012

# MECHANICAL SEALS

BY ZERO-LEAK

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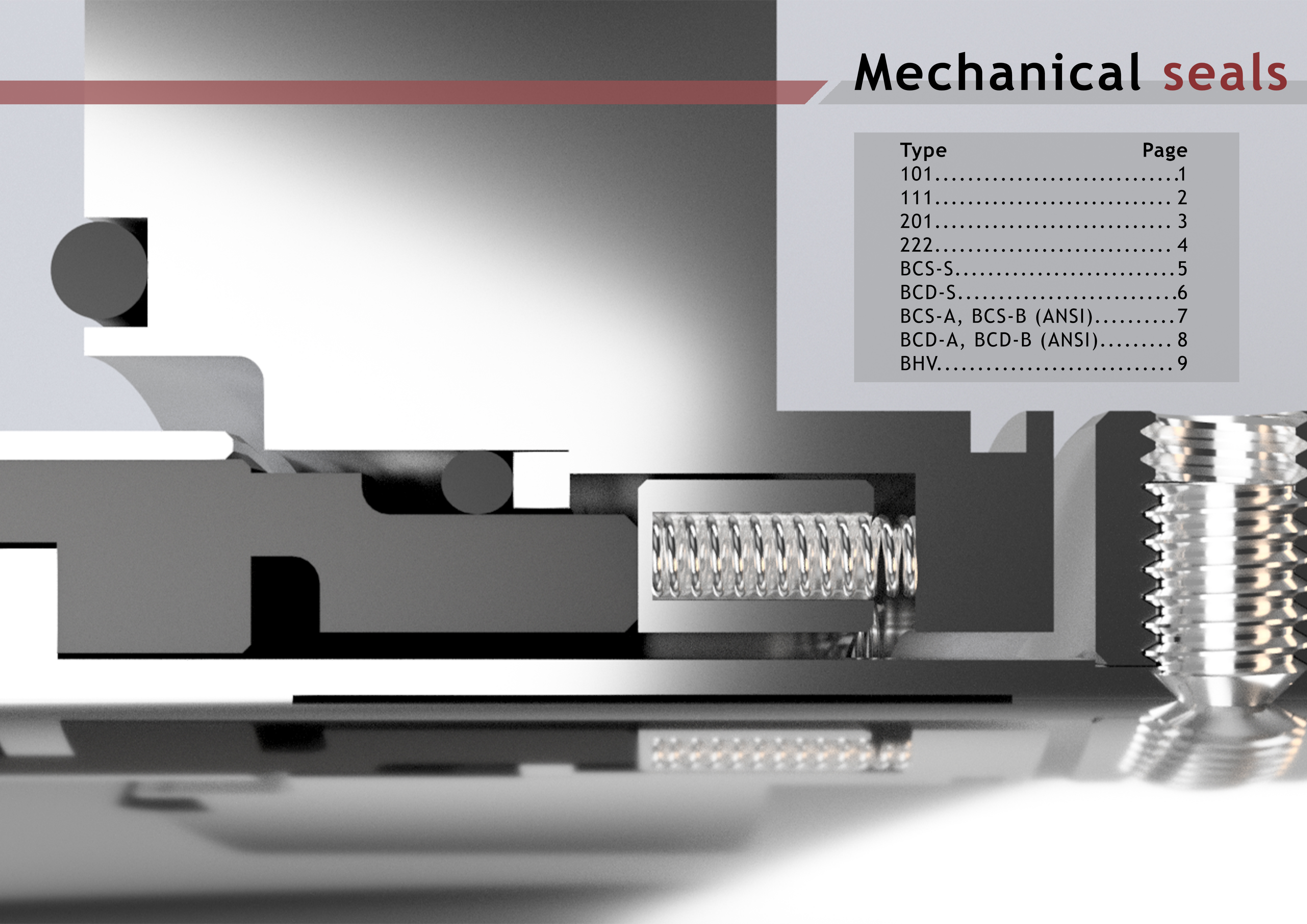
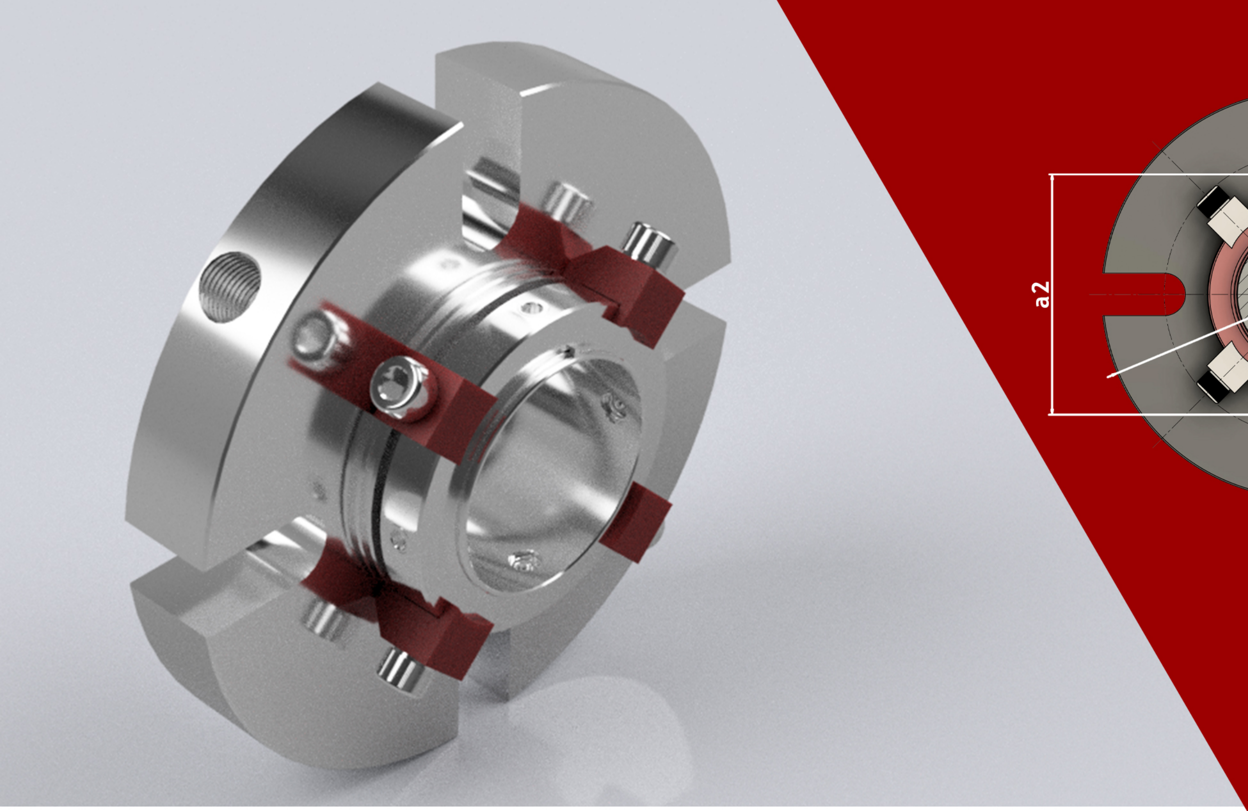
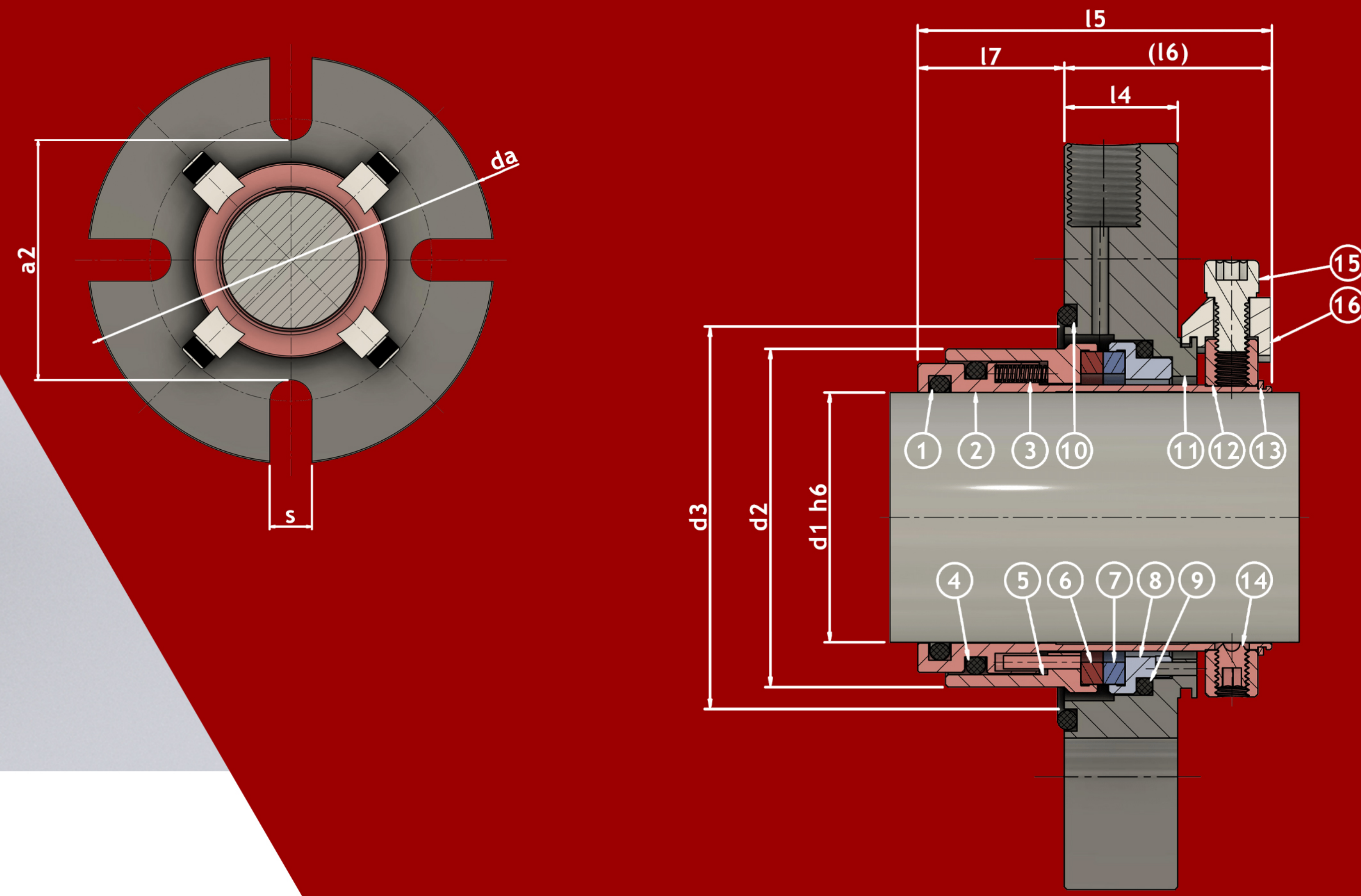
# Mechanical seals










| Item | Item Description |
|---|---|
| 1, 4, 9, 10 | O-Ring |
| 2 | Sleeve |
| 3 | Spring |
| 5 | Rotary Seal Face |
| 6 | Rotary Housing |
| 7 | Stationary Seal Face |
| 8 | Stationary Housing |
| 11 | Gland |
| 12 | Set-Ring |
| 13 | Lock Washer |
| 14 | Set Screw |
| 15 | Screw |
| 16 | Setter |

Mechanical seals

# Type 101

## Features

- Single seal
- Cartridge design for precise, easy intallation
- Balanced design for wide range of services
- Independent of direction of rotation
- Shrink-fitted seal faces can be easily replaced with other materials. (Not suitable for temperatures above 300°C)
- Universal applicable for packings conversions, retrofits or original equipment
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- Installation faults are avoided, cost-effective
- No damage caused by dirt entered during assembly
- Customer specific versions available

## Operating range

Shaft diameter: d1 = 20 ... 100 mm (1.000" ... 4.000")
Other sizes on request
Temperature: t = -40 °C ... +220 °C (-40 °F ... +428 °F)
(Check O-Ring resistance)

Sliding face material combination Carbon Resin VS SSIC
Pressure: p1 = 25 bar (363 PSI)
Sliding velocity: vg = 16 m/s (52 ft/s)

Sliding face material combination SSIC VS SSIC or TC VS SSIC
Pressure: p1 = 12 bar (174 PSI)
Sliding velocity: vg = 10 m/s (33 ft/s)

Axial movement: ±1.0 mm, d1 ≥ 75 mm ±1.5 mm

## Materials

Rotary Seal Face: SSIC, Carbon graphite resin, Tungsten carbide
Stationary Seal Face: SSIC, Tungsten carbide
Secondary seals: FKM, EPDM, FFKM, FEPM, NBR
Springs: SUS316, Hastelloy® C-4
Metal parts: SUS316
*Other configuration of material also available on request

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## Dimensions in mm

| d1 | d2 | d3min | l4 | l5 | l6 | l7 | a2 | da | s |
|---|---|---|---|---|---|---|---|---|---|
| 20 | 36 | 40.5 | 20.5 | 56.5 | 37.5 | 19.0 | 51.5 | 86 | 11 |
| 22 | 38 | 42.5 | 20.5 | 56.5 | 37.5 | 19.0 | 53.5 | 88 | 11 |
| 24 | 40 | 44.5 | 20.5 | 56.5 | 37.5 | 19.0 | 55.5 | 90 | 11 |
| 25 | 43 | 45.5 | 20.5 | 56.5 | 37.5 | 19.0 | 56.5 | 93 | 11 |
| 28 | 46 | 48.5 | 20.5 | 56.5 | 37.5 | 19.0 | 59.5 | 95 | 11 |
| 30 | 46 | 50.5 | 20.5 | 56.5 | 37.5 | 19.0 | 64.0 | 101 | 11 |
| 32 | 48 | 53.5 | 20.5 | 57.5 | 37.5 | 20.0 | 66.5 | 101 | 11 |
| 33 | 50 | 54.5 | 20.5 | 57.5 | 37.5 | 20.0 | 66.5 | 101 | 11 |
| 35 | 52 | 55.5 | 20.5 | 59.5 | 37.5 | 22.0 | 67.0 | 101 | 11 |
| 38 | 55 | 58.5 | 20.5 | 61.0 | 37.5 | 23.5 | 69.0 | 114 | 14 |
| 40 | 57 | 61.5 | 20.5 | 61.0 | 37.5 | 23.5 | 71.0 | 121 | 14 |
| 42 | 59 | 62.5 | 20.5 | 62.0 | 37.5 | 24.5 | 74.0 | 121 | 14 |
| 43 | 61 | 63.5 | 20.5 | 63.0 | 37.5 | 25.5 | 79.0 | 122 | 14 |
| 45 | 63 | 66.5 | 20.5 | 64.0 | 37.5 | 26.5 | 79.5 | 135 | 14 |
| 48 | 67 | 70.5 | 20.5 | 64.0 | 37.5 | 26.5 | 82.0 | 137 | 14 |
| 50 | 70 | 72.5 | 20.5 | 64.0 | 37.5 | 26.5 | 86.0 | 137 | 14 |
| 52 | 73 | 76.5 | 20.5 | 64.0 | 37.5 | 26.5 | 91.0 | 137 | 14 |
| 53 | 74 | 77.5 | 20.5 | 64.0 | 37.5 | 26.5 | 93.0 | 137 | 14 |
| 55 | 74 | 78.5 | 20.5 | 64.0 | 37.5 | 26.5 | 100.0 | 152 | 14 |
| 58 | 78 | 82.5 | 20.5 | 64.0 | 37.5 | 26.5 | 103.0 | 152 | 14 |
| 60 | 80 | 84.5 | 20.5 | 64.0 | 37.5 | 26.5 | 100.0 | 152 | 17 |
| 62 | 82 | 87.5 | 20.5 | 64.0 | 37.5 | 26.5 | 102.0 | 152 | 17 |
| 63 | 83 | 87.5 | 20.5 | 64.0 | 37.5 | 26.5 | 102.0 | 152 | 17 |
| 65 | 85 | 87.5 | 21.0 | 64.5 | 38.0 | 26.5 | 102.0 | 152 | 17 |
| 68 | 88 | 92.5 | 21.0 | 64.5 | 38.0 | 26.5 | 105.0 | 160 | 17 |
| 70 | 90 | 94.5 | 21.0 | 64.5 | 38.0 | 26.5 | 108.0 | 160 | 17 |
| 75 | 95 | 100.0 | 21.5 | 67.0 | 39.5 | 27.5 | 113.0 | 160 | 17 |
| 80 | 100 | 105.0 | 21.5 | 67.0 | 39.5 | 27.5 | 118.0 | 160 | 17 |
| 85 | 105 | 110.0 | 21.5 | 67.0 | 39.5 | 27.5 | 123.0 | 160 | 17 |
| 90 | 110 | 115.0 | 21.5 | 67.0 | 39.5 | 27.5 | 128.0 | 160 | 17 |
| 95 | 115 | 120.0 | 21.5 | 67.0 | 39.5 | 27.5 | 133.0 | 160 | 17 |
| 100 | 120 | 125.0 | 21.0 | 64.3 | 38.0 | 26.3 | 136.0 | 182 | 18 |

