

# ASEPTIC VALVE PROGRAM

TECHNICS IN STAINLESS STEEL FOR FOOD,  
CHEMICAL AND PHARMACEUTICAL INDUSTRIES





**RIEGER**

www.rieger.de  
Made in Germany

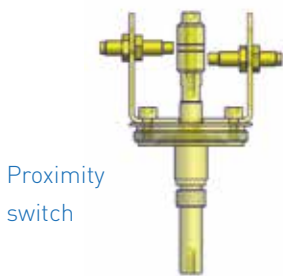
**CERTIFIED**  
ENGINEERING &  
**EHEDG**  
HYGIENIC ENGINEERING & DESIGN GROUP  
EUROPEAN GROUP  
**TYPE EL - CLASS I**  
JANUARY 2012

## Our ideas – your advantages

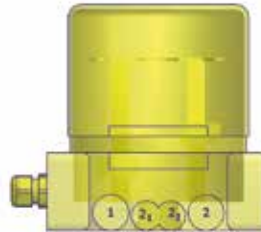
- valve body from **solid bar** – different mounting positions possible providing proper draining
- cleanable and drainable
- interior surface  $Ra \leq 0,8 \mu m$  (32) (standard)
- product **hermetically sealed** against environment
- no sump or dome in product space
- **dead space free** design
- valves available meeting **3-A standards and EHEDG guidelines**
- easy and quick assembly without special tools
- low maintenance time
- valves available with DIN, ISO and OD tube sizes
- standard connection: weld end – optional connections upon request
- **PTFE bellows FDA** conformance, meets 3-A standards and EG 1935/2004
- high durability due to improved pressure stability
- folds remain separated in open valve position allowing optimum cleanability
- low adhesion on PTFE bellows
- resistant to aggressive media
- alternatively: metallic bellows with standard-O-rings (FDA conformance) or PTFE-metal combinations
- bellows failure indicator
- Thanks to the **building block system**, actuators and spindles may be changed in case of process or customer modification.
- The **pneumatic actuator** can be ordered alternatively with function „air to open/spring to close NC“, „spring to open/air to close NO“ or „air/air“.
- A **3-position actuator** permits a third position in simple static dosing processes.
- Feedback elements and control tops are mountable.



## The building block system



Proximity switch



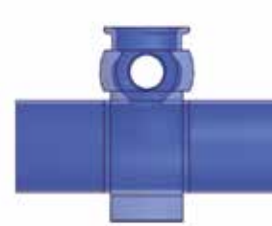
Control top



Pneumatic actuators



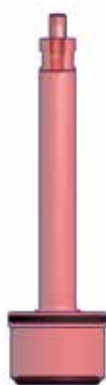
Aseptic spindles - PTFE bellows



Body combinations



Manual actuators



Hygienic spindles - O-rings

Aseptic spindles - metal bellows



# Aseptic double seat valves N7



... for a safe separation of liquids

## Valve

- leakage chamber sterilizable
- valve body from solid bar
- no dead space, valve is drainable

## Complete product protection

- safe media separation due to leakage chamber
- meeting 3-A standards

## Seals

- PTFE bellow
- PTFE metallic head
- PTFE-PEEK head



## Building block system

- possibility to change at any time between PTFE and other seals

## Ease of service

- change of seals without special tools
- low maintenance time
- optimum cleanability

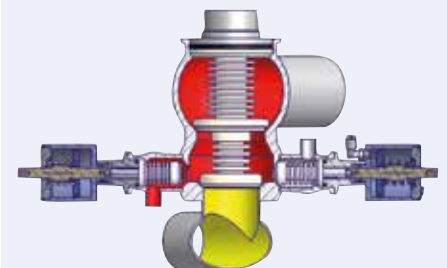
## Economic efficiency

- long life of PTFE bellows
- minimal maintenance costs

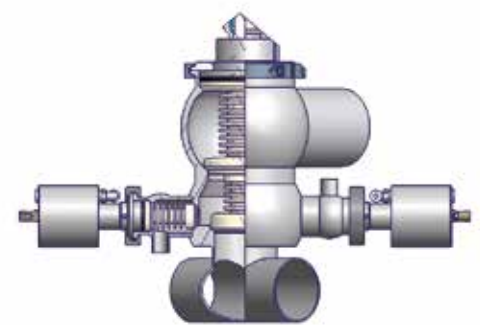
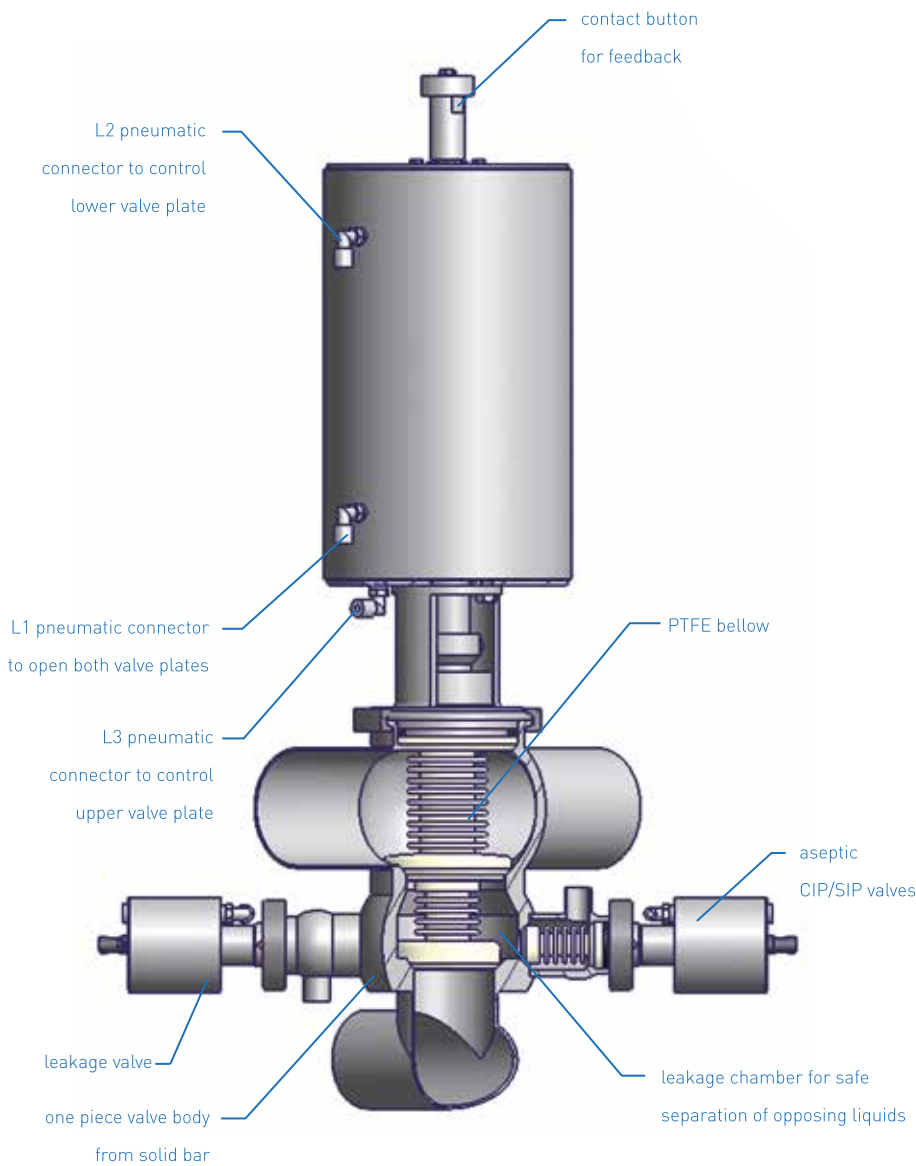


