
Inlet: MLS Male Luer Slip
Outlet: Male Luer Slip + Tube
Pressure
3.2 bar
Application
Breathing Systems
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Assembly Method
Connectors/Bonding
Sterilization Compatibility
EtO*
Bacterial Retention
Brevundimonas diminuta
Candida albicans
Air Flow
0.2 µm: >15 ml/min
Water Breakthrough
0.2 µm: 1 bar/1 minute

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size µm
TP031ANAG002AA01	PVC	clear / clear	Acrylic Copolymer	0.2 µm

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	13.5 kg	5,000 units

TP32

Dimensions
Width: 27.40 mm
Length: 21.50 mm
Effective Filtration Area
3.6 cm^2
Weight
2.5 g
Ref. Standard
ISO 8638
Inlet / Outlet Connections
Inlet: FLS Female Luer Slip
Outlet: MLS Male Luer Slip
Efficiency of Filtration
100%
Application
Hemodialysis
Pressure
3.2 bar
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Assembly Method
Connectors/Bonding
Sterilization Compatibility
EtO*
Bacterial Retention
Brevundimonas diminuta
Air Flow
>55 ml/min
Water Breakthrough
> 1 bar for 1 minute

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size µm
TP032ANAV002AA02	PVC	Clear / Clear	PTFE	0.2

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	11.20 kg	5,000 units

TRANSDUCER PROTECTORS - 25 MM BELL SHAPE

TP28

Dimensions
Width: 27.40 mm
Length: 45.75 mm
Effective Filtration Area
3.6 cm^2
Weight
3.30 g
Ref. Standard
ISO 8638
Inlet / Outlet Connections
Inlet: FLL Female Luer Lock
Outlet: MLS Male Luer Slip
Efficiency of Filtration
100%

Pressure
3.2 bar
Maximum Operating Temperature
50°C
Application
Hemodialysis
Pyrogenicity
<0.25 EU/ml
Assembly Method
Connectors/Bonding
Sterilization Compatibility
EtO*
Bacterial Retention
0.2 µm: Brevundimonas diminuta

Air Flow
PTFE
0.2 µm >55 ml/min
Acrylic Copolymer
0.2 µm >15 ml/min
Water Breakthrough
PTFE
0,2 µm 1 bar/1 minute
Acrylic Copolymer
0,2 µm 1 bar/1 minute

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size µm
TP028ANAG002AV01	PVC	clear / blue	Acrylic Copolymer	0.2

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	11.7 kg	2,500 units

Please contact GVS Sales Medical Division for detailed ordering Information.

TP27

Dimensions
Width: 27.40 mm
Length: 45.34 mm
Effective Filtration Area
3.6 cm^2
Weight
3.30 g
Ref. Standard
ISO 8638
Efficiency of Filtration
100%
Inlet / Outlet Connections
MLS Male Luer Slip
Application
Hemodialysis
Pressure
3.2 bar

Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Application
Hemodialysis
Pipettor Protection
Air / Gas Filtration
Pressure Monitor
Protection
Assembly Method
Bonding
Sterilization Compatibility
Standard PVC: EtO
PVC gamma: EtO, Gamma, e-beam
Bacterial Retention
0.2 µm: Brevundimonas diminuta
1.0 µm: Candida albicans

Air Flow
PTFE
0.2 µm >55 ml/min
1.0 µm >100 ml/min
Acrylic Copolymer
0.2 µm >15 ml/min
Water Breakthrough
PTFE
0.2 µm 1 bar/1 minute
1.0 µm 0,1 bar/1 minute
Acrylic Copolymer
0.2 µm 1 bar/1 minute

Ordering Information:

Product Code	Housing Material	Color	Filter Material	Pore Size µm
TP027ANAV010AV01	PVC	clear / blue	PTFE	0.2

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	11.7 kg	2,500 units

Please contact GVS Sales Medical Division for detailed ordering Information.

Pressure Monitor Isolator with flexible diaphragm

TP10

Dimensions
Width: 38.00 mm
Length: 60.72 mm
Housing Material
Rigid PVC / PVC DEHP Free
Color
Clear
Filter Material
Flexible PVC film
Application
Open heart surgery
Weight
9.70 g

Inlet / Outlet Connections
MLS Male Luer Slip
Pressure
6.0 bar
Ref. Standard
ISO 1135-4
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Assembly Method
Bonding

Sterilization Compatibility
EtO

Ordering Information:

Product Code	Description
TP010AAT0000AA00	TP10 Isolator / 1 Inlet and 1 Outlet
TP010ARA0000AA00	TP10 Isolator PVC DEHP Free / 1 Inlet and 1 Outlet

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	11.8 kg	1,000 units

IV Flow Regulators

IV FLOW REGULATOR CHARACTERISTICS

Safe
GVS IV Flow Regulators provide constant flow rate during the entire infusion procedure. There is no need for continuous adjustment of flow rate and there is no risk of over-infusion. Because it takes two hands to set and adjust our products, this prevents accidental changes in flow.

Easy
It is very easy to accomplish the required flow rate, and prime the IV line. Just set the requested flow rate and count the drops and the GVS IV Flow Regulator is ready to use.

Inexpensive
The GVS IV Flow Regulator is the best solution for guarding against the high investment required to purchase infusion pumps which are also involving costly IV set. GVS IV Flow Regulators can be used to upgrade any gravity IV set. No expensive maintenance is required; GVS IV Flow Regulators are disposable single use products.

Accurate
Accuracy is always important and The GVS IV Flow Regulator is the solution for the well known problem of inconsistency provided by the roller clamps.

Stable
Stability is a key characteristic of GVS IV Flow Regulators. Stability of flow rate over the 24 hours of infusion allows use of an IV set equipped with the GVS IV Flow Regulators in critical applications. This is due to the large size of the channels in its "triple labyrinth" path which avoids the risk of clogging due to micro-crystals (the use of our Speedflow IV filter downstream of the GVS IV Flow Regulator eliminates crystalline components, dirt, air, and bacteria. See section IV Solution Filter).

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Wide use
GVS IV Flow Regulators are compatible with any existing gravity IV set or they can be provided in an Extension Set.
The product can be used in a variety of applications, including drug delivery and parenteral nutrition can be made through them. GVS IV Flow Regulators are Latex, PVC and free of animal origin substances.

Your Flow Regulator
The GVS IV Flow Regulator can be imprinted with personalized logo, reorder number, or other nomenclature for the customer that want to have a distinctive product on the market. Your GVS IV Flow Regulator can be found between Easydrop, Eurodrop and Crystaldrop.

IV Flow Regulators

EASYDROP FLOW REGULATOR

Easydrop is a single-use disposable flow regulator which allows highly accurate control of flow rate in gravity administered I.V. solutions. It'is a very low-cost alternative to highly expensive I.V. pump systems (with expensive and dedicated high pressure I.V. sets).
Easydrop is used with standard gravity I.V. sets and requires a “two hands” safety operation for any adjustment.
The Easydrop operating principle is the “triple labyrinth”, the GVS patented technology that ensures a very accurate flow rate and high stability in delivery throughout the whole infusion session. No electrical power is required. Easydrop has a very light weight and a modern look.
Easydrop can be added as a component of a standard gravity I.V. line or can be provided into an extension set to be connected to an existing standard gravity I.V. line.

Easydrop

SPECIFICATIONS:

Biosafety
Materials comply with USP class VI-121°C test and ISO 10993
Dimensions
Diameter x Height: 32.00 x 34.20 mm (body)
Weight: 9.00 g
Operating range
20 to 250 ml/h*
Inlet/Outlet connectors
Standard IV tubing connectors (2.7x3.5mm or 3.0x4.1mm)
Materials of construction
Housing: White ABS (also available in other materials and colors) Gasket: SEBS (also available in other materials)

Sterilization
Suitable for EtO (44°C/111°F max) and gamma (50kGy) sterilization. Higher temperature can cause a reduction in performance.
Maximum operating pressure
0.5 bar (7 psi) in static condition, Gravity set.
Maximum storage and operating temperature
40°C (104°F) indoor operation
Tolerance of flow rate*
range 5-15 ml/h not defined
range 20ml/h tolerance on flow rate -10 / + 50%
range 21-40ml/h tolerance on flow rate -10 / + 30%
range 41-250ml/h tolerance on flow rate -10 / + 20%
Stability of flow rate
10% flow rate fluctuation during 24 hours infusion (tested with NaCl 0.9% solution from glass bottles).

Calibrated scale
Easydrop is available in single and double calibration scale. Easydrop single scale has a general purpose scale that can be used for any kind of solution. Easydrop double scale has one first scale for liquid having density lower than 10% (i.e. light solutions with basis of NaCl 0.9% or Glucose 5% and 10% or Mannitol 5% and 10%) and a second scale for liquid having higher density (40% scale calibrated for solutions made with a basis of Glucose 20% or Mannitol 18%).
Personalized scales are available upon request.
Pyrogenicity
<0.25 EU/ml using the LAL test method.
Operating instruction
Place the I.V. solution container (plastic bag or glass bottle or burette) at about 80 cm above the outlet level of the I.V. administration set.

Connect the I.V. set to the container.
Connect the Extension Set with Easydrop to the I.V. set (not necessary if Easydrop is already contained in I.V. set)
Open the clamp to begin priming the line.
Check that liquid is flowing out through the end of the line.
Easydrop is provided by GVS in the OPEN position.
Prime Easydrop completely turning Easydrop from OPEN position to OFF position and then adjust the Easydrop scale to the required value.
Connect the I.V. line to the catheter or needle.
At the first stage of infusion, double check that Easydrop is delivering the required flow rate by counting the drops.
In order to change the flow rate adjust height of I.V. solution container. Raise the container to increase the flow rate, lower the container to decrease it.

Note
* Easydrop scales have been calibrated according to GVS standard test conditions:
- Head pressure 80 cm (Head pressure is considered the differential height between the inlet and outlet of liquid in the I.V administration set).
- Standard ISO8536-4 gravity I.V. line: vented drip chamber 20 drops/ml with 15 micron filter, tubing 3.0 x 4.1 mm, Y-site connector, equipped with the Easydrop and Male Luer Lock connector at the end of the line.
- Needle used is 20G, 36 mm length.
- Total length of the line 150 cm.
- Liquid used: NaCl 0.9% physiological solution from glass bottles of 500ml.
- Changing of any of the above parameters can cause a different response in flow regulation.

IMPORTANT
- Do not use Easydrop in OPEN position, this will cause an uncontrolled liquid delivery (about 3 liters/hour).
- Easydrop cannot be used for the administration of blood or blood components.
- Using a high viscosity solution can cause lower flow rate than indicated on the scale. Compensate for this by increasing the head pressure applied.
- Use of a 15 micron filter into the drip chamber is suggested in order to prevent crystals from blocking the fluid path inside Easydrop.
- Drop counting is always necessary in order to confirm proper flow rate. If necessary, adjust the height of the I.V. solution container to increase or decrease the flow rate.

Example
Drip chamber 20 drops/ml
200 ml/h = 66 drops per minute.
100 ml/h = 33 drops per minute.
50 ml/h = 16 drops per minute.
Drip chamber 15 drops/ml
200 ml/h = 50 drops per minute.
100 ml/h = 25 drops per minute.
50 ml/h = 12 drops per minute.
Drip chamber 10 drops/ml
200 ml/h = 33 drops per minute.
100 ml/h = 16 drops per minute.
50 ml/h = 8 drops per minute.

