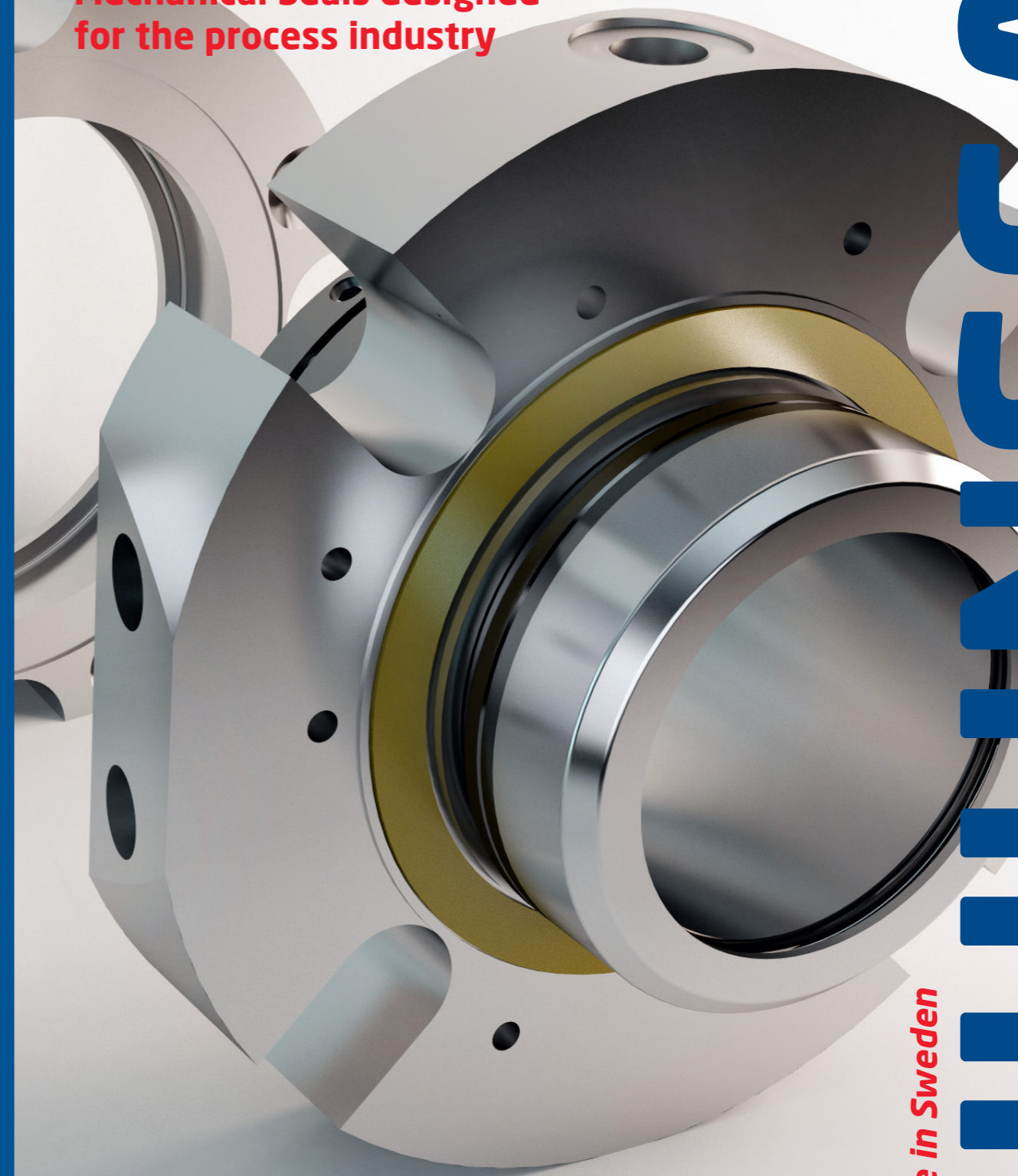




# E series

Mechanical Seals designed for the process industry



Made in Sweden



A quality conscious organization

BUREAU VERITAS  
Certification



ISO 9001  
Quality  
ISO 14001  
Environment  
OHSAS 18001  
Working environment



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Meccanotecnica  
Umbra  
a Story of Excellence

join us:



