

### Construction requirements for Hygienic Design

#### Material

- Stainless steels
- FDA and EU compliant plastics and elastomers

#### Surfaces

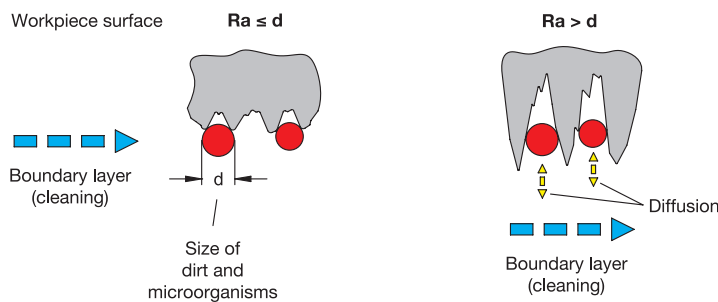
- Surfaces must be cleanable
- Steps due to non-aligned device arrangements should be avoided
- Seals must be designed so that no gaps occur
- O-ring grooves must be hygienically designed
- Contact with the product to be manufactured must be ruled out
- Corners should preferably have a radius of 6 mm or more

#### Design / Geometry

The interior and exterior areas of all appliances, components and piping must be self-draining or drainable and easy to clean.

#### Surface properties and roughness

Easy to clean with  $Ra < 0.8 \mu\text{m}$



### Design principles of Hygienic Design

#### EHEDG

- European Hygienic Engineering & Design Group
- European, nonprofit consortium of machine and food manufacturers and their suppliers, research institutes, universities and governmental health agencies
- Approximately 45 guidelines
- Testing of products and issuing of certificates



#### 3-A Sanitary Standards, Inc.

- Nonprofit and independent organization in the USA
- Three interest groups:  
Public and governmental health agencies, machine and food manufacturers
- Over 70 Sanitary Standards
- Testing of designs and processes, issuing of certificates



- **BGN** (Berufsgenossenschaft Nahrungsmittel und Gastgewerbe) [Food and Hospitality Trade Association]
- Active participation in national, European and international standardization efforts. Prevention of work accidents, occupational illnesses and work-related health risks
- European Machinery Directive (98/37/EC), plus the German Appliance and Product Safety Act (GPSG)
- Testing of parts and machines, issuing of certificates

## Seals

For parts that are designed in Hygienic Design, seals have the central function of protecting dead spaces, gaps and cracks from penetration of cleaning fluids or product residues.

This requires a defined pre-tension / pressure of the seals and wipers for a reliable and permanent seal when installed. Within the Hygienic Design range, seal installation spaces and seal cross sections are therefore calculated and designed using simulation software in such a way that the necessary surface pressure is achieved during installation and at the same time, the seal material is not overstressed.

A fundamental differentiation can be made between static and movable seals: The **static seals** shown in the application example below (at the top towards the mounting surface (**sealing ring**) and at the bottom towards the installation

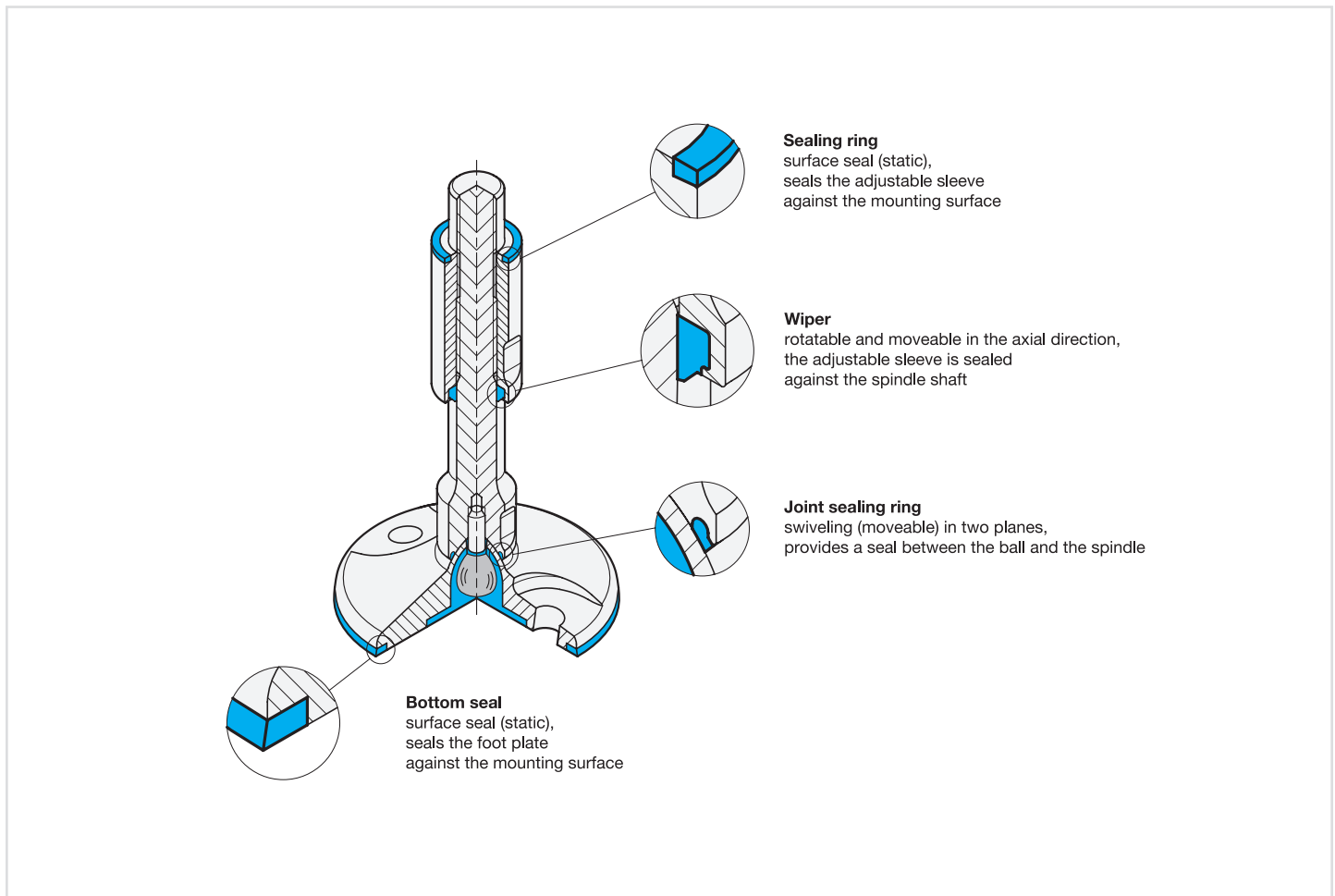
surface (**bottom seal**) are tightened during installation. It should be ensured that all surfaces in contact with the seals have a surface quality of at least Ra 0.8 µm.

The **movable seals** on the adjustable sleeve (**wiper**) and on the ball joint (**joint sealing ring**) of the foot are designed in such a way that they allow an adjustment in height and angle. Also with these, the installation space together with the seal cross section ensures a gap-free, pre-tensioned seal.

Depending on the version and application, it may be necessary to replace the seals in case of damage or for preventative maintenance. For this purpose, JW Winco offers the respective seals separately as a standard part under **GN 7600** ( → page XYZ) and **GN 7607** ( → page XYZ) for spare part requirements.

## Application example

With the example of a GN 20 Hygienic Design leveling foot, the illustrated design shows how the various seal configurations can be designed.



3.1  
3.2  
3.3  
3.4  
3.5  
3.6  
3.7  
3.8  
3.9  
3.10

