

PDGS

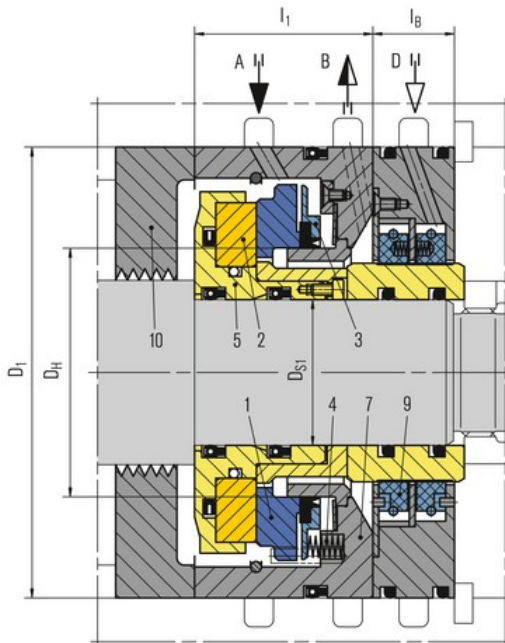
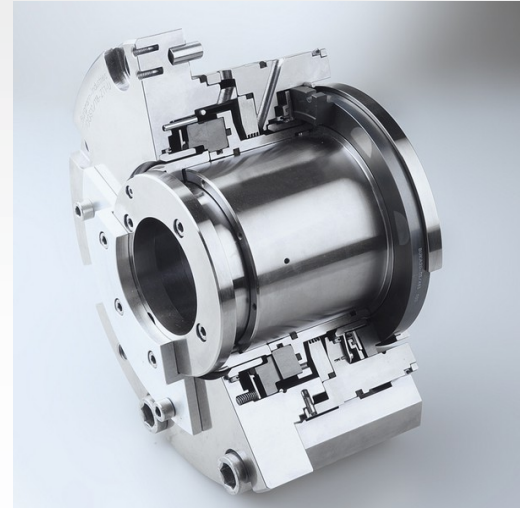
Features

- Gas-lubricated
- Uni-directional or bi-directional
- Elastomer-free
- Ready-to-fit cartridge unit
- Single, double, tandem seal and tandem with intermediate labyrinth available

Advantages

High quality components make this a universal seal for a wide range of applications and the ideal solution for standardization. The universal gas seal for centrifugal compressors; resistant to chemicals.

Application single seal: The simplest seal is a Dry Gas Seal in single arrangement. This seal is used in case that due to the nature of the product gas no additional back up seal is required. Separation seals as labyrinths, radial clearance seals or CobaSeal are optionally available. This version is used as an emission-free arrangement with a corresponding flare/vent connection. Primary leakage is then discharged with the separating gas to the primary vent (flare). In the case of dirty gases the gas to be sealed has to be filtered in addition and conveyed to the seal chamber via connection "A". The resulting gas flow from the sealing compartment prevents any dirty/wet gas entering the seal.



Item Description

- 1 Seal face, stationary
 - 2 Seat, rotating
 - 3 Thrust ring
 - 4 Spring
 - 5 Shaft sleeve and seat retainer
 - 6 Intermediate sleeve
 - 7 Housing (adapted in size to the installation space)
 - 8 Housing (adapted in size to the installation space)
 - 9 Carbon ring type separation seal
 - 10 Labyrinth
 - 11 Intermediate labyrinth
- A Product flushing
B Flare
C Buffer gas
D Separating gas
S Vent

PDGS (2)

Recommended applications

- Oil and gas industry
- Refining technology
- Petrochemical industry
- Hydrocarbon gas
- Ammonia
- Nitrogen
- Refrigerants
- Air
- Centrifugal compressors
- Turbo expanders
- Blowers

Standards and approvals

- NACE

Operating range

Shaft diameter: $D_{S1} = 29 \dots 435 \text{ mm}$ (1.14" ... 17.13")
Pressure: $p = 0 \dots 450 \text{ bar}$ (0 ... 6,525 PSI)
Temperature: $t = -170 \text{ }^\circ\text{C} \dots +230 \text{ }^\circ\text{C}$ (-274 °F ... +446 °F)
Sliding velocity: $v_g = 0.6 \dots 200 \text{ m/s}$ (2 ... 656 ft/s)

Notes

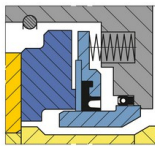
Available with EagleBurgmann
DiamondFaces™.