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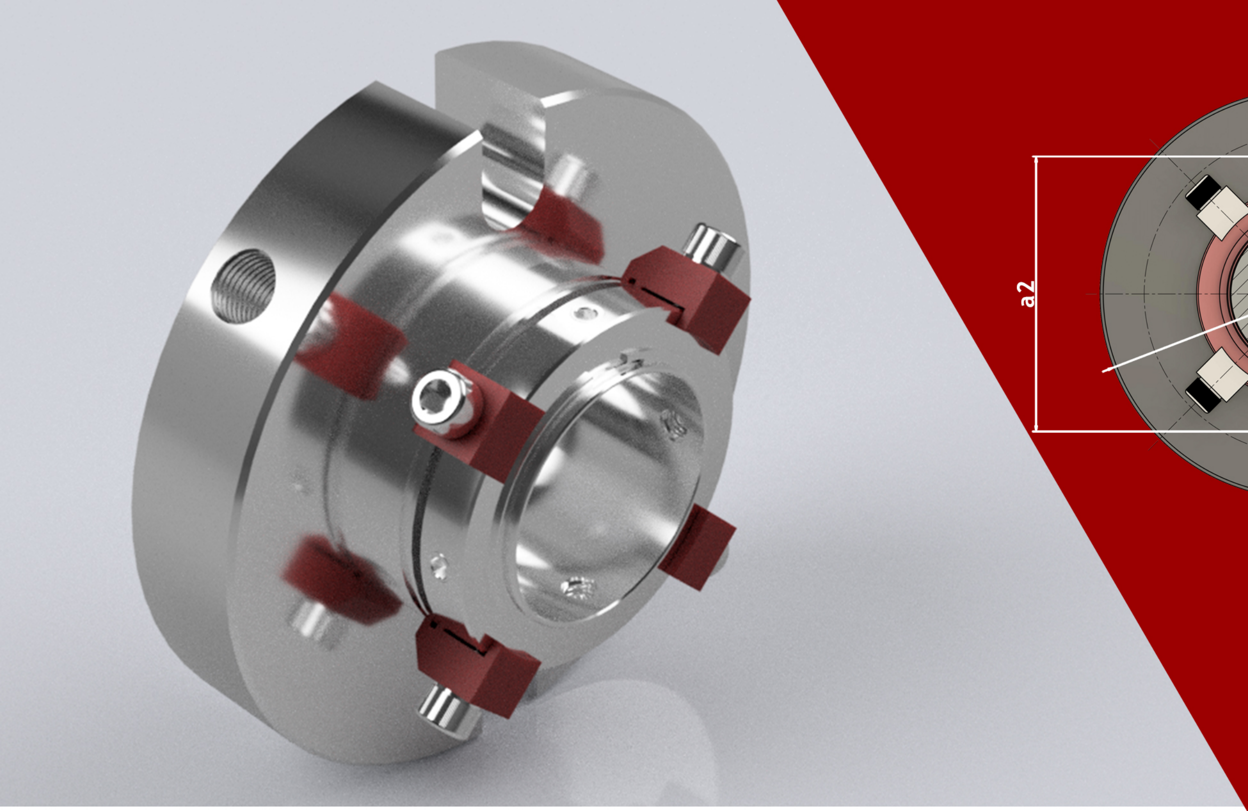

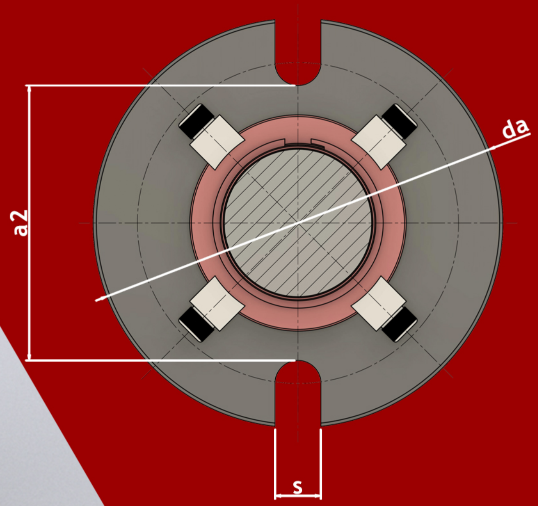


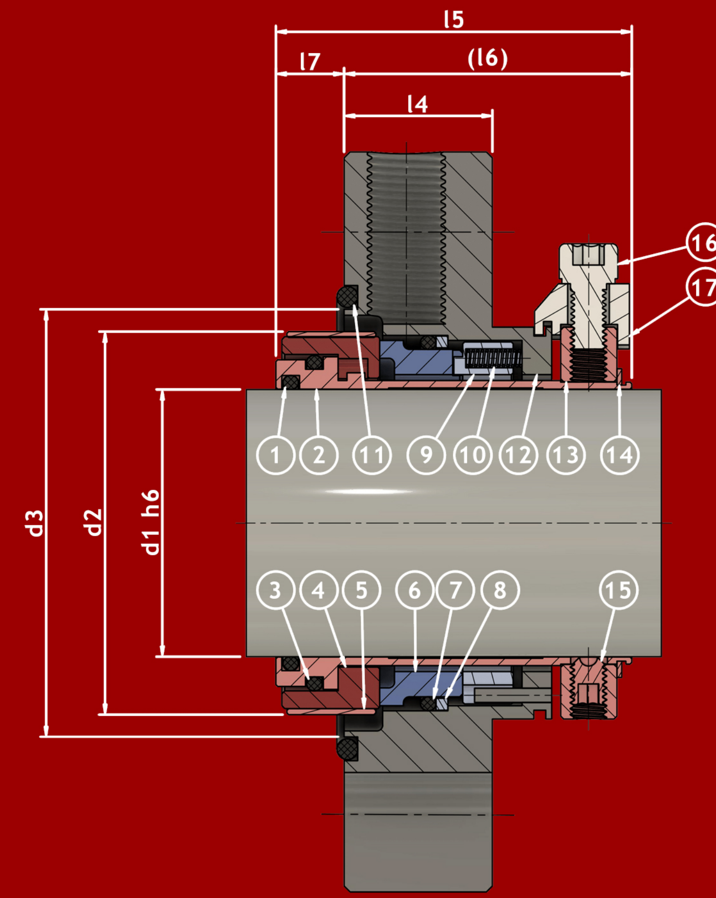


| Item | Item Description |
|---|---|
| 1, 3, 7, 11 | O-Ring |
| 2 | Sleeve |
| 4 | Rotary Seal Face |
| 5 | Rotary Housing |
| 6 | Stationary Seal Face |
| 8 | Thrust Ring |
| 9 | Compression Ring |
| 10 | Spring |
| 12 | Gland |
| 13 | Set-Ring |
| 14 | Lock Washer |
| 15 | Set Screw |
| 16 | Screw |
| 17 | Setter |

Mechanical seals

# Type 111

## Features

- Single seal
- The balanced cartridge construction makes the suitable for wide range of demanding application.
- The spring of seal are located in the stationary housing outside of the product.
- Independent of direction of rotation
- Premium-grade silicon carbide solid seal faces are excellent for high temperature, high speed pumps and enduring abrasive fluid.
- Universal applicable for packings conversions, retrofits or original equipment
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- Installation faults are avoided, cost-effective
- No damage caused by dirt entered during assembly
- Customer specific versions available

## Operating range

Shaft diameter: d1 = 20 ... 100 mm (1.000" ... 4.000")
Other sizes on request
Temperature: t = -40 °C ... +220 °C (-40 °F ... +428 °F)
(Check O-Ring resistance)

Sliding face material combination SSIC VS SSIC or TC VS SSIC
Pressure: p1 = 12 bar (174 PSI)
Sliding velocity: vg = 10 m/s (33 ft/s)

Axial movement: ±1.0 mm, d1 ≥ 75 mm ±1.5 mm

## Materials

Rotary Seal Face: SSIC, Tungsten carbide
Stationary Seal Face: SSIC, Tungsten carbide
Secondary seals: FKM, EPDM, FFKM, FEPM, NBR
Springs: SUS316, Hastelloy® C-4
Metal parts: SUS316
*Other configuration of material also available on request

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## Dimensions in mm

| d1 | d2 (without Rotary Housing) | d2 (with Rotary Housing) | d3min | l4 | l5 | l6 | l7 | a2 | da | s |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 36.4 | 38.0 | 44.5 | 25 | 60 | 48.5 | 11.5 | 61 | 95 | 11 |
| 22 | 38.4 | 40.0 | 46.5 | 25 | 60 | 48.5 | 11.5 | 63 | 97 | 11 |
| 24 | 41.5 | 43.1 | 49.5 | 25 | 60 | 48.5 | 11.5 | 63 | 98 | 12 |
| 25 | 42.5 | 44.1 | 50.5 | 25 | 60 | 48.5 | 11.5 | 65 | 100 | 12 |
| 28 | 44.5 | 46.1 | 51.5 | 25 | 60 | 48.5 | 11.5 | 65 | 100 | 12 |
| 30 | 47.0 | 48.6 | 54.5 | 25 | 60 | 48.5 | 11.5 | 68 | 105 | 12 |
| 32 | 49.0 | 50.6 | 57.5 | 25 | 60 | 48.5 | 11.5 | 72 | 110 | 12 |
| 33 | 50.0 | 52.0 | 58.5 | 25 | 60 | 48.5 | 11.5 | 73 | 114 | 12 |
| 35 | 52.5 | 54.5 | 60.5 | 25 | 60 | 48.5 | 11.5 | 74 | 110 | 12 |
| 38 | 55.5 | 57.5 | 63.5 | 25 | 60 | 48.5 | 11.5 | 78 | 115 | 12 |
| 40 | 57.5 | 59.5 | 65.5 | 25 | 60 | 48.5 | 11.5 | 81 | 114 | 14 |
| 42 | 59.5 | 61.5 | 67.5 | 25 | 60 | 48.5 | 11.5 | 83 | 115 | 14 |
| 43 | 60.5 | 62.5 | 68.5 | 25 | 60 | 48.5 | 11.5 | 84 | 120 | 14 |
| 45 | 62.5 | 64.5 | 68.5 | 25 | 60 | 48.5 | 11.5 | 84 | 125 | 14 |
| 48 | 65.5 | 67.5 | 73.5 | 25 | 60 | 48.5 | 11.5 | 85 | 125 | 14 |
| 50 | 67.5 | 69.5 | 75.5 | 25 | 60 | 48.5 | 11.5 | 88 | 130 | 14 |
| 52 | 69.5 | 71.5 | 77.5 | 25 | 60 | 48.5 | 11.5 | 90 | 130 | 14 |
| 53 | 70.5 | 72.5 | 78.5 | 25 | 60 | 48.5 | 11.5 | 91 | 130 | 14 |
| 55 | 73.0 | 76.0 | 81.5 | 25 | 60 | 48.5 | 11.5 | 96 | 135 | 14 |
| 58 | 76.0 | 79.0 | 85.0 | 25 | 60 | 48.5 | 11.5 | 99 | 135 | 14 |
| 60 | 78.0 | 81.0 | 86.5 | 25 | 60 | 48.5 | 11.5 | 101 | 140 | 14 |
| 62 | 80.0 | 83.0 | 89.0 | 25 | 60 | 48.5 | 11.5 | 100 | 140 | 17 |
| 63 | 81.0 | 84.0 | 90.0 | 25 | 60 | 48.5 | 11.5 | 101 | 140 | 17 |
| 65 | 82.5 | 85.5 | 91.5 | 25 | 60 | 48.5 | 11.5 | 103 | 140 | 17 |
| 68 | 85.5 | 90.0 | 96.5 | 25 | 60 | 48.5 | 11.5 | 106 | 147 | 17 |
| 70 | 91.0 | 95.0 | 100.5 | 25 | 60 | 48.5 | 11.5 | 122 | 175 | 18 |
| 75 | 93.0 | 97.0 | 103.5 | 25 | 60 | 48.5 | 11.5 | 115 | 161 | 18 |
| 80 | 98.0 | 102.0 | 108.5 | 25 | 60 | 48.5 | 11.5 | 120 | 166 | 18 |
| 85 | 103.0 | 107.0 | 113.5 | 25 | 60 | 48.5 | 11.5 | 125 | 171 | 18 |
| 90 | 107.5 | 112.0 | 118.5 | 25 | 60 | 48.5 | 11.5 | 130 | 176 | 18 |
| 95 | 112.0 | 117.0 | 123.5 | 25 | 60 | 48.5 | 11.5 | 135 | 181 | 18 |
| 100 | 118.0 | 122.0 | 128.0 | 25 | 60 | 48.5 | 11.5 | 137 | 150 | 18 |