## Operating mode

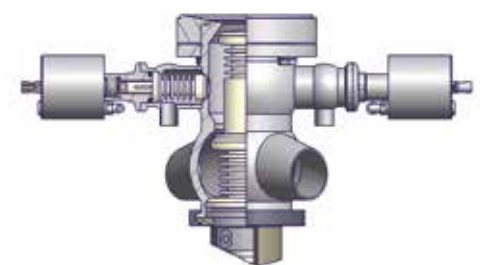
L3 – pneumatic connector to control upper valve plate



CIP-cleaning and SIP-sterilization of upper valve body including valve seat and leakage chamber; upper valve plate lifted each cycle.

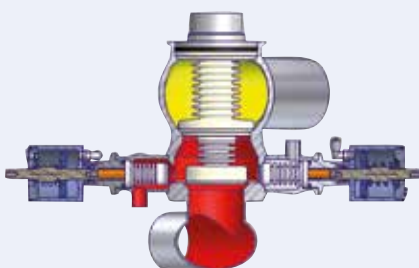


for pipes



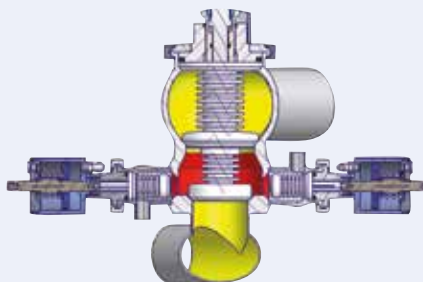
for tanks

L2 – pneumatic connector to control lower valve plate



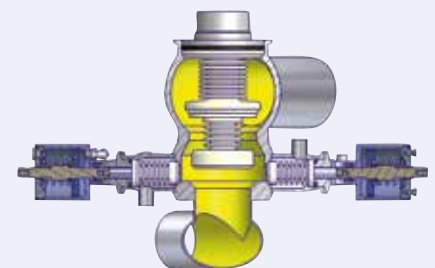
CIP-cleaning and SIP-sterilization of lower valve body including valve seat and safety chamber; lower valve plate lifted each cycle.

CIP-cleaning and SIP-sterilization of the leakage chamber



valve closed

L1 – pneumatic connector to open both valve plates



valve open

# Aseptic double seat valve N13



... the hybrid between N1 and N7

Two independent PTFE bellows hermetically seal against the environment. The double valve seat separates the two process lines to prevent unwanted mixing of two liquids. The construction reduces CIP valves and permits a very compact shaped valve.

Both the upper and the lower valve chambers may be cleaned independently.

The spherical shape of the valve body with no dead space provides optimal cleaning.

The aseptic process valve N13 combines the advantages of the double seat valve N1 with those of the aseptic process valve N7.

The patent has been granted.



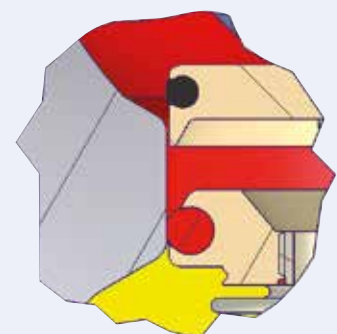
## Features

- PTFE bellow with metallic head
- leakage free and liftable
- CIP able and sterilizable
- vacuum safe
- identical spare parts from DN 50 to DN 80 (2" - 3")
- EHEDG-certified