stamp

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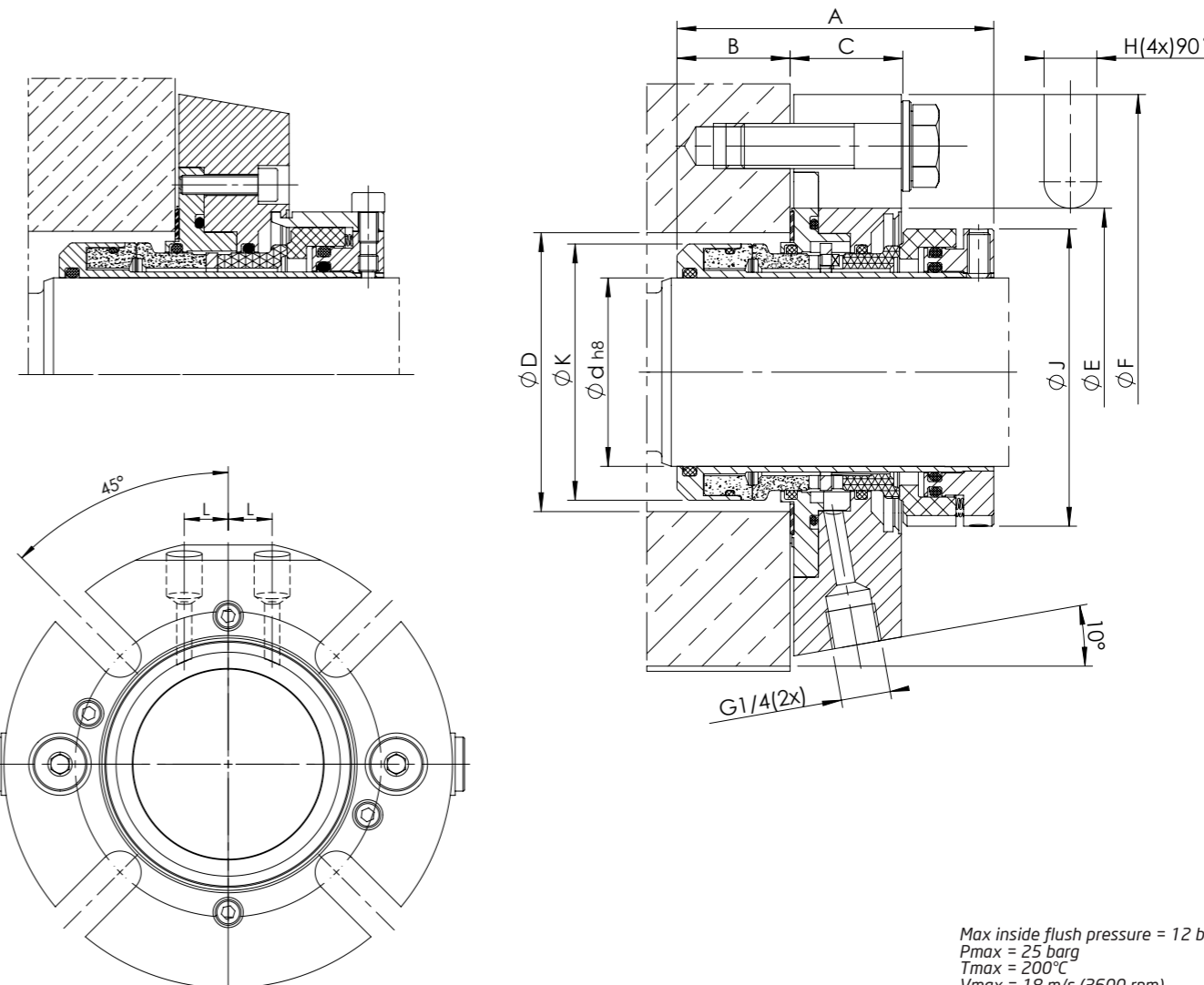
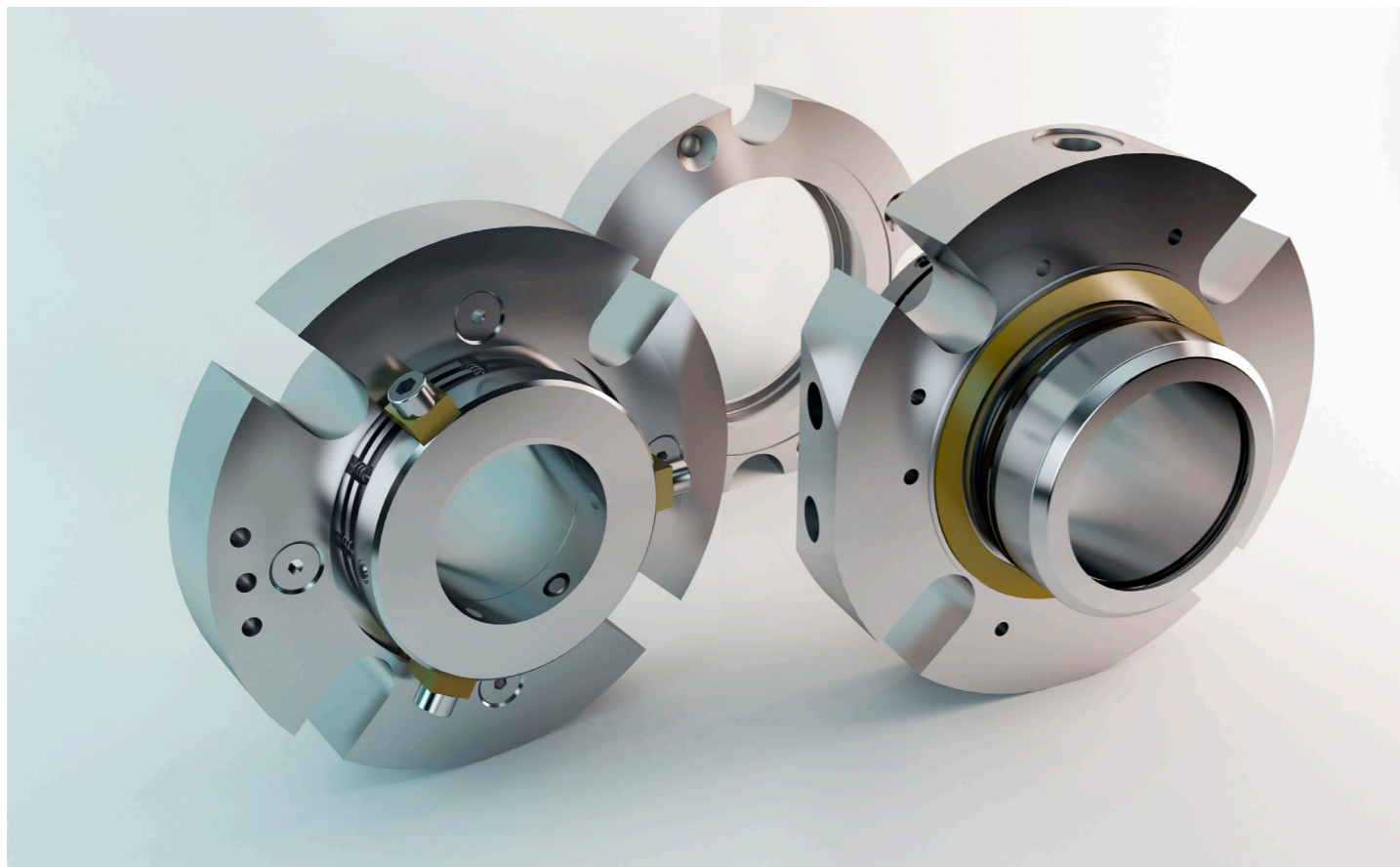
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- Excellent axial and radial flexibility
- Suitable for standardizing
- Spring packages isolated from product and buffer fluid
- Easy to install
- Radial and axial cooling channels
- Available in both metric and imperial sizes to suit ANSI pumps with large bores