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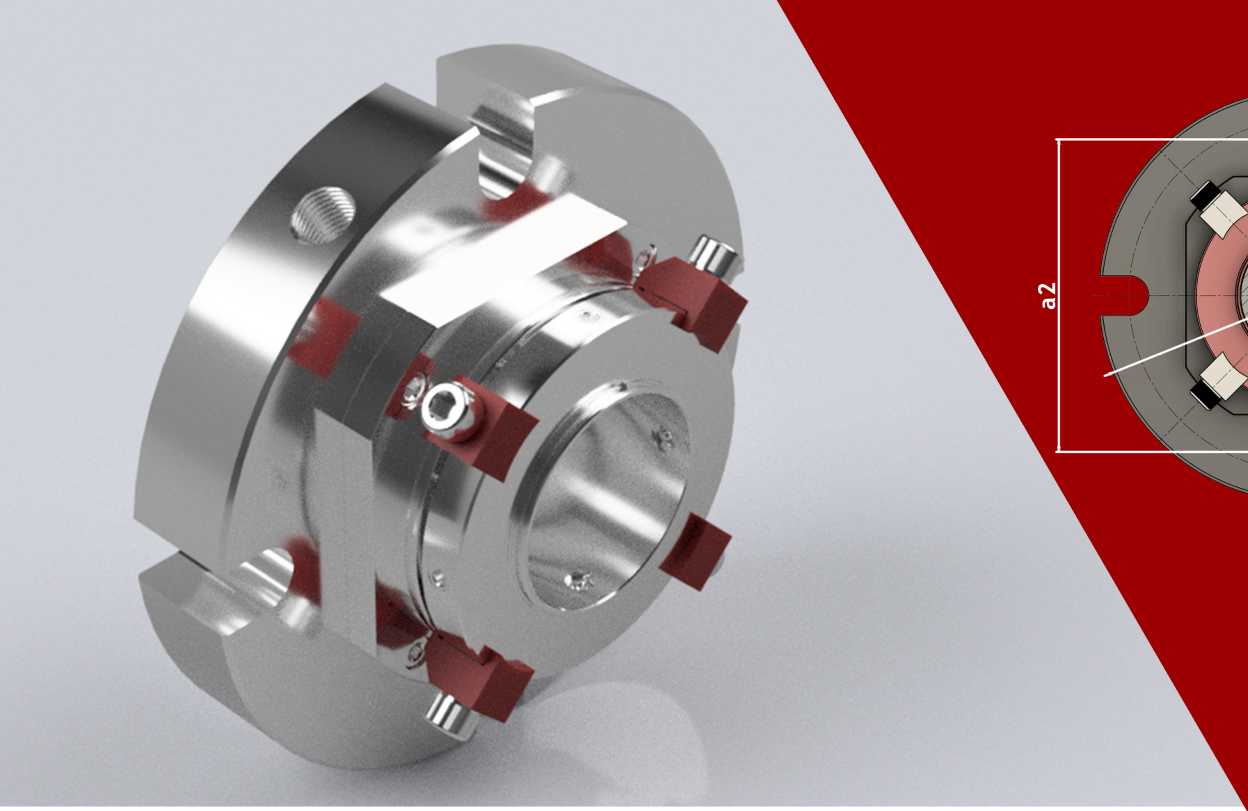

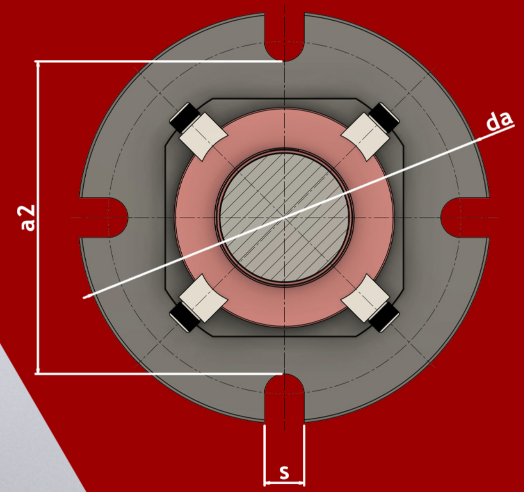


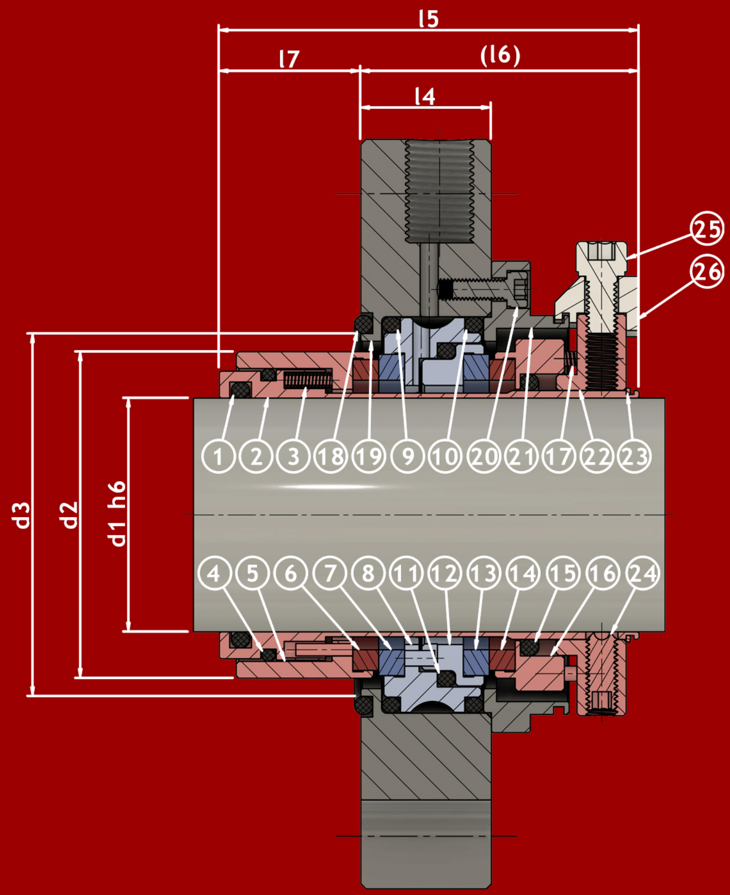


| Item | Item Description |
|---|---|
| 1, 4, 9, 10, 11, 15,18 | O-Ring |
| 2 | Sleeve |
| 3, 17 | Spring |
| 5 | Rotary Housing In |
| 6 | Rotary Seal Face In |
| 7 | Stationary Seal Face In |
| 8 | Stationary Housing In |
| 12 | Stationary Housing Out |
| 13 | Stationary Seal Face Out |
| 14 | Rotary Seal Face Out |
| 16 | Rotary Housing Out |
| 19 | Gland |
| 20 | Screw |
| 21 | Gland Ring |
| 22 | Set-Ring |
| 23 | Lock Washer |
| 24 | Set Screw |
| 25 | Screw |
| 26 | Setter |

Mechanical seals

# Type 201

## Features

- Dual seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Double pressure balanced
- Shrink-fitted seal faces can be easily replaced with other materials.
  (Not suitable for temperatures above 300°C)
- Universal applicable for packings conversions, retrofits or original equipment
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- Installation faults are avoided, cost-effective
- No damage caused by dirt entered during assembly
- Straightforward and easy installation due to pre-assembled unit (reduced down-times)
- Individual adaptation to pump design possible
- Customer specific versions available

## Operating range

Shaft diameter: d1 = 20 ... 100 mm (1.000" ... 4.000")
Other sizes on request
Temperature: t = -40 °C ... +220 °C (-40 °F ... +428 °F)
(Check O-Ring resistance)

Sliding face material combination CB VS SSIC
Pressure: p1 = 25 bar (363 PSI)
Sliding velocity: vg = 16 m/s (52 ft/s)

Sliding face material combination SSIC VS SSIC or TC VS SSIC
Pressure: p1 = 20 bar (290 PSI)
Sliding velocity: vg = 10 m/s (33 ft/s)

Barrier fluid circulation system:
P3max = 25 bar (290 PSI)
P3max = 7 bar (102 PSI) for poor barrier media

Recommended supply medium: Max. ISO VG 5
Axial movement: ±1.0 mm, d1 ≥ 75 mm ±1.5 mm

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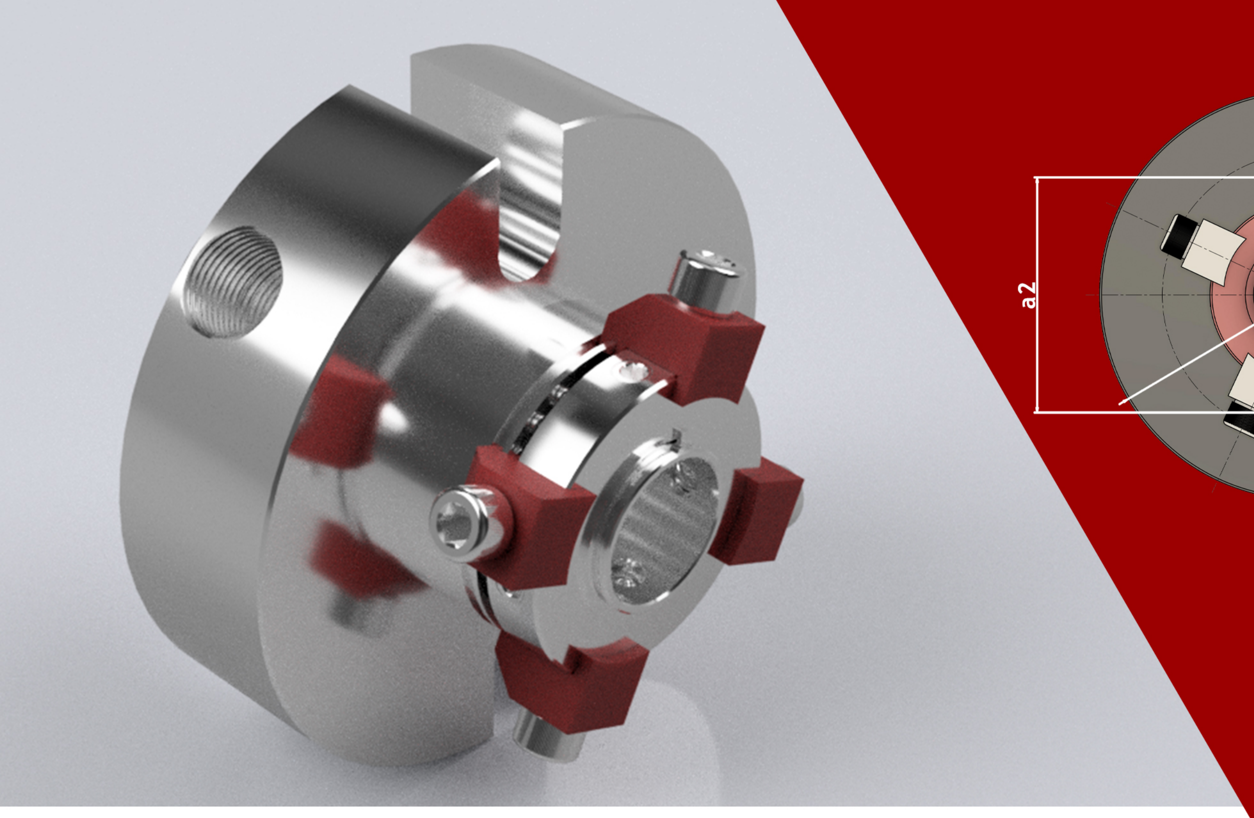
## Materials

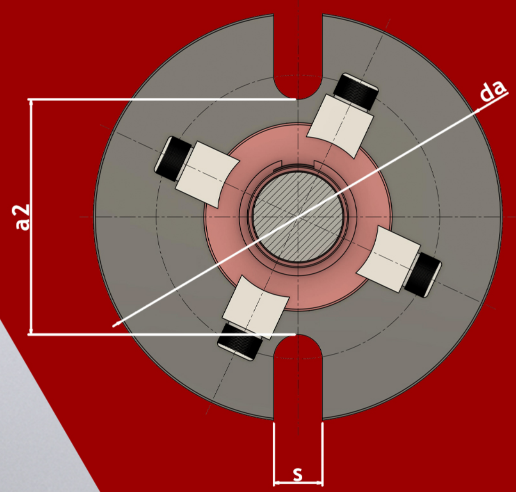
Rotary Seal Face: SSIC, CB, Tungsten carbide
Stationary Seal Face: SSIC, Tungsten carbide
Secondary seals: FKM, EPDM, FFKM, FEPM, NBR
Springs: SUS316, Hastelloy® C-4
Metal parts: SUS316
*Other configuration of material also available on request

