

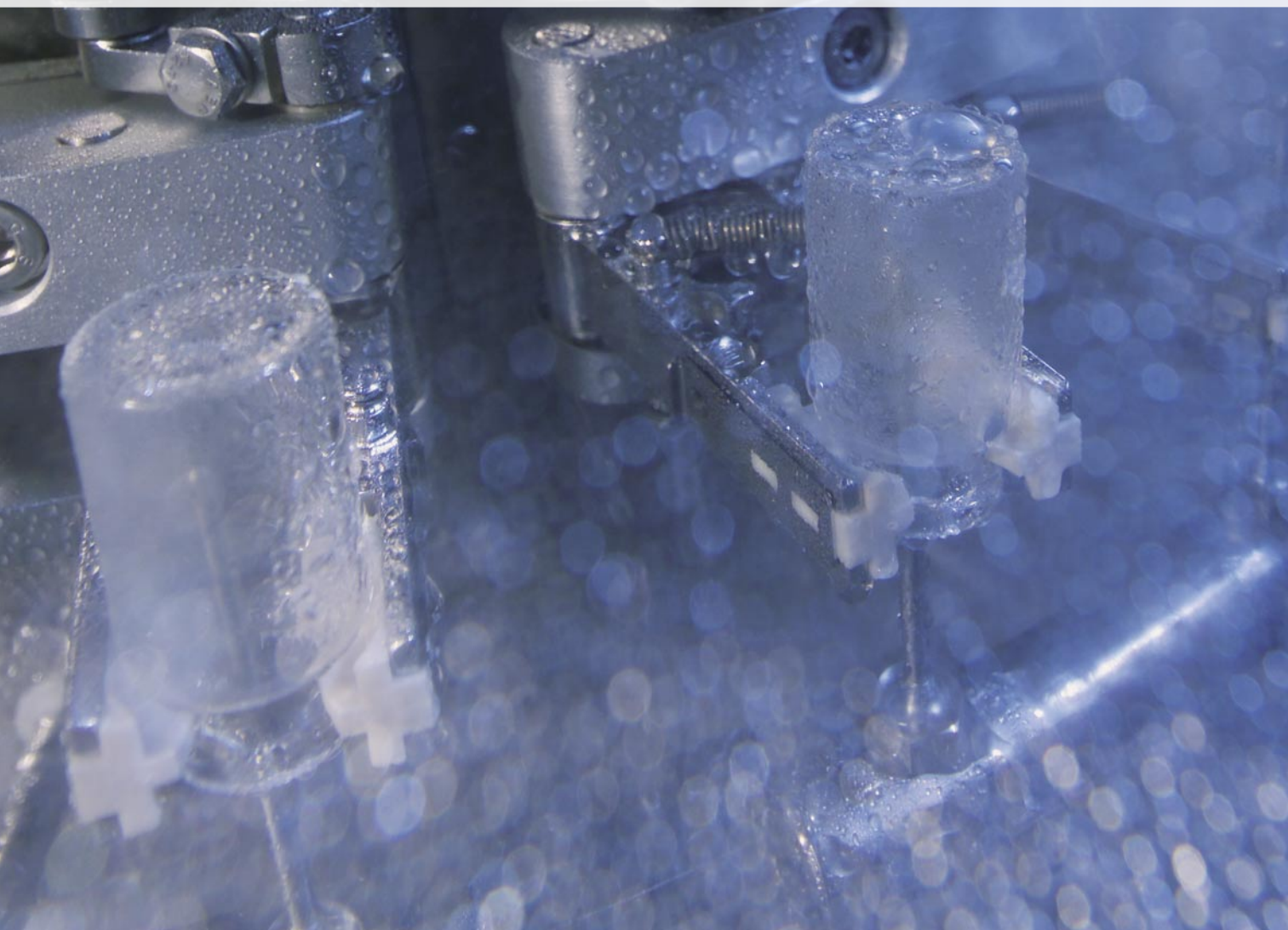


## Washing Machine RRU/RRN 20x3



**BOSCH**

Invented for life





**Economical and Flexible –**  
the Bosch series RRU/RRN 20x3





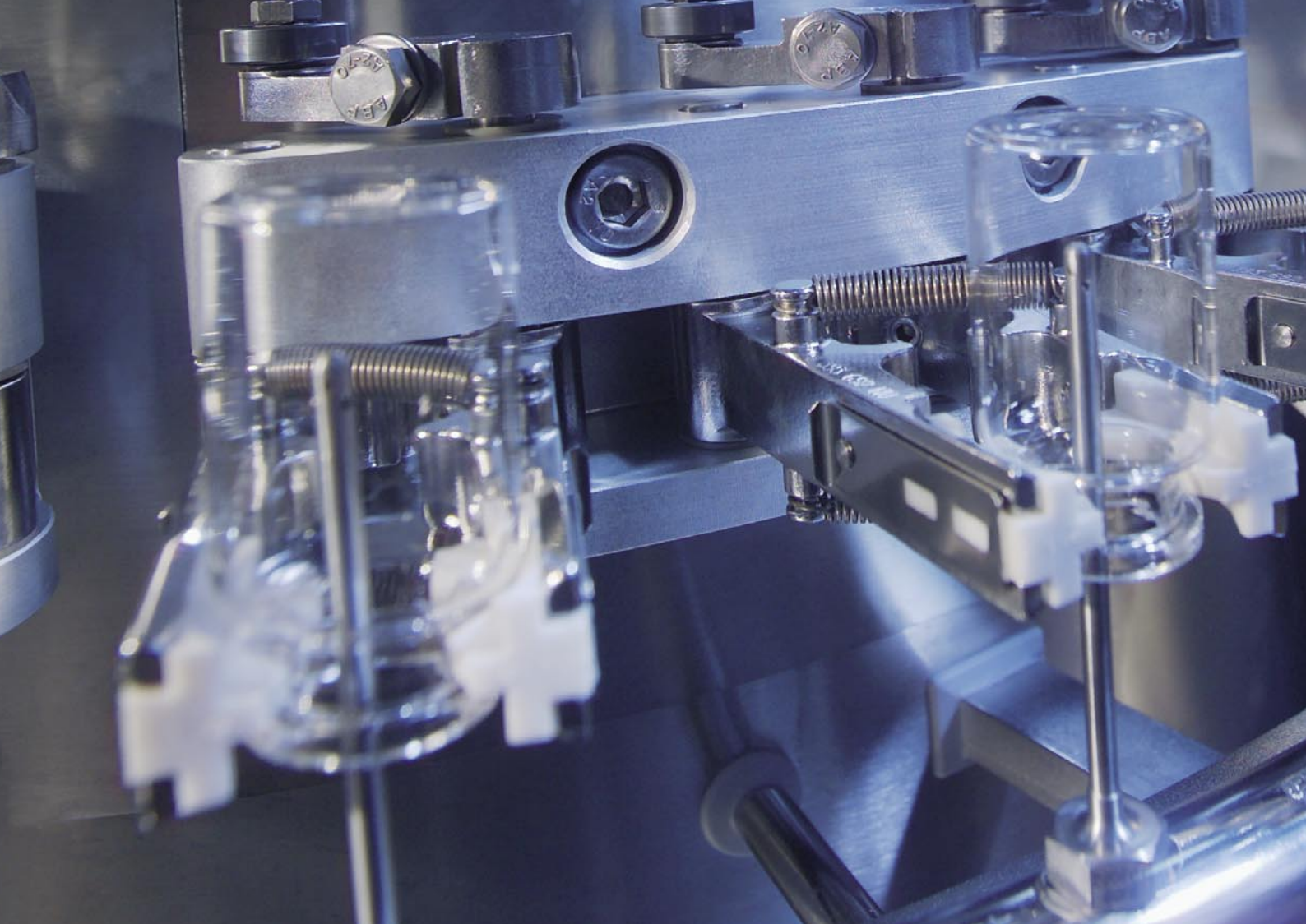
One of the most important criteria for a safe and successful pharmaceutical filling process is the cleaning of the primary packaging. Each container to be filled must be guaranteed clean and sterile before it enters the sterile filling area. With proven technology and experience, Bosch has been the market leader in high quality washing machines for several decades.

The Bosch series RRU/RRN 20x3 is the latest addition to the Bosch portfolio of high quality washing machines. The RRU 20x3 continues in the tradition of innovative design and reliability while providing improved operational flexibility and ease of operation.