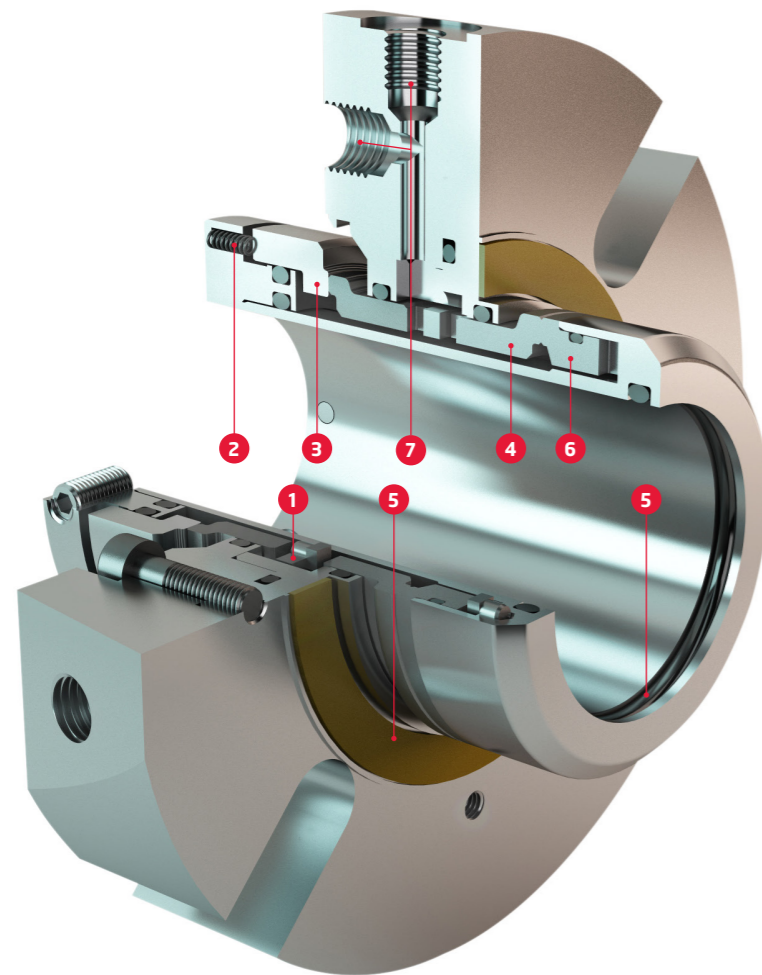
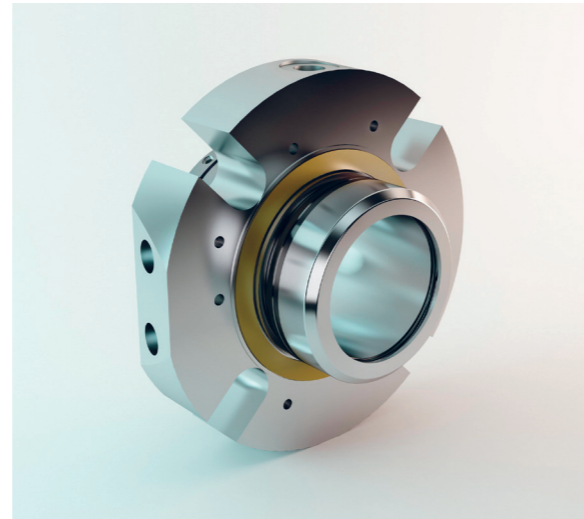


