EagleBurgmann
a member of EKK and FREUDENBERG

RELY ON EXCELLENCE

PDGS

Mechanical Seals | Compressor seals | Gas-lubricated seals

Features

- Gas-lubricated
- Uni-directional or bi-directional
- Elastomer-free
- Ready-to-fit cartridge unit
- Single, double, tandem seal and tandem with intermediate labyrinth available
- Separation seals as labyrinths, carbon rings or CobaSeal are optionally available

Notes

A well-established compressor seal for high pressure and both low and high temperature applications. Innovative design features allow it to cope with even the highest pressures without problems. The application of U-cups and special dynamic sealing elements opens up a wide range of uses for this versatile and successful seal series.

Dimensions on request.

Advantages

- Wear-free and contact-free operation
- Self-cleaning 3D gas grooves
- High gas film stiffness
- Secure cupped retainer for seat
- Available in various materials for optimized chemical resistance
- Proven, reliable and economical solution

Operating range

Shaft diameter:
D = 24.5 ... 360 mm (0.96" ... 14.17")
Pressure (static and dynamic):
p = up to 650 bar (7.977 PSI)
Temperature:
t = -200 °C ... +230 °C
(-328 °F ... +446 °F)
Sliding velocity:
vg = up to 227 m/s (744 ft/s)

Materials

Seal face: Silicon carbide with DLC coating
Seat: Silicon carbide with DLC coating
Secondary seals: Polymer rings
Metal parts: 1.4006, 1.4313-QT650, Inconel® or other stainless steels.

Other materials on request.

Available also with EagleBurgmann DiamondFace technology.

Standards and approvals

- NACE
- API 617
- Compliant to TA Luft (German Clean Air Act) (double seal, tandem seal)

Recommended applications

- Hydrocarbon gas
- Ammonia
- Nitrogen
- Refrigerants
- Air
- Oil and gas industry
- Refining technology
- Petrochemical industry
- LNG
- CCUS
- Hydrogen
- Power generation
- Centrifugal compressors
- Turbo expanders
- Blowers

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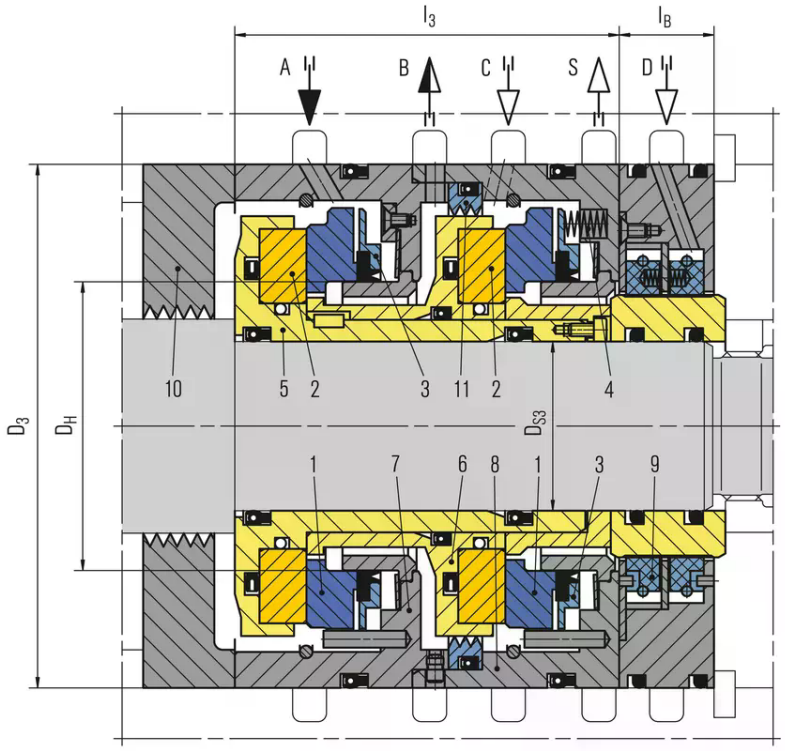
All technical specifications are based on extensive tests and our many years of experience. The diversity of possible applications means, however, that they can serve only as guide values.
We must be notified of the exact conditions of application before we can provide any guarantee for a specific case.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