EASYDROP Ordering Information:

Product Code	Description
RN067BTEK0000D02	Easydrop Flow Regulator white / single scale
RN130BTEK0000D02	Easydrop Flow Regulator white / double scale

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	15.9 kg	1,500 units

IV Flow Regulators

Eurodrop Flow Regulator

Eurodrop is a single-use disposable flow regulator which allows highly accurate control of flow rate in gravity administered I.V. solutions. It'is a very low-cost alternative to highly expensive I.V. pump systems (with expensive and dedicated high pressure I.V. sets). Eurodrop is used with standard gravity I.V. sets and requires a “two hands” safety operation for any adjustment. The Eurodrop operating principle is the “triple labyrinth”, the GVS patented technology that ensures a very accurate flow rate and high stability in delivery throughout the whole infusion session.
No electrical power is required. Eurodrop has a very light weight and a modern look. Eurodrop can be added as component of a standard gravity I.V. line or provided into an extension set to be connected to an existing standard gravity IV line.

SPECIFICATIONS

Biosafety
Materials comply with USP class VI-121°C test and ISO 10993

Dimensions
Diameter x Height: 32.00 x 34.20 mm (body)
Weight: 9.00 g
Operating range
20 to 250 ml/h*

Inlet/Outlet connectors
Standard IV tubing connectors
(2.7 x 3.5 mm or 3.0 x 4.1 mm)

Materials of construction
Housing: White ABS (also available in other materials and colors) Gasket: SEBS (also available in other materials)

Sterilization
Suitable for EtO (44°C/111°F max) and gamma (50kGy) sterilization. Higher temperature can cause a reduction in performance.

Maximum operating pressure
0.5 bar (7 psi) in static condition, Gravity set.

Maximum storage and operating temperature
40°C (104°F) indoor operation

Tolerance of flow rate*
range 5-15 ml/h not defined.
range 20ml/h tolerance on flow rate -10 / + 50%
range 21-40ml/h tolerance on flow rate -10 / + 30%
range 41-250ml/h tolerance on flow rate -10 / + 20%

Stability of flow rate
10% maximum flow rate fluctuation during 24 hours infusion (tested with NaCl 0.9% solution from glass bottles).

Calibrated scale
Eurodrop is available in single and double calibration scale.
Eurodrop single scale has a general purpose scale that can be used for any kind of solution.
Eurodrop double scale has one first scale for liquid having density lower than 10% (i.e. light solutions with basis of NaCl 0.9% or Glucose 5% and 10% or Mannitol 5% and 10%) and a second scale for liquid having higher density (40% scale calibrated for solutions made with a basis of Glucose 20% or Mannitoil 18%).
Personalized scales are available upon request.

Pyrogenicity
<0.25 EU/ml using the LAL test method.

Operating instruction

Place the I.V. solution container (plastic bag or glass bottle or burette) at about 80 cm above the outlet level of the I.V. administration set.
Connect the I.V. set to the container.
Connect the Extension Set with Eurodrop to the I.V. set (not necessary if Eurodrop is already contained in I.V. set)
Open the clamp to begin priming the line.
Check that liquid is flowing out through the end of the line.
Eurodrop is provided by GVS in the OPEN position.
Prime Eurodrop completely turning Eurodrop from OPEN position to OFF position and then adjust the Eurodrop scale to the required value.
Connect the I.V. line to the catheter or needle.
At the first stage of infusion, double check that Eurodrop is delivering the required flow rate by counting the drops.
In order to change the flow rate adjust height of I.V. solution container. Raise the container to increase the flow rate, lower the container to decrease it.

Note

* Eurodrop scales have been calibrated according to GVS standard test conditions:
- Head pressure 80 cm (Head pressure is considered the differential height between the inlet and outlet of liquid in the I.V administration set).
- Standard ISO8536-4 gravity I.V. line: vented drip chamber 20 drops/ml with 15 micron filter, tubing 3.0 x 4.1 mm, Y-site connector, equipped with the Eurodrop and Male Luer lock connector at the end of the line.
- Needle used is 20G, 36 mm length.
- Total length of the line 150 cm.
- Liquid used: NaCl 0.9% physiological solution from glass bottles of 500ml.
- Changing of any of the above parameters can cause a different response in flow regulation.

IMPORTANT

- Do not use Eurodrop in OPEN position, this will cause an uncontrolled liquid delivery (about 3 liters/hour).
- Eurodrop cannot be used for the administration of blood or blood originated products.
- Using a high viscosity solution can cause lower flow rate than indicated on the scale. Compensate for this by increasing the head pressure applied.
- Use of a 15 micron filter into the drip chamber is suggested in order to prevent crystals from blocking the fluid path inside Eurodrop.
- Drop counting is always necessary in order to confirm proper flow rate. If necessary, adjust the height of the I.V. solution container to increase or decrease the flow rate.

Example

Drip chamber 20 drops/ml
200 ml/h = 66 drops per minute.
100 ml/h = 33 drops per minute.
50 ml/h = 16 drops per minute.
Drip chamber 15 drops/ml
200 ml/h = 50 drops per minute.
100 ml/h = 25 drops per minute.
50 ml/h = 12 drops per minute.
Drip chamber 10 drops/ml
200 ml/h = 33 drops per minute.
100 ml/h = 16 drops per minute.
50 ml/h = 8 drops per minute.

EURODROP Ordering Information:

Product Code	Description
RN200BTEK0000D01	Eurodrop Flow Regulator white / single scale
RN201BTEK0000D01	Eurodrop Flow Regulator white / double scale

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 35 cm	15.9 kg	1,500 units

Membranes

GVS Group is a fully integrated producer and supplier of membrane-based solutions for the Heathcare market. Our membranes are suitable for all of the IV Medical Applications. All of our membranes are manufactured at our facilities in North America and Italy, allowing for easy and cost-effective customization. Because we manufacture more types of membranes than any other company, we are able to partner with you for all of your OEM Membrane needs.

SAFE-IV
Air Flow Stop Membrane for Infusion Sets

Description

This PES (Polyethersulfone) membrane, cast on a non-woven PET (Polyethyle- nethereftalate) support, has been formulated to satisfy the necessity of the use of a particle filter in IV administration sets (in compliance with ISO 8536-4) but with the additional performance of the Automatic Air flow Stop in case of emptied Fluid Container letting the infusion tube completely filled. This Allow the Nurse to re-use the same infusion kit only by changing the infusion container.

The Safe-IV prevent air infusion and infusion-related to infections, reduces tasks at hands and saves time and costs.

How it works

SAFE – IV Air Flow Stop Membrane works with acqueous solutions and once wetted, they stop gasses.

Stopping the gasses means that liquid solutions pass through the hydrophilic membranes wetting her, this stop the gasses until the applied pressure exceeds the "bubble point". Dry hydrophilic membrane allows gas to pass through.

Major Advantages

» Patient safety: prevention of air infusion and related infections

» Workload, time and costs reduction: absence of alarm and stressful situations;

» High Flow Rate.

Biosafety
Height: 22.00 mm
Diameter: 10.20 mm

Materials
PES/PET

Water Bubble Point [Bar]
0.2 approx

Thickness [µm] 150+/-10

Water Flow Rate
In compliance with ISO 8536-4

Sterilization
Gamma, E-beam, EtO

Ordering Informations
PI Master Roll Ref.
M10F0800H4500
Please contact GVS Sales Medical Division for detailed ordering information.

FORTEX

FORTEX
PVDF hydrophobic membrane

Description
The Fortex PVDF membrane is an hydrophobic / oleophobic / hemophobic PVDF membrane cast on a non-woven polyester support. Treatments give the membrane superior skills to be compatible with the most performing requirements.

Major Advantages
- Polyesther supported, hydrophobic PVDF
- Hydrophobic/oleophobic/hemophobic
- Wide chemical compatibility
- Non-wettable by most low-surface tension liquids
- Excellent handling properties
- High mechanical strength
- Compatible with all sealing/welding methods
- EtO, Gamma, Beta and Steam compatible
- Comply with ISO 10993-1 and USP Class VI testing

Applications
Fortex PVDF hydrophobic membranes offers a very cost effective solution to many healthcare requirements. It's a real breakthrough for all venting needs.

Medical Applications
- Spike vents
- IV filter vents
- Transducer protectors
- Vacuum suction canisters
- Urine drain bags
- Ostomy bags

The Fortex PVDF is repellent to fluids including:
- Body fluids
- Lipid solutions
- Water
- Oils (oleophobic)
- Organic solvents
- Blood (hemophobic)

Dimensions
Master roll (max): 450 mm x 180 m (WxL)
Plastic core: ID 76 mm, OD 88 mm
Custom roll, sheet and disc sizes available on demand.

Packaging
Plastic core: ID 76 mm, OD 88 mm
Packaging: single PE package for each roll; a second PE collecting bag.

Performance:

Pore size (µm)	Thickness (µm)	MIN Air Flow Rate (l/min at 1 cm² at 1 bar)	MIN Water Breaktrough (bar)
0.20	150 - 220	2,1	1,80
0.45	150 - 220	4,5	1,00
0.80	150 - 220	11,4	0,80
1.20	150 - 220	31,3	0,30
3.00	150 - 220	41,8	0,15

Ordering Informations

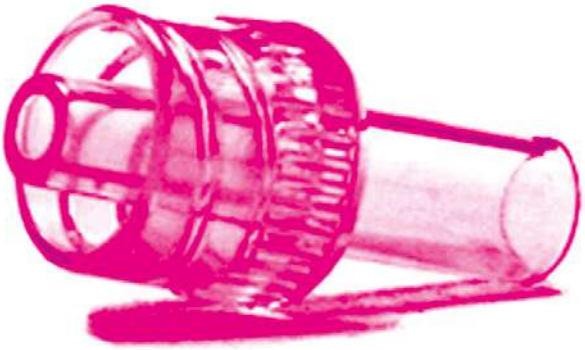
Master Roll Ref.	Description
M09G0020H4500E	Fortex PVDF hydrophobic - haemophobic membrane, 0.20 µm, 450 mm width
M09G0045H4500E	Fortex PVDF hydrophobic - haemophobic membrane, 0.45 µm, 450 mm width
M09G0080H4500E	Fortex PVDF hydrophobic - haemophobic membrane, 0.80 µm, 450 mm width
M09G0120H4500E	Fortex PVDF hydrophobic - haemophobic membrane, 1.2 µm, 450 mm width
M09G0300H4500E	Fortex PVDF hydrophobic - haemophobic membrane, 3.0 µm, 450 mm width

Please contact GVS Sales Medical Division for detailed ordering Information.

Luer Connectors

GVS provides a full range of Luer connectors:
- Male luer lock
- Rotating male luer lock
- Female luer lock

All of these connectors can be manufactured with closed or vented caps or with special air vent caps.
These are suitable for any numerous medical applications, available in different raw materials and colors.
Depending on the materials of construction, they can be suitable for EtO, Gamma, e-beam or steam sterilization.