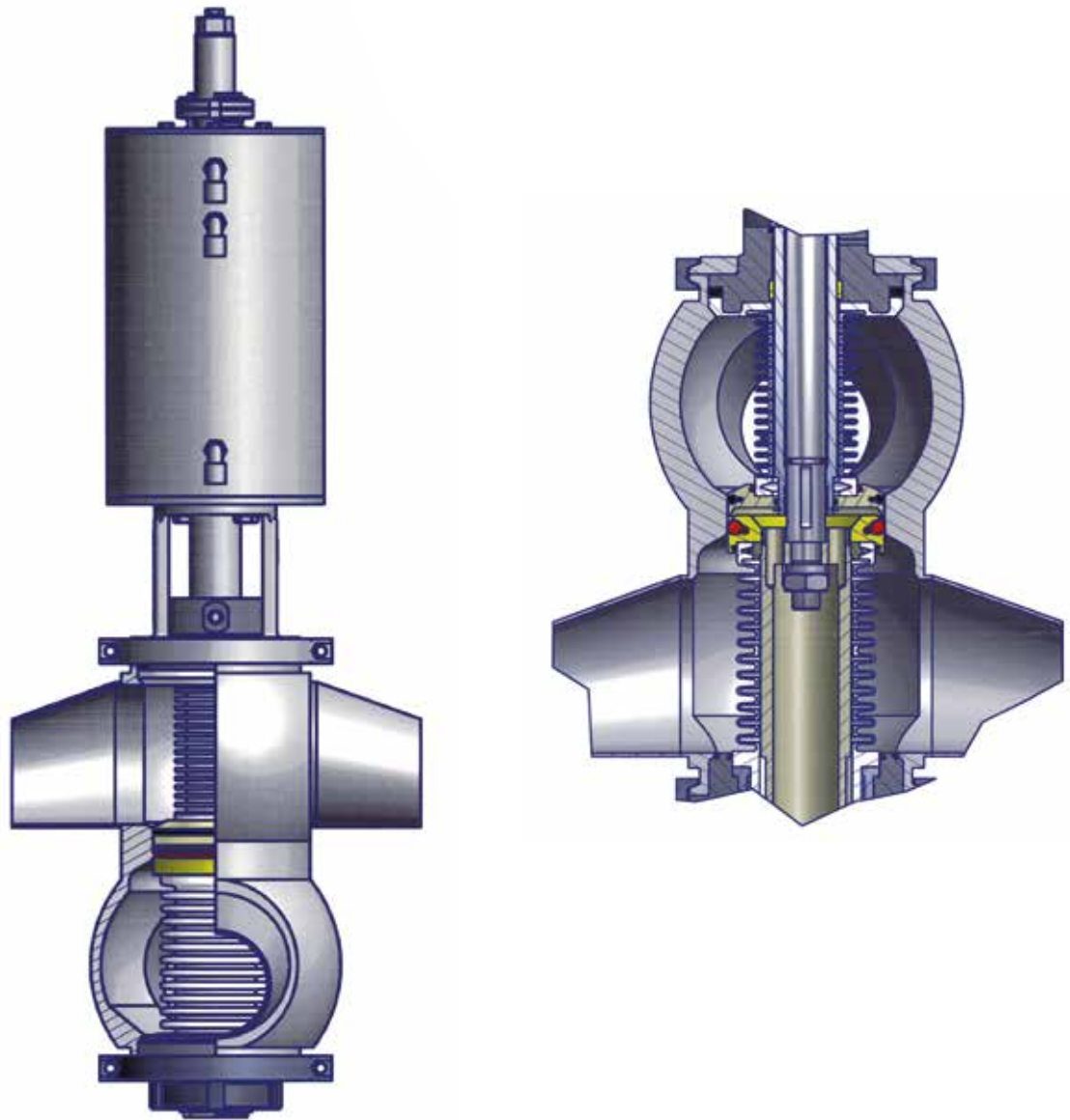


## Cleaning process

cleaning: upper valve body



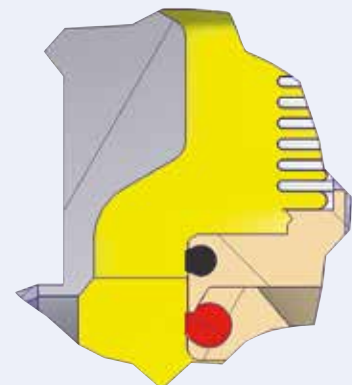
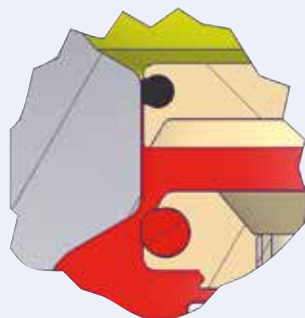
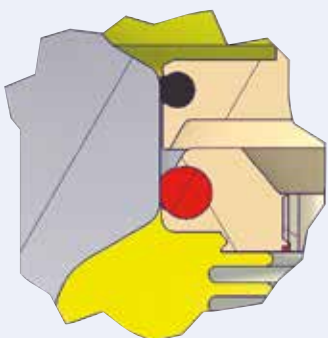




valve closed

cleaning: lower valve body

valve open





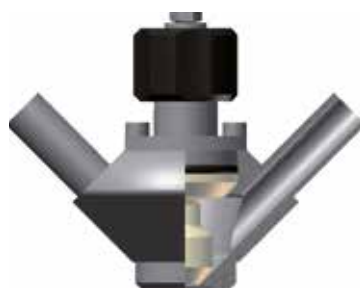
... safety for your product



Two modes of operation – pneumatic actuation and manual control – are combined in one valve. This variant permits a new sampling flexibility – as the process requirements may be. The building block system offers unproblematic change between pneumatic and manual actuation.



pneumatic with handle



hand wheel

## BioCheck

In aseptic process engineering, process control has become an indispensable element.

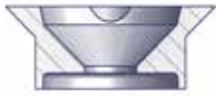
By means of the BioCheck sampling valve, samples can be taken out of closed systems including vessels and piping in a simple and safe way.

BioCheck valves were developed paying special attention to compact and true aseptic design. The result is minimal problems when mounting valves in CIP/SIP applications. The product sample is protected from the environment.

### Features

- valve body from solid bar
- no dead space
- drainable
- very small mounting dimensions
- connections suitable for orbital welding
- long life of PTFE bellows
- minimal maintenance costs
- hermetically sealed against the environment
- optimum cleanability
- change of seals without special tools
- low maintenance time
- industries of application: pharmaceuticals, bio-pharmaceuticals, bio-chemical, cosmetic, food, dairy and beverage
- certified according to TA-Luft / VDI 2440 / VDI 3479
- certified according to 3-A





pipe



tank



clamp



BioConnect



hand wheel



Ingold nozzle



pneumatic actuator



with welded T-piece



All valve bodies are available with single or double outlet.

## Construction types of the BioCheck sampling valve





... small but mighty

## BioCheck Mini

The Mini BioCheck sampling valves meet the requirements for minimal product contact surfaces.

The mini valves allow minimal sampling quantities fulfilling the same valve features in material and design compared to the larger valves such as DN 10 (1/2").