| d   | A   | B    | C    | D min. | D max. | E   | L  | F   | J   | H  | K   |
|-----|-----|------|------|--------|--------|-----|----|-----|-----|----|-----|
| 25  | 84  | 30   | 29,5 | 44     | 54     | 62  | 21 | 105 | 51  | 14 | 43  |
| 30  | 84  | 30   | 29,5 | 49     | 59     | 67  | 22 | 105 | 56  | 14 | 48  |
| 33  | 84  | 30   | 29,5 | 52     | 62     | 70  | 23 | 110 | 59  | 14 | 51  |
| 35  | 84  | 30   | 29,5 | 54     | 64     | 72  | 24 | 112 | 61  | 14 | 53  |
| 38  | 84  | 30   | 29,5 | 57     | 67     | 75  | 25 | 122 | 64  | 14 | 56  |
| 40  | 84  | 30   | 29,5 | 59     | 69     | 77  | 25 | 122 | 66  | 14 | 58  |
| 43  | 84  | 30   | 29,5 | 62     | 72     | 80  | 26 | 132 | 69  | 14 | 61  |
| 45  | 84  | 30   | 29,5 | 64     | 74     | 82  | 27 | 138 | 71  | 14 | 63  |
| 48  | 84  | 30   | 29,5 | 67     | 77     | 85  | 27 | 138 | 74  | 14 | 66  |
| 50  | 84  | 30   | 29,5 | 69     | 79     | 87  | 29 | 148 | 76  | 18 | 68  |
| 55  | 84  | 30   | 29,5 | 74     | 84     | 93  | 31 | 148 | 81  | 18 | 73  |
| 57  | 84  | 30   | 29,5 | 79     | 92     | 102 | 33 | 157 | 86  | 18 | 78  |
| 60  | 84  | 30   | 29,5 | 79     | 92     | 102 | 33 | 157 | 86  | 18 | 78  |
| 65  | 84  | 30   | 29,5 | 84     | 99     | 109 | 35 | 163 | 91  | 18 | 83  |
| 70  | 84  | 30   | 29,5 | 89     | 108    | 118 | 37 | 178 | 96  | 18 | 88  |
| 75  | 100 | 35,5 | 31,5 | 101    | 118    | 129 | 41 | 190 | 110 | 18 | 100 |
| 80  | 100 | 35,5 | 31,5 | 106    | 124    | 135 | 43 | 194 | 115 | 18 | 105 |
| 85  | 100 | 35,5 | 31,5 | 111    | 128    | 139 | 45 | 198 | 120 | 22 | 110 |
| 90  | 100 | 35,5 | 31,5 | 116    | 135    | 145 | 47 | 204 | 125 | 22 | 115 |
| 95  | 100 | 35,5 | 31,5 | 121    | 138    | 148 | 49 | 208 | 130 | 22 | 120 |
| 100 | 100 | 35,5 | 31,5 | 126    | 144    | 154 | 50 | 218 | 135 | 22 | 125 |
| 110 | 103 | 38,5 | 31,5 | 136    | 154    | 164 | 55 | 238 | 145 | 22 | 135 |
| 120 | 103 | 38,5 | 31,5 | 146    | 164    | 174 | 58 | 268 | 155 | 22 | 145 |