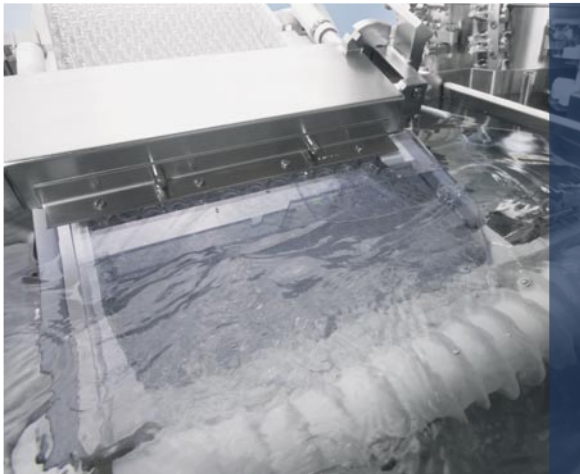
The RRU 20x3 rotary washer is easily configured to fit the specific needs of the customer and installation. An angle of 90° or 180° between the infeed and the outfeed can be selected. Additionally the washer infeed can be configured in several different ways. The most common allows containers to be loaded directly at the washer from bulk packaging. Alternate configurations allow feeding containers in a single lane from an upstream machine or system.



**Infeed with horizontal belt (optional)**



## Convincing advantages – cleaning with ultrasonic

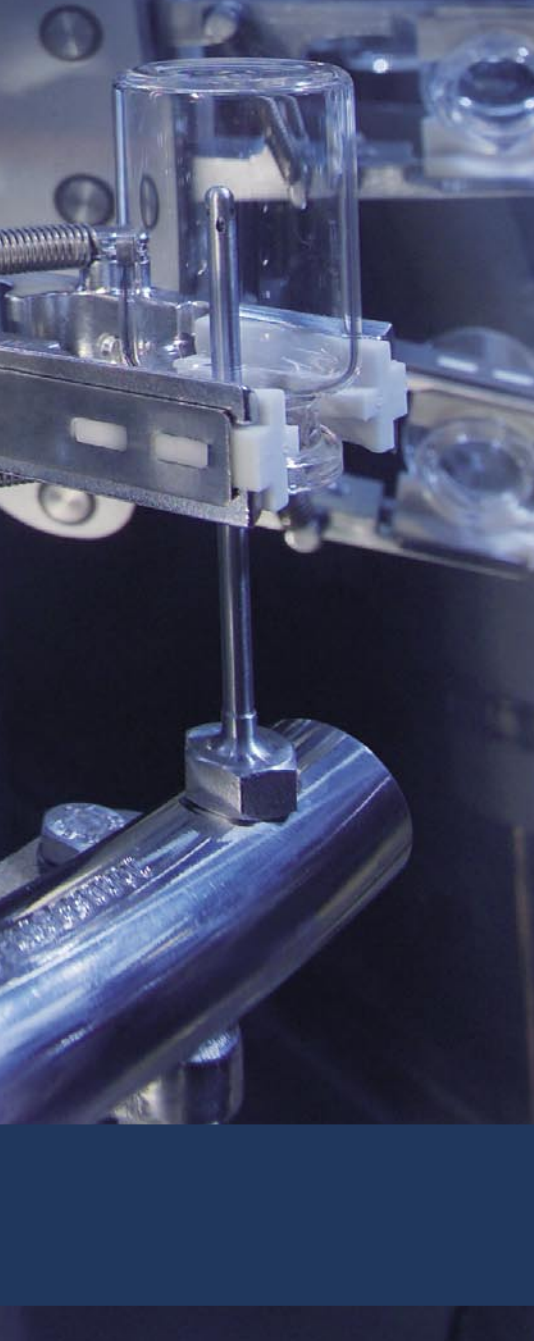


Ultrasonic bath with singularization scroll

### Pre-treatment in the ultrasonic bath

For optimum cleaning results the incoming containers will be pre-treated in an ultrasonic bath. Single opening containers are flooded with water while entering the ultrasonic bath. Any upside down containers will float free of the infeed system without interrupting the washing process. Containers are gently singularized by a scroll conveyor and passed to an elevator, which gently lifts them from the bath.





### **Precise and gentle container transport**

Next the singularized containers are individually taken by grippers from the elevator. The grippers have plastic contact parts to avoid scratching the containers and the generation of particles. The gripping surface has been designed to be as small as possible, minimizing contact area between the gripping surface and the container, and maximizing the container external surface exposed for cleaning. The gripper system allows for precise centering of the container opening for repeatable and non-contacting insertion of the spray nozzles at the cleaning stations.