### Features

- pipe, vessel, clamp connection (Ø 25 mm or 34 mm)
- 1 port for sampling
- 2 ports for CIP and/or SIP plus sampling
- DIN 6 (8 x 1 mm pipe)
- DIN 8 (10 x 1 mm pipe)
- hand wheel
- pneumatic (spring to close)
- pneumatic and lever



## BioCheck Combi

### Features

- extremely space saving
- with lever or proximity switch bracket on sampling valve
- steam valve and product sampling valve are directly mounted to valve body
- a separate steam valve is not required
- no product back flow into steam piping during sampling



## BioCheck Compact

### Features

- all actuators possible
- hygienic process connections
- according the newest EHEDG standards
- bigger hand wheel



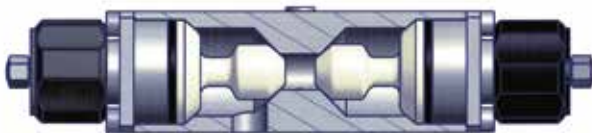
lockable with key





### Features

- utilizes standard laboratory bottles
- connection thread GL45 ISO
- for samples from 100 to 2000 ml
- no air contamination
- autoclavable
- absolute aseptic system



### Sampling procedure

- sterilize entire device
- insert device into pipe
- sterilize pipe
- take aseptic sample
- close valves
- remove device from pipe
- aseptic transport to laboratory

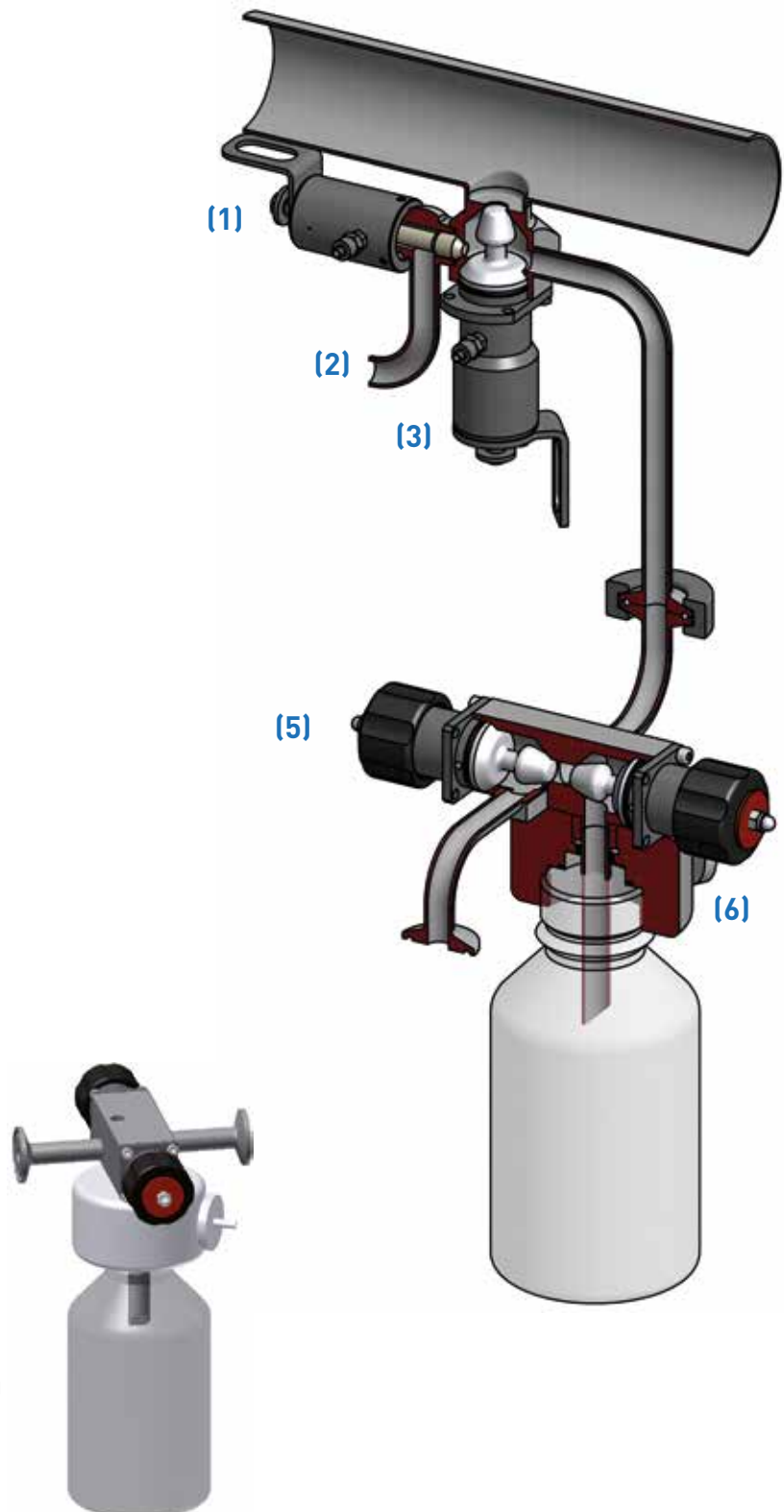


With the BioCheck sampling system, samples can be taken from sealed systems like tanks and pipelines simply and safely.

In the design of this sterile valve, special attention was paid to an aseptic yet at the same time highly compact design. That incorporation in both sterile and CIP/SIP circuits is straightforward and, above all, without contamination.