The E-series are seal solutions designed for use in pumps, agitators and other rotating equipment within process industries such as pulp and paper, petrochemical, food and beverage, and power generation. The E-series offers high-quality and cost-effective seals with optimized built-in dimensions, which makes it an excellent choice for standardization. The E-series has been designed focusing on increased flexibility, optimal performance and reliability as well as easy handling. E-series seals are easy to refurbish, can be configured in many material combinations and can have dimensions customized if required. Available versions of the "E" series for hygienic applications are in accordance with EHEDG and 3A.

## ED Double balanced cartridge seal

Huhnseal ED is a double balanced cartridge seal maintaining sealing performance even during sudden pressure drops on the product side and/or the secondary side. The design of the seal is robust and rigid but at the same time flexible, with excellent radial and axial movement capabilities. The springs are located outside both the product and the flush minimizing risk for clogging.



- 1 Excellent axial movement**  
The seal can move  $\pm 2,0$  mm independent of the compression of the springs. The seal follows the movement of the shaft without influencing the compression of the springs. This feature is essential when sealing equipment with flexible bearing units.
- 2 Patented protected spring package**  
The springs are located outside both the product and the flush. Minimizing the risk for clogging, which is one of the most common causes for seal failure. Patent No: 900912-2
- 3 Safe drive of rotating surface at the atmospheric side**  
The rotating face on the atmospheric side is driven by three big drive pins machined into the sealing face. The pins are not in contact with the quench liquid, eliminating the risk of them being blocked axially by residues from the quench.
- 4 Excellent radial movement capabilities**  
Through a new design the seal is able to compensate for angular deviation without generating stresses over the seal faces, which may influence sealing performance. This feature minimizes the effects of excessive shaft bending during operation against closed valves.
- 5 Hygienic applications**  
Smooth surfaces without cavities or closed spaces make the seal suitable for food and drug applications. If required, the gasket may be replaced with O-rings according to EHEDG in order to achieve a hygienic designed seal suitable for CIP (Cleaning in Place).
- 6 H4 design**  
The rotating sealing face on the product side has the new "H4-design". This means that the seal face is O-ring mounted and the outer diameter of the seal face is the same as of the holder. This prevents the forming of turbulent flows, which cause heavy wear in abrasive liquids.
- 7 Axial cooling channels**  
Allow for installation of a double seal in applications with very limited space.