**Filter plate with short pipes**

### **Internal Cleaning**

The standard RRU 20x3 has 6 internal cleaning stations available. Each cleaning station is supplied via its own pipe connection to the cleaning media making the washing area completely free of hoses. This not only reduces the risk of particle generation, but also simplifies maintenance and cleaning efforts. By using a servo controlled internal spraying needle motion, different container sizes can be processed without changing the internal spraying needles. Once configured, these needle motion parameters can be stored as a format specific recipe and are easily re-called from the operator interface.

### **External Cleaning**

The external cleaning stations are mounted stationary above the containers and can be easily adjusted for a specific height, angle, and lateral position. By mounting the external cleaning stations above the containers, the washing area remains free of vertical columns, which also helps to make cleaning and maintenance work easier.



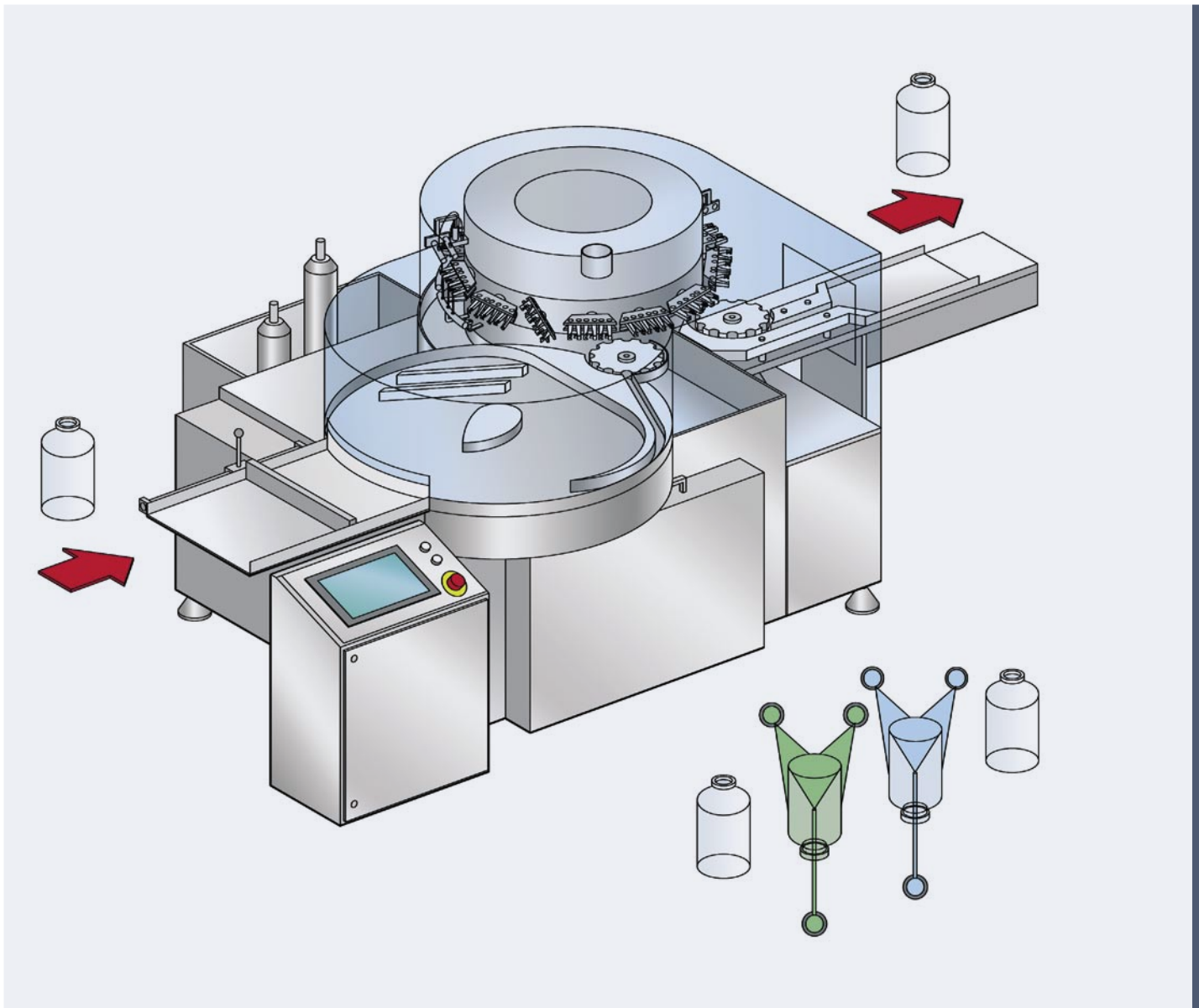