### Drain process

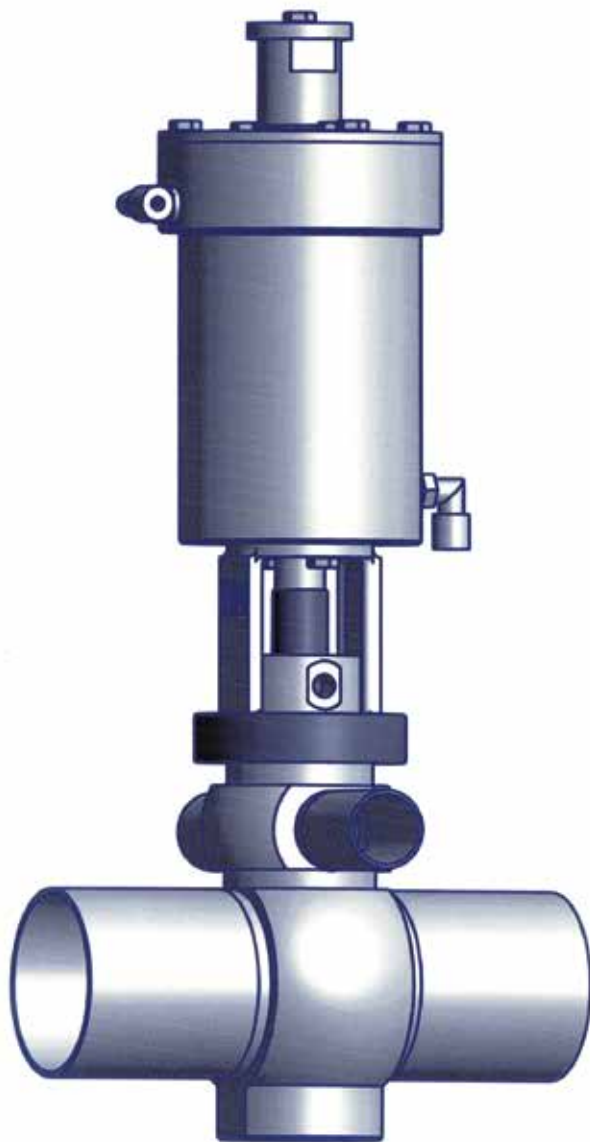
1. The product flows through the pipeline. The BioCheck sampling valve (3) and CIP/SIP valve (1) are closed.
2. After the bottle has been sterilized in the autoclave, connect the bottle to the sampling outlet. Both valves on the bottle (valve (5) and valve (6)) are closed.
3. Open the CIP/SIP valve (1) and the bypass valve (5) for cleaning. The steam cleans the entire system, but not the bottle. This was cleaned beforehand in the autoclave (see 2.).
4. Close the CIP/SIP valve (1) and the bypass valve (5).
5. Open the BioCheck sampling valve (3) and the valve for sampling in the bottle (6). The product flows into the bottle.
6. First close the BioCheck sampling valve (3).
7. After the outlet for sampling has been drained (4), close the valve for bottle sampling (6) on the bottle. The entire system is sealed.
8. Remove the bottle for sampling from the system.



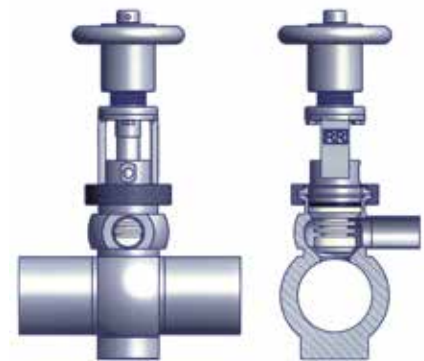
# Aseptic sampling valves D



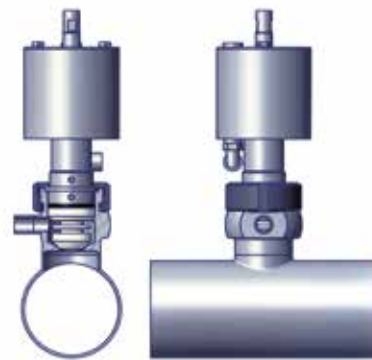
... pipe sampling valve from DN 25



All valves are also available  
with only one outlet.



manually actuated with hand wheel D4

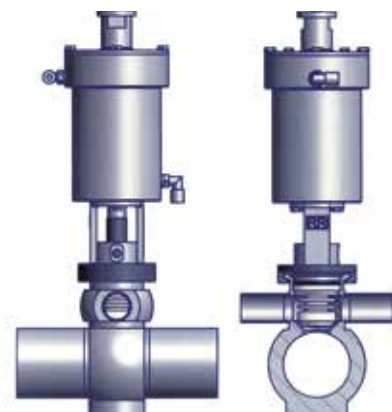


pneumatically actuated D31

Aseptic pipe sampling valves allow contamination-free sampling of liquids in pipes without contact to ambient air.

The extraction and pipe bodies are available in several nominal diameters. An optionally available rinsing nozzle serves to clean and sterilize the valve body.

Equipped with either hand wheel, pneumatic actuator or 3-position actuator, thanks to the building block modular system, the valves' actuation can easily be adapted to changed process requirements.



pneumatic with 3-position actuator D71



# Aseptic filling valves



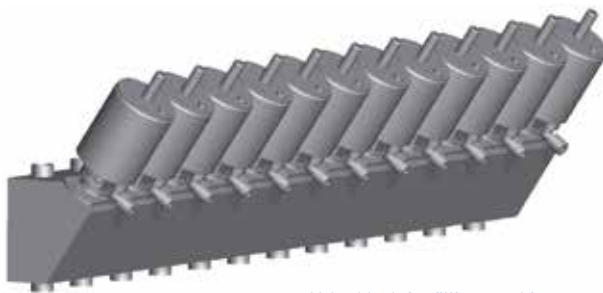
... aseptic filling guaranteed



PTFE bellows



PTFE bellows with stainless steel cap



Valve block for filling machines

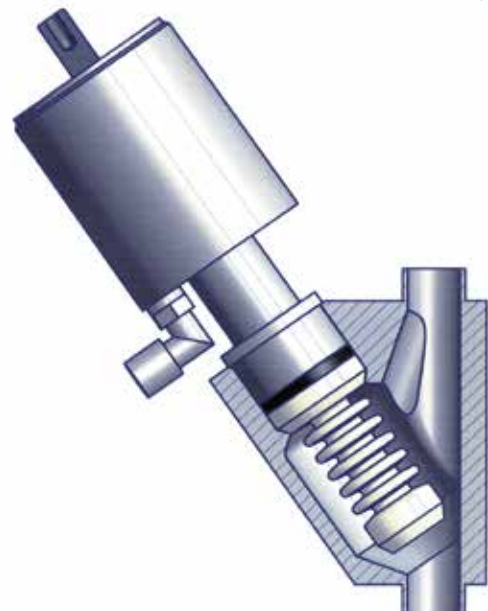


PTFE bellows with PEEK cap

## Inclined seat filling valve

The durability of PTFE bellows – optionally available also with a stainless steel cap with O-ring or a PEEK cap for liquids with particles – guarantees low downtimes. Folds remain separated in open valve position allowing optimum cleanability.

Several valves, which are combined to valve blocks inside filling machines, flawlessly and aseptically fill in products like yogurt.