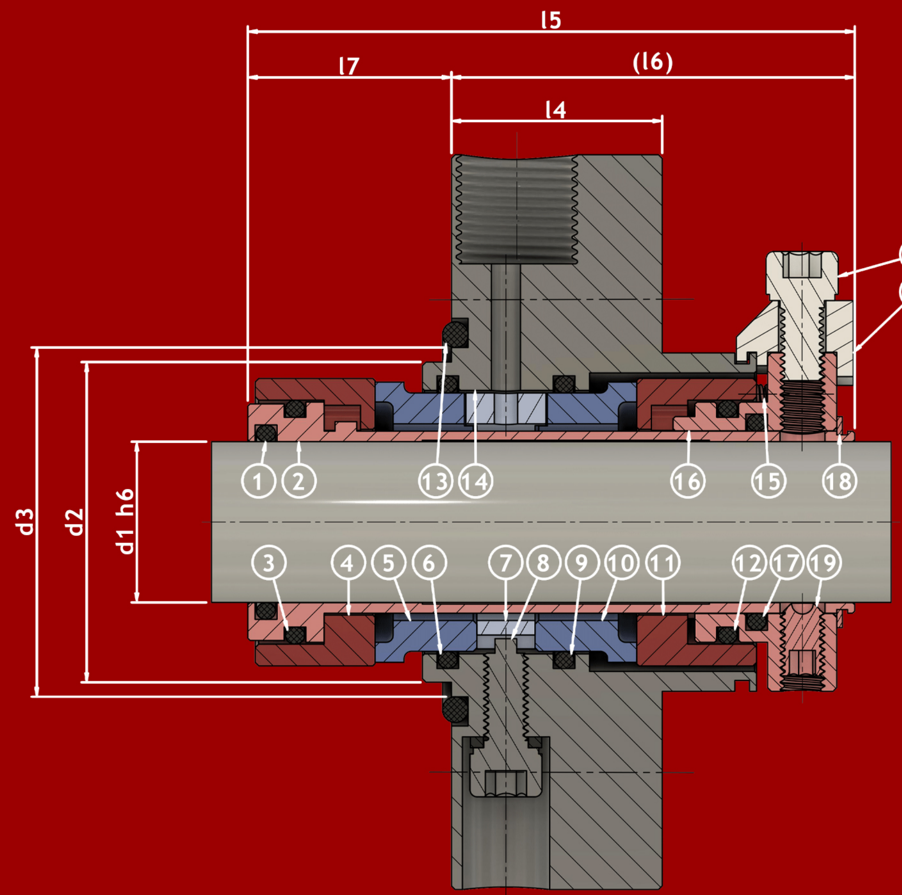
## Dimensions in mm

| d1 | d2 | d3min | l4 | l5 | l6 | l7 | a2 | da | s |
|---|---|---|---|---|---|---|---|---|---|
| 20 | 37 | 40.5 | 21.5 | 72.0 | 48.0 | 24.0 | 66 | 90 | 11 |
| 22 | 39 | 42.5 | 21.5 | 73.5 | 48.0 | 25.5 | 68 | 99 | 11 |
| 24 | 41 | 44.5 | 21.5 | 73.5 | 48.0 | 25.5 | 70 | 99 | 11 |
| 25 | 42 | 45.5 | 21.5 | 74.0 | 48.0 | 26.0 | 71 | 100 | 11 |
| 28 | 45 | 49.5 | 21.5 | 73.5 | 48.0 | 25.5 | 74 | 101 | 11 |
| 30 | 48 | 51.5 | 21.5 | 75.0 | 48.0 | 27.0 | 78 | 113 | 11 |
| 32 | 50 | 53.5 | 21.5 | 75.0 | 48.0 | 27.0 | 82 | 115 | 11 |
| 33 | 51 | 54.5 | 21.5 | 75.0 | 48.0 | 27.0 | 83 | 116 | 11 |
| 35 | 54 | 57.5 | 24.0 | 78.5 | 51.5 | 27.0 | 91 | 123 | 11 |
| 38 | 56 | 60.5 | 24.0 | 79.0 | 51.5 | 27.5 | 94 | 126 | 11 |
| 40 | 58 | 62.5 | 24.0 | 79.0 | 51.5 | 27.5 | 98 | 137 | 14 |
| 42 | 60 | 64.0 | 24.0 | 80.0 | 52.5 | 27.5 | 99 | 139 | 14 |
| 43 | 61 | 65.5 | 24.0 | 80.0 | 52.5 | 27.5 | 99 | 141 | 14 |
| 45 | 63 | 67.5 | 24.0 | 80.0 | 52.5 | 27.5 | 110 | 145 | 14 |
| 48 | 66 | 70.5 | 24.0 | 80.0 | 52.5 | 27.5 | 110 | 145 | 14 |
| 50 | 68 | 72.5 | 25.5 | 83.5 | 55.0 | 28.5 | 110 | 145 | 14 |
| 52 | 70 | 74.5 | 25.5 | 83.5 | 55.0 | 28.5 | 112 | 147 | 14 |
| 53 | 71 | 75.5 | 25.5 | 83.5 | 55.0 | 28.5 | 113 | 148 | 14 |
| 55 | 73 | 77.5 | 25.5 | 83.5 | 55.0 | 28.5 | 116 | 152 | 14 |
| 58 | 76 | 80.5 | 25.5 | 83.5 | 55.0 | 28.5 | 119 | 155 | 14 |
| 60 | 79 | 83.5 | 25.5 | 83.5 | 55.0 | 28.5 | 121 | 160 | 14 |
| 62 | 81 | 86.0 | 25.5 | 84.5 | 55.0 | 29.5 | 123 | 162 | 14 |
| 63 | 82 | 87.0 | 25.5 | 84.5 | 55.0 | 29.5 | 124 | 163 | 14 |
| 65 | 86 | 91.0 | 25.5 | 84.5 | 55.0 | 29.5 | 126 | 165 | 14 |
| 68 | 89 | 94.0 | 26.5 | 86.0 | 56.0 | 30.0 | 129 | 168 | 14 |
| 70 | 91 | 96.0 | 26.5 | 87.5 | 57.5 | 30.0 | 128 | 170 | 17 |
| 75 | 96 | 101.0 | 26.5 | 87.5 | 57.5 | 30.0 | 133 | 175 | 17 |
| 80 | 101 | 106.0 | 26.5 | 87.5 | 57.5 | 30.0 | 138 | 180 | 17 |
| 85 | 106 | 112.0 | 26.5 | 87.5 | 57.5 | 30.0 | 143 | 185 | 17 |
| 90 | 111 | 117.0 | 26.5 | 87.5 | 57.5 | 30.0 | 148 | 190 | 17 |
| 95 | 116 | 122.0 | 26.5 | 87.5 | 57.5 | 30.0 | 153 | 195 | 17 |
| 100 | 121 | 127.0 | 26.5 | 87.5 | 57.5 | 30.0 | 158 | 200 | 17 |

Inch size is available upon request.






| Item | Item Description |
|---|---|
| 1, 3, 6, 9, 12, 13, 17 | O-Ring |
| 2 | Sleeve |
| 4 | Rotary Seal Face In |
| 5 | Stationary Seal Face In |
| 7 | Compression Ring |
| 8 | Pin |
| 10 | Stationary Seal Face Out |
| 11 | Rotary Seal Face Out |
| 14 | Gland |
| 15 | Spring |
| 16 | Set-Ring |
| 18 | Lock Washer |
| 19 | Set Screw |
| 20 | Screw |
| 21 | Setter |

Mechanical seals

# Type 222

## Features

- Dual seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Double pressure balanced
- Premium-grade silicon carbide solid seal faces are excellent for high temperature, high speed pumps and enduring abrasive fluid.
- Universal applicable for packings conversions, retrofits or original equipment
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- Installation faults are avoided, cost-effective
- No damage caused by dirt entered during assembly
- Straightforward and easy installation due to pre-assembled unit (reduced down-times)
- Individual adaptation to pump design possible
- Customer specific versions available

## Operating range

Shaft diameter: d1 = 20 ... 100 mm (1.000" ... 4.000")
Other sizes on request
Temperature: t = -40 °C ... +220 °C (-40 °F ... +428 °F)
(Check O-Ring resistance)

Sliding face material combination CB VS SSIC
Pressure: p1 = 25 bar (363 PSI)
Sliding velocity: vg = 16 m/s (52 ft/s)

Sliding face material combination SSIC VS SSIC or TC VS SSIC
Pressure: p1 = 20 bar (290 PSI)
Sliding velocity: vg = 10 m/s (33 ft/s)

Barrier fluid circulation system:
P3max = 25 bar (290 PSI)
P3max = 7 bar (102 PSI) for poor barrier media

Recommended supply medium: Max. ISO VG 5
Axial movement: ±1.0 mm, d1 ≥ 75 mm ±1.5 mm



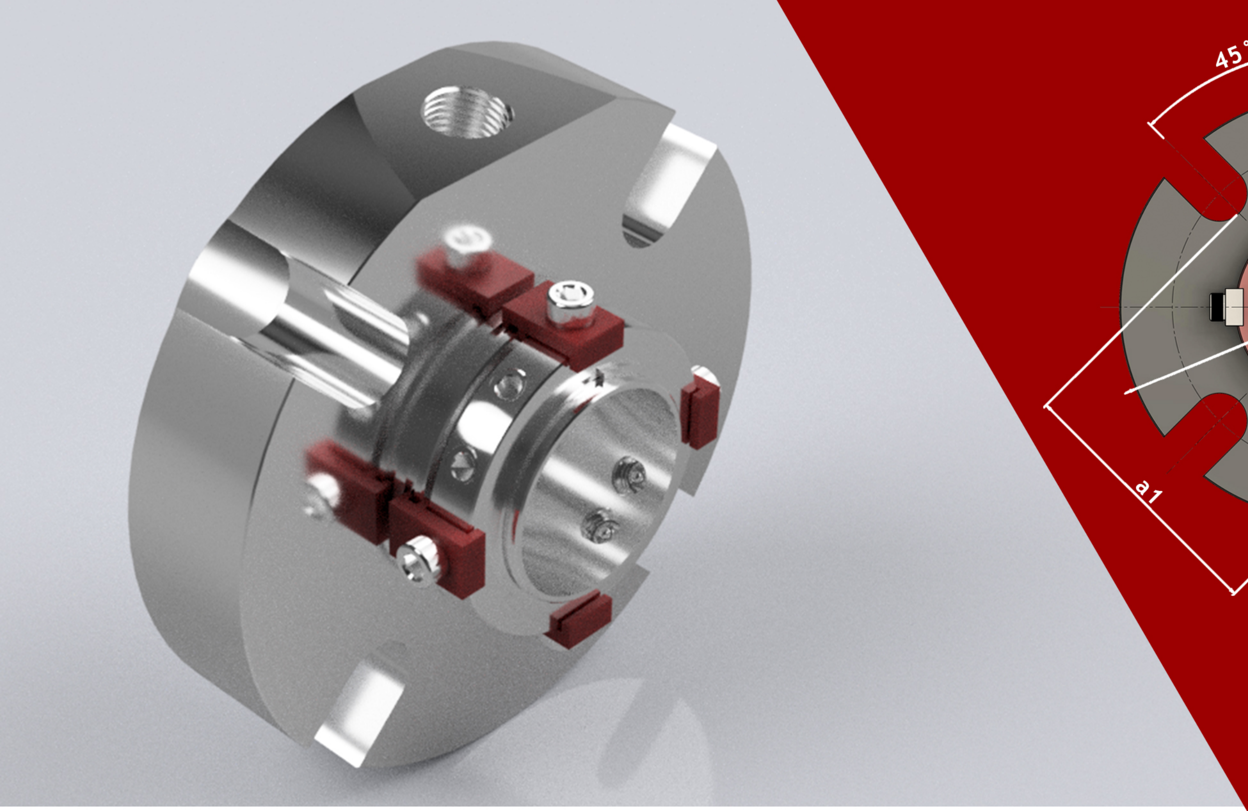
## Materials

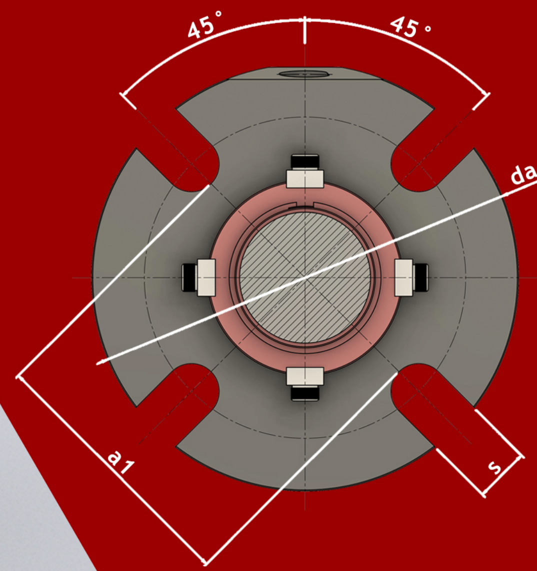
Rotary Seal Face: SSIC, Tungsten carbide
Stationary Seal Face: SSIC, Tungsten carbide
Secondary seals: FKM, EPDM, FFKM, FEPM, NBR
Springs: SUS316, Hastelloy® C-4
Metal parts: SUS316
*Other configuration of material also available on request

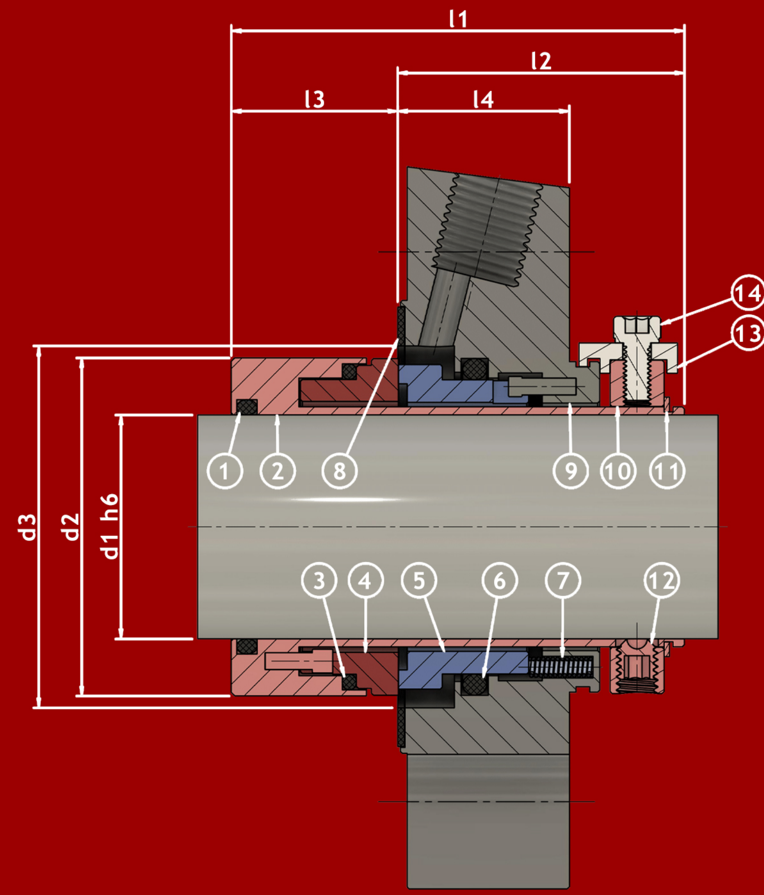
## Dimensions in mm

| d1 | d2 | d3min | l4 | l5 | l6 | l7 | a2 | da | s |
|---|---|---|---|---|---|---|---|---|---|
| 20 | 37.5 | 42.5 | 29 | 84 | 56 | 28 | 56 | 100 | 12 |
| 22 | 39.5 | 44.5 | 29 | 84 | 56 | 28 | 58 | 101 | 12 |
| 24 | 41.5 | 46.5 | 29 | 84 | 56 | 28 | 60 | 103 | 12 |
| 25 | 42.5 | 47.5 | 29 | 84 | 56 | 28 | 61 | 104 | 12 |
| 28 | 44.5 | 49.5 | 29 | 84 | 56 | 28 | 64 | 110 | 12 |
| 30 | 47.5 | 52.5 | 29 | 84 | 56 | 28 | 69 | 120 | 12 |
| 32 | 49.0 | 54.0 | 29 | 84 | 56 | 28 | 70 | 123 | 12 |
| 33 | 50.0 | 55.0 | 29 | 84 | 56 | 28 | 71 | 123 | 12 |
| 35 | 52.6 | 57.5 | 29 | 84 | 56 | 28 | 74 | 125 | 12 |
| 38 | 55.5 | 60.5 | 29 | 84 | 56 | 28 | 74 | 125 | 14 |
| 40 | 57.5 | 64.5 | 29 | 84 | 56 | 28 | 78 | 127 | 14 |
| 42 | 59.5 | 65.5 | 29 | 84 | 56 | 28 | 79 | 127 | 14 |
| 43 | 60.5 | 66.5 | 29 | 84 | 56 | 28 | 79 | 127 | 14 |
| 45 | 62.5 | 68.5 | 29 | 84 | 56 | 28 | 83 | 139 | 14 |
| 48 | 65.5 | 71.5 | 29 | 84 | 56 | 28 | 84 | 139 | 14 |
| 50 | 67.5 | 73.5 | 29 | 84 | 56 | 28 | 86 | 145 | 14 |
| 52 | 69.5 | 75.5 | 29 | 84 | 56 | 28 | 90 | 145 | 14 |
| 53 | 70.5 | 76.5 | 29 | 84 | 56 | 28 | 91 | 145 | 14 |
| 55 | 72.5 | 78.5 | 29 | 84 | 56 | 28 | 91 | 152 | 18 |
| 58 | 76.0 | 82.0 | 29 | 84 | 56 | 28 | 95 | 152 | 18 |
| 60 | 78.0 | 84.0 | 29 | 84 | 56 | 28 | 100 | 152 | 18 |
| 62 | 80.0 | 86.0 | 29 | 84 | 56 | 28 | 104 | 155 | 18 |
| 63 | 81.0 | 87.0 | 29 | 84 | 56 | 28 | 105 | 155 | 18 |
| 65 | 82.5 | 88.5 | 29 | 84 | 56 | 28 | 111 | 165 | 18 |
| 68 | 86.0 | 92.0 | 29 | 84 | 56 | 28 | 117 | 165 | 18 |
| 70 | 87.5 | 93.5 | 29 | 84 | 56 | 28 | 123 | 175 | 18 |
| 75 | 93.0 | 99.0 | 29 | 84 | 56 | 28 | 129 | 175 | 18 |
| 80 | 98.0 | 104.0 | 29 | 84 | 56 | 28 | 135 | 185 | 18 |
| 85 | 103.0 | 109.0 | 29 | 84 | 56 | 28 | 139 | 185 | 22 |
| 90 | 108.0 | 114.0 | 29 | 84 | 56 | 28 | 146 | 210 | 22 |
| 95 | 113.0 | 121.0 | 29 | 84 | 56 | 28 | 153 | 220 | 22 |
| 100 | 118.0 | 126.0 | 29 | 84 | 56 | 28 | 160 | 230 | 22 |

Inch size is available upon request.






| Item | Item Description |
|---|---|
| 1, 3, 6 | O-Ring |
| 2 | Sleeve |
| 4 | Rotary Seal Face |
| 5 | Stationary Seal Face |
| 7 | Spring |
| 8 | Gasket |
| 9 | Gland |
| 10 | Set-Ring |
| 11 | Lock Washer |
| 12 | Set Screw |
| 13 | Screw |
| 14 | Setter |
| 15 | Bush |
| 16 | Oil Seal |