MALE LUER LOCK

Dimensions
Height: 22.00 mm
Diameter: 10.20 mm
Raw Material
ABS
Ref. Standard
ISO 594-1/2
Application
Multipurpose

Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
ABS Gamma EtO

Ordering Information:

Product Code	Description
RN214ATER0000A00	Male Luer Lock Connector for 2.0 mm OD Tube in clear ABS
RN169ATER0000A0	Male Luer Lock Connector for 2.2 mm OD Tube in clear ABS
RN171ATER0000A0	Male Luer Lock Connector for 2.5 mm OD Tube in clear ABS
RN173ATER0000A0	Male Luer Lock Connector for 3.0 mm OD Tube in clear ABS
RN054AABS0000A00	Male Luer Lock Connector for 4.1 mm OD Tube in clear ABS
RN054DMAC0000B0	Male Luer Lock Connector for 4.1 mm OD Tube in white ABS for photosensitive drugs
RN175ATER0000A0	Male Luer Lock Connector for 5.5 mm OD Tube in clear ABS
RN177ATER0000A0	Male Luer Lock Connector for 6.8 mm OD Tube in clear ABS

Packaging:	Dimension	Weight	Quantity / Box
	50 x 39 x 31 cm	12.5 kg	20,000 units

Suitable Vented Cap: see Code RN053DPEH0000A00 in Cap for Male Luer Lock section
Suitable Bacterial Priming Purge Filter: see codes TA225 in Cap for Male Luer Lock section

NEW SELF-EJECTING ROTATING MALE LUER LOCK ONE HAND OPERATION

Dimensions
Height: 49.71 mm
Diameter: 14.00 mm
Color
Clear + clear / red / blue
Raw Material
PVC + PC + LDPE
Application
Multipurpose

Ref. Standard
ISO 594-1/2
Assembly Method
Bonding
Pyrogenicity
<0,25 EU/ml
Maximum Operating Temperature
50 °C
Sterilization
EtO, Gamma, Beta

Ordering Information:

Product Code	Description
CO1004ANAKLEA00	Rotating Male Luer Lock Connector with clear LDPE cap for tube OD 4.1mm in clear rigid PVC + clear PC ring for EtO Sterilization
CO1005ANAKLEA00	Rotating Male Luer Lock Connector with clear LDPE cap for tube OD 5.5mm in clear rigid PVC + clear PC ring for EtO Sterilization
CO1005ANAKLEC00	Rotating Male Luer Lock Connector with clear LDPE cap for tube OD 5.5mm in clear rigid PVC + red PC ring for EtO Sterilization
CO1005ANAKLED00	Rotating Male Luer Lock Connector with clear LDPE cap for tube OD 5.5mm in clear rigid PVC + blue PC ring for EtO Sterilization
CO1006ANAKLEA00	Rotating Male Luer Lock Connector with clear LDPE cap for tube OD 6.8mm in clear rigid PVC + clear PC ring for EtO Sterilization
CO1006ANAKLEC00	Rotating Male Luer Lock Connector with clear LDPE cap for tube OD 6.8mm in clear rigid PVC + red PC ring for EtO Sterilization
CO1006ANAKLED00	Rotating Male Luer Lock Connector with clear LDPE cap for tube OD 6.8mm in clear rigid PVC + blue PC ring for EtO Sterilization

Packaging:	Dimension	Weight	Quantity / Box
	37 x 56 x 23 cm	12.5 kg	5,000 units

Luer Connectors

NEW SELF-EJECTING ROTATING MALE LUER LOCK

Dimensions
Height: 35.00 mm
Diameter: 10.86 mm
Color
Clear + clear / red / blue
Raw Material
PVC + PC
Application
Multipurpose
Ref. Standard
ISO 594-1/2
Assembly Method
Bonding
Pyrogenicity
<0,25 EU/ml
Maximum Operating Temperature
50 °C
Sterilization
EtO, Gamma

Ordering Information:

Product	Code Description
CO1001ANAKLEA00	Rotating Male Luer Lock Connector for tube OD 4.1mm in clear rigid PVC + clear PC ring for EtO Sterilization
CO1002ANAKLEA00	Rotating Male Luer Lock Connector for tube OD 5.5mm in clear rigid PVC + clear PC ring for EtO Sterilization
CO1002ANAKLEC00	Rotating Male Luer Lock Connector for tube OD 5.5mm in clear rigid PVC + red PC ring for EtO Sterilization
CO1002ANAKLED00	Rotating Male Luer Lock Connector for tube OD 5.5mm in clear rigid PVC + blue PC ring for EtO Sterilization
CO1003ANAKLEA00	Rotating Male Luer Lock Connector for tube OD 6.8mm in clear rigid PVC + clear PC ring for EtO Sterilization
CO1003ANAKLEC00	Rotating Male Luer Lock Connector for tube OD 6.8mm in clear rigid PVC + red PC ring for EtO Sterilization
CO1003ANAKLED00	Rotating Male Luer Lock Connector for tube OD 6.8mm in clear rigid PVC + blue PC ring for EtO Sterilization

Packaging:	Dimension	Weight	Quantity / Box
	37 x 56 x 23 cm	11.5 kg	5,000 units

Suitable Cap: see Code RN406ARIB0000A00 in One hand Cap for Male Rotating Male Luer Lock section

ROTATING MALE LUER LOCK WITH DISINFECTABLE LUER CONE

Dimensions
Height: 32.00 mm
Diameter: 10.60 mm
Raw Material
ABS - PVC + Polypropylene
Ref. Standard
ISO 594-1/2
Application
Multipurpose
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
ABS: Gamma EtO
PVC: EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CO0615ANAKPPAA00	Rotating Male Luer Lock Connector for 4.1 mm OD Tube in clear PVC + natural PP ring
CO0615ATERPPA00	Rotating Male Luer Lock Connector for 4.1 mm OD Tube in clear ABS + natural PP ring
CO0616ANAKPPA00	Rotating Male Luer Lock Connector for 6.8 mm OD Tube in clear PVC + natural PP ring
CO0616ANAKPPC00	Rotating Male Luer Lock Connector for 6.8 mm OD Tube in clear PVC + red PP ring
CO0616ANAKPPD00	Rotating Male Luer Lock Connector for 6.8 mm OD Tube in clear PVC + blue PP ring
CO0616ATERPPA00	Rotating Male Luer Lock Connector for 6.8 mm OD Tube in clear ABS + natural PP ring
CO0616ATERPPC00	Rotating Male Luer Lock Connector for 6.8 mm OD Tube in clear ABS + red PP ring
CO0616ATERPPD00	Rotating Male Luer Lock Connector for 6.8 mm OD Tube in clear ABS + blue PP ring

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	12.2 kg	10,000 units

FULLY RETRACTABLE LUER LOCK

Dimensions
Height: 28 mm
Color
Clear
Raw Material
PP+PVC or PP+ABS

Application
Multipurpose
Ref. Standard
ISO 594-1/2
Assembly Method
Bonding

Pyrogenicity
<0,25 EU/ml
Maximum Operating Temperature
50 °C
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CO0628ANAKPPA00	Fully Retractable Luer Lock for 4.1mm OD Tube in clear PVC+PP
CO0628ATERPPA00	Fully Retractable Luer Lock for 4.1mm OD Tube in clear ABS+PP

Packaging:	Dimension	Weight	Quantity / Box
	50 x 39 x 31 cm	11.3 kg	8,000 units

ROTATING MALE LUER LOCK

Dimensions
Height: 32.00 mm
Diameter: 10.60 mm
Raw Material
ABS - PVC + Polypropylene
Ref. Standard
ISO 594-1/2

Application
Multipurpose
Assembly method
Bonding
Pyrogenicity in EU/ml
<0.25

Maximum Operating Temperature
50°C
Sterilization
ABS: Gamma EtO
PVC: EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CO0589DPPABSA00	Rotating Male Luer Lock Connector for 4.1 mm OD Tube in clear ABS + natural PP ring
CO0589APPNAKA00	Rotating Male Luer Lock Connector for 4.1 mm OD Tube in clear PVC + natural PP ring
CO0589DPPABSB00	Rotating Male Luer Lock Connector for 4.1 mm OD Tube in white ABS + natural PP ring for photosensitive drugs
CO0590DPPPVCA00	Rotating Male Luer Lock Connector for 6.8 mm OD Tube in clear PVC + natural PP ring
CO0590DPPPVCC00	Rotating Male Luer Lock Connector for 6.8 mm OD Tube in clear PVC + red PP ring
CO0590DPPPVCD00	Rotating Male Luer Lock Connector for 6.8 mm OD Tube in clear PVC + blue PP ring

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	12.2 kg	10,000 units

Suitable Vented Cap: see Code RN053DPEH0000A00 in Cap for Male Luer Lock section
Suitable Bacterial Priming Purge Filter: see codes TA225 in Cap for Male Luer Lock section

ROTATING MALE LUER LOCK + CAP

Dimensions
Height: 39.00 mm
Diameter: 12.00 mm
Raw Material
ABS + Polypropylene + Polyethylene
Ref. Standard
ISO 594-1/2 / ISO 8536-4
Application
Multipurpose

Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CO0599APPABSA00	Rotating Male Luer Lock Connector with clear PE cap for Tube OD 4.1mm in clear ABS + clear PP ring
CO0599DPPABSB00	Rotating Male Luer Lock Connector with clear PE cap for Tube OD 4.1mm in white ABS + clear PP ring for photosensitive drugs
CO0618ATERPPA00	Rotating Male Luer Lock Connector with PE cap for tube OD 4.1mm in clear ABS + natural PP ring*

Packaging:	Dimension	Weight	Quantity / Box
	35 x 30 x 50 cm	14.5 kg	8,000 units

Luer
Connector Caps

MALE LUER LOCK + CAP

Dimensions
Height: 30.50 mm
Diameter: 12.00 mm
Raw Material
ABS + Polyethylene
Ref. Standard
ISO 594-1/2 ISO 8536-4
Application
Multipurpose

Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CO0555AABSPEA00	Male Luer Lock Connector with clear PE cap for 4.1mm OD Tube in clear ABS
CO0555AABSPEB00	Male Luer Lock Connector with white PE cap for 4.1mm OD Tube in white ABS for photosensitive drugs
CO0610ATERLUA00	Male Luer Lock Connector with clear PE cap for 3.0 mm OD Tube in clear ABS
CO0607AABSPEA00	Male Luer Lock Connector with clear PE cap for 2.5 mm OD Tube in clear ABS

Packaging:	Dimension	Weight	Quantity / Box
	50 x 39 x 31 cm	11.5 kg	10,000 units

FULLY RETRACTABLE LUER LOCK WITH PURGE FILTER

Dimensions
Height 41.3 mm
Way dimensions
Diameters - 3,8 - 4,0 conical (tube 4,1)
Raw Material
PP+PVC, PP+ABS or PC+ABS
Color
Clear/green-blue, White/blue, Amber/b
Ref. Standard
ISO 594-1/2

Assembly method
Bonding
Maximum Operating Temperature
50° C Max (122°F)
Application
Multipurpose
Pyrogenicity
< 0,25EU/ml
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CO0629ANAKPPD00	Fully Retractable Luer Lock for 4.1mm OD Tube in clear PVC+PP, with blue Priming Purge Filter TA225 1.2 µm
CO0629ATERPPD00	Fully Retractable Luer Lock for 4.1mm OD Tube in clear ABS+PP, with blue Priming Purge Filter TA225 1.2 µm
CO0629ANAKPPE00	Fully Retractable Luer Lock for 4.1mm OD Tube in clear PVC+PP, with green Priming Purge Filter TA225 1.2 µm
CO0629ATERPPE00	Fully Retractable Luer Lock for 4.1mm OD Tube in clear ABS+PP, with green Priming Purge Filter TA225 1.2 µm
CO0629ATERPCD00	Fully Retractable Luer Lock for 4.1mm OD Tube in clear ABS+PC, with blue Priming Purge Filter TA225 1.2 µm
CO0629ASD0PCD00	Fully Retractable Luer Lock for 4.1mm OD Tube in white ABS+clear PC, with blue Priming Purge Filter TA225 1.2 µm
CO0629ASD0PPD00	Fully Retractable Luer Lock for 4.1mm OD Tube in white ABS+PP, with blue Priming Purge Filter TA225 1.2 µm
CO0629ATERPCM00	Fully Retractable Luer Lock for 4.1mm OD Tube in amber ABS+PC, with blue Priming Purge Filter TA225 1.2 µm

