Cylinder seal options for the food industry

In the food and splash zone of food processing operations, corrosion-proof design and the use of appropriate materials is mandatory to prevent contamination and protect automation equipment that may be damaged by cleaning agents or foodstuffs.

Find out what options are available from the Festo Sealing System for cylinders suitable for use in environments involving direct contact with food products...
Cylinder sealing options for the food industry

As standard, food approved cylinders from Festo are fitted with an FDA-compliant lubricant and wiper seal, suitable for use in environments involving direct contact with food products. However, for particularly aggressive applications which demand frequent detergent-based wash-down or in extreme temperature conditions for example, the cylinders are optionally available with alternative wiper seals. Take a look at the different wiper seal options available from the Festo sealing system suitable for the food industry:

<table>
<thead>
<tr>
<th>Cylinder sealing system</th>
<th>Rod seal material</th>
<th>Cylinder options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Food seal</td>
<td>TPE-U (PUR) media sealing (modified for resistance to hydrolysis and cleaning agents)</td>
<td>CRDSNU, DSBF, CRHD, CRDNG/S, DGRF, CDC</td>
</tr>
<tr>
<td></td>
<td>Food approved</td>
<td></td>
</tr>
</tbody>
</table>

A1: Increased chemical resistance

- Chemical resistance against acids/oils
- Hydrolysis resistance (water)
- High temperature resistance

A2: Hard scraper seal

- Applications where the piston rod can be burdened with dust, chips, ice, milk and crystals
- This version is fitted with a hard chromed plated piston rod

A3: Un lubricated operation

- Long lifetime with inadequate lubrication (dry run)
- All applications where grease of piston rod gets washed away (e.g. by frequent cleaning, especially with extracted piston rod)
- Very good hydrolysis resistance
- Very good resistance to acids and bases
- Areas with direct contact to food

S6 / T1 / T4: Heat resistant

- Contact with acids or oils at high temperatures
- Temperature range 0 ... +120 °C for versions T1 and S6 (the seals and grease in this variant are not FDA-compliant)
- Temperature range 0 ... +150 °C for version T4

TT / T3: Low temperature

- Temperature range –40 ... +80 °C (the seals and grease in this variant are not FDA-compliant)
- For applications in highly chilled environments
- Froster and handling of frozen products
- Outdoor usage in extreme conditions

Application solutions overview

<table>
<thead>
<tr>
<th>Application</th>
<th>Standard</th>
<th>Water</th>
<th>Acids</th>
<th>Lyes</th>
<th>Un lubricated operation</th>
<th>Dust/ adhesives</th>
<th>High temp</th>
<th>Low temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal type</td>
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<td>A1</td>
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<tr>
<td>A2 (CRDSNU)</td>
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<td>++</td>
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</tr>
<tr>
<td>A2 (DSBF)</td>
<td>+</td>
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<td>--</td>
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<td>A3</td>
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<td>S6/T1/T4</td>
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<td>TT/T3</td>
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</tbody>
</table>

++ resistant / + conditionally resistant, testing required in each individual case / - not resistant / -- no specification

Refer media database from Festo → www.festo.com/mediaristance
Food approved cylinders

Pneumatic cylinders from Festo are designed to provide a cost-effective alternative to specialist high-end components for the food industry. The cylinders employ 'Clean Design' principles to help minimise contamination risk, and are ideal for use in aggressive environments where frequent wash-down procedures are implemented. They also offer more than just suitability for the food industry and corrosion resistance: they also feature self-adjusting cushioning PPS.

<table>
<thead>
<tr>
<th>Stainless steel cylinder to ISO 6432</th>
<th>Clean design cylinder ISO 15552</th>
<th>Clean design - Guided drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRDSNU: 12 ... 63ømm</td>
<td>DSBF: 32 ... 125ømm</td>
<td>DGRF: 20 ... 63ømm</td>
</tr>
<tr>
<td>• Standard food seal</td>
<td>• Standard food seal</td>
<td>• Standard food seal</td>
</tr>
<tr>
<td>• Very high corrosion resistance (CRC 4)</td>
<td>• High corrosion resistance (CRC 3)</td>
<td>• High corrosion resistance (CRC 3)</td>
</tr>
<tr>
<td>• Clean design</td>
<td>• Easy to clean</td>
<td>• Easy to clean</td>
</tr>
</tbody>
</table>

### Alternative seal options

- **A1**: Increased chemical resistance
- **A2**: Hard scraper seal
- **A3**: Unlubricated operation / dry run seal
- **S6**: Heat resistant seal
- **TT**: Low temperature seal

### Clean design cylinder ISO 15552

- **DSBF**: 32 ... 125ømm

- **Alternative seal options**
  - **A1**: Increased chemical resistance
  - **A2**: Hard scraper seal
  - **A3**: Unlubricated operation / dry run seal
  - **T1 or T4**: Heat resistant seal
  - **T3**: Low temperature seal

### Clean design - Guided drive

- **DGRF**: 20 ... 63ømm

- **Alternative seal options**
  - **A3**: Unlubricated operation / dry run seal

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**Pneumatic cushioning, self-adjusting at both ends is designed without adjusting screws, which are susceptible to contamination (PPS)**

**Bearing cap available without mounting thread**

**Two-part bearing cap facilitates replacement of piston rod scraper**

**Reliable sensor solution with SMT-C1 and CRSMT ideal for harsh conditions**

**The bellows protects the piston rod, the seal and the bearing from the effects of a wide range of media.**

**The PPS self-adjusting end-position cushioning means no more need for adjusting screw**

**Position detection possible with SMT-C1 or CRSMT mounted directly to the guide**

**Position detection with sensors and mounting brackets**
### Food approved cylinders

<table>
<thead>
<tr>
<th>Clean design - Compact</th>
<th>Stainless steel - Round</th>
<th>Stainless steel - Tie rod</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDC: 20 ... 80ømm</td>
<td>CRHD: 32 ... 100ømm</td>
<td>CRDNG/S: 32 ... 100ømm</td>
</tr>
</tbody>
</table>

**Alternative seal options**
- **S6** - Heat resistant seal

**Highlights**
- Position detection possible with sensor SMT-C1 mounted directly to cylinder

**Alternative seal options**
- **S6** - Heat resistant seal

**Highlights**
- Position detection possible with CRSMT and mounting kit CRSMB-8-32/100

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**Overview: Modular system variants**

<table>
<thead>
<tr>
<th>Variant/ cylinder type</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>S6</th>
<th>T1</th>
<th>T4</th>
<th>TT</th>
<th>T3</th>
<th>DABD/PS2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean design - Compact</td>
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<tr>
<td>Clean design - Profile</td>
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<tr>
<td>Clean design - Guided</td>
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</tbody>
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**Wiper seal variant:** For increased chemical resistance
- Hard wiper seal
- Unlubricated operation

**Heat resistant seals up to max. 120 °C**

**Temperature range**
- 0 ... +120 °C
- 0 ... +150 °C
- -40 °C ... +80 °C
- -40 °C ... +80 °C

**Bellows/Dustboot front cap protection**

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**Note:** For further technical details and dimensions for each of these cylinders please refer to the product catalogue [www.festo.com](http://www.festo.com)