Mechanical seals

# Type BCS-S

## Features

- Single seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Premium-grade silicon carbide solid seal faces are excellent for high temperature, high speed pumps and enduring abrasive fluid.
- Universal applicable for packings conversions, retrofits or original equipment
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- Installation faults are avoided, cost-effective
- No damage caused by dirt entered during assembly
- Customer specific versions available

## Operating range

Shaft diameter: d1 = 25 ... 100 mm (1.000" ... 4.000")
Other sizes on request
Temperature: t = -40 °C ... +220 °C (-40 °F ... +428 °F)
(Check O-Ring resistance)

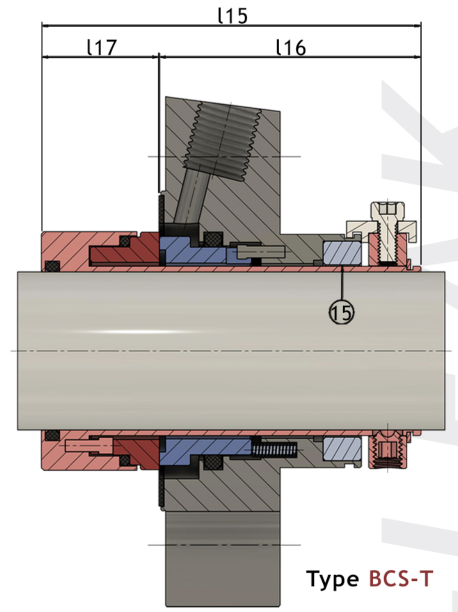
Sliding face material combination Carbon Resin VS SSIC
Pressure: p1 = 25 bar (363 PSI)
Sliding velocity: vg = 16 m/s (52 ft/s)

Sliding face material combination SSIC VS SSIC or TC VS SSIC
Pressure: p1 = 12 bar (174 PSI)
Sliding velocity: vg = 10 m/s (33 ft/s)

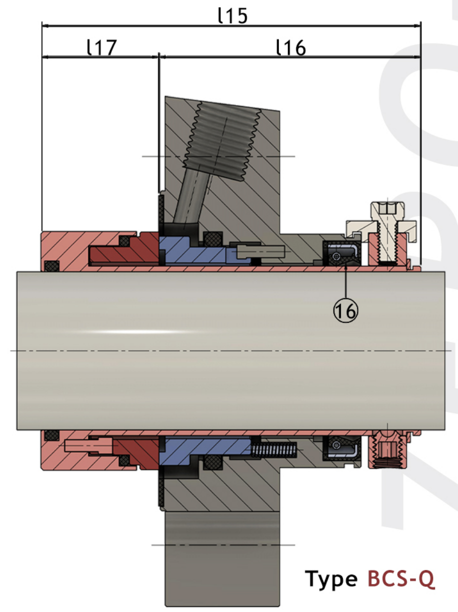
Axial movement: ±1.0 mm, d1 ≥ 75 mm ±1.5 mm

## Materials

Rotary Seal Face: SSIC
Stationary Seal Face: SSIC, Carbon graphite resin, Tungsten carbide
Secondary seals: FKM, EPDM, FFKM, Perflourocarbon rubber
Springs: SUS316, Hastelloy® C-4
Metal parts: SUS316




Type BCS-T




Type BCS-Q

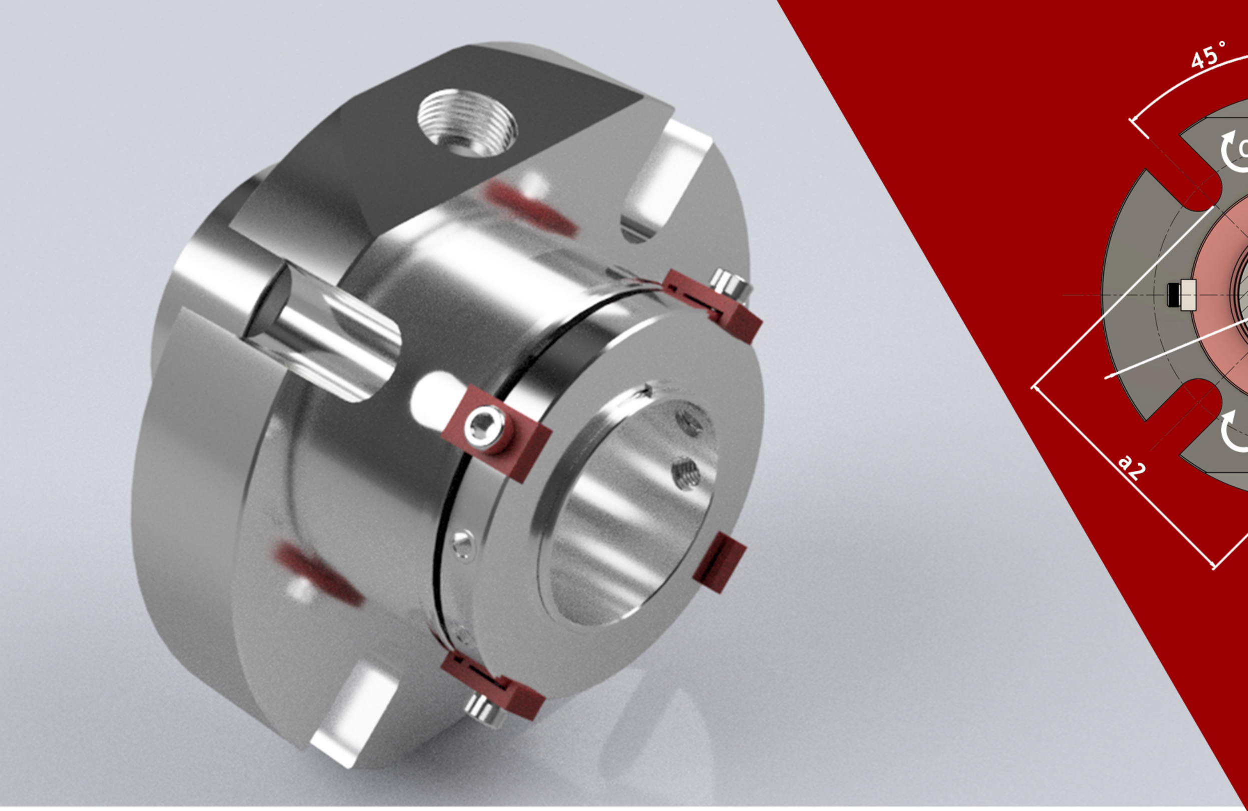


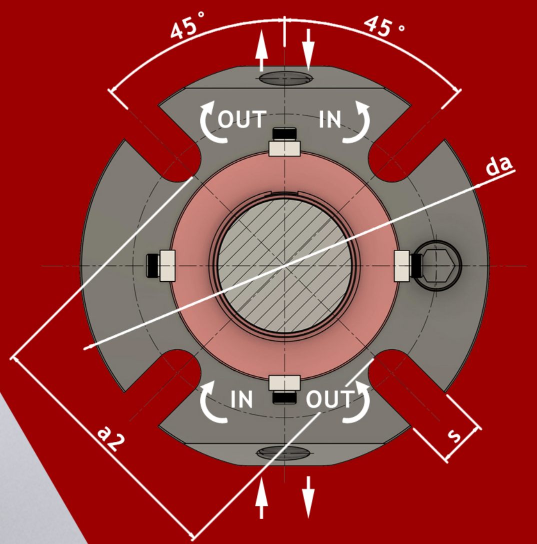
## Dimensions in mm

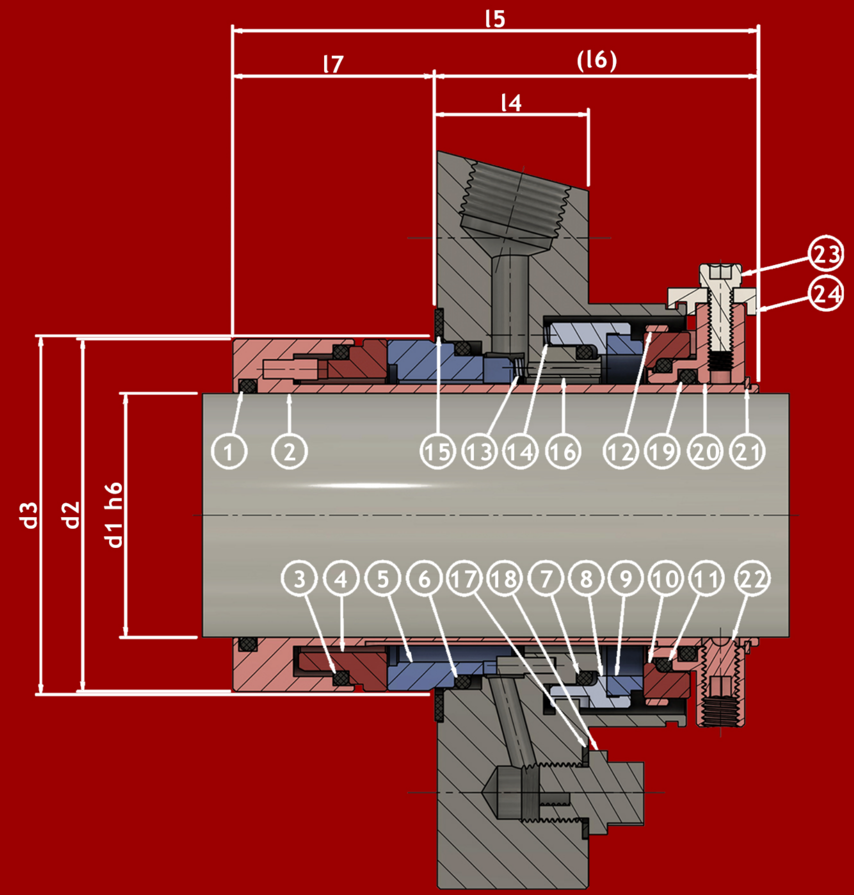
| d1 | d2 | d3min | d3max | l1 | l2 | l3 | l4 | l15 | l16 | l17 | a1 | da | s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 43.0 | 44.0 | 51.5 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 62 | 105 | 13.2 |
| 28 | 43.0 | 47.0 | 52.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 62 | 105 | 13.2 |
| 30 | 48.0 | 49.0 | 56.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 65 | 105 | 13.2 |
| 32 | 49.8 | 51.0 | 57.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 67 | 110 | 13.2 |
| 33 | 49.8 | 51.0 | 57.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 67 | 110 | 13.2 |
| 35 | 53.0 | 54.0 | 61.5 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 70 | 113 | 13.2 |
| 38 | 56.0 | 57.0 | 66.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 75 | 123 | 13.2 |
| 40 | 58.0 | 59.0 | 68.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 75 | 123 | 14.2 |
| 42 | 60.5 | 61.5 | 69.5 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 80 | 133 | 14.2 |
| 43 | 60.5 | 61.5 | 70.5 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 80 | 133 | 14.2 |
| 45 | 62.5 | 64.0 | 73.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 81 | 138 | 14.2 |
| 48 | 65.6 | 67.0 | 75.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 84 | 138 | 14.2 |
| 50 | 68.0 | 69.0 | 78.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 87 | 148 | 14.2 |
| 53 | 72.0 | 73.0 | 87.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 97 | 148 | 18.0 |
| 55 | 73.0 | 74.0 | 83.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 90 | 148 | 18.0 |
| 60 | 78.0 | 79.0 | 91.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 102 | 157 | 18.0 |
| 65 | 84.5 | 85.7 | 98.5 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 109 | 163 | 18.0 |
| 70 | 93.0 | 95.0 | 108.0 | 67 | 42.4 | 24.6 | 25.4 | 79.5 | 53.4 | 26.1 | 118 | 178 | 18.0 |
| 75 | 100.0 | 101.6 | 118.0 | 84 | 57.4 | 26.6 | 28.0 | 98.0 | 63.9 | 34.1 | 129 | 190 | 18.0 |
| 80 | 106.4 | 108.0 | 124.0 | 84 | 57.4 | 26.6 | 28.0 | 98.0 | 63.9 | 34.1 | 135 | 195 | 18.0 |
| 85 | 109.5 | 111.1 | 128.0 | 84 | 57.4 | 26.6 | 28.0 | 98.0 | 63.9 | 34.1 | 139 | 198 | 22.0 |
| 90 | 115.9 | 117.5 | 135.0 | 84 | 57.4 | 26.6 | 28.0 | 98.0 | 63.9 | 34.1 | 145 | 205 | 22.0 |
| 95 | 119.1 | 120.7 | 138.0 | 84 | 57.4 | 26.6 | 28.0 | 98.0 | 63.9 | 34.1 | 148 | 208 | 22.0 |
| 100 | 125.4 | 127.0 | 144.0 | 84 | 57.4 | 26.6 | 28.0 | 98.0 | 63.9 | 34.1 | 154 | 218 | 22.0 |

## Dimensions in inch

| d1 | d2 | d3min | d3max | l1 | l2 | l3 | l4 | l15 | l16 | l17 | a1 | da | s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.693 | 1.750 | 2.008 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 2.441 | 4.134 | 0.520 |
| 1.125 | 1.811 | 1.850 | 2.047 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 2.441 | 4.134 | 0.520 |
| 1.250 | 1.969 | 2.008 | 2.244 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 2.640 | 4.252 | 0.520 |
| 1.375 | 2.087 | 2.126 | 2.421 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 2.756 | 4.449 | 0.520 |
| 1.500 | 2.205 | 2.244 | 2.589 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 2.953 | 4.843 | 0.520 |
| 1.625 | 2.344 | 2.375 | 2.700 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 3.031 | 4.843 | 0.559 |
| 1.750 | 2.461 | 2.520 | 2.874 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 3.189 | 5.433 | 0.559 |
| 1.875 | 2.583 | 2.638 | 2.953 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 3.307 | 5.433 | 0.559 |
| 2.000 | 2.677 | 2.717 | 3.071 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 3.425 | 5.827 | 0.559 |
| 2.125 | 2.835 | 2.875 | 3.425 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 3.819 | 5.827 | 0.709 |
| 2.250 | 2.961 | 3.000 | 3.560 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 3.940 | 6.181 | 0.709 |
| 2.375 | 3.071 | 3.110 | 3.583 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 4.016 | 6.181 | 0.709 |
| 2.500 | 3.213 | 3.250 | 3.800 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 4.173 | 6.417 | 0.709 |
| 2.625 | 3.339 | 3.338 | 3.937 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 4.291 | 6.417 | 0.709 |
| 2.750 | 3.661 | 3.740 | 4.252 | 2.640 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 4.646 | 7.008 | 0.709 |
| 2.875 | 3.937 | 4.000 | 4.646 | 3.307 | 2.260 | 1.047 | 1.000 | - | - | - | 5.079 | 7.480 | 0.709 |
| 3.000 | 3.937 | 4.000 | 4.646 | 3.307 | 2.260 | 1.047 | 1.100 | 3.858 | 2.516 | 1.343 | 5.079 | 7.480 | 0.709 |
| 3.125 | 4.189 | 4.252 | 4.882 | 3.307 | 2.260 | 1.047 | 1.100 | 3.858 | 2.516 | 1.343 | 5.315 | 7.677 | 0.709 |
| 3.250 | 4.189 | 4.252 | 4.882 | 3.307 | 2.260 | 1.047 | 1.100 | - | - | - | 5.315 | 7.677 | 0.709 |
| 3.375 | 4.311 | 4.374 | 5.039 | 3.307 | 2.260 | 1.047 | 1.100 | - | - | - | 5.472 | 7.795 | 0.866 |
| 3.500 | 4.437 | 4.500 | 5.157 | 3.307 | 2.260 | 1.047 | 1.100 | - | - | - | 5.591 | 7.795 | 0.866 |
| 3.625 | 4.563 | 4.626 | 5.315 | 3.307 | 2.260 | 1.047 | 1.100 | - | - | - | 5.709 | 8.071 | 0.866 |
| 3.750 | 4.689 | 4.752 | 5.433 | 3.307 | 2.260 | 1.047 | 1.100 | 3.858 | 2.156 | 1.343 | 5.827 | 8.189 | 0.866 |
| 4.000 | 4.937 | 5.000 | 5.669 | 3.307 | 2.260 | 1.047 | 1.100 | - | - | - | 6.063 | 8.583 | 0.866 |






| Item | Item Description |
|---|---|
| 1, 3, 6, 7, 11, 14, 15, 19 | O-Ring |
| 2 | Sleeve |
| 4 | Rotary Seal Face In |
| 5 | Stationary Seal Face In |
| 8 | Stationary Housing Out |
| 9 | Stationary Seal Face Out |
| 10 | Rotary Seal Face Out |
| 12 | Rotary Housing Out |
| 13, 14 | Spring |
| 15 | Gasket |
| 16 | Gland |
| 17 | Gasket for Plug |
| 18 | Screw Plug |
| 20 | Set-Ring |
| 21 | Lock Washer |
| 22 | Set Screw |
| 23 | Screw |
| 24 | Setter |