Packaging:	Dimension	Weight	Quantity / Box
	50 x 39 x 31 cm	13.6 kg	8,000 units

MALE LUER LOCK + BACTERIAL VENT FILTER WITH CAP

Dimensions
Height: 20.6 mm
Diameter: 10.4. mm
Color
Light Blue
Raw Material
ABS + PP
Filter Material
Acrylic co-polymer membrane
Application
Multipurpose

Ref. Standard
ISO 594-1/2
Assembly Method
Bonding
Pyrogenicity
<0,25 EU/ml
Maximum Operating Temperature
50 °C
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CO0638ATEREPD00	Male Luer Lock in light blue ABS, with blue PP bacterial air vent with closing cap

Packaging:	Dimension	Weight	Quantity / Box
	50 x 39 x 31 cm	7.15 kg	10,000 units

MALE LUER SLIP

Dimensions
Height: 24.1 mm
Diameter: 6.6 mm
Color
Clear
Raw Material
PVC

Application
Multipurpose
Ref. Standard
ISO 594-1/2 / ISO 10993-1
Assembly Method
Bonding/Interference

Pyrogenicity
<0,25 EU/ml EU/ml
Maximum Operating Temperature
50 °C
Sterilization
EtO

Ordering Information:

Product Code	Description
	Male Luer Slip Connector for Tube OD 4.1 mm in clear PVC

Packaging:	Dimension	Weight	Quantity / Box
	50 x 40 x 25 cm	10.9 kg	30,000 units

Suitable Vented Cap: see Code TAPPOR234CRLS in Cap for Male Luer Slip section
Suitable Bacterial Priming Purge Filter: see codes TA225 in Cap for Male Luer Slip section

SLIP LUER LOCK CONNECTOR

Dimensions
Height: 28.00 mm
Diameter: 5.50 mm
Color
Clear, White , Amber
Raw Material
PVC, ABS
Application
Multipurpose

Ref. Standard
ISO 594-1/2 / ISO 10993-1
Assembly Method
Bonding/Interference
Pyrogenicity
<0,25 EU/ml EU/ml
Maximum Operating Temperature
50 °C
Sterilization
EtO

Ordering Information:

Product Code	Description
RN230ANAK0000A00	Male Luer Slip Connector for Tube OD 4.1 mm in clear PVC
RN230ASD00000B00	Male Luer Slip Connector for Tube OD 4.1 mm in white ABS
RN230ATER0000A00	Male Luer Slip Connector for Tube OD 4.1 mm in clear ABS
RN230ATER0000M00	Male Luer Slip Connector for Tube OD 4.1 mm in amber ABS

Packaging:	Dimension	Weight	Quantity / Box
	50 x 39 x 31 cm	12.20 kg	20,000 units

ONE HAND CAP FOR MALE ROTATING LUER LOCK

Dimensions
Height: 21.62 mm
Diameter: 14.00 mm
Color
Clear
Raw Material
LDPE
Application
Multipurpose

Ref. Standard
ISO 594-1/2
Assembly Method
Interference
Pyrogenicity
<0,25 EU/ml
Maximum Operating Temperature
50 °C
Sterilization
EtO, Gamma

Ordering Information:

Product Code	Description
RN406ARIB0000A00	Patient Connector Cap for New Rotating Male Luer Lock for Sterilization

Packaging:	Dimension	Weight	Quantity / Box
	37 x 56 x 23 cm	9.0 kg	15,000 units

Suitable for GVS New Rotating Male Luer Lock One Hand operation

VENTED CAP FOR MALE LUER LOCK PLUG-IN

Dimensions
Height: 14.70 mm
Diameter: 12.00 mm
Raw Material
Polyethylene, Polypropylene
Ref. Standard
ISO 594-1/2 / ISO 10993-1

Assembly method
Interference
Application
Multipurpose
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25

Sterilization
EtO
(products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
RN053DPEH0000A00	Universal Vented Cap for Male Luer Lock in clear PE

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 50 cm	22.0 kg	60,000 units

Suitable for all GVS Male Luer Lock and Rotating Male Luer Lock

CAP FOR MALE LUER LOCK TWIST-IN

Dimensions
Height: 18.60 mm
Diameter: 6.70 mm
Raw Material
Polypropylene
Ref. Standard
ISO 594-1/2 / ISO 10993-1
Assembly method
Interference

Application
Multipurpose
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
RN291AHD72550D00	Vented Cap for Male Luer Lock in blue PP
RN290AHD72550D00	Closed Cap for Male Luer Lock in blue PP

Packaging:	Dimension	Weight	Quantity / Box
	50 x 39 x 31 cm	22.0 kg	30,000 units

Suitable for all GVS Male Luer Lock and Rotating Male Luer Lock

VENTED CAP FOR MALE LUER SLIP

Raw Material
Polyethylene
Ref. Standard
ISO 8536-4
Application
Multipurpose
Assembly method
Interference

Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO, gamma, e-beam
(products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
TAPPO234CRLS	Universal Vented Cap for Male Luer Slip in clear Polyethylene

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 25 cm	10.2 kg	30,000 units

Suitable for GVS Male Luer Slip Connector, code RACCOR234RLT

FEMALE LUER LOCK

Dimensions
Height: 20.00 mm
Diameter: 14.00 mm (wings)
Raw Material
PVC
Ref. Standard
ISO 594-1/2 / 10993-1
Application
Multipurpose

Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO
(products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
RN152ANAK0000A00	Winged Female Luer Lock Connector for 2.0 mm OD Tube in clear PVC
RN152CTGP0000A00	Female Luer Lock Connector for 2.0 mm OD Tube in Natural ABS
RN154ANAK0000A00	Winged Female Luer Lock Connector for 2.5 mm OD Tube in clear PVC
RN154CTGP0000A00	Female Luer Lock Connector for 2.5 mm OD tube in Natural ABS
RN156ANAK0000A00	Winged Female Luer Lock Connector for 3.0 mm OD Tube in clear PVC
RN156CTGP0000A00	Female Luer Lock Connector for 3.0 mm OD tube in Natural ABS
RN158ANAK0000A00	Winged Female Luer Lock Connector for 4.1 mm OD Tube in clear PVC
RN158CTGP0000A00	Female Luer Lock Connector for 4.1 mm OD tube in Natural ABS
RN162ANAK0000A00	Winged Female Luer Lock Connector for 5.0 mm OD Tube in clear PVC
RN164ANAK0000A00	Winged Female Luer Lock Connector for 5.5 mm OD Tube in clear PVC

Packaging:	Dimension	Weight	Quantity / Box
	50 x 39 x 31 cm	22.0 kg	20,000 units

BREAKABLE FEMALE LUER LOCK

Dimensions
Height: 37.00 mm
Diameter: 6.0/6.6 mm (wings)
Raw Material
PVC
Ref. Standard
ISO 594-1/2

Application
Bag Connectors
Assembly method
Bonding
Maximum Operating Temperature
120°C
Pyrogenicity in EU/ml
<0.25

Sterilization
EtO, Gamma, steam
(products for other sterilization method available ponupon request

Ordering Information:

Product Code	Description
RACCOR26908400L	Breakable Female Luer Lock outside fitting Tube 6.6 mm
RACCOR26808400L	Breakable Female Luer Lock outside fitting Tube 6.0 mm

Packaging:	Dimension	Weight	Quantity / Box
	40 x 30 x 30 cm	9.5 kg	10,000 units

RN179 - CLOSED CAP FOR FEMALE LUER LOCK

Dimensions
Height: 11.20 mm
Diameter: 10.50 mm
Raw Material
Polypropylene, ABS.
Polyethylene available under request
Ref. Standard
ISO 594-1/2 / 10993-1

Application
Multipurpose
Assembly method
Connectors
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25

Sterilization
EtO, gamma (ABS)
steam (PP)
(products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
RN179AMAC0000B00	Closed Luer Lock Cap for Female Luer Lock Connector in white ABS
RN179ATER0000A0	Closed Luer Lock Cap for Female Luer Lock Connector in clear ABS
RN179AXM60000B00	Closed Luer Lock Cap for Female Luer Lock Connector in white PP
RN179AXM60000C00	Closed Luer Lock Cap for Female Luer Lock Connector in red PP
RN179AXM60000D00	Closed Luer Lock Cap for Female Luer Lock Connector in blue PP
RN179AXM60000E00	Closed Luer Lock Cap for Female Luer Lock Connector in green PP

Packaging:	Dimension	Weight	Quantity / Box
	50 x 30 x 40 cm	14.0 kg	30,000 units

RN216 - VENTED CAP FOR FEMALE LUER LOCK

Dimensions
Height: 11.20 mm
Diameter: 10.50 mm
Raw Material
Polyethylene. ABS and Polypropylene available under request
Ref. Standard
ISO 594-1/2

Application
Multipurpose
Assembly method
Connectors
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25

Sterilization
EtO
(products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
RN216DHC70000A00	Vented Luer Lock Cap for Female Luer Lock Connector in clear PE
RN216DHC70000B00	Vented Luer Lock Cap for Female Luer Lock Connector in white PE
RN216DHC70000C00	Vented Luer Lock Cap for Female Luer Lock Connector in red PE
RN216DHC70000D00	Vented Luer Lock Cap for Female Luer Lock Connector in blue PE
RN216DHC70000E00	Vented Luer Lock Cap for Female Luer Lock Connector in green PE

Packaging:	Dimension	Weight	Quantity / Box
	50 x 30 x 40 cm	14.0 kg	30,000 units

ASSEMBLED FEMALE LUER CONNECTORS
FEMALE LUER LOCK + CAP

Dimensions
Height: 25.00 mm
Diameter: (wings) 14.00 mm
Color
Clear/ white/ red/ blue
Raw Material
ABS + Polyethylene
Application
Multipurpose

Ref. Standard
ISO 594-1/2
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25

Sterilization
EtO
(products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CO0614ANAKMAAB0	Female Luer Lock Connector in clear PVC with White Closed Cap for tube OD 3.0mm
CO0603ANAKXMAB0	Female Luer Lock Connector in clear PVC with White Closed Cap for tube OD 4.1mm
CO0603ANAKXMAC0	Female Luer Lock Connector in clear PVC with Red Closed Cap for tube OD 4.1mm
CO0603ANAKXMAD0	Female Luer Lock Connector in clear PVC with Blue Closed Cap for tube OD 4.1mm
CO0603ANAKXMAE0	Female Luer Lock Connector in clear PVC with Green Closed Cap for tube OD 4.1mm
CO0604ATER00A00	Female Luer Lock Connector in clear PVC with White Vented Cap for tube OD 4.1mm
CO0613ANAKXMAB0	Female Luer Lock Connector in clear PVC with White Closed Cap for tube OD 5.5mm
CO0613ANAKXMAC0	Female Luer Lock Connector in clear PVC with Red Closed Cap for tube OD 5.5mm
CO0613ANAKXMAD0	Female Luer Lock Connector in clear PVC with Blue Closed Cap for tube OD 5.5mm