### Features

- Cartridge mounted for easy assembly
- Balanced (ES) and double balanced (ED) design for minimum heat generation
- Both ES and ED have excellent axial and radial movement capabilities
- Suitable for standardization
- Robust construction materials as standard:  
*Acid resistant stainless steel*  
*Graphite loaded sintered silicon carbide*  
*Peroxide cured FPM for ES*  
*FFPM for ED*
- Easy and time efficient to recondition on site when required
- Protected spring package to minimize risk for clogging
- The seals may be equipped with a separate flange for flushing

### Applications

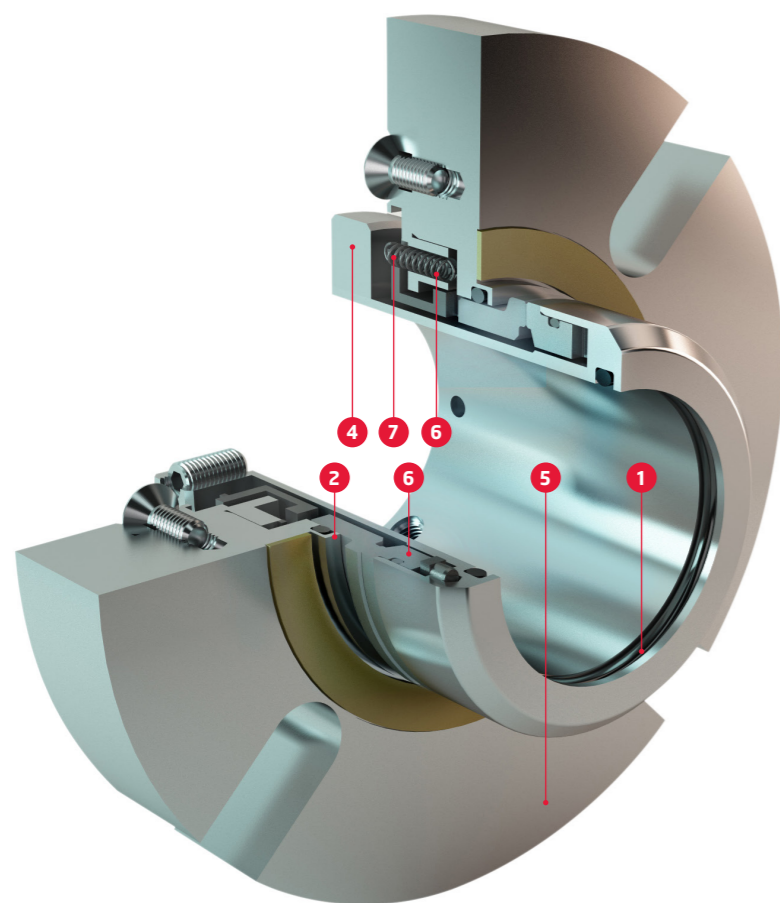
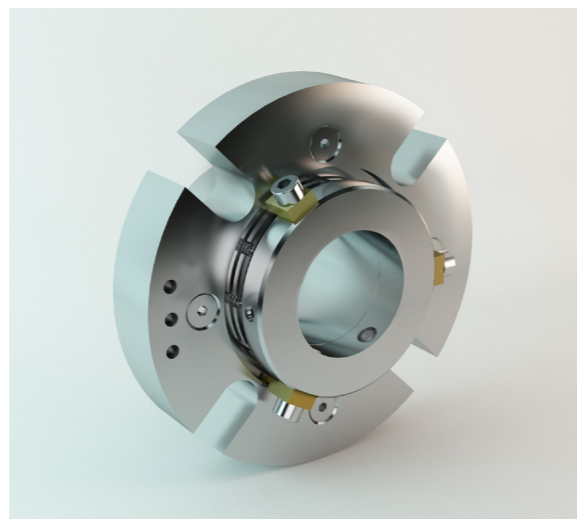
|  | ED | ES | ESF |
|--|----|----|-----|
| Clean fluids*                              |    | ●  |     |
| Fluids with poor lubrication capabilities  | ●  |    | ●   |
| Crystallizing fluids                       | ●  |    | ●   |
| Fluids reacting with air                   | ●  |    |     |
| Sedimentary fluids                         | ●  |    | ●   |
| High temperature fluids ( > 100°C )        | ●  |    | ●   |
| Fluids hazardous to health and environment | ●  |    |     |
| Extra need of cooling / pressure balancing |    |    | ●   |

\*Clean fluids: Low content of solid and abrasive particled. For example, less than 3% fiber content in Pulp & Paper.

