

# Grundfos CRN in pharmaceutical applications

In the pharmaceutical-, food- and electronic industries where pumps have to operate in applications with strict hygiene requirements, special pumps are needed. Years of close cooperation with our clients within the pharmaceutical industry, have taught us that a key factor to successful production is to keep pump parts which handle aggressive liquids, clean in order to avoid corrosion.

Therefore, Grundfos has developed a special CRN variant for pharmaceutical applications; a pump which meets the special demands of the industries in terms of safety, of providing a high level of sterilisation and in terms of a cleaning system, cleaning-in-place (CIP), which sees to it that the pumps, pipes and valves are constantly kept clean.



# Advantages and the CRN for pharmaceutical applications

## Hygienic design

The Grundfos CRN for the pharmaceutical and food industries comes with a special base with a TriClamp connection; a special sanitary connection in a hygienic design which does not attract burrs and inclusions and thus stays clean. Additionally, the pump is available with gaskets in different types of rubber material which can resist aggressive liquids.

## Electropolished pump parts

Because the pump parts are electro-polished, burrs as well as metallic and non-metallic inclusions are removed. When pump parts are polished it is possible to obtain a smooth stainless steel surface roughness and thereby a maximum cleanness and avoid that particles get stocked on the surface. The process consists of three steps: All components are pickled in a mixture of nitric acid and hydrofluoric acid. Then the parts are electropolished in a mixture of sulphuric acid and phosphoric acid. Finally, the components are passivated in nitrid acid. All the Grundfos CRN pumps are available as electropolished pumps and thus indeed well-suited for pharmaceutical applications.



## Cleaned and dried

Prior to assembly the CRN parts for pharmaceutical pumps are washed in pure hot soap water, rinsed in de-ionised water, and dried in order to ensure that the components are clean and ready to be installed directly in the customer's production. To avoid that the pump gets exposed to dirt during shipment and to guarantee that the pump is completely clean when it arrives at the client, it is wrapped in plastic bags before being packed.

The following Grundfos pumps are available as cleaned and dried pumps

Pump type	CR 1s	CR 1	CR 3	CR 5	CR 10	CR 15	CR 20	CR 32	CR45	CR 64
CR	•	•	•	•	•	•	•	•	•	•
CRI	•	•	•	•	•	•	•			
CRN	•	•	•	•	•	•	•	•	•	•

Also available for CRT 2, 4, 8, 16.

The following Grundfos pumps are available as electropolished pumps

Pump type	CR 1s	CR 1	CR 3	CR 5	CR 10	CR 15	CR 20	CR 32	CR45	CR 64	CR 90
CR											
CRI											
CRN	•	•	•	•	•	•	•	•	•	•	•

## Custom-built solutions

The comprehensive standard Grundfos CR programme covers a wide range of pumps, for a wide range of different industrial applications. Besides, Grundfos designs custom-built pump solutions; acknowledging that sometimes it does not take more, than a little extra effort, to come up with the right solution. With a custom-built pump solution from Grundfos, your pump is capable of handling even higher pressures, more aggressive liquids, excessive liquid temperatures etc.

## Worldwide pump supplier

Being a worldwide pump supplier, Grundfos has committed itself to provide its clients with a global, reliable and efficient service network. Our experienced team of service technicians are always ready to serve you wherever you are in the world and – of course – at a short notice.