Packaging:	Dimension	Weight	Quantity / Box
	50x30x50 cm	11,5 kg	10.000 units

Notes
* Assembled Female Luer Lock Connectors in ABS are available upon request
** Products for other sterilization method available upon request

CLOSED COMBI CAP / CLOSE FEMALE LUER LOCK CAP

Dimensions
Height: 22.20 mm
Diameter: 10.50 mm
Raw Material
PP
Ref. Standard
ISO 594-1/2 / 10993-1
Application
Multipurpose

Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
Eto, Gamma

Ordering Information:

Product Code	Description
CONCOMC08021330R	Closed cap Combi FLL/MLL in red PP
CONCOMC08021330B	Closed cap Combi FLL/MLL in blue PP

Packaging:	Dimension	Weight	Quantity / Box
	40 x 30 x 30 cm	6.5 kg	10,000 units

CLOSED CAP FEMALE LUER LOCK

Dimensions
Height 19.20 mm
Diameter 7.70 mm
Raw Material
PP
Ref. Standard
ISO 594-1/2 / 10993-1
Application
Multipurpose

Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
Eto, Steam

Ordering Information:

Product Code	Description
TAPPOC00261330T	Closed Cap Female Luer Lock

Packaging:	Dimension	Weight	Quantity / Box
	40 x 30 x 22 cm	4.0 kg	10,000 units

Clamps Closure Devices

Full range of roller, pinch, slide and non-reopening clamps.
These are suitable for numerous medical applications and are available in different raw materials and colors.
Depending on materials of construction, they are suitable for EtO, Gamma, e-beam or steam sterilization.

ROLLER CLAMPS
Housing for Small Size Roller

Dimensions
Height: 48.00 mm
Width: 18.00 mm
Raw Material
PE
Ref. Standard
ISO 1135-4 / ISO 8536-4
Application
Infusion
Transfusion
Assembly method
Assembly

Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO
(products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
ROLLEMP3RR	Housing for small size wheel roller for 4.1 mm OD Tube

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 55 cm	22.2 kg	12,500 units

To be assembled with Wheel Code: RUOTAR234RR1R

Wheel for Small Size Roller

Dimensions
Height: 10.90 mm
Width: 9.20 mm
Raw Material
Polyethylene
Ref. Standard
ISO 1135-4 / ISO 8536-4
Application
Infusion
Transfusion

Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25

Sterilization
EtO
(products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
RUOTAROLLMP3RR	Wheel in red PE for small size roller in red PE

Packaging:	Dimension	Weight	Quantity / Box
	40 x 50 x 30 cm	18.2 kg	50,000 units

To be assembled with Housing code: ROLLEMP3RR
Other colors available upon request

Housing for Medium Size Roller

Dimensions
Height: 55.00 mm
Width: 22.20 mm
Raw Material
Polyethylene
Ref. Standard
ISO 1135-4 / ISO 8536-4
Application
Infusion
Transfusion

Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (products for other sterilization method available upon request)

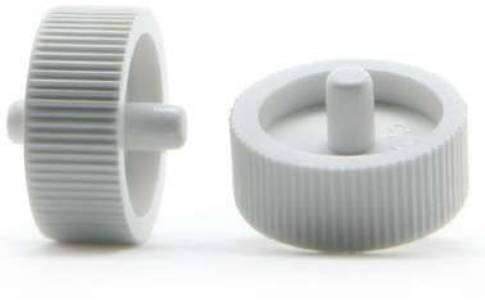
Ordering Information:

Product Code	Description
ROLLER13808503L	Housing in white PE for medium size wheel for Tube OD 4.1 mm

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 30 cm	11.6 kg	2,500 units

To be assembled with Wheel Code: RUOTAR13908503L

Wheel for Medium Size Roller



Dimensions
Height: 13.00 mm
Width: 10.00 mm
Raw Material
Polyethylene
Ref. Standard
ISO 1135-4 / ISO 8536-4
Application
Infusion
Transfusion
Assembly method
Assembly

Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
RUOTAR13908503L	Wheel in white PE for medium size roller

Packaging:	Dimension	Weight	Quantity / Box
	40 x 30 x 30 cm	9.9 kg	20,000 units

To be assembled with Housing code: ROLLER13808503L

Housing for Large Size Roller

Dimensions
Height: 59.50 mm
Width: 22.00 mm
Raw Material
ABS
Ref. Standard
ISO 1135-4 / ISO 8536-4
Application
Infusion
Transfusion

Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO
(products for other sterilization method available upon request)

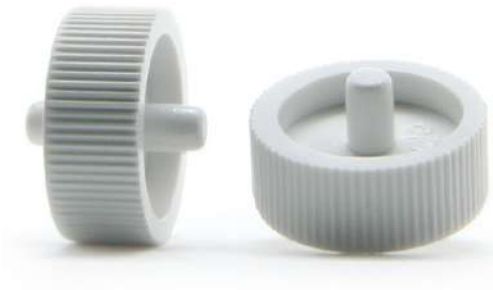
Ordering Information:

Product Code	Description
ROLLER13308503L	Housing for big size wheel for Tube OD 6.8 mm

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 30 cm	16.2 kg	2,500 units

To be assembled with Wheel Code: ROLLER13408503L

Wheel for Large Size Roller



Dimensions
Height: 16.00 mm
Width: 15.00 mm
Raw Material
ABS
Ref. Standard
ISO 1135-4 / ISO 8536-4
Application
Infusion
Transfusion

Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO
(products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
RUOTAR13408503L	Wheel in white ABS for big size roller

Packaging:	Dimension	Weight	Quantity / Box
	40 x 30 x 20 cm	14.5 kg	10,000 units

To be assembled with Housing Code: ROLLER13308503L

Clamps
Closure Devices

On/Off Clamps - Small Size

Dimensions
Length: 24.50 mm
Heigth: 19.40 mm
Raw Material
Polypropylene
Ref. Standard
ISO 1135-4 / ISO 8536-4
Application
Infusion
Hemodialysis

Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO, steam, Gamma

Ordering Information:

Product Code	Description
RN408AHP30000B00	On/Off single step small size clamp for 2.0 mm to 5.5 mm OD Tube - in white PP
RN408AHP30000C00	On/Off single step small size clamp for 2.0 mm to 5.5 mm OD Tube - in red PP
RN408AHP30000D00	On/Off single step small size clamp for 2.0 mm to 5.5 mm OD Tube - in blue PP

Packaging:	Dimension	Weight	Quantity / Box
	56.5 x 37.5 x 45 cm	12.0 kg	10,000 units

On/Off Clamps - Medium Size

Dimensions
Length: 31.04 mm
Heigth: 22.06 mm
Raw Material
Polypropylene
Application
Infusion
Hemodialysis
Ref. Standard
ISO 1135-4 / ISO 8536-4

Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO, Steam, Gamma

Ordering Information:

Product Code	Description
CLAMPE6653001	On/Off single step medium size clamp for 5.5 mm to 6.8 mm OD Tube - in white PP
CLAMPE6651001	On/Off single step medium size clamp for 5.5 mm to 6.8 mm OD Tube - in red PP
CLAMPE6652001	On/Off single step medium size clamp for 5.5 mm to 6.8 mm OD Tube - in blue PP

Packaging:	Dimension	Weight	Quantity / Box
	37 x 56 x 23 cm	16.1 kg	7,000 units

On/Off Clamps - Large Size

Dimensions
Length: 38.00 mm
Heigth: 28.00 mm
Raw Material
Polypropylene
Ref. Standard
ISO 1135-4 / ISO 8536-4
Application
Infusion
Hemodialysis

Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
CLAMPE6753001	On/Off single step large size clamp, gamma for 5.5 mm to 8.0 mm OD Tube in white PP
CLAMPE6751001	On/Off single step large size clamp, gamma for 5.5 mm to 8.0 mm OD Tube in red PP
CLAMPE6752001	On/Off single step large size clamp, gamma for 5.5 mm to 8.0 mm OD Tube in blue PP

Packaging:	Dimension	Weight	Quantity / Box
	58 x 37 x 23	10.8 kg	2,500 units

Small Slide Clamps

Dimensions
Height: 37.00 mm
Width: 16.00 mm
Raw Material
Polypropylene
Ref. Standard
ISO 8536-4 / ISO 8536-4
Application
Infusion
Hemodialysis

Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO
(Products for other sterilization method available under request)

Ordering Information:

Product Code	Description
PIASTR10908301L	Small slide clamp for 2.5 mm to 5.5 mm OD Tube in red PP
PIASTR10908302L	Small slide clamp for 2.5 mm to 5.5 mm OD Tube in blue PP
PIASTR10908303L	Small slide clamp for 2.5 mm to 5.5 mm OD Tube in white PP

Packaging:	Dimension	Weight	Quantity / Box
	50 x 30 x 30 cm	8.7 kg	10,000 units

LARGE SLIDE CLAMPS

Dimensions
Height: 40.00 mm
Width: 17.00 mm
Raw Material
Polypropylene
Ref. Standard
ISO 8536-4 / ISO 8536-4
Application
Infusion
Hemodialysis

Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (Products for other sterilization method available under request)

Ordering Information:

Product Code	Description
PIASTR11008301L	Large slide clamp for 5.5 mm to 6.8 mm OD Tube in red PP
PIASTR11008302L	Large slide clamp for 5.5 mm to 6.8 mm OD Tube in blue PP
PIASTR11008303L	Large slide clamp for 5.5 mm to 6.8 mm OD Tube in white PP

Packaging:	Dimension	Weight	Quantity / Box
	40 x 30 x 30 cm	7.0 kg	5,000 units

NON REOPENING CLAMPS

Dimensions
Height: (closed position)
27.00 mm
Width: 12.80 mm
Raw Material
PP-EPT 30R
Ref. Standard
ISO 8536-4 / ISO 8536-4
Application
Infusion
Hemodialysis

Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO
(Products for other sterilization method available under request)

Ordering Information:

Product Code	Description
CLAMPL08608303L	Non Reopening Clamps for tube OD 6.8 mm in white PP

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 30 cm	11.6 kg	3,500 units

CELER CLAMP

Dimensions
Height: 32.8 mm
Width: 33 mm
Raw Material
PP
Ref. Standard
ISO 8536-4 / ISO 8536-4
Application
Hemodialysis
Infusion

Assembly Method
Assembly
Pyrogenicity
<0,25 EU/ml
Maximum Operating Temperature
50 °C
Sterilization
EtO, Steam, Gamma

Ordering Information:

Product Code	Description
RN400ABOR0000B00	Celer Clamp for tube from OD 5.0 mm to OD 7.2 mm (tubing wall thickness 1 mm)

Packaging:	Dimension	Weight	Quantity / Box
	37 x 56 x 22 cm	8.250 kg	2,500 units

Injection Ports

GVS has a range of injection ports covering various applications; we offer Polycarbonate Injection Ports, Y-site connectors for Infusion Sets and the injection sites for hemodialysis straight and with auxiliary port connectors for hemodialysis bloodlines.