Materials

Seal face: Silicon carbide (Q1) with DLC coating
Seat: Silicon carbide (Q1) with DLC coating
Secondary seals: Polymer rings
Metal parts: 1.4006 or other stainless steels.

Installation, Details, Options

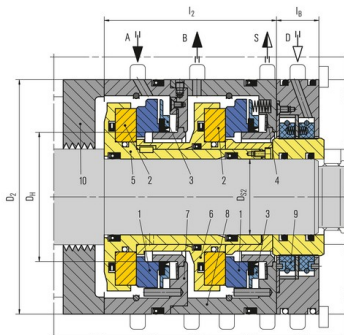
Main components of the dynamic secondary seal of the PDGS are made of the extremely rigid material tungsten carbide which allows an optimum control of the extrusion clearance over the full range of operation. The specific design of the polymer cup seals ensures minimum sliding forces combined with wear-free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



Product variants

PDGS Tandem seal

Application: Where small product leakages of process gas are admissible, e.g. on gas pipeline compressors. Seal on the atmosphere side acting as a safety seal. The tandem arrangement provides a particularly high degree of operational safety. The seal on the product side and the seal on the atmosphere side are able to absorb the complete pressure differential. Under normal operating conditions the full pressure is reduced only by the seal on the product side. The space between the seal on the product side and the seal on the atmosphere side is cleared by a connection "B" to the flare. The pressure differential to be sealed by the seal on the atmosphere side equals the flare pressure, so the leakage to the atmosphere side or to the vent is very low. If the main seal fails, the second seal acts as a safety seal.

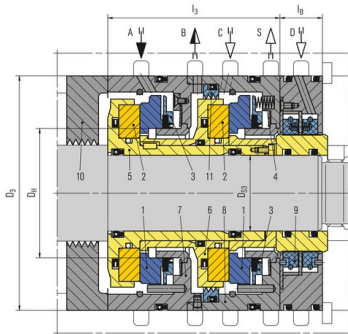


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PDGS (3)

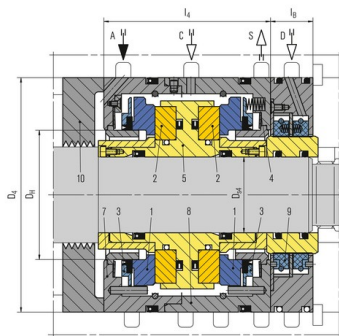
PDGS Tandem seal with intermediate labyrinth

Application: Where product leakages to the atmosphere as well as buffer gas leakages to the product are inadmissible, e.g. on H^2 , ethylene or propylene compressors. With this version the product pressure to be sealed is reduced via the seal on the product side. The entire process gas leakage is discharged via connection "B" to the flare. The seal on the atmosphere side is pressurized with buffer gas (nitrogen) via connection "C". The pressure of the buffer gas ensures that a current flows via the labyrinth to the primary vent outlet.



PDGS Dual Seal

Application: Where product leakages to the atmosphere are inadmissible and tandem arrangements are not suitable because of too small product gas pressures. Buffer gas leakages into the product must be admissible (buffer pressure $p_3 > p_1$). This seal is used when a neutral buffer gas of suitable pressure is available. Typical applications are to be found mainly in the chemical industry, e.g. on HC gas compressors. A buffer gas, e.g. nitrogen, is fed between the seals via connection "C" at a higher pressure than the product pressure. One part of the buffer gas leakage escapes to the atmosphere side and the other part to the product.