... full flow with minimal intrusion

## Features

- valve body from solid bar
- product hermetically sealed against the environment
- full product and CIP drainage
- change of seals without special tools
- modular system: simple change between hygienic and aseptic version
- with manual or pneumatic actuator
- minimal pressure loss



## BioCheck inclined seat valves

Similar to the BioCheck Sampling valve, the BioCheck inclined seat valve offers reliable product safety in size DN 10 DIN (1/2").



with hand wheel



with pneumatic actuator

# Pressure retaining valve DH2



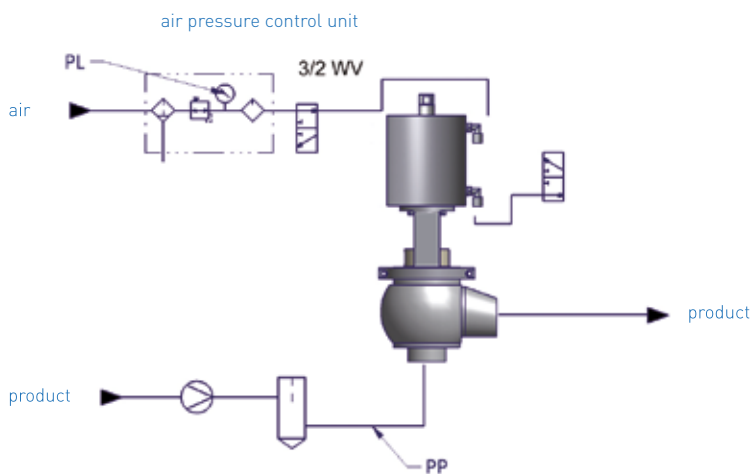
## ... the aseptic constant pressure valve

The **RIEGER pressure retaining valve DH2** fulfills the task to maintain a defined pressure on the valve's inlet side. This may be i.e. the pressure (PP) in a pipe after a filter or heat exchanger.

If the pressure drops after the filter or heat exchanger, the valve automatically adjusts to the requested set pressure.

This is achieved by means of an air pressure control unit, whose pressure gauge is adjusted to the desired pressure of the pressure retaining valve.

The product space is protected by the PTFE-bellows against contamination from ambience, i.e. the "lift effect" is avoided.



Calculation formula for air pressure PL to be adjusted:

$$PL = (PP \times VF) \pm 0,1 \text{ bar tolerance}$$

VF = valve factor depending upon size – see catalog

Example for DN 25 with PP (incoming pressure) of 3 bar between filter and pressure retaining valve:

$$PL = (3 \text{ bar} \times 0,14) \pm 0,1 \text{ bar} = 0,42 \pm 0,1 \text{ bar}$$

i.e. PL: approx. 0,32 to 0,52 bar

# Aseptic regulating valves E



... exact flow control



pneumatically actuated  
with positioner

In the pharmaceutical industry and also in the food industry, endurance and durability of PTFE control bellows give problem free production while providing product safety. Longer production cycles mean less maintenance costs and thus higher productivity.

Thanks to the building block system, a change in the actuation system is possible at any time, i.e. from manual to pneumatic actuation or vice versa.



up to DN 20 manually actuated via hand wheel  
from DN 25 manually actuated with crank handle

# Aseptic overflow angle valve E8



## ... for safe pressure reduction

The **Rieger overflow angle valve E8** is a combination of right angle and overflow valves. The desired pressure is adjustable, with a valve stroke as high as possible.

Unlike an overflow valve, this valve can be opened up to 100% – like an angle valve.

The Overflow valve type E8 is suitable for all liquid media. It is not a safety valve. For this purpose, we recommend our TÜV approved safety valve type SH.

### Valve structure

- valve body from solid bar
- no dead spaces
- drainable when mounted in various positions

### Complete product protection

- no sump or dome in product space
- high grade inner surfaces
- optimum cleanability

### Safety

- clamp union between body and actuator
- suitable for all liquid media

### Economic efficiency

- building block system: easily change from hygienic to aseptic version
- standard seals
- spare parts from the angle valve product range





<b>Material</b>	in contact with product	1.4404/AISI 316L	
	optional	1.4435/AISI 316L (others upon request)	
	not in contact with product	1.4301/AISI 304	
<b>Product contact seals</b>		EPDM (FDA)	PTFE (FDA)
<b>Temperatures</b>	for continuous operation	130 °C (EPDM)* 266 °F	121 °C 250 °F
	for sterilization	150 °C (EPDM)* 302 °F	135 °C (for a short time) 275 °F (for a short time)
<b>Pressure</b>	operating pressure	max. 6 bar (standard) higher upon request max. 87 psi (standard)	
	controlled pressure	min. 6 bar – max. 10 bar min. 87 psi – max. 145 psi	
<b>Surfaces</b>	in contact with product	Ra ≤ 0,8 µm (32)	
	not in contact with product	rotated, Ra ≤ 1,6 µm (63)	
	optional	higher quality surfaces on demand e.g. electro polished	
<b>Connections</b>	standard	weld end	
	optional	all common threads and flange connections	

\* depending on operating parameters



## ... industries of application

<b>Pharmaceutic Biotechnology Cosmetics Chemical</b>	B. Braun Melsungen	Kwizda Pharma
	Bayer Schering Pharma	Merck
	Dr. Hobein (Eubos)	Novartis
	Ecolab	Queisser Pharma
	Fresenius Medical Care	Rentschler
	HAKA Kunz	Sandoz
	Inova pharma systems	Sanofi-Aventis
	kocher-plastik	Sartorius
<b>Dairies</b>	Bayernland	Hochwald
	Bergland Naturkäse	Kärtnermilch
	Breisgaumilch	Meggle
	FrieslandCampina	MZG Molkerei Zeulenroda
	Danone	Starmilch
	DMK	Tirol Milch
	Ehrmann	Zott
<b>Beverages</b>	Altmühltaler Mineralbrunnen	Mineralbrunnen AG
	Brandenburger Urstromquelle	Ricker Fruchtsäfte
	Brasseries Kronenbourg	Sinziger Mineralbrunnen
	EICO-Quelle	Thüringer Waldquell
	Glashäger Brunnen	WEG Weser-EMS
	Markengetränke Schwollen	Ybbstaler Fruchtsaft
<b>Plant engineering</b>	ALPMA Alpenland Maschinenbau	Krones
	AT Anlagentechnik	LTH Dresden
	Belimed	MHG Anlagenbau
	BIS Industrietechnik Salzburg	Miteco AG
	Döhler Engineering	Oystar-Gruppe
	Elopak	Pharmaplan
	Höfliger	Ruland
	HOSOKAWA ALPINE	Sepelec
	Idoneus	SIG Combibloc Systems
	KHS	Täschner Engineering
	Kinetics	Tetra Pak

Further references upon request. Please use our contact form on our website [www.rr-rieger.de](http://www.rr-rieger.de)

# Aseptic valves in operation



... in dairies, for food and beverages



New production techniques and a high safety of process equipment are the challenges of the future. RIEGER valves make a contribution to achieve a maximum of productivity, safety and quality in dairies, food and beverage industry.