## Medium-saving cleaning principle with defined treatment times

To reduce the consumption of cleaning medias, the WFI (water for injection) and sterile air cleaning stations are synchronized with the vial motion so that these medias are only active when they are required for cleaning. WFI consumption is further reduced by recovering the WFI and recirculating it in the pre-washing stations and ultrasonic bath. The cycle times for these stations can be easily configured and are also stored in the format recipe.

### Options

- Pneumatic lift for the safety hood**
- Provides easier internal access for cleaning and maintenance



RRN version (without ultrasonics)

**Vapor exhaust connection and condensation collection system**

**Loading options:**

- Diagonal or horizontal infeed conveyor
- Extension of the infeed conveyor
- Single lane infeed conveyor, e.g. infeed from upstream equipment
- Bulk container loading table / system

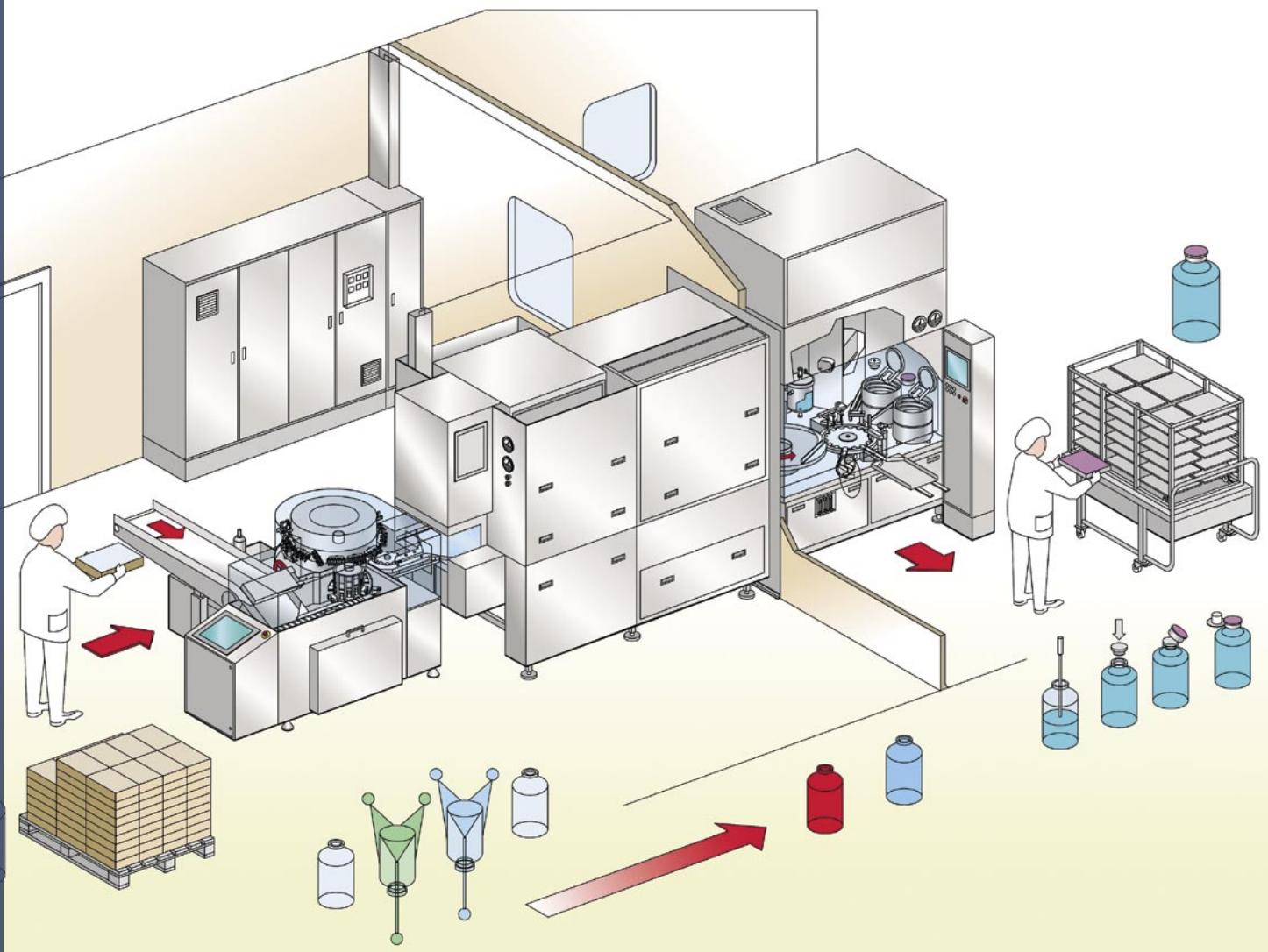
**Automatic draining and blowing out of the water carrying piping**

