



Filling for the foodstuffs, cosmetics and pharmaceutical industries

Fast and precise valve designs for filling with liquid and viscous media.

Process description

Filling with liquid and viscous media is one of the core processes in the foodstuffs, cosmetics and pharmaceutical industries.

A range of different designs are used, depending on the medium, container, intended dosing quantity and the required system flexibility. For example, bulk filling of foodstuffs and beverages is often undertaken with large circular fillers, which have more than 100 filling points. Linear fillers are most often used for the filling of cosmetics, cleaning and pharmaceutical products.

Due to an increase in health awareness, modern foodstuffs are largely made without artificial colourings, flavourings and preservatives. This has led to a constant increase in the requirements relating to hygiene and the technology used in filling processes.

Similarly, the requirements relating to filling accuracy and reproducibility, particularly for filling with high value media such as vaccines or cancer drugs, are increasing steadily.

Suitable GEMÜ product range

- GEMÜ F40
- GEMÜ F60 servoDrive
- GEMÜ 650 BioStar
- GEMÜ 658
- GEMÜ 660
- GEMÜ C50 iComLine
- GEMÜ C53 iComLine

Application examples

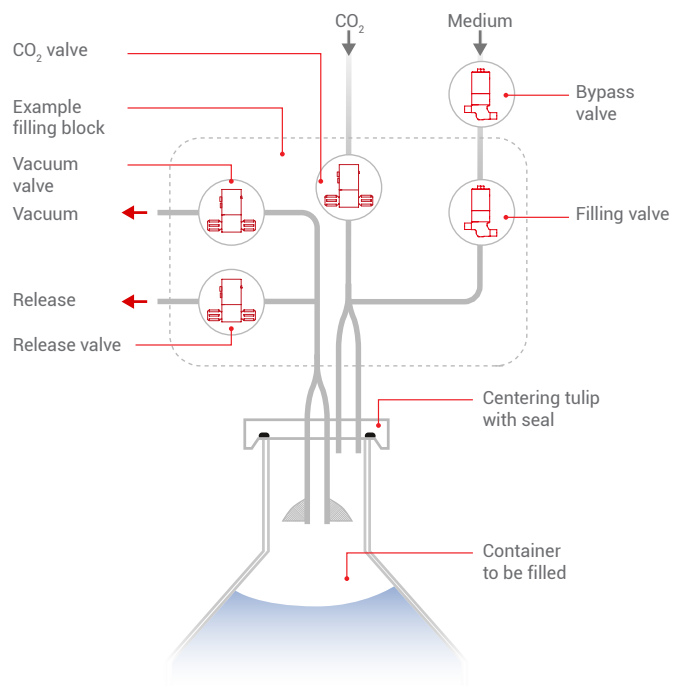
- Carbonated and uncarbonated beverages
- Dairy products
- Viscous and abrasive media
- Cosmetics and care products
- Cleaning agents, acids and alkalis
- Oils and greases
- Medicinal products
- Corrosive media