INJECTION SITE MLL AND CAP

Dimensions
Height 20.70 mm
Diameter 10.50 mm
Raw Material
ABS, Poliisoprene
Ref. Standard
ISO 8536-4
Application
Multipurpose

Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
PUNINA0175I600T	Injection Port Male Luer Lock Latex Free

Packaging:	Dimension	Weight	Quantity / Box
	40 x 30 x 30 cm	12.0 kg	10.000 pcs/box

VENTED COVER FOR INJECTION PORT MALE LUER LOCK

Dimensions
Height: 18.00 mm
Diameter: 12.70 mm
Raw Material
PE
Ref. Standard
ISO 8536-4

Application
Multipurpose
Assembly method
Interference

Ordering Information:

Product Code	Description
CAPSLAC04990520T	Vented Cover for Injection Port Male Luer Lock

Packaging:	Dimension	Weight	Quantity / Box
	50 x 37 x 30 cm	16.0 kg	10.000 pcs/box

"Y" INJECTION SITE SHORT VERSION FINGER PROTECTOR

Dimensions
Height: 29.00 mm
Width : 22.30 mm
Raw Material
ABS + TPE
Ref. Standard
ISO 8536-4
Application
Infusion

Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CO0665AABS00A00	Short Version Y-site connector for 3.5 mm OD Tube INLET and 4.1 mm OUTLET with finger protector in clear ABS - Latex-free Septum
CO0661AMAC00B00	Short Version Y-site connector for 4.1 mm OD Tube INLET and 4.1 mm OUTLET with finger protector in white ABS
CO0661ATERMAA00	Short Version Y-site connector for 4.1 mm OD Tube INLET and 4.1 mm OUTLET with finger protector in clear ABS
CO0661ATERMAM00	Short Version Y-site connector for 4.1 mm OD Tube INLET and 4.1 mm OUTLET with finger protector in amber ABS

Packaging:	Dimension	Weight	Quantity / Box
	35 x 30 x 50 cm	14.0 kg	6,000 units

"Y" INJECTION SITE LONG VERSION FINGER PROTECTOR

Dimensions
Height: 43.20 mm
Width: 22.30 mm
Raw Material
ABS + TPE
Ref. Standard
ISO 8536-4
Application
Infusion

Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CO0600AABS00A00	Long Version Y-site connector for 3.5 mm OD Tube INLET and 4.1 mm OUTLET with finger protector in clear ABS - Latex-free Septum
CO0598ATER00A00	Long Version Y-site connector for 4.1 mm OD Tube INLET and 4.1 mm OUTLET with finger protector in clear ABS - Latex-free Septum
CO0598DMACMAB00	Long Version Y-site connector for 4.1 mm OD Tube INLET and 4.1 mm OUTLET with finger protector in White ABS - Latex-free Septum - for photosensitive drugs.

Packaging:	Dimension	Weight	Quantity / Box
	35 x 30 x 50 cm	14.5 kg	6,000 units

VIAL ADAPTER

Dimensions
Height: 43.20 mm
Diameter: OD 22.30 mm
Raw Material
Polycarbonate
Ref. Standard
ISO 8536-4
Application
Infusion

Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO, Gamma, Steam

Ordering Information:

Product Code	Description
TAPPO40419900L	PC Vial Adapter for bag (Tube ID 6.0 mm) with metal cover and PP septum

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 30 cm	23.8 kg	5,000 units

Injection Ports

SNAP-OFF MEMBRANE PORT

Dimensions
Height: 39.00 mm
Diameter: OD 6.80 mm
Raw Material
PVC
Ref. Standard
ISO 8536-4
Application
Infusion

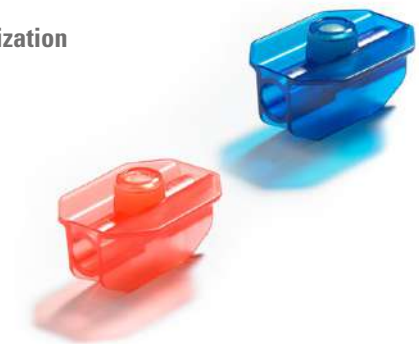
Assembly method
bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
RACCOR91908000L	Snap-Off Membrane Port for Tube in clear PVC, OD 6.8 mm – open position
RACCLU91909900L	Snap-Off Membrane Port for Tube in clear PVC, OD 6.8 mm – closed position

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 30 cm	13.8 kg	5,000 units

INJECTION SITES FOR HEMODÌALYSIS STRAIGHT



Dimensions
Height: 20.24 mm
Width: 33.00 mm
Raw Material
PVC + Polysoprene
Ref. Standard
ISO 8638

Application
Hemodialysis
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25

Sterilization
EtO

Ordering Information:

Product Code	Description
CO1007ANAKSLC00	Injection Site with protection for tube OD 6.8mm in red PVC
CO1007ANAKSLD00	Injection Site with protection for tube OD 6.8mm in blue PVC

Packaging:	Dimension	Weight	Quantity / Box
	37 x 56 x 23	11.0 kg	3,000 units

INJECTION SITES FOR HEMODÌALYSIS WITH AUXILIARY PORT

Dimensions
Height: 20.24 mm
Width: 33.00 mm
Raw Material
PVC + Polysoprene
Ref. Standard
ISO 8638
Application
Hemodialysis

Assembly Method
Bonding
Pyrogenicity
<0,25 EU/ml
Maximum Operating Temperature
50 °C
Sterilization
EtO

Ordering Information:

Product Code	Description
CO1009ANAKSLC00	Injection Site with auxiliary port for tube OD 2 x 6.8 + 1 x 5.5 mm in red PVC
CO1009ANAKSLD00	Injection Site with auxiliary port for tube OD 2 x 6.8 + 1 x 5.5 mm in blue PVC

Packaging:	Dimension	Weight	Quantity / Box
	37 x 56 x 23 cm	11.00 kg	3,000 units

Suspended Spikes

Suspended spikes assembled with vent or unassembled w/o vent vented or non-vented and suitable for 4.1mm OD Tubing or Luer Lock connection. All of these ABS products comply with ISO 8536-4 standards.

SUSPENDED ONE WAY SPIKE

Dimensions
Length: 65.60 mm
Raw Material
ABS
Color
White
Ref. Standard
ISO 8536-4

Application
Multipurpose
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25

Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
PERF1VC0001L550W	Non-Vented spike FLL
PERF1VC0003L550W	Non-Vented spike for tube OD 4.1 mm / ID 4.8 mm

Packaging:	Dimension	Weight	Quantity / Box
	40 x 60 x 25 cm	11.0 kg	5,000 units

To be assembled with Tip Protector Code CAPSLAC03250520W, CAPSLAC03250520T

VENTED CAP FOR SPIKE

Dimensions
Length: 40.00 mm
Diameter: 10.00 mm
Raw Material
PE
Color
White
Application
Multipurpose

Ref. Standard
ISO 8536-4
Assembly method
Assembly
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25

Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
CAPSLAC03250520T	Vented cap for spike, Clear
CAPSLAC03250520W	Vented cap for spike, White

Packaging:	Dimension	Weight	Quantity / Box
	40 x 37 x 30 cm		10,000

*To be assembled with Suspended One Way Spike Code PERF1VC001L550W, PERF1VC0003L550W

SUSPENDED SPIKE TWO WAY ASSEMBLY

Dimensions
Length: 64.00 mm
Raw Material
ABS
Color
White
Application
Multipurpose

Ref. Standard
ISO 8536-4
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25

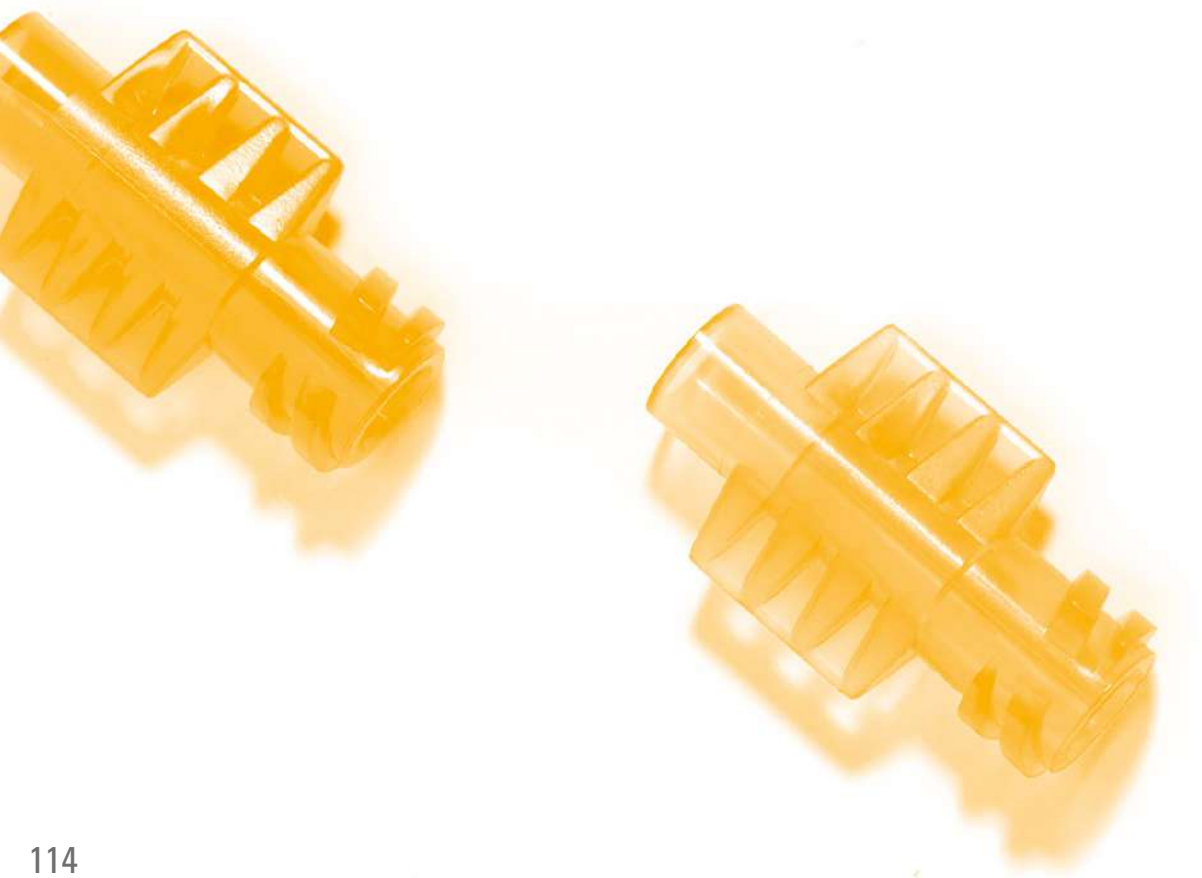
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description		
PERFLU97509903L	Vented Spike for tube OD 4.1 mm / ID 4.8 mm - Air Vent with Cap 3.0 µm - with Clear tip protector		
PERF2V97609903L	Vented Spike with FLL Air Vent with Cap 3.0 µm - with Clear tip protector		
Packaging:	Dimension	Weight	Quantity / Box
	40 x 60 x 30 cm	8.0 kg	2,000 units

Single & Multi-Way Connectors

This family of products is mainly suitable for hemodialysis and EVA bags components. Multi-purpose “W” and “Y” connectors are also included.