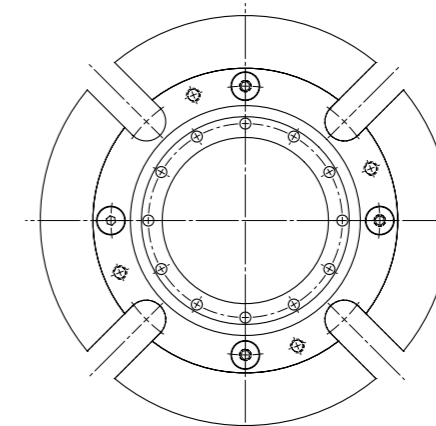
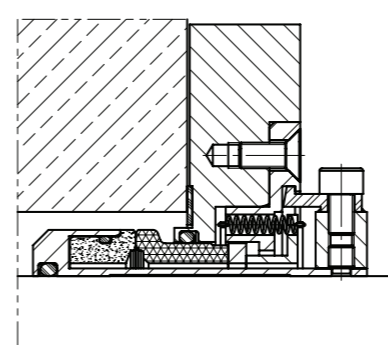
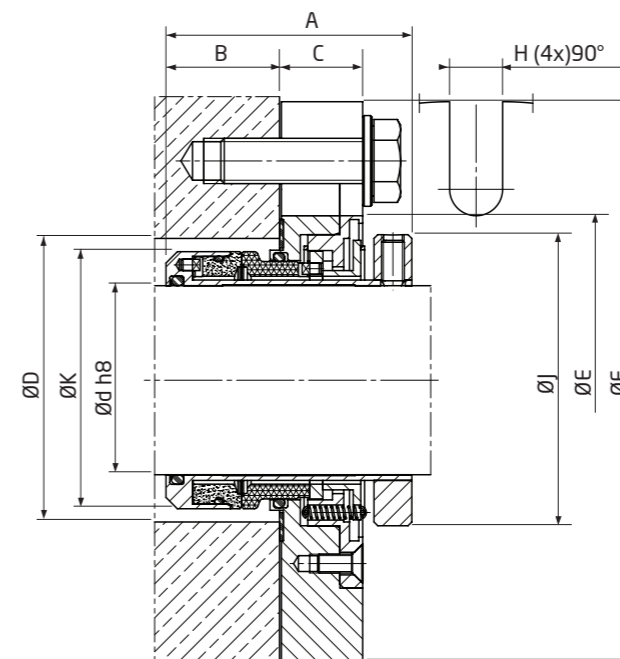
### Materials

|                                  | Standard                | On request           |
|----------------------------------|-------------------------|----------------------|
| Rotating face product side       | SSiC+C                  | TC                   |
| Stationary face product side     | SSiC                    | TC                   |
| Rotating face atmospheric side   | TC                      | -                    |
| Stationary face atmospheric side | Carbon                  | SSiC                 |
| Elastomer                        | EPDM / FPM / FFPM       | -                    |
| Springs                          | HASTELLOY C™, EN 1.4401 | -                    |
| Metal parts                      | EN 1.4404               | Titanium / EN 1.4462 |

Huhnseal ES is a balanced single mechanical seal with a unique and modern design. The springs are not placed directly behind the stationary face, this being the most common competitor solution, but have been located on a larger diameter further away from the critical O-ring and seal face gap in order to reduce risk for clogging. Due to the relocation of the springs, more robust springs may be used enabling to change from compression to tension springs. The robust tension spring design gives the seal better performance since it is more difficult for particles and fibers from the product to reach and clog up the springs. Additionally the relatively long springs with larger wire diameter increase the axial and radial movement capabilities of the seal. First-class materials from carefully selected suppliers ensure optimized performance at minimized built-in dimensions.



- 1 Hygienic solutions**  
Smooth surfaces without cavities or closed spaces make the seal suitable for food and drug application. If required the gasket may be replaced with O-rings in execution according to EHEDG to achieve a hygienic designed seal suitable for CIP (Cleaning in Place).
- 2 Excellent angular movement capabilities**  
Advantage when operating against closed valves, causing shaft bending.
- 3 H4 design**  
The rotating sealing face on the product side has the new "H4-design". This means that the seal is O-ring mounted and the outer diameter of the seal face is the same as of the holder. This prevents the forming of turbulent flows, which cause heavy wear in abrasive liquids.
- 4 Advantageous built-in dimensions**  
Fits in most standard pump stuffing boxes.
- 5 Optional additional flange for flushing**  
The seal may be equipped with an extra flange when flushing into the media is needed. The standard design is without flange since the chamber with a small gap given by the flushing flange may encourage material build-up if flush is not connected.
- 6 Spring package located on the outside of the flange**  
This design is better protected against fiber and particle build-up, which eventually causes clogged-up springs.
- 7 Patented tension springs**  
Allow for an excellent axial movement of  $\pm 2,0$  mm. Patent No: 9803436-6