Filling with circular fillers

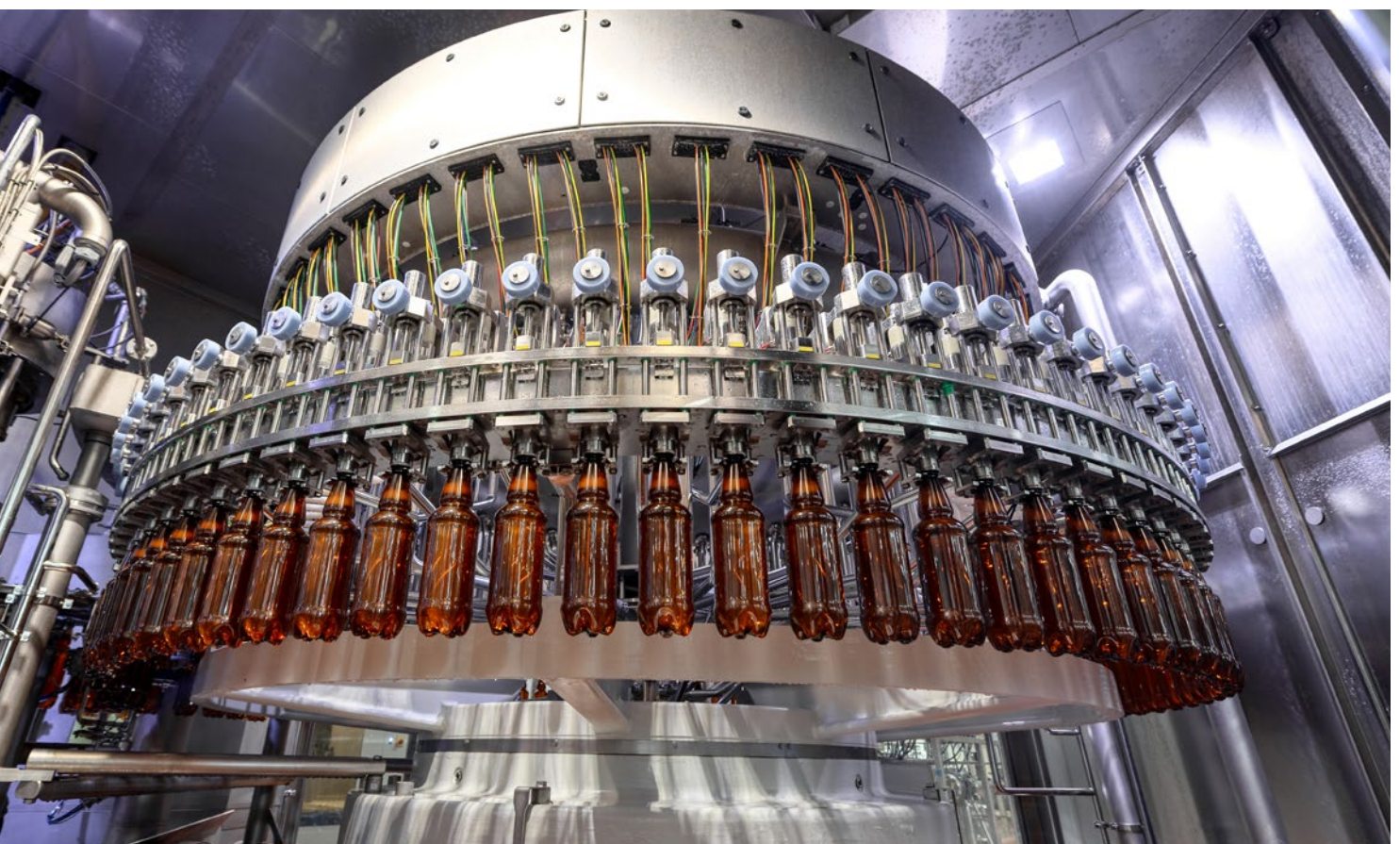
Circular fillers are most often employed for filling with foodstuffs requiring a large dosing quantity. Filling uses a rotating carousel, which has filling points around the periphery. This ensures that there is enough time for optimal control of the filling process, and to allow a continuous flow of the containers.

Circular fillers can be used for uncarbonated media, such as still mineral water, fruit juices or dairy products. A two-stage filling process is often used for these. The container is filled slowly, topped up quickly, and then brought to the desired level using a decreased flow rate. This can be controlled with a bypass valve connected upstream of the filling valve and a filling valve with a servo- or two-stage actuator. For oxygen-sensitive products, nitrogen is used before closing the containers to displace any remaining oxygen. For carbonated media, additional auxiliary valves are required. These are used to condition the containers to be filled, and ensure CO₂ supposition. Here too, a two-stage filling process is usually employed.

