Fatigue-proof sealing with the AIRMATIC® sealing system

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Getinge Produktions-GmbH in Peiting, Germany, is a subsidiary of the Getinge AB group headquartered in Sweden. The Getinge group is a leading global manufacturer of equipment and turnkey systems for healthcare, the pharmaceutical industry and laboratories. Getinge Produktions-GmbH was hunting for a sealing solution for the loading doors of its CM320 series of modular, versatile, fully automatic multichamber washer-disinfectors. This out-of-the-ordinary assignment was entrusted to Angst+Pfister, which successfully solved the problem by means of a specially developed AIRMATIC® sealing system that meets all of the demanding specifications.

One of the toughest challenges in devising a sealing solution for such equipment is reliably sealing the infeed opening, which in this case gets shut with the assistance of a vertical sliding door with an insulating double glass pane. The AIRMATIC® sealing system is the ideal solution for this case.

Simple and efficient

The AIRMATIC® sealing system is especially recommendable for opening-and-closing applications where a static seal needs to be formed at the end of a movement sequence. Being involved as a partner already during the designing of the equipment is important in the search for the right sealing system. Angst+Pfister is a skilled partner and consultant for all matters relating to sealing technology.

The AIRMATIC® sealing system is an inflatable elastomeric profile that has rolled-up reserve material tucked inside. During the sealing phase, the profile is inflated with compressed air that is applied through a special air connection. The compressed air forces the tucked-in reserve material to roll out and fill the sealing space without any stretching of the material. The AIRMATIC® sealing system is thus practically fatigue-proof. The elastomer material and profile geometry selected specifically for the deployment parameters enable this simple and efficient sealing technique to be adapted to withstand the toughest operating conditions and temperatures up to +200°C.

The advantages of the AIRMATIC® sealing system include:
- it easily compensates unevennesses and deformations in the sealing space;
- the seal exhibits no compression set; consistent sealing force thanks to bolstering pressure;
- the profile cross-section is self-retracting;
- it is suitable for large sealing spaces;
- it provides a tight seal;
- it features automatic pressure control;
- it is easy to install;
- it makes it easier to design connections that need to be sealed.

How it works

The AIRMATIC® sealing system is installed into a matching retainer groove that runs around the perimeter of the infeed opening of the processing chamber and seals axially against the sliding door.

The seal must meet the following requirements and specifications:
- it must seal the processing chamber against the sliding doors;
- it must be capable of compensating construction tolerances;
- it must be capable of bridging a sealing space of 6 mm;
- the material employed must comply with FDA-177.2600 criteria and must not be black;
- the operating pressure must not exceed 0.9 bar;
- replaceability must be guaranteed;
- resistance to hot air (the drying cycle involves a maximum temperature of +100°C) as well as various detergents and disinfectants is imperative.

The shape of the seal and manufacturing process issues were crucial considerations in designing the sealing system, as was the choice of material. The solution selected was a low-pressure rollout seal that can be installed in a corresponding groove and inflated via a special air connection. The sealing system meets all of the desired requirements thanks to its special cross-section geometry and the assembly process, which was precisely adapted to the specifications.

Material utilized

A light gray ethylene/propylene/diene/monomer (EPDM) compliant with FDA 177.2600 criteria was selected as the material for the AIRMATIC® sealing system. The material has very good mechanical properties and provides the necessary resistance to hot air and the employed detergents and disinfectants.

Focusing on customer value

With the AIRMATIC® sealing system, Angst+Pfister was able to satisfy all of the customer's specifications and wishes in every respect. The AIRMATIC® sealing system was developed in close collaboration between Getinge Produktions-GmbH and Angst+Pfister. You, too, can take advantage of Angst+Pfister's expertise. Contact us to arrange a consultation with our specialists, because it's often the tiny details that are crucial for the optimal functioning of a product.

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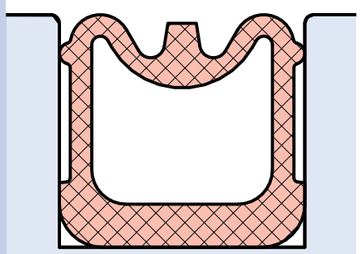
Front view of the infeed opening with the AIRMATIC® sealing system installed around the opening.

Profile height: 27.0 mm
Profile width: 28.5 mm
Height of profile when activated: max. 35.5 mm
Height of inflation: max. 8.5 mm



Low-pressure rollout seal from Angst+Pfister in rolled-up condition

AIRMATIC® AIR 1117, EPDM

Loaded items ready for washing and disinfecting

Cleaning process