PDGS Tandem seal with intermediate labyrinth

A	Primary seal gas supply
B	Primary vent
C	Secondary gas seal supply
S	Secondary vent
D	Separation gas supply

Item	Description
1	Seal face, stationary
2	Seat, rotating
3	Thrust ring
4	Spring
5	Shaft sleeve and seat retainer
6	Intermediate sleeve
7, 8	Housing (size matched to installation space)
9	Separation seal (CSR)
10	Labyrinth
11	Intermediate labyrinth

Product links separation seals:
EagleBurgmann CSE
EagleBurgmann CSR
EagleBurgmann CobaSeal

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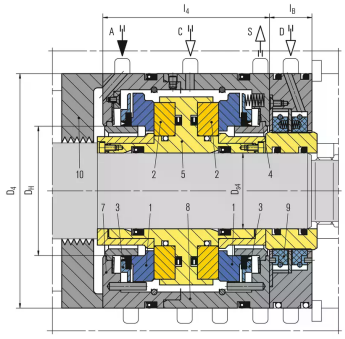
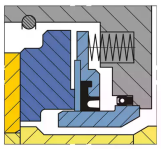
Installation, details, options

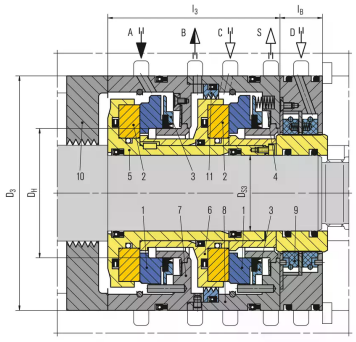


PDGS Double seal
Application: where product leakage to the atmosphere/flare is unacceptable or for low pressure applications. Seal gas leakage into the product needs to be permitted (seal gas pressure p3 > p1). This is used when a neutral seal gas is available at the appropriate pressure. Typical applications can be found in the chemical and petrochemical industries, e.g. in HC gas compressors. A seal gas, e.g. nitrogen at a pressure higher than the product pressure, is supplied between the seals via connection "C". Part of the seal gas leakage dissipates to the bearing side, while the other part goes to the product.

A Buffer gas supply
C Seal gas supply
S Vent
D Separation gas supply

Design detail
Main components of the dynamic secondary seal of the PDGS are made of the extremely rigid material tungsten carbide which allows an optimum control of the extrusion clearance over the full range of operation. The specific design of the polymer cup seals ensures minimum sliding forces combined with wear-free operation.





PDGS Tandem seal with intermediate labyrinth
Application: where product leakage to the atmosphere is unacceptable, e.g. H2, ethylene or propylene compressors. With this type of seal, the product pressure to be sealed is reduced via the seal on the process side. The entire process gas leakage is routed to the flare via connection "B". The bearing side seal is pressurized with secondary seal gas (nitrogen) via connection "C". The pressure of the secondary seal gas ensures the flow through the labyrinth to the flare/tapping point.

A Primary seal gas supply
B Primary vent
C Secondary gas seal supply
S Secondary vent
D Separation gas supply

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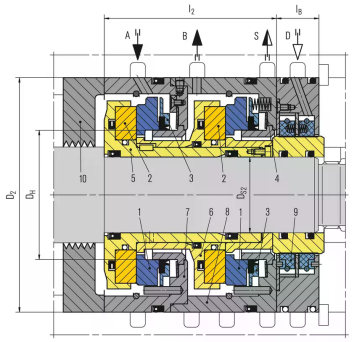
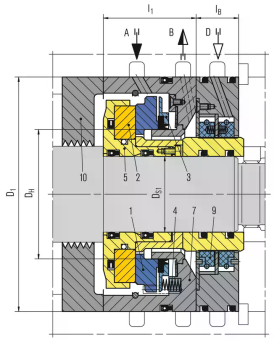