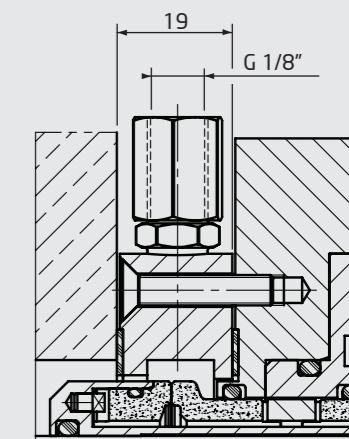


$P_{max} = 25 \text{ bar}$   
 $T_{max} = 100^\circ\text{C}$   
 $V_{max} = 18 \text{ m/s (3600 rpm)}$   
 Axial movement:  $\pm 2,0 \text{ mm}$

| d   | A  | B    | C  | Dmin | Dmax | E   | F   | H  | J   | K   |
|-----|----|------|----|------|------|-----|-----|----|-----|-----|
| 25  | 66 | 30   | 22 | 44   | 54   | 62  | 105 | 14 | 52  | 43  |
| 28  | 66 | 30   | 22 | 47   | 57   | 65  | 105 | 14 | 55  | 46  |
| 30  | 66 | 30   | 22 | 49   | 59   | 67  | 105 | 14 | 57  | 48  |
| 32  | 66 | 30   | 22 | 51   | 61   | 70  | 110 | 14 | 9   | 50  |
| 33  | 66 | 30   | 22 | 52   | 62   | 70  | 110 | 14 | 60  | 51  |
| 35  | 66 | 30   | 22 | 54   | 64   | 72  | 112 | 14 | 62  | 53  |
| 38  | 66 | 30   | 22 | 57   | 67   | 75  | 122 | 14 | 65  | 56  |
| 40  | 66 | 30   | 22 | 59   | 69   | 77  | 122 | 14 | 67  | 58  |
| 43  | 66 | 30   | 22 | 62   | 72   | 80  | 132 | 14 | 70  | 61  |
| 45  | 66 | 30   | 22 | 64   | 74   | 82  | 138 | 14 | 72  | 63  |
| 48  | 66 | 30   | 22 | 67   | 77   | 85  | 138 | 14 | 75  | 66  |
| 50  | 66 | 30   | 22 | 69   | 79   | 87  | 148 | 14 | 77  | 68  |
| 55  | 66 | 30   | 22 | 74   | 84   | 93  | 148 | 18 | 82  | 73  |
| 60  | 66 | 30   | 22 | 79   | 92   | 102 | 157 | 18 | 87  | 78  |
| 65  | 66 | 30   | 22 | 84   | 99   | 109 | 163 | 18 | 92  | 83  |
| 70  | 66 | 30   | 22 | 89   | 108  | 118 | 178 | 18 | 97  | 88  |
| 75  | 75 | 35,5 | 25 | 101  | 118  | 129 | 190 | 18 | 108 | 100 |
| 80  | 75 | 35,5 | 25 | 106  | 124  | 135 | 194 | 18 | 113 | 105 |
| 85  | 75 | 35,5 | 25 | 111  | 128  | 139 | 198 | 22 | 118 | 110 |
| 90  | 75 | 35,5 | 25 | 116  | 135  | 145 | 204 | 22 | 123 | 115 |
| 95  | 75 | 35,5 | 25 | 121  | 138  | 148 | 208 | 22 | 128 | 120 |
| 100 | 75 | 35,5 | 25 | 126  | 144  | 154 | 218 | 22 | 133 | 125 |

### ESF - Single Seal with optional Flushing Flange

Depending on the application, the seals may be equipped with an additional flange in order to achieve balanced pressure, flushing and/or additional cooling. This will increase the lifetime of the seal.



The axial built-in measurement increases with 19 mm irrespective of the shaft dimension.