Mechanical seals

# Type BCD-S

## Features

- Dual seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Double pressure balanced
- Universal applicable for packings conversions, retrofits or original equipment
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- Installation faults are avoided, cost-effective
- No damage caused by dirt entered during assembly
- Straightforward and easy installation due to pre-assembled unit (reduced down-times)
- Individual adaptation to pump design possible
- Customer specific versions available

## Operating range

Shaft diameter: d1 = 25 ... 100 mm (1.000" ... 4.000")
Other sizes on request
Temperature: t = -40 °C ... +220 °C (-40 °F ... +428 °F)
(Check O-Ring resistance)

Sliding face material combination CB VS SSIC
Pressure: p1 = 25 bar (363 PSI)
Sliding velocity: vg = 16 m/s (52 ft/s)

Sliding face material combination SSIC VS SSIC or TC VS SSIC
Pressure: p1 = 20 bar (290 PSI)
Sliding velocity: vg = 10 m/s (33 ft/s)

Barrier fluid circulation system:
P3max = 25 bar (363 PSI)
P3max = 7 bar (102 PSI) for poor barrier media

Recommended supply medium: Max. ISO VG 5
Axial movement: ±1.0 mm, d1 ≥ 75 mm ±1.5 mm

## Materials

Rotary Seal Face: SSIC
Stationary Seal Face: SSIC, Carbon graphite resin, Tungsten carbide
Secondary seals: FKM, EPDM, FFKM, Perflourocarbon rubber
Springs: SUS316, Hastelloy® C-4
Metal parts: SUS316

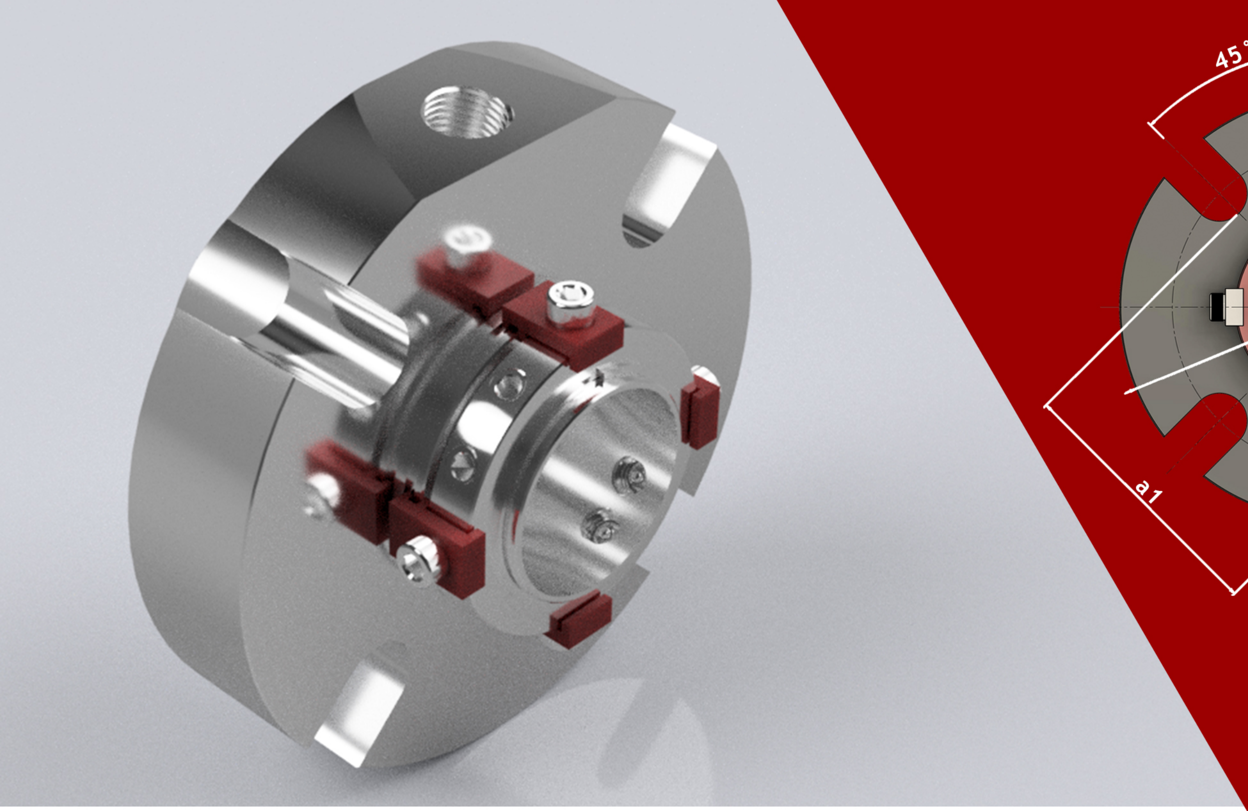
ZERO-LEAK

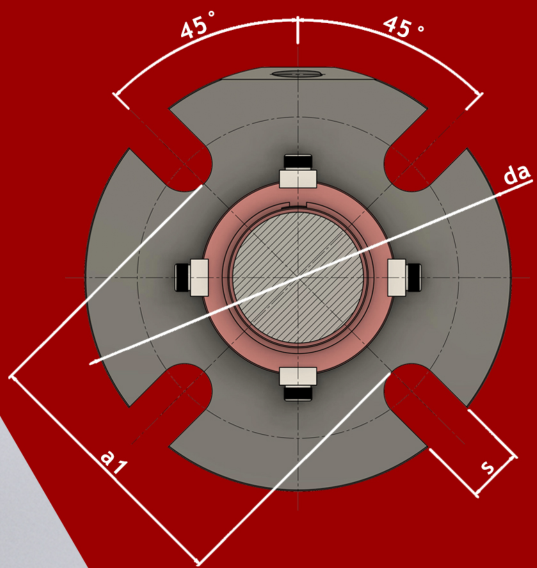
## Dimensions in mm

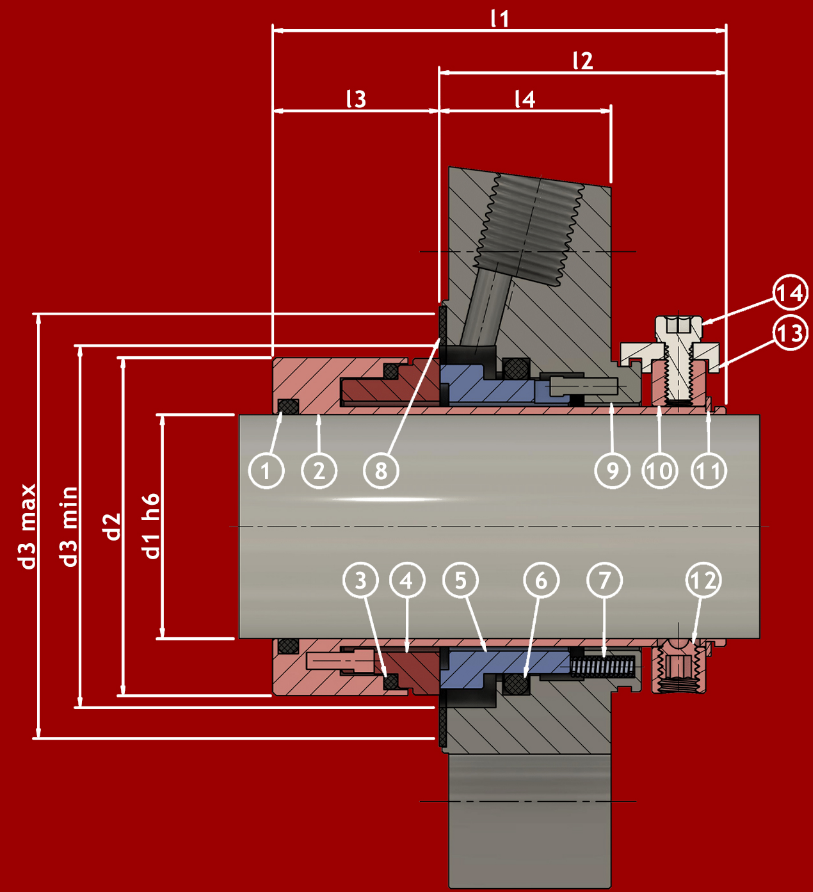
| d1 | d2 | d3min | d3max | l4 | l5 | l6 | l7 | a2 | da | s |
|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 43.0 | 44.0 | 51.5 | 25.4 | 86.5 | 53.4 | 33.1 | 62 | 105 | 13.2 |
| 28 | 46.0 | 47.0 | 52.0 | 25.4 | 86.5 | 53.4 | 33.1 | 61 | 105 | 13.2 |
| 30 | 48.0 | 49.0 | 56.0 | 25.4 | 86.5 | 53.4 | 33.1 | 67 | 105 | 13.2 |
| 32 | 49.8 | 51.0 | 57.0 | 25.4 | 86.5 | 53.4 | 33.1 | 70 | 110 | 13.2 |
| 33 | 49.8 | 51.0 | 57.0 | 25.4 | 86.5 | 53.4 | 33.1 | 70 | 110 | 13.2 |
| 35 | 53.0 | 54.0 | 61.5 | 25.4 | 86.5 | 53.4 | 33.1 | 72 | 113 | 13.2 |
| 38 | 56.0 | 57.0 | 66.0 | 25.4 | 86.5 | 53.4 | 33.1 | 75 | 123 | 13.2 |
| 40 | 58.0 | 59.0 | 68.0 | 25.4 | 86.5 | 53.4 | 33.1 | 77 | 123 | 14.2 |
| 42 | 60.5 | 61.5 | 69.5 | 25.4 | 86.5 | 53.4 | 33.1 | 80 | 133 | 14.2 |
| 43 | 60.5 | 61.5 | 70.5 | 25.4 | 86.5 | 53.4 | 33.1 | 80 | 133 | 14.2 |
| 45 | 62.5 | 64.0 | 73.0 | 25.4 | 86.5 | 53.4 | 33.1 | 82 | 138 | 14.2 |
| 48 | 65.6 | 67.0 | 75.0 | 25.4 | 86.5 | 53.4 | 33.1 | 85 | 138 | 14.2 |
| 50 | 68.0 | 69.0 | 78.0 | 25.4 | 86.5 | 53.4 | 33.1 | 87 | 148 | 14.2 |
| 53 | 72.0 | 73.0 | 87.0 | 25.4 | 86.5 | 53.4 | 33.1 | 97 | 148 | 18.0 |
| 55 | 73.0 | 74.0 | 83.0 | 25.4 | 86.5 | 53.4 | 33.1 | 82 | 148 | 18.0 |
| 60 | 78.0 | 79.0 | 91.0 | 25.4 | 86.5 | 53.4 | 33.1 | 102 | 157 | 18.0 |
| 65 | 84.8 | 85.7 | 98.5 | 25.4 | 86.5 | 53.4 | 33.1 | 109 | 163 | 18.0 |
| 70 | 93.0 | 95.0 | 108.0 | 25.4 | 86.5 | 53.4 | 33.1 | 118 | 178 | 18.0 |
| 75 | 100.0 | 101.6 | 118.0 | 28.0 | 108.0 | 63.9 | 44.1 | 129 | 190 | 18.0 |
| 80 | 106.4 | 108.0 | 124.0 | 28.0 | 108.0 | 63.9 | 44.1 | 135 | 195 | 18.0 |
| 85 | 109.5 | 111.1 | 128.0 | 28.0 | 108.0 | 63.9 | 44.1 | 139 | 198 | 22.0 |
| 90 | 115.9 | 117.5 | 135.0 | 28.0 | 108.0 | 63.9 | 44.1 | 145 | 205 | 22.0 |
| 95 | 119.1 | 120.7 | 138.0 | 28.0 | 108.0 | 63.9 | 44.1 | 148 | 208 | 22.0 |
| 100 | 125.4 | 127.0 | 144.0 | 28.0 | 108.0 | 63.9 | 44.1 | 154 | 218 | 22.0 |

## Dimensions in inch

| d1 | d2 | d3min | d3max | l4 | l5 | l6 | l7 | a2 | da | s |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.693 | 1.732 | 2.008 | 1.000 | 3.400 | 2.102 | 1.303 | 2.440 | 4.134 | 0.520 |
| 1.125 | 1.811 | 1.875 | 2.050 | 1.000 | 3.400 | 2.102 | 1.303 | 2.402 | 4.134 | 0.520 |
| 1.250 | 1.961 | 2.008 | 2.244 | 1.000 | 3.400 | 2.102 | 1.303 | 2.760 | 4.330 | 0.520 |
| 1.375 | 2.087 | 2.126 | 2.421 | 1.000 | 3.400 | 2.102 | 1.303 | 2.840 | 4.449 | 0.520 |
| 1.500 | 2.205 | 2.244 | 2.598 | 1.000 | 3.400 | 2.102 | 1.303 | 2.950 | 4.843 | 0.520 |
| 1.625 | 2.343 | 2.375 | 2.700 | 1.000 | 3.400 | 2.102 | 1.303 | 3.090 | 4.842 | 0.559 |
| 1.750 | 2.461 | 2.520 | 2.874 | 1.000 | 3.400 | 2.102 | 1.303 | 3.230 | 5.433 | 0.559 |
| 1.875 | 2.582 | 2.638 | 2.953 | 1.000 | 3.400 | 2.102 | 1.303 | 3.350 | 5.433 | 0.559 |
| 2.000 | 2.677 | 2.717 | 3.071 | 1.000 | 3.400 | 2.102 | 1.303 | 3.430 | 5.827 | 0.559 |
| 2.125 | 2.835 | 2.874 | 3.425 | 1.000 | 3.400 | 2.102 | 1.303 | 3.819 | 5.827 | 0.709 |
| 2.250 | 2.961 | 3.000 | 3.560 | 1.000 | 3.400 | 2.102 | 1.303 | 3.940 | 6.181 | 0.709 |
| 2.375 | 3.071 | 3.125 | 3.583 | 1.000 | 3.400 | 2.102 | 1.303 | 4.020 | 6.181 | 0.709 |
| 2.500 | 3.213 | 3.300 | 3.800 | 1.000 | 3.400 | 2.102 | 1.303 | 4.180 | 6.417 | 0.709 |
| 2.625 | 3.339 | 3.374 | 3.937 | 1.000 | 3.400 | 2.102 | 1.303 | 4.303 | 6.417 | 0.709 |
| 2.750 | 3.661 | 3.740 | 4.252 | 1.000 | 3.400 | 2.102 | 1.303 | 4.660 | 7.008 | 0.709 |
| 2.875 | 3.937 | 4.000 | 4.646 | 1.000 | 4.250 | 2.516 | 1.736 | 5.079 | 7.480 | 0.709 |
| 3.000 | 3.937 | 4.000 | 4.646 | 1.102 | 4.250 | 2.516 | 1.736 | 5.079 | 4.480 | 0.709 |
| 3.125 | 4.189 | 4.252 | 4.882 | 1.102 | 4.250 | 2.516 | 1.736 | 5.315 | 7.677 | 0.709 |
| 3.250 | 4.189 | 4.252 | 4.882 | 1.102 | 4.250 | 2.516 | 1.736 | 5.315 | 7.677 | 0.709 |
| 3.375 | 4.311 | 4.375 | 5.039 | 1.102 | 4.250 | 2.516 | 1.736 | 5.472 | 7.795 | 0.866 |
| 3.500 | 4.437 | 4.500 | 5.157 | 1.102 | 4.250 | 2.516 | 1.736 | 5.591 | 7.795 | 0.866 |
| 3.625 | 4.563 | 4.625 | 5.315 | 1.102 | 4.250 | 2.516 | 1.736 | 5.709 | 8.071 | 0.866 |
| 3.750 | 4.689 | 4.752 | 5.433 | 1.102 | 4.250 | 2.516 | 1.736 | 5.827 | 8.189 | 0.866 |
| 4.000 | 4.937 | 5.000 | 5.669 | 1.102 | 4.250 | 2.516 | 1.736 | 6.063 | 8.583 | 0.866 |






| Item | Item Description |
|---|---|
| 1, 3, 6 | O-Ring |
| 2 | Sleeve |
| 4 | Rotary Seal Face |
| 5 | Stationary Seal Face |
| 7 | Spring |
| 8 | Gasket |
| 9 | Gland |
| 10 | Set-Ring |
| 11 | Lock Washer |
| 12 | Set Screw |
| 13 | Screw |
| 14 | Setter |
| 15 | Bush |
| 16 | Oil Seal |