Strictly made of solid bar, the valve bodies even comply with very high requirements in terms of puncture resistance, absence of distortions and stability. Precisely tailored, either as single valve or combined to valve blocks, they accurately fit in installations while being exchangeable among each other.

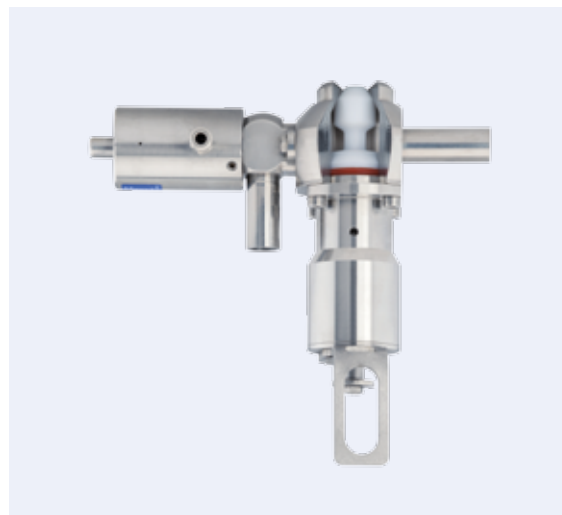
The building block system allows unproblematic change between manual and pneumatic actuation as well as between hygienic and aseptic realisation. Equally, a modification of the sealing system is simple – from “spring close / air open” to “spring open / air close” and vice versa.

Thus, RIEGER valves are easily adaptable to changing process requirements.

We adapt our valves to your process. So you don't have to adapt your process.



**The RIEGER valve range stands for reliability**







## ... in pharmaceutical, chemical and bio-engineering industries

Aseptic production equipment in the area of the pharmaceutical and biotechnological industry set new benchmarks for aseptic components such as valves. These are only met with a consequent selection of materials and an uncompromisingly aseptic realisation.

Integrated into pharmaceutical installations for absolutely clean applications, RIEGER valves successfully demonstrate their excellent aseptic properties since years by hermetically separating products from the environment.

RIEGER valves can be found all over the world. Whether Europe, Asia, Africa, Oceania or America – they call every continent and every climate zone their home.

As a renowned German company and part of the worldwide operating NEUMO Ehrenberg Group, RIEGER disposes of the necessary economic capacity and international experience to supply all markets.

Whether bottom seat valves for fermenters, inclined seat valves with bottling functions or sampling valves, the emphasis of construction is always laid on the proper aseptic operation of the valve.



### in process control and installations



# The company



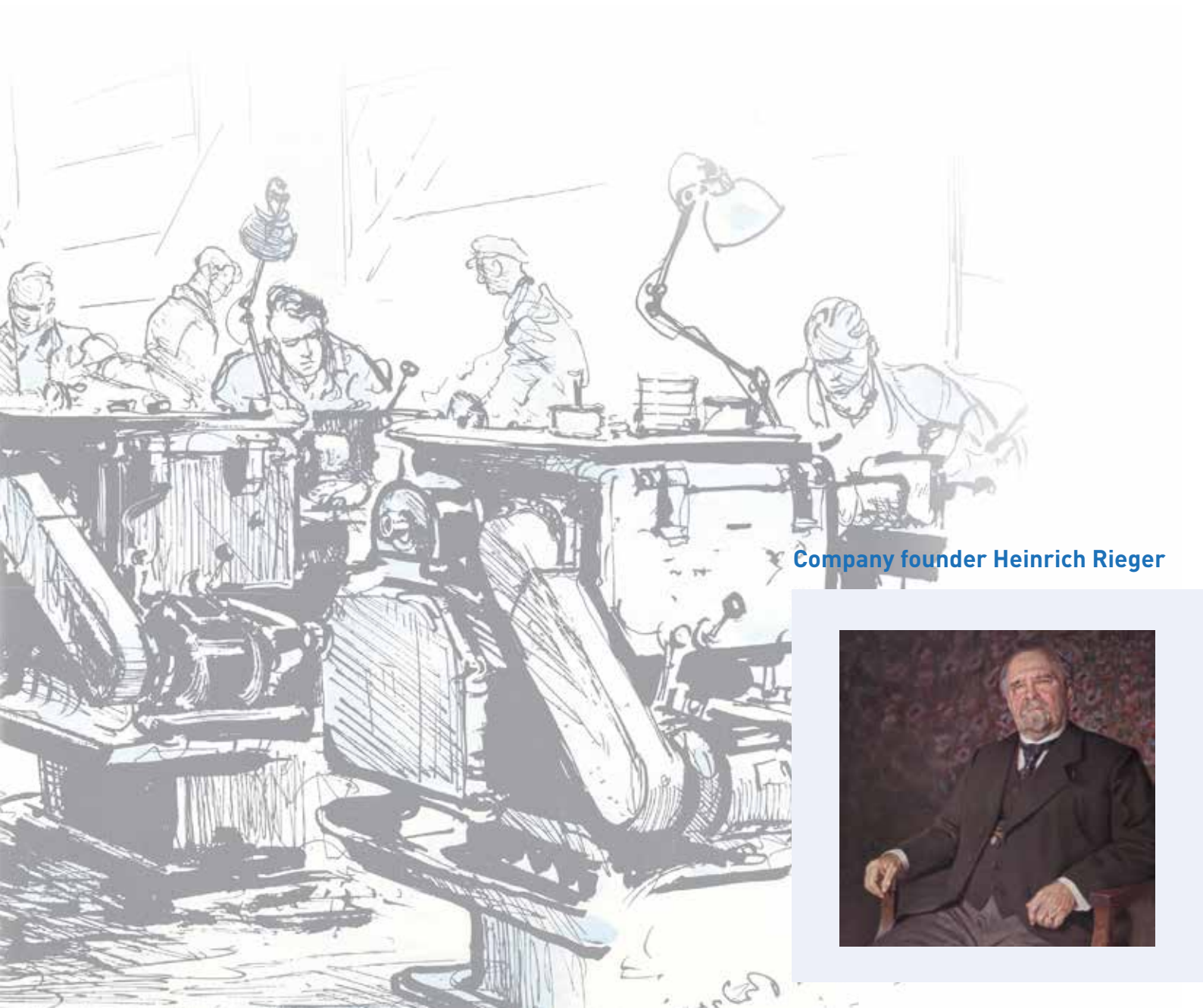
The company Rieger is a company with long tradition.