"T" CONNECTORS

Dimensions
Height: 28.00 mm
Diameter: 9.00 mm
Raw Material
PVC soft
Ref. Standard
ISO 8638
Application
Hemodialysis
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
RACCLU01868000L	"T" connector for 6.8 mm OD Tube, with line connection for 5.5 mm OD Tube, in clear soft PVC
RACCOR01848000L	"T" connector for 6.8 mm OD Tube, with line connection for 4.1 mm OD Tube, in clear soft PVC
RACCLU01808000L	"T" connector for 6.8 mm OD Tube, with line connection for 2.5 mm OD Tube, in clear soft PVC
RACCLU01828000L	"T" connector for 6.8 mm OD Tube, with line connection for 2.0 mm OD Tube, in clear soft PVC

Packaging:	Dimension	Weight	Quantity / Box
	40 x 40 x 30	cm 8.5 kg	10,000 units

DIALYZER CONNECTORS

Raw Material
Soft PVC
Ref. Standard
ISO 1135-4 8638

Application
Hemodialysis
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Dimensions
Height: 35.00 mm
Diameter: 20.00 mm

Ordering Information:

Product Code	Description
RN405ANAK0000A00	Dialyzer Connector Luer Lock for 6.8 mm OD Tube, in clear soft PVC DEHP Free
RN405ANAK0000C00	Dialyzer Connector Luer Lock for 6.8 mm OD Tube, in red soft PVC DEHP Free
RN405ANAK0000D00	Dialyzer Connector Luer Lock for 6.8 mm OD Tube, in blue soft PVC DEHP Free

Packaging:	Dimension	Weight	Quantity / Box
	37 x 56 x 23 cm	13.5 kg	5,000 units

Single & Multi-Way Connectors

CAP FOR DIALYZER CONNECTORS

Dimensions
Height: 15.10 mm
Diameter: 17.00 mm
Raw Material
LDPE
Ref. Standard
ISO 8638
Application
Hemodialysis

Assembly method
Connectors
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
RN407ARIB0000A00	Cap for dialyzer connector in clear LDPE
RN407ARIB0000D00	Cap for dialyzer connector in blue LDPE
RN407ARIB0000C00	Cap for dialyzer connector in red LDPE

Packaging:	Dimension	Weight	Quantity / Box
	37 x 56 x 23 cm	9.0 kg	10,000 units

PUMP CONNECTORS

Raw Material
PVC soft
Application
Hemodialysis
Ref. Standard
ISO 8638
Assembly method
Bonding

Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
RN404ANAK0000A00	Pump connector for tubes ID 8.0 mm x OD 12.0 mm, OD 6.8 mm tube line in clear soft PVC - DEHP Free
RN401ANAK0000A00	Pump connector for tubes ID 8.0 mm x OD 12.0 mm, OD 6.8 mm tube line, heparine tube line OD 2.0 mm in clear soft PVC - DEHP Free
RN402ANAK0000A00	Pump connector for tubes ID 8.0 mm x OD 12.0 mm, OD 6.8 mm tube line, heparine tube line OD 2.5 mm in clear soft PVC - DEHP Free
RN403ANAK0000A00	Pump connector for tubes ID 8.0 mm x OD 12.0 mm, OD 6.8 mm tube line, saline tube line OD 5.5 mm in clear soft PVC - DEHP Free

Packaging:	Dimension	Weight	Quantity / Box
	40 x 30 x 30 cm	7.1 kg	5,000 units

Other dimension available on request

RECIRCULATING CONNECTORS

Dimensions
Height: 35.0 mm
Diameter: 25.0 mm
Raw Material
Polyethylene
Ref. Standard
ISO 8638
Application
Hemodialysis
Assembly method
Connectors

Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
GANSCAE0050005	Recirculating Connector with closed vented cap in white PE

Packaging:	Dimension	Weight	Quantity / Box
	40 x 60 x 25 cm	10.6 kg	5,000 units

"Y" CONNECTORS

Raw Material
PVC
Ref. Standard
ISO 8536-4
Application
Multipurpose
Assembly method
Bonding

Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
RACCOR10208000L	"Y" Connector for Tube 3 x OD 4.1 mm in clear PVC
RACCLU10308000L	"Y" Connector for Tube 3 x OD 5.5 mm in clear PVC
RACCOR20008000L	"Y" Connector for Tube 2 x OD 5.5 mm - 1 x OD 4.1 mm in clear PVC
RACCOR20108000L	"Y" Connector for Tube 1 x OD 5.5 mm - 2 x OD 4.1 mm in clear PVC
RACLU14908000L	"Y" Connector for Tube 3 x OD 6.8 mm in clear PVC
RACCORC01040400T	"Y" Connector for Tube 3 X OD 3,0 in clear PVC - DEHP FREE

Packaging:	Dimension	Weight	Quantity / Box
	50 x 30 x 30 cm	6.7 / 12.5 kg	5,000 units DEHP FREE, 10,000 units

Single & Multi-Way Connectors

THREE-WAY CONNECTORS

Raw Material
Soft PVC
Ref. Standard
ISO 8536-4
Application
Multipurpose
Assembly method
Bonding
Maximum Operating Temperature
50°C

Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
RN217DDAC0000A02	Three-Way Connector for Tube OD 4.1 mm in clear PVC
RN217DKAR0000A02	Three-Way Connector for Tube OD 4.1 mm in clear PVC
RACCLU41408000L	Three-Way Connector for Tube OD 5.5 mm in clear PVC
RACCLU41908000L	Three-Way Connector for Tube OD 6.8 mm in clear PVC

Packaging:	Dimension	Weight	Quantity / Box
	50 x 39 x 31 cm	7.3 kg	10,000 units

"W" CONNECTORS

Raw Material
PVC
Ref. Standard
ISO 8536-4
Application
Multipurpose
Assembly method
Bonding

Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
RACCOR15408000L	"W" Connector for Tube 4 x OD 4.1 mm in clear PVC
RACCLU15108000L	"W" Connector for Tube 4 x OD 5.5 mm in clear PVC
RACCLU15308000L	"W" Connector for Tube 4 x OD 6.8 mm in clear PVC

Packaging:	Dimension	Weight	Quantity / Box
	50 x 30 x 30 cm	6.3 / 9.0 kg	2,500 units

LOCK CONNECTORS 6.8 FOR EVA BAGS

Raw Material
ABS
Ref. Standard
ISO 8536
Application
Multipurpose
Assembly method
Bonding

Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
CONNET63108503L	Male Lock Connector for PVC Tube OD 6.8 mm - ID 4.8 mm for EVA Bags
CONNET63208503L	Male Lock Connector for EVA Tube OD 6.8 mm - ID 4.8 mm for EVA Bags
CONNET63308503L	Female Lock Connector for PVC Tube OD 6.8 mm - ID 4.8 mm for EVA Bags
CONNET63408503L	Female Lock Connector for EVA Tube OD 6.8 mm - ID 4.8 mm for EVA Bags
CONNET63608503L	Male Lock Connector for EVA Tube OD 5.5 mm for EVA Bags

Packaging:	Dimension	Weight	Quantity / Box
	50 x 30 x 30 cm	7.2 kg	5,000 units

ADAPTER CONNECTORS FOR EVA BAGS

Raw Material
PVC
Ref. Standard
ISO 8536
Application
Multipurpose
Assembly method
Bonding

Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
RACCOR92008100L	Adapter Connector for EVA Bags
RACCOR92009500L	Adapter Connector for EVA Bags for gamma irradiation

Packaging:	Dimension	Weight	Quantity / Box
	40 x 30 x 20 cm	5.5 kg	10,000 units

Single & Multi-Way Connectors

TUBE CONNECTORS FOR EVA BAGS

Raw Material
ABS - PVC
Ref. Standard
ISO 8536
Application
Enteral Nutrition
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
RACCOR07608503L	Connector for EVA Bags in white ABS, for Tube OD 4.1 mm
RACCOR07708503L	Connector for EVA Bags in white ABS, for Tube OD 5.5 mm
RACCOR08108503L	Connector for EVA Bags in white ABS, for Tube OD 6.8 mm
RACCOR21208000L	Connector for EVA Bags in soft clear PVC, for Tube OD 6.8 mm and for Tube ID 8.5 mm
RACCOR03008106L	Connector for EVA Bags in rigid clear PVC, for Tube OD 6.5/6.8 mm and for Tube ID 8.5 mm
RACCOR00408103L	Connector for EVA Bags in rigid clear PVC, for Tube OD 6.8 mm and for Tube ID 8.5 mm
RACCOR07108503L	Non-luer connector for EVA Bags in white ABS, for Tube OD 6.0 mm
RACCOR07208503L	Non-luer connector for EVA Bags in white ABS, for Tube OD 4.1 mm
RACCOR07308503L	Non-luer connector for EVA Bags in white ABS, for Tube OD 5.5 mm
RACCOR07408503L	Non-luer connector for EVA Bags in white ABS, for Tube OD 6.8 mm

Packaging:	Dimension	Weight	Quantity / Box
	50 x 30 x 30 cm	9.5 / 11.4 kg	5,000 units

LOCK CONNECTORS FOR EVA BAGS

Dimensions
Height: 28.20 mm
Diameter: male luer lock
Raw Material
ABS
Ref. Standard
ISO 8536
Application
Enteral Nutrition
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<025
Sterilization
EtO

Ordering Information:

Product Code	Description
RACCOR48408503L	Connector for EVA Bags in white ABS, for male luer lock
RACCOR48108503L	Connector for EVA Bags in white ABS, for male luer lock

Packaging:	Dimension	Weight	Quantity / Box
	50 x 30 x 30 cm	10.4 kg	10,000 units

CAP FOR TUBE CONNECTOR FOR EVA BAGS

Dimensions
Height: 45.00 mm
Diameter: ID 13.30 mm
Raw Material
PE
Ref. Standard
ISO 8536
Application
Multipurpose

Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
CAPSLA08208200L	Vented Cap for EVA Bags Connectors for Tube

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 30 cm	6.3 kg	5,000 units

CAP FOR LOCK CONNECTORS FOR EVA BAGS

Dimensions
Height: 25.00 mm
Diameter: ID 15.00 mm
Raw Material
PE
Ref. Standard
ISO 8536
Application
Multipurpose

Assembly method
Interference
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO

Ordering Information:

Product Code	Description
CAPSLA38808200L	Vented Cap for lock Connectors for EVA Bags

Packaging:	Dimension	Weight	Quantity / Box
	60 x 40 x 30 cm	10.4 kg	10,000 units

CAP FOR LOCK CONNECTORS 6.8 MM FOR EVA BAGS

Raw Material
ABS
Ref. Standard
ISO 8536
Application
Multipurpose
Assembly method
Lock