Mechanical seals

# Type BCS-A, BCS-B

## Features

- Single seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Available for standard (BCS-A) and big bore (BCS-B) seal chambers
- Single seals with flush (-A, -B) and with quench combined with lip seal (-AQ, -BQ) or throttle ring (-AT, -BT)
- Ideal for use in ANSI process pumps
- Universal applicable for packings conversions, retrofits or original equipment
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- No damage caused by dirt entered during assembly

## Operating range

Shaft diameter: d1 = 1.000" ... 3.750"
Other sizes on request
Temperature: t = -40 °C ... +220 °C (-40 °F ... +428 °F)
(Check O-Ring resistance)

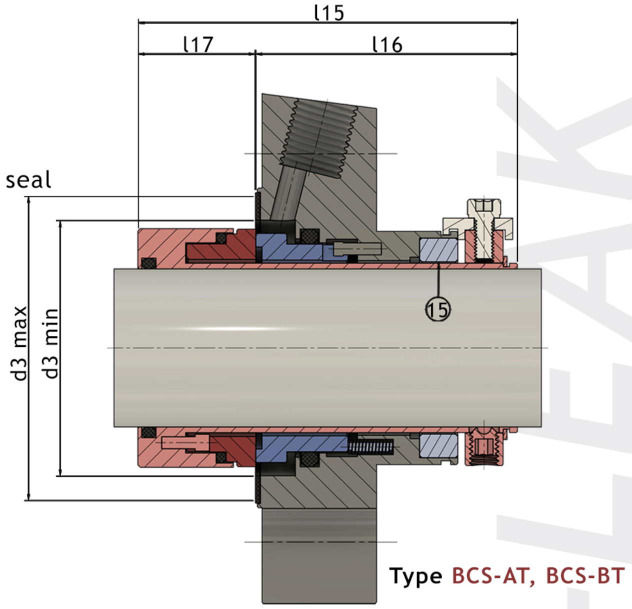
Sliding face material combination Carbon Resin VS SSIC
Pressure: p1 = 25 bar (363 PSI)
Sliding velocity: vg = 16 m/s (52 ft/s)

Sliding face material combination SSIC VS SSIC or TC VS SSIC
Pressure: p1 = 12 bar (174 PSI)
Sliding velocity: vg = 10 m/s (33 ft/s)

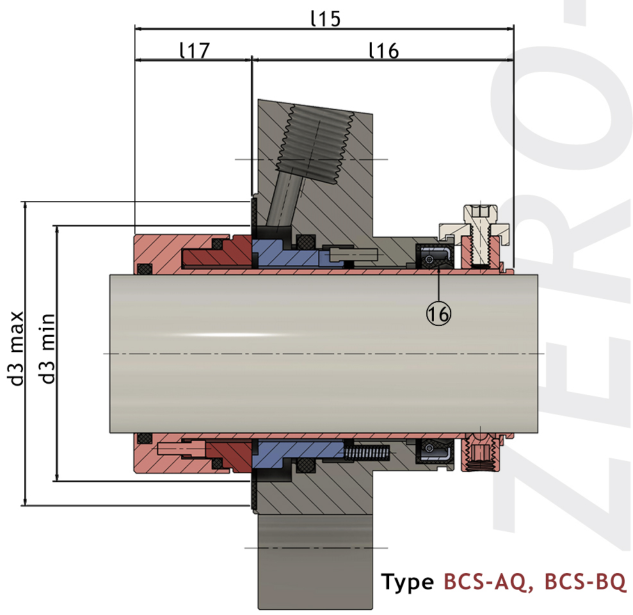
Axial movement: ±1.0 mm, d1 ≥ 75 mm ±1.5 mm

## Materials

Rotary Seal Face: SSIC
Stationary Seal Face: SSIC, Carbon graphite resin, Tungsten carbide
Secondary seals: FKM, EPDM, FFKM, FEPM
Springs: SUS316, Hastelloy® C-4
Metal parts: SUS316




Type BCS-AT, BCS-BT




Type BCS-AQ, BCS-BQ

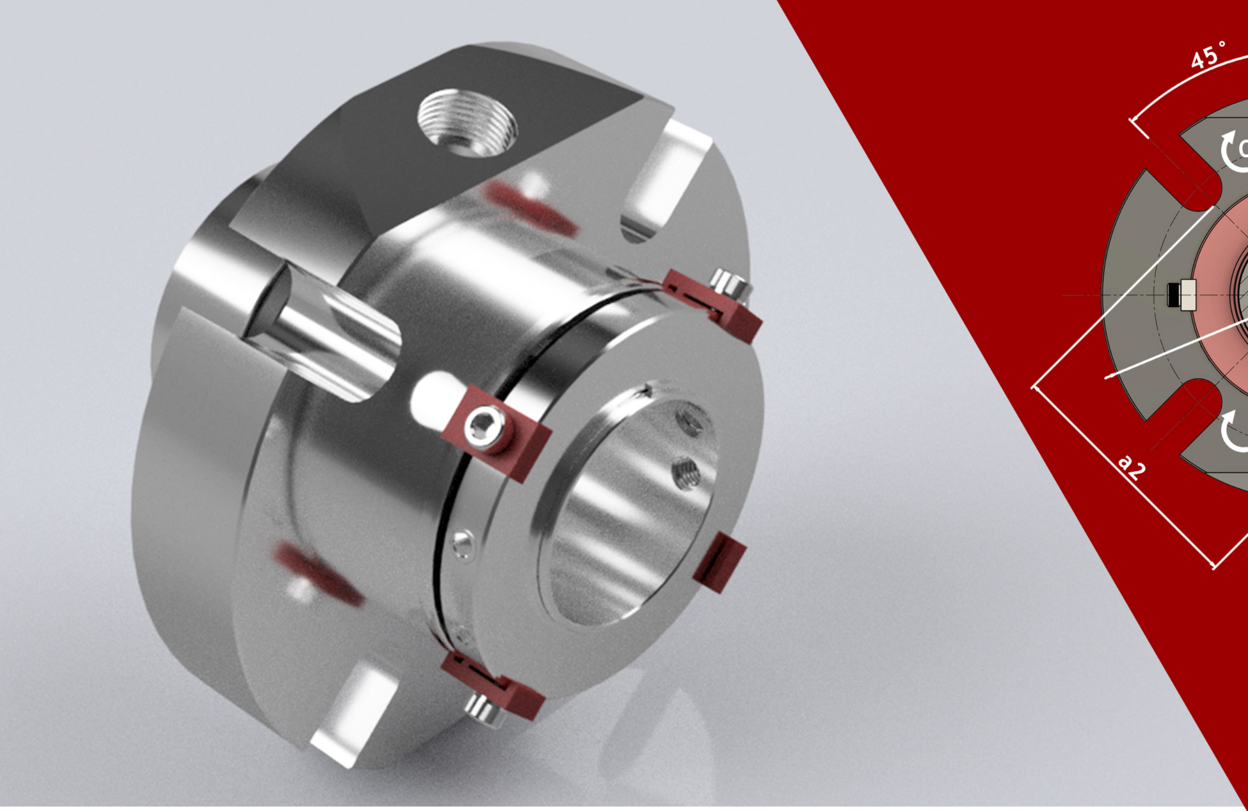


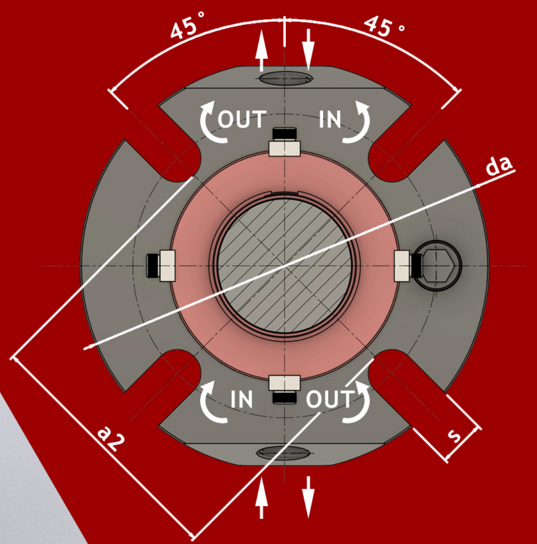
## Big bore - Dimensions in inch

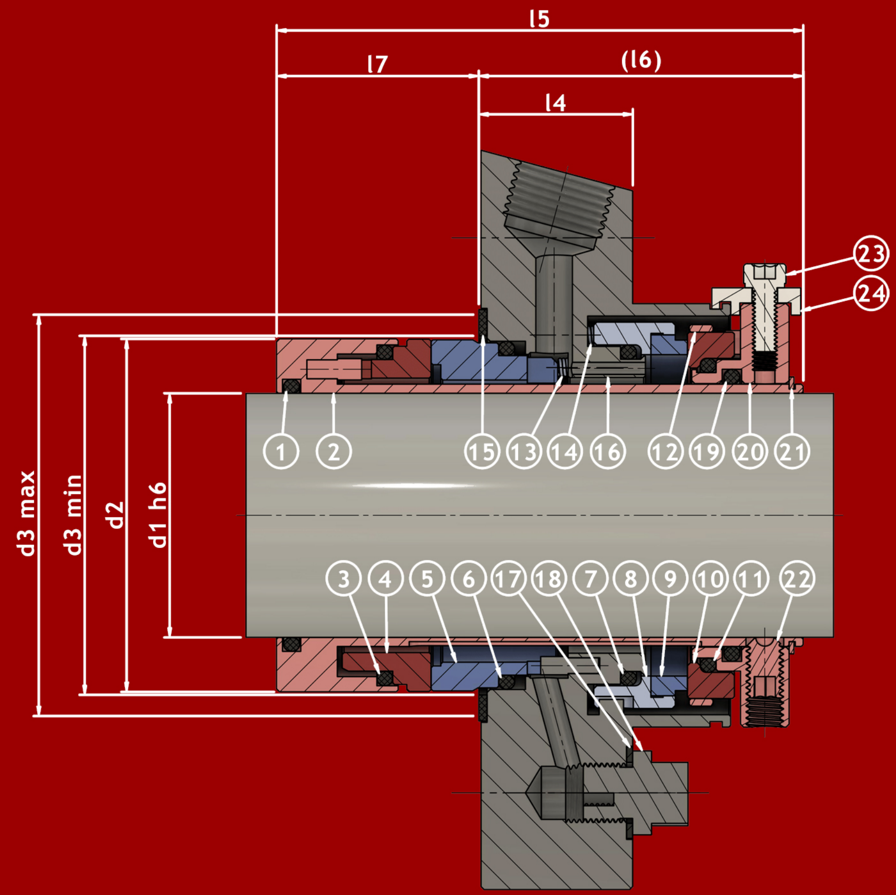
| d1 | d2 | d3min | d3max | l1 | l2 | l3 | l4 | l15 | l16 | l17 | a1 | da | s | Connection |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.125 | 1.713 | 1.752 | 2.795 | 2.638 | 1.669 | 0.969 | 1.000 | 2.937 | 1.909 | 1.028 | 3.311 | 4.500 | 0.437 | 1/4 NPT |
| 1.250 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.375 | 1.960 | 2.000 | 3.189 | 2.638 | 1.669 | 0.969 | 1.000 | 2.947 | 1.919 | 1.028 | 3.543 | 5.118 | 0.437 | 1/4 NPT |
| 1.500 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.625 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.750 | 2.461 | 2.500 | 4.055 | 2.638 | 1.669 | 0.969 | 1.000 | 3.012 | 1.984 | 1.028 | 4.567 | 6.496 | 0.559 | 3/8 NPT |
| 1.875 | 2.583 | 2.661 | 3.937 | 2.638 | 1.669 | 0.969 | 1.000 | 3.071 | 2.059 | 1.012 | 4.409 | 5.984 | 0.551 | 3/8 NPT |
| 2.000 | 2.677 | 2.756 | 4.567 | 2.638 | 1.929 | 0.709 | 1.260 | 3.130 | 2.102 | 1.028 | 4.882 | 6.260 | 0.551 | 3/8 NPT |
| 2.125 | 2.834 | 2.913 | 4.528 | 2.638 | 1.669 | 0.969 | 1.000 | 3.012 | 1.984 | 1.028 | 5.276 | 6.890 | 0.709 | 3/8 NPT |
| 2.250 | 2.960 | 3.039 | 4.409 | 2.638 | 1.945 | 0.693 | 1.276 | 3.130 | 2.120 | 1.028 | 4.685 | 6.417 | 0.709 | 3/8 NPT |
| 2.500 | 3.212 | 3.299 | 5.276 | 2.638 | 1.919 | 0.719 | 1.250 | 3.130 | 2.120 | 1.028 | 5.512 | 7.795 | 0.709 | 3/8 NPT |
| 2.625 | 3.338 | 3.417 | 5.118 | 2.638 | 1.919 | 0.719 | 1.250 | 3.130 | 2.120 | 1.028 | 5.354 | 6.890 | 0.709 | 3/8 NPT |
| 2.750 | 3.660 | 3.740 | 5.236 | 2.638 | 1.945 | 0.693 | 1.276 | 3.130 | 2.120 | 1.028 | 5.512 | 7.480 | 0.630 | 3/8 NPT |
| 3.000 | 3.937 | 4.016 | 5.512 | 3.307 | 2.276 | 1.031 | 1.276 | 3.858 | 2.516 | 1.343 | 5.906 | 8.228 | 0.650 | 3/8 NPT |
| 3.250 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