**Sample valves for analysis of the incoming WFI**

**Siliconization station:**

- Controlled silicone application timing (injection principle)
- Separate vapor exhaust for separate removal of the silicone vapor
- Application setpoints adjustable at the touch screen and stored in the format recipe





RRU 2033 in line with Bosch HQL and Bosch filling and closing machine

**RRU 20x3 – Your advantages in a glance:**

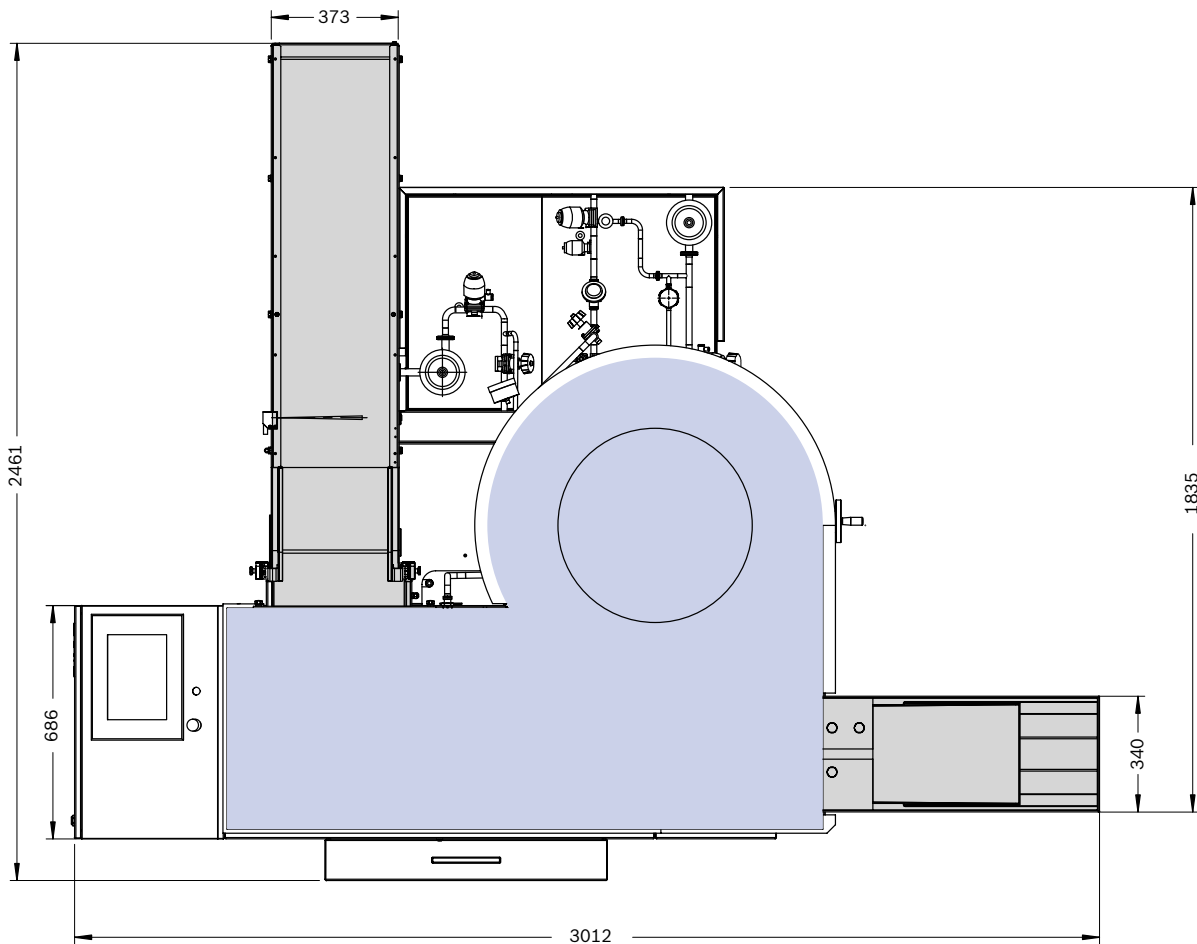
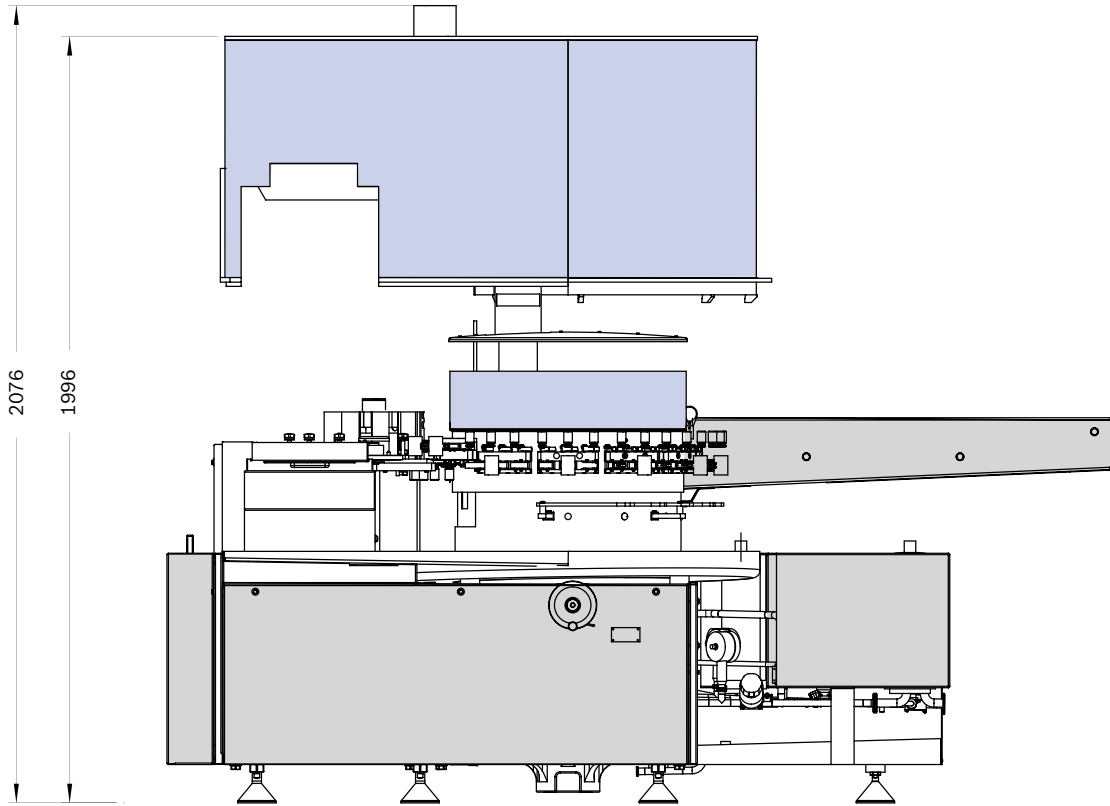
- Excellent value in this performance range
- Space-saving and flexible layout, adaptable to customer specific requirements
- Flexible processing / capacity range
- Configurable format recipes for container size and washing times
- Simple format conversion: no needle changes required; adjustment of the needle stroke takes place automatically when a format recipe is loaded
- Reduced documentation requirements with short internal piping systems





- Simplified cleaning: high-quality surfaces ( $Ra < 0,6 \mu m$ ) and good accesibility
- Minimal risk of corrosion by using electropolished surfaces and high-quality inner tubing surfaces
- Ergonomic machine operation via touch screen and format recipe management system

**RRN Model (without Ultrasonic Bath)**

This machine is also available without an ultrasonic bath, allowing containers to be directly fed to the washing and air blowing stations, in the RRN configuration.