PDGS Tandem seal
Application: where no N2 is available and minimal process gas leakage to the atmosphere is acceptable, e.g. gas pipeline compressors. The seal on the bearing side is intended as a safety seal. The tandem arrangement offers particularly good operational safety. The process side and bearing side seals are able to withstand the full pressure. In normal operation, only the process side seal reduces the full pressure. The space between the process side and bearing side seals is routed to the flare via connection "B". The pressure to be sealed on the bearing side corresponds to the flare pressure. There is thus very little leakage to the bearing side or to the vent. If the primary seal fails, the secondary seal is activated as a back-up and operates at primary seal conditions.

A Primary seal gas supply
B Primary vent
S Secondary vent
D Separation gas supply



PDGS Single seal
Application: where leakage of the product into the atmosphere is not harmful, e.g. from air or nitrogen compressors or the axial cavity does not allow a tandem seal (e.g. geared compressors). This version allows process gas leakage to the corresponding flare / vent connection. Primary seal leakage is dissipated with the separation gas to the vent. The gas to be sealed must also be filtered and routed to the seal chamber via connection "A". The resulting flow from the sealed space to the impeller side prevents contaminated / wet gas reaching the Dry Gas Seal on the process gas side, e.g. towards the labyrinth.

A Seal gas supply
B Vent
D Separation gas supply

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Product variants

PDGS10
The PDGS10 is the standard seal for high pressures up to 220 bar (3,191 PSI). Since many years the seal demonstrates their reliability worldwide in a wide variety of applications. It is characterized by very low leakage and sets the standard in the market for low-emission compressor gas seals.

Operating range
Shaft diameter:
d = 24.5 ... 360 mm (0.96"... 14.17")
Pressure (static): p = 0 ... 220 bar (725 ... 3.191 PSI)
Pressure (dynamic): p = 0 ... 200 bar (725 ... 2.901 PSI)
Temperature:
t= -50 °C ... +230 °C (-58 °F ... +446 °F)
Sliding velocity: vg = up to 227 m/s (744 ft/s)

Materials
Seal face: Silicon carbide with DLC coating
Seat: Silicon carbide with DLC coating
Secondary seals: Polymer rings
Metal parts: 1.4006 or other stainless steels

PDGS15
The PDGS15 series enable the sealing of very cold media up to -200 °C (-328°F) . Therefore special, cold-resistant steels are used. For years, these seals are successfully used in LNG liquefaction plants, for example.

Operating range
Shaft diameter:
d = 24.5 ... 360 mm (0.96"... 14.17")
Pressure (static and dynamic): p= 100 bar (1450 PSI)
Temperature:
t = -200 °C ... +150 °C (-328 °F ... +302 °F)
Sliding velocity: vg = up to 227 m/s (744 ft/s)

Materials
Seal face: Silicon carbide with DLC coating
Seat: Silicon carbide with DLC coating
Secondary seals: Polymer rings
Metal parts: 1.4313-QT650 or other stainless steels

PDGS51
The PDGS51 was developed for use in extreme high pressure applications. Adapted sliding faces and an innovative design of the shaft sleeve allow pressures up to 450 bar (6.525 PSI) and more. Most of these seals are successful in use in compressors for gas injection.

Operating range
Shaft diameter:
d = 85.5 ... 173 mm (3.37"... 6.81")
Pressure (static and dynamic): p = up to 650 bar (7.977 PSI)
Temperature:
t = -50 °C ... +230 °C (-58 °F ...+446 °F)
Sliding velocity:
vg = 0,6 .... 190 m/s (2 ... 623 ft/s)

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Materials
Seal face: Silicon carbide with DLC coating
Seat: Silicon carbide with DLC coating
Secondary seals: Polymer rings
Metal parts: 1.4006 or other stainless steels

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