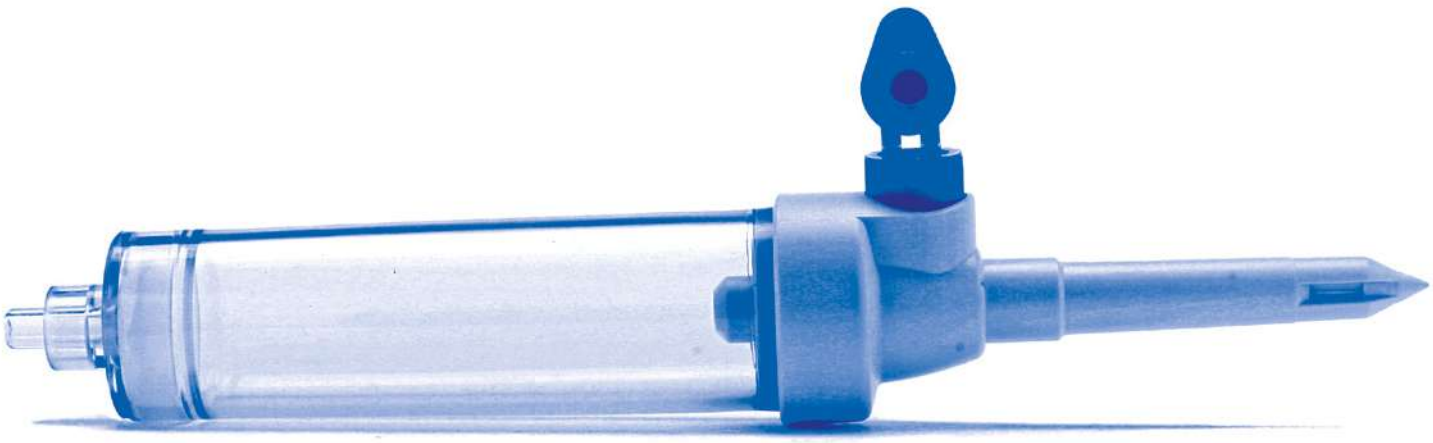
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<025
Sterilization
EtO

Ordering Information:

Product Code	Description
TAPPOL63018503L	Female Lock Cap for Connectors 6.8 mm for EVA Bags
TAPPOL63518503L	Male Lock Cap for Connectors 6.8 mm for EVA Bags
TAPPO163509903L	Male Lock Cap with built in filter for Connectors 6.8 mm for EVA Bags
TAPPO163009903L	Female Lock Cap with built in filter for Connectors 6.8 mm for EVA Bags

Packaging:	Dimension	Weight	Quantity / Box
	50 x 30 x 30 cm	12.6 kg	10,000 units

IV Drip Chambers



ASSEMBLED IV CHAMBERS

Dimensions
Height 103.44
Diam.18.00
Color
Clear
Raw Material
Soft PVC + DEHP Free

Application
Infusion
Ref. Standard
ISO 8536-4
Assembly method
Bonding
Maximum Operating Temperature
50°C

Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
VASCHE5A1	Non-Vented chamber 20 drops
VASCHE5A16ND	Vented chamber 20 drops with 15 micron disc filter DEHP Free

Packaging:	Dimension	Weight	Quantity / Box
	40 x 33 x 60 cm	13.0 kg	2,000 units

Blood Transfusion Drip Chambers

GVS blood drip chambers cover a wide variety of applications. The effective filtration areas range from 16 cm^2 to 32 cm^2 for the ISO standard models. We also have a special line of proprietary products manufactured with the latest "one shot" insert molding technology and compact pleated filters in 32 cm^2 and 47 cm^2.

ASSEMBLED BLOOD TRANSFUSION DRIP CHAMBERS

EFFECTIVE FILTRATION AREA 16 CM^2

Dimensions
Height: 157.00 mm
Diameter: 22.00 mm
Housing Material
PVC chamber - ABS
Membrane mesh
Mesh PA - Vent Acrylic
Ref. Standard
ISO 1135-4

Application
Transfusion
Color
Non-vented version: Clear + White
Vented version: Clear + White + Green
Assembly method
Bonding
Maximum Operating Temperature
50°C

Pyrogenicity in EU/ml
<0.25
Sterilization
EtO (products for other sterilization method available upon request)

Ordering Information:

Product Code	Description
GRUTRMP7AT1	PVC Non-vented drip chamber ISO standard (20 drops/ml) with 200 micron blood filter
GRUTRMP7AT3	PVC Vented (3 micron) drip chamber ISO standard (20 drops/ml) with 200 micron blood filter

Packaging:	Dimension	Weight	Quantity / Box
	41 x 59 x 22 cm	8.5 kg	500 units

Assembled Blood Transfusion Drip Chambers – Effective Filtration Area 32-47 cm²

Specifications:
Housing Material
Kresin+Kraton and ABS
Spike Version: + polyethylene
Color
Clear and White
Filter Material
Mesh polyester
Application
Transfusion
Mesh Opening
200 µm
Open area
43%
Efficiency of Filtration
98%
Nr of Drops per ml
10
Maximum Operating Temperature
50°C
Pyrogenicity
<0.25 EU/ml
Sterilization Compatibility
EtO, Gamma, e-beam
Assembly Method
Bonding

Dual Port Version*

Product Code	Length mm	Diameter mm	Effective filtration area cm²	Packaging Dimension	Weight	Quantity / Box
RS0090000000A00	167.50	34.16	47.0	60 x 40 x 60 cm	12.2 kg	500 units
RS0120000000A00	167.50	22.36	32.0	60 x 40 x 60 cm	15.7 kg	1,000 units

Spike Version

Product Code	Length mm	Diameter mm	Effective filtration area cm²	Packaging Dimension	Weight	Quantity / Box
RS010A0000000A04	195.00	34.16	47.0	60 x 40 x 60 cm	11.8 kg	450 units
RS013A0000000A03	195.00	22.36	32.0	60 x 40 x 60 cm	14.8 kg	900 units

Single Port Version

Product Code	Length mm	Diameter mm	Effective filtration area cm²	Packaging Dimension	Weight	Quantity / Box
RS0140000000A00	167.50	22.36	32.0	60 x 40 x 60 cm	14.8 kg	1,000 units

*Proprietary Products

Hemodialysis Blood Chambers

There are many different drip chambers available for a variety of blood line configurations. We offer a full range of drip chambers, including eccentric, blown molded, cylindrical, in soft and rigid PVC versions, also suitable for gamma sterilization. A full range of covers is also offered to serve a variety of different specifications.
Assembled chambers are also available.

HEMODIALYSIS DRIP CHAMBERS
19/30 MM DIAMETER

Dimensions
Height: 132.00 mm
Diameter: 32.00 mm

Ref. Standard
ISO 8638

Raw Material
Soft PVC

Assembly method
Bonding

Color
Clear

Maximum Operating Temperature
50°C

Application
Hemodialysis

Pyrogenicity in EU/ml
<0.25

Sterilization
EtO, Gamma

Ordering Information:

Product Code	Description
RN226DDAC0000A01	Hemodialysis drip chamber dia. 19/30mm with wall dripping for tube 6.8mm in clear soft PVC*

Packaging:	Dimension	Weight	Quantity / Box
	40 x 60 x 25 cm	11.0 kg	600 units

COVERS FOR HEMODIALYSIS
DRIP CHAMBERS - 30 MM DIAMETER

Dimensions
Height: 23.00 mm
Diameter: 45.00 mm
Raw Material
PVC Rigid
Color
Clear
Application
Hemodialysis

Ref. Standard
ISO 8638
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO, Gamma

Ordering Information:

Product Code	Description
RN227DDAC0000A00	2-way (1x6.8mm + 1x4.1mm) cover for hemodialysis drip chamber dia. 30mm
RN229DDAC0000A00	2-way (1x6.8mm + 1x5.5mm) cover for hemodialysis drip chamber dia. 30mm
RN228DDAC0000A00	3-way (1x6.8mm + 2x5.5mm) cover for hemodialysis drip chamber dia. 30mm

Packaging:	Dimension	Weight	Quantity / Box
	40 x 60 x 25 cm	15.0 kg	2,500 units

* Fitting with 19/30 mm Dia. Drip Chamber, code RN226DNAF0000A00

ARTERIAL PRE-PUMP FLOW CHAMBER

Using AIM technology, GVS has developed an innovative process to manufacture an Arterial Flow Chamber that meets all of the needs of the haemodialysis market while increasing the quality of the product. Arterial Flow Chambers are currently made using rigid materials to meet patient needs during haemodialysis treatment. The molded components are stored and then assembled either by solvent bonding or ultrasonic bonding.

There are several potential failure modes in the current process:
The process requires multiple steps.
Components could deform during storage before assembly.
Defects can be generated during the solvent bonding or ultrasonic bonding processes.
There could be potentially toxic solvent residue that could transfer to the patient.

With the innovative new manufacturing technology developed by GVS the parts are molded and assembled inside the mold using both molding and overmolding. The external storage and assembly cycles are eliminated, increasing the quality level and eliminating the potential for solvent residuals.

Dimensions
Height: 82.0 mm
Diameter: 34.0 mm
Color
Clear/Red
Raw Material
PVC Rigid

Ref. Standard
ISO 8638
Application
Hemodialysis
Assembly Method
Bonding

Pyrogenicity
<0,25 EU/ml
Maximum Operating Temperature
50 °C
Sterilization
EtO, Gamma, Beta

Ordering Information:

Product Code	Description
RN417ACOL0000A00	Arterial pre-pump Flow Chamber 2 Way Cover, Connection 1x6.8mm + 1x5.5mm UP + 1x6.8mm DOWN
RN418ACOL0000A00	Arterial pre-pump Flow Chamber 3 Way Cover, Connection 1x6.8mm + 2x5.5mm UP + 1x6.8mm DOWN

Packaging:	Dimension	Weight	Quantity / Box
	40 x 40 x 30 cm	11.2 kg	400 units

Blown Molded Chambers

BLOWN MOLDED CHAMBERS
DIAMETER 26 MM

Dimensions
Height: 143.00 mm
Diameter: 26.00 mm
Raw Material
Rigid PVC

Color
Clear
Application
Hemodialysis

Ref. Standard
ISO 8638
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO, Gamma, e-beam

Ordering Information:

Product Code	Description
CAMESPGS0285GN	Blown molded expansion chamber, 26 mm dia. - Connection 1 x 5.5 mm UP + 2 x 6.8 mm DOWN (Y stable) / Eto

Packaging:	Dimension	Weight	Quantity / Box
	60 x 60 x 30 cm	8.5 kg	300 units

BLOWN MOLDED CHAMBERS
INTEGRA TYPE

Dimensions
Height: 177.00 mm
Diameter: 36.00 mm
Raw Material
Rigid PVC
Color
Clear
Application
Hemodialysis
Ref. Standard
ISO 8638
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO, Gamma, e-beam

Ordering Information:

Product Code	Description
CAMESPGS0298GN	Blown molded expansion chamber (Integra type) - Connection 1 x 5.5 mm UP + 2 x 6.8 mm DOWN (Y stable w/o Hemoscan)
LETOTTRV0310GN	Hemoscan (Blood density reading device)

Packaging:	Dimension	Weight	Quantity / Box
	60 x 60 x 30 cm	9.0 kg	500 units
			Hemoscan 5,000 units

BLOWN MOLDED CHAMBERS
DIAMETER 40 MM

Dimensions
Height: 207.00 mm
Diameter: 40.00 mm
Raw Material
Rigid PVC
Color
Clear
Application
Hemodialysis
Ref. Standard
ISO 8638
Assembly method
Bonding
Maximum Operating Temperature
50°C
Pyrogenicity in EU/ml
<0.25
Sterilization
EtO, Gamma, e-beam

Ordering Information:

Product Code	Description
CAMESPGS0292G	Blown molded expansion chamber. 39 mm dia. - Connection 1 x 5.5 mm UP + 2 x 6.8 mm DOWN (Y stable)

Packaging:	Dimension	Weight	Quantity / Box
	60 x 60 x 30 cm	7.0 kg	330 units

Product Code Index

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