### Mechanical seals Mechanical seals for pumps · Pusher seals

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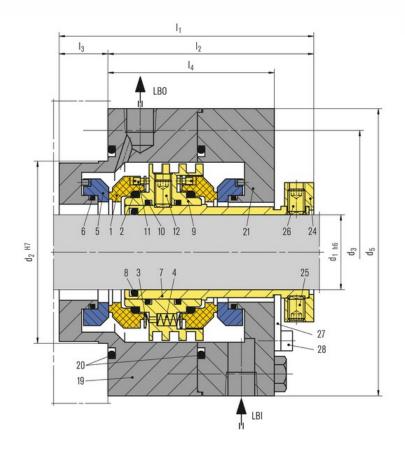
# LL9DKUU

### Features

- API 682 Category 2 and 3, Type A, Arrangement 3 seal
- Dual seal in back-to-back arrangement
- Same size of inboard and outboard seal
- Balanced
- Cartridge unit
- Rotating multiple springs
- Solid seal faces

#### Advantages

- Compact design
- Low heat generation and power consumption due to narrow seal face width
- Longer seal life
- Pressure-balanced design prevents mating ring being forced out under reverse pressure
- No damage to shaft sleeve as dynamic
  O-Ring is not in direct contact with the sleeve



| ltem            | Description      |
|-----------------|------------------|
| 1               | Seal ring        |
| 2, 6, 8, 10, 20 | O-Ring           |
| 3               | Thrust ring      |
| 4               | Spring           |
| 5               | Mating ring      |
| 7               | Seal sleeve      |
| 9               | Pumping ring     |
| 11              | Drive screw      |
| 12, 25, 26      | Set screw        |
| 19, 21          | Gland plate      |
| 22              | Flow distributor |
| 23              | Retaining ring   |
| 24              | Drive collar     |
| 27              | Setting device   |
| 28              | HSH Cap screw    |

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All technical specifications are based on extensive tests and our many years of experience. The diversity of possible applications means, however, that they can serve only as guide values. We must be notified of the exact conditions of application before we can provide any guarantee for a specific case. Subject to change.

## LL9DKUU (2)

### **Recommended applications**

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- Light volatile hydrocarbons

### Operating range

Pressure: p = vacuum ... 42 bar (... 609 PSI) Temperature: t = -40 °C ... 176 °C (-40 °F ... 349 °F)\* Sliding velocity: vg ... 23 m/s (... 75 ft/s) Viscosity: ... 300 mPa·s Solids content: ... 0.5 wt.%

\* Engineered up to 260 °C (500 °F) with FFKM (K) secondary seals

LPG plants

- API 610 / ISO 13709 pumps
- Process pumps

### Standards and approvals

API 682 / ISO 21049

### Materials

Seal ring: Blister resistant carbon, Silicon carbide SSiC (Q1), RBSiC (Q2) Mating ring: Silicon carbide SSiC (Q1), RBSiC (Q2) Secondary seals: FKM (V), FFKM (K), EPDM (E), NBR (P) Springs: Hastelloy® C-276 (M5) Metal parts: CrNiMo steel 316 (G)

### **Recommended piping plans**

Process side: 02, 11, 12, 13, 14, 21, 22, 31, 32, 41 Between seals: 53A, 53B, 53C, 54 Atmospheric side\*: 61, 62, 65A, 65B

\* Throttle bushing on request.

| Dimensi            | ons                |                    |                |                |                |    |     |
|--------------------|--------------------|--------------------|----------------|----------------|----------------|----|-----|
| API/d <sub>1</sub> | API/d <sub>2</sub> | API/d <sub>3</sub> | d <sub>5</sub> | l <sub>1</sub> | l <sub>2</sub> | l3 | I4  |
| 20                 | 70                 | 105                | -              | -              | -              | -  | -   |
| 30                 | 80                 | 115                | 138            | 123            | 97             | 26 | 79  |
| 40                 | 90                 | 125                | 148            | 124            | 91             | 33 | 74  |
| 50                 | 100                | 140                | 168            | 126            | 96             | 30 | 79  |
| 60                 | 120                | 160                | 188            | 136            | 108            | 28 | 89  |
| 70                 | 130                | 170                | 198            | 131            | 105            | 26 | 86  |
| 80                 | 140                | 180                | 208            | 133            | 107            | 26 | 88  |
| 90                 | 160                | 205                | 238            | 146            | 116            | 30 | 92  |
| 100                | 170                | 215                | 248            | 131            | 94             | 37 | 113 |
| 110                | 180                | 225                | 258            | 139.5          | 109.5          | 30 | 89  |

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