It was founded 1879 as machine

factory in the center of Aalen.

Being subdivided into the two departments machine factory and aluminium foundry, today, RIEGER is member of the worldwide operating NEUMO Ehrenberg Group.

RIEGER machine factory successfully competes in the areas of armatures, valves and welded constructions. All products are basically made of stainless steel, offering the full range of stainless steel types from AISI 304 via 316 L up to hastelloy steel and special materials.




Company founder Heinrich Rieger






- 2015**


Foundation of RIEGER USA


- 2012**


Aseptic Pigging System


- 2005**


DIN ISO 9001 Certification


- 2004**


First 5 - Axis Machining Center


- 2002**


3-A Approval for the US Market


- 2001**


FEM Calculations


- 2000**


Aseptic Valve Technology


- 1999**


Double Seat Mix Proof Valves


- 1991**


Moving into the industrial area


- 1958**

Member of NEUMO Ehrenberg Group

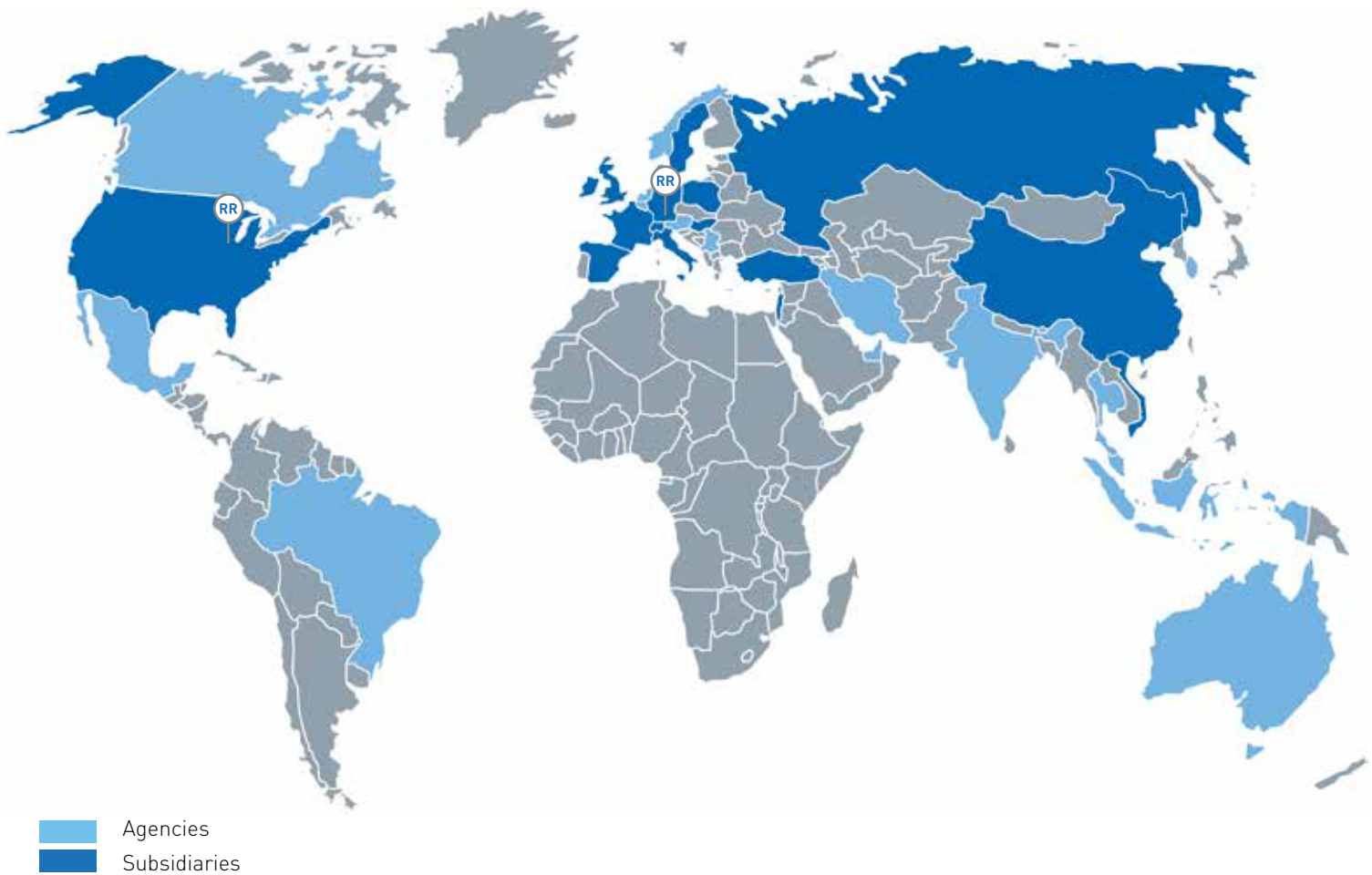

- 1879**

Foundation





# RIEGER worldwide



The **NEUMO Ehrenberg Group** is an owner-managed, globally operational group of companies with more than 1,800 staff.

Gebr. Rieger has been a member of the globally operational **NEUMO Ehrenberg Group** since 1958. At its machinery factory Gebr. Rieger produces its highly successful **hygienic** and **aseptic valves** and welded constructions.

Due to this global orientation, Rieger was able to achieve international recognition within the food and beverage and pharmaceutical markets within a very short space of time.

Besides **sampling valves**, our main products also include **double-seated valves**, **filler valves** and **pig trap stations**.

## **Gebr. Rieger GmbH + Co. KG**

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