Universal washing machines RRN/RRU
RRN washing machines:

**RRN/RUU series:**
- Application-suited execution for ampoules, vials, dental cartridges and syringe barrels with a comprehensive size range.
- With or without ultrasonic cleaning.
- Fast size change.
- Nominal output according to number of filling points and container size from 66 - 600 minute⁻¹.
- Low-noise and gentle container singularization.
- Container infeed and outfeed executed at an angle or inline.

**RRN washing machines:**
Reliable cleaning of self-stable containers, loading via rotary table, large size and output range.
RRN machines are designed for cleaning self-stable containers for which ultrasonic cleaning is not necessary. Feed is effected via a charging plate with a diameter of up to 1000 mm. In this case the containers are singularized into individual tracks and fed via an infeed star to the conveying grippers of the cleaning star. Immersion of needles down to the container bottom – optimum cleaning due to shower-head spraying needles for vials.

**RRN washing stations:**
- Inner and outer cleaning by spraying with recirculated water
- Blowing-out with compressed air
- Spraying with fresh water
- Blowing-out with compressed air
- Siliconizing (additional unit)

**RRN principle of functioning:**
1. Infeed table
2. Infeed plate
3. Infeed starwheel
4. Transfer of the containers via prism grippers and pivoting through 180°
5-8. Washing stations
9. Pivoting back
10. Outfeed starwheel
11. Traying off
For every container type the intensive and absolutely reliable cleaning process. **Ultrasonic cleaning process:**

Ultrasonic cleaning is recommendable for specific containers, this being conditional on the process.

- Container loading directly from the pack via an inclined infeed magazine or a conveyor belt (additional unit).
- Following inundation the tightly compacted containers are guided via an ultrasonic transducer plate and are exposed to sonic waves from below. Any particles present on the inner walls are thereby released.
- Container transport and singularization is effected by a continuous motion feed scroll, which transfers the containers into the rotary gripper transport system.

**For the benefit of reliable and economical production:**

- Easy cleaning
- Higher cleaning quality due to ultrasonic preprocessing
- Hermetically sealed separation of drive and washing section
- All media-conducting parts made of 316L stainless steel
- GMP-suited pipework with consistent surface quality
- Spraying range with inclined trough base for complete draining of residual water
- Low-noise and gentle container singularization
- Save and precise conveyance
- Engineered for low wear
- High-quality surface in the washing section.

**RRU ultrasonic washing machines**

**RRU with inclined infeed magazine**
The cleaning process:
A proven system for intensive and pharmaceutical-suited cleaning.

For the benefit of pharmaceutical-suited, economical production:
- Highest cleaning quality
- Execution with number of cleaning stations according to output and product-related cleaning process
- Washing process is validatable
- Gentle container singularization with continuous motion feed scroll in the ultrasonic bath (RRU)
- Through-conveyance by means of continuously revolving gripper turret
- Containers picked up by grippers
- Uniform and precise alignment of spraying needles with containers
- Containers precleaned inside and outside with recirculated water
- Blowing-out with compressed air
- Cleaning with fresh water
- Blowing-out with compressed air
- Siliconizing, if required (additional unit)
The revolving gripper transport system

RRU function principles:
1. Inclined magazine
2. Ultrasonic crystal plate
3. Feed scroll
4. Transfer elevator
5. Container transfer via transport grippers
6-10. Washing stations
11. Pivoting back the containers through 80°
12. Outfeed starwheel
13. Traying off or transfer to downstream sterilizing tunnel

Revolving gripper transport system

Transfer from the transport grippers into the outfeed system
RRU 3123 – Washing machine for cartridges

Machine structure
- Container loading via an inclined infeed magazine or a conveyor belt (additional unit)
- Gentle singularization with continuous motion rotary feed scroll in the ultrasonic bath (RRU)
- Through-conveyance by means of continuously revolving gripper turret
- Containers picked up by grippers
- Uniform and precise alignment of spraying needles with containers
- Containers precleaned inside and outside with recirculated water
- Blowing-out with compressed air
- Cleaning with fresh water
- Siliconizing by fogging with two-component nozzle (additional unit)
- Blowing-out with compressed air
- Container discharge via toothed belt (additional unit).

Cleaning stations

Cartridges loaded into the conveying system

Safe gripper transfer via grippers
Syringe barrels – detraying, infeed, washing, siliconizing and placing into pucks for further processing.

Syringe barrels are thoroughly cleaned inside and outside (jetting needles immerse into the syringe body).

Inserting the syringe barrel into the puck (additional device)

Syringe barrel compact line: Detraying of syringe barrels, cleaning, sterilizing, filling, closing, traying-off
**Additional devices**

*Additional devices:*
- Pneumatic cover guard lifting device, due to which operation by 1 person is possible.
- Intermittent fresh-water spraying for the purpose of saving water.
- Intermittent blowing-out for purpose of saving compressed air.
- Needle centering for dependable immersion of the spray needles when processing ampoules.
- Siliconizing station for inner siliconization.
- Vapour extraction system.
- Drainage tap for taking microbiological water samples.
- Operability check for the ultrasonic generator.
- Pressure monitoring of the spraying stations.
- Electric flow heater for water supplied onsite.
- Preliminary filter and fine filter devices for the cleaning media.
- Pressure boosting pump for water supplied onsite.

- Needle centering in case of ampoule processing

- Pneumatic cover guard lifting device

- Standard-filter unit

- Siliconizing station
Additional devices

- Inclined infeed belt
- Container discharge via toothed belt
- Pump recirculation station for supply of the spray stations, with heated pump-recirculated water, considerably reducing the water consumption.
- Transfer to one downstream sterilizing tunnel (compact line).

Sizeparts

- Container sizepart set complete (RRN)
- Sizeparts for discharge via toothed belt
- Recirculating pump station
## Overview machine series

<table>
<thead>
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<th>Washing machine</th>
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<th>Max. container height (mm)</th>
<th>Max. throughput/h (l/h)</th>
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All dimensions in mm

Subject to technical modifications.

The illustrations and drawings contained in this leaflet are intended for general information only. For definite specifications and data please ask for our quotation.