## Standard bore - Dimensions in inch

| d1 | d2 | d3min | d3max | l1 | l2 | l3 | l4 | l15 | l16 | l17 | a1 | da | s | Connection |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.693 | 1.732 | 2.205 | 2.638 | 1.669 | 0.969 | 1.000 | 2.937 | 1.909 | 1.028 | 2.756 | 0.433 | 1/4 NPT | 1/4 NPT |
| 1.125 | 1.713 | 1.752 | 2.205 | 2.638 | 1.669 | 0.969 | 1.000 | 2.937 | 1.909 | 1.028 | 2.440 | 0.437 | 1/4 NPT | 1/4 NPT |
| 1.250 | 1.969 | 2.008 | 2.402 | 2.638 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 2.638 | 0.433 | 1/4 NPT | 1/4 NPT |
| 1.375 | 1.961 | 2.000 | 2.402 | 2.638 | 1.669 | 0.969 | 1.000 | 2.947 | 1.919 | 1.028 | 2.760 | 0.437 | 1/4 NPT | 1/4 NPT |
| 1.500 | 2.200 | 2.244 | 2.717 | 2.638 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 2.950 | 0.551 | 3/8 NPT | 3/8 NPT |
| 1.625 | 2.340 | 2.421 | 2.795 | 2.638 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 3.030 | 0.551 | 3/8 NPT | 3/8 NPT |
| 1.750 | 2.461 | 2.500 | 2.953 | 2.638 | 1.669 | 0.969 | 1.000 | 3.012 | 1.984 | 1.028 | 3.228 | 0.559 | 3/8 NPT | 3/8 NPT |
| 1.875 | 2.583 | 2.661 | 3.070 | 2.638 | 1.669 | 0.969 | 1.000 | 3.071 | 2.043 | 1.028 | 3.190 | 0.551 | 3/8 NPT | 3/8 NPT |
| 2.000 | 2.677 | 2.756 | 3.189 | 2.638 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 3.430 | 0.630 | 3/8 NPT | 3/8 NPT |
| 2.125 | 2.834 | 2.913 | 3.583 | 2.638 | 1.669 | 0.969 | 1.000 | 3.012 | 1.984 | 1.028 | 3.820 | 0.650 | 3/8 NPT | 3/8 NPT |
| 2.250 | 2.960 | 3.039 | 3.583 | 2.638 | 1.669 | 0.969 | 1.000 | 3.130 | 2.102 | 1.028 | 3.858 | 0.650 | 3/8 NPT | 3/8 NPT |
| 2.375 | 3.070 | 3.125 | 3.590 | 2.638 | 1.669 | 0.969 | 1.000 | - | - | - | 4.020 | 0.709 | 3/8 NPT | - |
| 2.500 | 3.212 | 3.291 | 3.937 | 2.638 | 1.669 | 0.969 | 1.122 | 3.130 | 2.102 | 1.028 | 4.528 | 0.709 | 3/8 NPT | 3/8 NPT |
| 2.625 | 3.338 | 3.417 | 4.016 | 2.638 | 1.669 | 0.969 | 1.250 | 3.130 | 2.102 | 1.028 | 4.528 | 0.630 | 3/8 NPT | 3/8 NPT |
| 2.750 | 3.660 | 3.740 | 4.370 | 2.638 | 1.929 | 0.709 | 1.260 | 3.130 | 2.102 | 1.028 | 4.646 | 0.709 | 3/8 NPT | 3/8 NPT |
| 3.000 | 3.937 | 4.016 | 4.724 | 3.307 | 2.260 | 1.047 | 1.260 | 3.858 | 2.516 | 1.343 | 5.000 | 0.709 | 3/8 NPT | 3/8 NPT |
| 3.250 | 4.189 | 4.268 | 4.921 | 3.307 | 2.260 | 1.047 | 1.260 | 3.858 | 2.516 | 1.343 | 5.315 | 0.709 | 3/8 NPT | 3/8 NPT |
| 3.750 | 4.689 | 4.750 | 5.433 | 3.307 | 2.260 | 1.047 | 1.000 | - | - | - | 5.827 | 0.866 | 3/8 NPT | - |






| Item | Item Description |
|---|---|
| 1, 3, 6, 7, 11, 14, 15, 19 | O-Ring |
| 2 | Sleeve |
| 4 | Rotary Seal Face In |
| 5 | Stationary Seal Face In |
| 8 | Stationary Housing Out |
| 9 | Stationary Seal Face Out |
| 10 | Rotary Seal Face Out |
| 12 | Rotary Housing Out |
| 13, 14 | Spring |
| 15 | Gasket |
| 16 | Gland |
| 17 | Gasket for Plug |
| 18 | Screw Plug |
| 20 | Set-Ring |
| 21 | Lock Washer |
| 22 | Set Screw |
| 23 | Screw |
| 24 | Setter |

Mechanical seals

# Type BCD-A, BCD-B

## Features

- Dual seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Double pressure balanced
- Available for standard (BCD-A) and big bore (BCD-A) seal chambers
- Ideal for use in ANSI process pumps
- Universal applicable for packings conversions, retrofits or OEM
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- Installation faults are avoided, cost-effective
- No damage caused by dirt entered during assembly

## Operating range

Shaft diameter: d1 = 1.000" ... 3.750"
Other sizes on request
Temperature: t = -40 °C ... +220 °C (-40 °F ... +428 °F)
(Check O-Ring resistance)

Sliding face material combination CB VS SSIC
Pressure: p1 = 25 bar (363 PSI)
Sliding velocity: vg = 16 m/s (52 ft/s)

Sliding face material combination SSIC VS SSIC or TC VS SSIC
Pressure: p1 = 20 bar (290 PSI)
Sliding velocity: vg = 10 m/s (33 ft/s)

Barrier fluid circulation system:
P3max = 25 bar (363 PSI)
P3max = 7 bar (102 PSI) for poor barrier media

Recommended supply medium: Max. ISO VG 5
Axial movement: ±1.0 mm, d1 ≥ 75 mm ±1.5 mm

## Materials

Rotary Seal Face: SSIC
Stationary Seal Face: SSIC, Carbon graphite resin, Tungsten carbide
Secondary seals: FKM, EPDM, FFKM, FEPM
Springs: SUS316, Hastelloy® C-4
Metal parts: SUS316

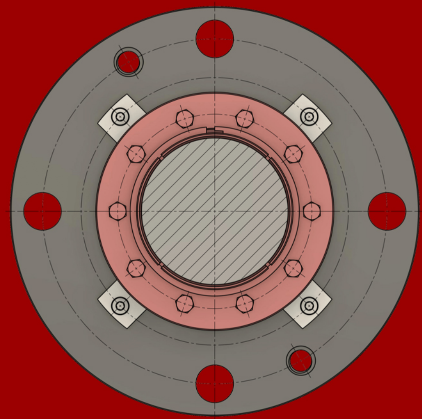


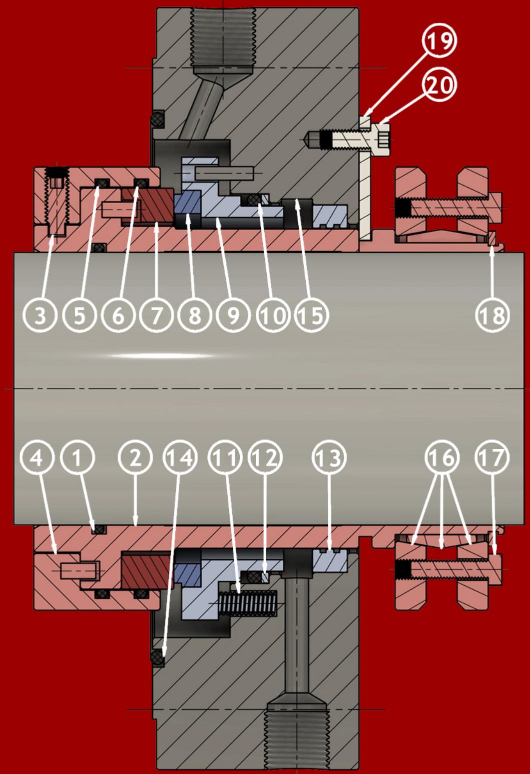
## Big bore - Dimensions in inch

| d1 | d2 | d3min | d3max | l4 | l5 | l6 | l7 | a2 | da | s | Connection |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | - | - | - | - | - | - | - | - | - | - | - |
| 1.125 | 1.713 | 1.752 | 2.795 | 1.000 | 3.228 | 1.886 | 1.343 | 3.311 | 4.500 | 0.437 | 1/4 NPT |
| 1.250 | - | - | - | - | - | - | - | - | - | - | - |
| 1.375 | 1.960 | 2.000 | 3.189 | 1.000 | 3.406 | 2.083 | 1.323 | 3.543 | 5.118 | 0.437 | 1/4 NPT |
| 1.500 | - | - | - | - | - | - | - | - | - | - | - |
| 1.625 | - | - | - | - | - | - | - | - | - | - | - |
| 1.750 | 2.461 | 2.500 | 4.055 | 1.000 | 3.406 | 2.083 | 1.323 | 4.567 | 6.496 | 0.559 | 3/8 NPT |
| 1.875 | 2.583 | 2.661 | 3.937 | 1.000 | 3.406 | 2.083 | 1.323 | 4.409 | 5.984 | 0.551 | 3/8 NPT |
| 2.000 | 2.677 | 2.756 | 4.567 | 1.260 | 3.406 | 2.102 | 1.303 | 4.882 | 6.260 | 0.551 | 3/8 NPT |
| 2.125 | 2.834 | 2.913 | 4.528 | 1.000 | 3.406 | 2.102 | 1.303 | 5.276 | 6.890 | 0.709 | 3/8 NPT |
| 2.250 | 2.960 | 3.093 | 4.409 | 1.276 | 3.406 | 2.102 | 1.303 | 4.685 | 6.417 | 0.709 | 3/8 NPT |
| 2.500 | 3.212 | 3.299 | 5.276 | 1.250 | 3.406 | 2.102 | 1.303 | 5.512 | 7.795 | 0.709 | 3/8 NPT |
| 2.625 | 3.338 | 3.417 | 5.118 | 1.250 | 3.406 | 2.102 | 1.303 | 5.354 | 6.890 | 0.709 | 3/8 NPT |
| 2.750 | 3.660 | 3.740 | 5.236 | 1.276 | 3.406 | 2.102 | 1.303 | 5.512 | 7.480 | 0.630 | 3/8 NPT |
| 3.000 | 3.937 | 4.016 | 5.512 | 1.276 | 3.406 | 2.516 | 1.303 | 5.906 | 8.228 | 0.650 | 3/8 NPT |
| 3.250 | - | - | - | - | -108.0 | - | - | - | - | - | - |

## Standard bore - Dimensions in inch

| d1 | d2 | d3min | d3max | l4 | l5 | l6 | l7 | a2 | da | s | Connection |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.693 | 1.732 | 2.205 | 1.000 | 3.406 | 2.102 | 1.303 | 2.441 | 3.937 | 0.433 | 1/4 NPT |
| 1.125 | 1.713 | 1.752 | 2.205 | 1.000 | 3.228 | 3.228 | 1.343 | 2.441 | 4.134 | 0.437 | 1/4 NPT |
| 1.250 | 1.969 | 2.008 | 2.402 | 1.000 | 3.406 | 2.102 | 1.303 | 2.756 | 4.252 | 0.433 | 1/4 NPT |
| 1.375 | 1.961 | 2.000 | 2.402 | 1.000 | 3.406 | 2.083 | 1.303 | 2.756 | 4.213 | 0.437 | 1/4 NPT |
| 1.500 | 2.200 | 2.244 | 2.717 | 1.000 | 3.406 | 2.102 | 1.303 | 2.953 | 4.488 | 0.551 | 3/8 NPT |
| 1.625 | 2.340 | 2.421 | 2.795 | 1.000 | 3.406 | 2.102 | 1.303 | 3.091 | 4.921 | 0.551 | 3/8 NPT |
| 1.750 | 2.461 | 2.500 | 2.953 | 1.000 | 3.406 | 2.102 | 1.303 | 3.228 | 5.118 | 0.559 | 3/8 NPT |
| 1.875 | 2.583 | 2.661 | 3.070 | 1.000 | 3.406 | 2.102 | 1.303 | 3.307 | 5.118 | 0.551 | 3/8 NPT |
| 2.000 | 2.677 | 2.756 | 3.189 | 1.000 | 3.406 | 2.102 | 1.303 | 3.425 | 5.472 | 0.630 | 3/8 NPT |
| 2.125 | 2.834 | 2.913 | 3.583 | 1.000 | 3.406 | 2.102 | 1.303 | 3.819 | 5.512 | 0.650 | 3/8 NPT |
| 2.250 | 2.960 | 3.039 | 3.583 | 1.000 | 3.406 | 2.102 | 1.303 | 3.858 | 5.866 | 0.650 | 3/8 NPT |
| 2.375 | 3.070 | 3.125 | 3.590 | 1.000 | - | - | - | - | 6.181 | 0.709 | 3/8 NPT |
| 2.500 | 3.212 | 3.291 | 3.937 | 1.122 | 3.406 | 2.102 | 1.303 | 4.528 | 6.693 | 0.709 | 3/8 NPT |
| 2.625 | 3.338 | 3.417 | 4.016 | 1.250 | 3.406 | 2.102 | 1.303 | 4.528 | 6.378 | 0.630 | 3/8 NPT |
| 2.750 | 3.660 | 3.740 | 4.370 | 1.260 | 3.406 | 2.102 | 1.303 | 4.646 | 7.441 | 0.709 | 3/8 NPT |
| 3.000 | 3.937 | 4.016 | 4.724 | 1.260 | 4.252 | 2.516 | 1.736 | 5.000 | 7.835 | 0.709 | 3/8 NPT |
| 3.250 | 4.189 | 4.268 | 4.921 | 1.260 | 4.252 | 2.516 | 1.736 | 5.315 | 7.830 | 0.709 | 3/8 NPT |
| 3.750 | 4.689 | 4.7500 | 5.433 | 1.000 | - | - | - | - | 8.189 | 0.866 | 3/8 NPT |






| Item | Item Description |
|---|---|
| 1, 5, 6, 10, 14 | O-Ring |
| 2 | Sleeve |
| 3 | Set Screw |
| 4 | Rotary Housing |
| 7 | Rotary Seal Face |
| 8 | Stationary Seal Face |
| 9 | Stationary Housing (For Shrink-fitted) |
| 11 | Spring |
| 12 | Thrust Ring |
| 13 | Bush |
| 15 | Gland |
| 16 | Shrink Disk |
| 17 | Bolt |
| 18 | Lock Waher |
| 19 | Setter |
| 20 | Screw |

Mechanical seals

# Type BHV

## Features

- Single seal
- Cartridge
- Balanced
- Stationary Spring loaded
- Deformation-optimized seal for high pressures and high sliding velocities
- High flexibility due to adaptation of the connection parts to the pump seal chamber
- Pre-assembled unit for quick and easy installation

## Operating range

Shaft diameter: d1 = 40 - 200 mm
Other sizes on request
Temperature: t = -40 °C ... +220 °C (-40 °F ... +428 °F)
(Check O-Ring resistance)
Pressure: 70 bar (1,015 PSI)
Sliding velocity: vg = 60 m/s (197 ft/s)

Axial movement: ±3.0 mm

## Materials

Rotary Seal Face: SSIC
Stationary Seal Face: SSIC, Carbon graphite resin
Secondary seals: FKM, EPDM, FFKM, FEPM
Springs: SUS316, Hastelloy® C-4
Metal parts: SUS316

ZERO-LEAK