# Technical Data



Packaging Type	Machine Type	Operating Range	Max. Q <sub>est</sub>
Ampules 	RRN/U 2033	Max. 25 ml	9000/h
	RRN/U 2043	Max. 25 ml	12000/h
	RRN/U 2053	Max. 25 ml	15000/h
Vials 	RRN 2013	Max. 500 ml	3000/h
	RRN 2023	Max. 250 ml	6000/h
	RRN/U 2033	Max. 100 ml	9000/h
	RRN/U 2043	Max. 30H	12000/h
	RRN/U 2053	Max. 15H	15000/h
Syringes 	RRN 2013	Max. 20 ml	3000/h
	RRN 2023	Max. 20 ml	6000/h
	RRN/U 2033	Max. 20 ml	9000/h
	RRN/U 2043	Max. 20 ml	12000/h
	RRN/U 2053	Max. 20 ml	15000/h
Cylindrical Ampules 	RRU 2033	Max. 10 ml	9000/h
	RRU 2043	Max. 10 ml	12000/h
	RRU 2053	Max. 10 ml	15000/h
	RRU 2063	Max. 10 ml	18000/h

**Special Containers / Special Sizes Upon Request**



## Locations world-wide

### Bosch Packaging Technology

#### Headquarters

Robert Bosch GmbH  
Packaging Technology Division  
Waiblingen  
Phone: +49 711 811-0  
Fax: +49 711 811-57 818  
E-mail: pa@boschpackaging.com  
www.bosch.com/pa

#### Brazil

Sigpack Tecnologia de Embalagem Ltda.  
São Paulo  
Phone: +55 11 41 91-68 00  
Fax: +55 11 41 91-61 97  
E-mail: sigpackbrazil@sigpack.com  
www.sigpack.com.br

#### China

Bosch Packaging Technology (Hangzhou)  
Co.Ltd.  
Hangzhou  
Phone: +86 571 93-55 26  
Fax: +86 571 88 91-30 11  
E-mail:  
jens.mack@boschpackaging.com  
www.bosch.com/pa

#### Denmark

Moeller & Devicon A/S  
Sandved  
Phone: +45 55 46 24 00  
Fax: +45 55 45 20 21  
E-mail: info@m-d.dk  
www.m-d.dk

#### France

Bosch Techniques d'Emballage S.A.S.  
Reichstett  
Phone: +33 3 88 20-98 10  
Fax: +33 3 88 20-26 10  
E-mail: pafr@boschpackaging.com  
www.bosch.com/pa

#### Germany

Robert Bosch GmbH  
Packaging Technology Division  
Product Division Pharma Liquid  
Crailsheim  
Phone: +49 79 51 4 02-1  
Fax: +49 79 51 4 02-2 58  
E-mail: pa@boschpackaging.com  
www.bosch.com/pa

#### Great Britain

Bosch Packaging Services Ltd.  
Derby  
Phone: +44 13 32 62 62 62  
Fax: +44 13 32 62 62 59  
E-mail: uk-hub@sigpack.com  
www.sigpack.com

#### India

Motor Industries Co.Ltd.  
Bangalore  
Phone: +91 80 29 9-20 33  
Fax: +91 80 22 1-37 06  
E-mail: vtin@in.bosch.com  
www.bosch.com/pa

#### Japan

Bosch Packaging Technology K.K.  
Tokyo  
Phone: +81 3 32 06-28 21  
Fax: +81 3 32 06-28 22  
E-mail: vtjp@boschpackaging.com  
www.bosch.co/jp/packaging

Bosch Packaging Technology K.K.  
Chiba  
Phone: +81 4 74 35-25 74  
Fax: +81 4 74 32-81 83  
E-mail: vtjp@boschpackaging.com  
www.bosch.co/jp/packaging

#### Singapore

Bosch Packaging Technology  
(Singapore) Pte. Ltd.  
Singapore  
Phone: +65 67 46-06 00  
Fax: +65 67 46-31 00  
E-mail: sigpackasia@sigpack.com  
www.sigpack.com

#### USA

Bosch Packaging Technology Inc.  
Pharmaceutical operations  
Minneapolis, MN  
Phone: +1 763 424-47 00  
Fax: +1 763 424-67 11  
E-mail: sales@boschpackaging.com  
www.boschpackaging.com

Robert Bosch GmbH

Packaging Technology Division  
Product Division Pharma Liquid  
Blaufelder Straße 45  
D-74564 Crailsheim

Phone: +49 79 51 4 02-1  
Fax: +49 79 51 40 2-2 58  
E-mail: pa@boschpackaging.com  
www.bosch.com/pa