In modern filling systems, cleaning takes place with a CIP/SIP unit. This works by securely attaching the filling lines to CIP cups. The plant is then flushed with cleaning media which is then discharged again via the CIP cups and the lines connected to them.



Filling line in a circular filler for carbonated media



Filling with a linear filler

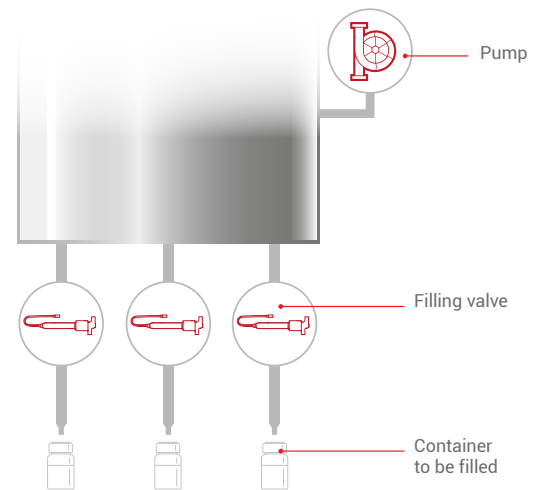
Cosmetics, pharmaceutical products, cleaning agents, oils and greases plus some types of beverages with small dosing quantities are often filled with linear fillers.

Linear filling is mostly used for fast filling of containers, as the duration of each individual filling process has a direct influence on the productivity of the filling system. Extremely accurate dosing of media is of crucial importance for the pharmaceutical industry. Fast, highly accurate filling valves are therefore required for filling minimal volumes. A linear filler frequently consists of several filling points arranged in rows. This allows several containers to be filled at the same time during each filling process and then conveyed out of the filler. Containers are therefore ejected after each filling cycle rather than continuously, with as many containers as filling points.

With the linear filler, an unlimited number of fixed pipes and cables or compressed air lines can be attached.

Linear fillers are in part designed so that two complete filling units are available within one plant. This allows for seamless filling with the second filling unit while the first filling unit is being cleaned.

On modern fillers, cleaning takes place using a CIP/SIP unit, which can be installed directly in the filling system.



Linear filler for filling small quantities





GEMÜ 650 BioStar
Pneumatically operated
diaphragm valve



GEMÜ 660
Pneumatically operated
diaphragm valve for
multiple fast filling cycles



GEMÜ 658
Pneumatically operated
diaphragm valve for two-
stage filling



GEMÜ C50 iComLine
Pneumatically operated
diaphragm globe valve for
auxiliary processes



GEMÜ C53 iComLine
Motorized diaphragm
globe valve for auxiliary
processes



GEMÜ F40
Pneumatically operated
diaphragm globe valve for
multiple fast filling cycles
and long service lives



GEMÜ F60 servoDrive
Motorized diaphragm
globe valve for the
strictest requirements

Why GEMÜ?

GEMÜ has created the perfect valve designs for all types of filling processes and output quantities.

Our many years of experience and expertise in valves for sterile processes and auxiliary processes, such as heating and cooling systems and steam generation, is employed to develop the optimal solutions for the filling process. GEMÜ's diaphragm globe valves with PD design are not only aseptic, they also boast fast cycle duties and high flow rates, and are easy to service with long service lives.

Alongside the clean media valves, GEMÜ also provides valves for auxiliary processes in the filling sector. These can be used, for example, to ensure reliable pre-evacuation and CO₂ supposition when filling with carbonated media.

In addition, GEMÜ Systems also offers the option of building complete subassemblies on a case-by-case basis. For example, we can provide complete filling lines with flowmeters, two-stage filling and the corresponding auxiliary valves.

GEMÜ also offers the right valve designs for the CIP/ SIP process cleaning installations integrated in the filling system or installed in the building.

Our close-meshed, worldwide sales and service network ensures you and your customers always have access to a knowledgeable contact person locally for all areas of application.

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