PDGS (4)

Dimensions

D _N	D _H	D _{s1}	D ₁	l ₁	D _{s2}	D ₂	l ₂	D _{s3}	D ₃	l ₃	D _{s4}	D ₄	l ₄	l _B
40	52.8	29	92	40	25	92	93	25	107	93	29	96	73	46
46	59.5	35	99	40	31	99	93	31	114	93	35	103	73	46
49	61.7	38	102	40	34	102	93	34	117	93	38	106	73	46
56	69.9	45	111	40	41	111	93	41	126	93	45	115	73	46
63	76.8	52	118	40	47	118	93	47	133	93	52	122	73	48
68	83.9	57	129	48	52	129	97	52	144.5	97	57	133	91.5	50
73	88.8	63	134	51	58	134	104	58	149.5	104	63	138	97.5	48
78	93.8	68	139	51	63	139	104	63	154.5	104	68	143	97.5	48
83	98.7	73	144	51	68	144	104	68	159.5	104	73	148	97.5	50.5
88	103.7	78	149	54.5	73	149	111.5	73	164.5	111.5	78	153	104.5	48.5
93	108.7	83	155	54.5	78	155	111.5	78	170.5	111.5	83	159	104.5	48.5
98	113.7	88	161	54.5	83	161	111.5	83	175.5	111.5	88	165	104.5	46.5
103	118.6	93	165	54.5	88	165	111.5	88	180.5	111.5	93	169	104.5	46.5
108	123.6	98	170	54.5	93	170	111.5	93	185.5	111.5	98	174	104.5	46.5
113	128.6	103	175	54.5	98	175	111.5	98	191	111.5	103	179	104.5	46.5
118	133.6	108	180	54.5	103	180	111.5	103	196	111.5	108	184	104.5	46.5
123	138.6	113	185	55.5	108	185	113.5	108	201	113.5	113	189	106.5	47.5
130	150.5	120	197	55.5	114	197	113.5	114	213	113.5	120	201	106.5	47.5
135	155.5	125	202	58.5	119	202	118.5	119	218	118.5	125	206	111.5	47.5
140	160.5	130	207	58.5	124	207	118.5	124	223	118.5	130	211	111.5	47.5
145	165.5	135	212	58.5	129	212	118.5	129	228	118.5	135	216	111.5	47.5
150	171.4	139.5	223	61	133.5	223	124	133.5	241.5	124	139.5	227	116.5	48
155	176.4	144.5	228	61	138.5	228	124	138.5	247.5	124	144.5	232	116.5	48
160	181.4	148.5	233	63	143.5	233	128	143.5	252.5	128	148.5	237	120.5	49
165	186.4	153.5	238	63	148.5	238	128	148.5	257.5	128	153.5	242	120.5	49
170	191.4	158.5	243	63	153.5	243	128	153.5	261	128	158.5	247	120.5	49
180	201.4	168.5	253	65	163.5	253	132	163.5	271	132	168.5	257	124.5	54
190	211.4	178.5	263	67.5	173.5	263	137.5	173.5	281	137.5	178.5	267	129.5	56.5
200	221.3	187.5	273	67.5	183.5	273	137.5	183.5	291	137.5	187.5	277	129.5	55.5
210	231.3	197.5	283	70.5	193.5	283	142.5	193.5	301	142.5	197.5	287	134.5	59.5
220	241.3	207.5	293	75.5	203.5	293	152.5	203.5	309	152.5	207.5	297	144	61
230	251.3	217.5	303	75.5	213.5	303	152.5	213.5	320	152.5	217.5	307	144	63
240	261.3	227.5	313	75.5	222.5	313	152.5	222.5	330.5	152.5	227.5	317	144	62
250	271.3	237.5	323	81	232.5	323	163	232.5	340.5	163	237.5	335	154	63.5
260	282.2	247.5	339	84	242.5	339	169	242.5	350	169	247.5	351	160	65.5
270	292.2	257.5	349	84	252.5	349	169	252.5	364	169	257.5	361	160	67.5
280	302.2	267.5	359	89.5	262.5	359	180.5	262.5	376	180.5	267.5	371	170.5	67.5
290	314	277.5	379	89.5	272.5	379	180.5	272.5	386	180.5	277.5	391	170.5	66.5
300	324	287.5	384	90.5	282.5	384	180.5	282.5	396	180.5	287.5	393	172.5	67.5
310	336	295	395	91.5	290	395	180.5	292	411	180.5	295	404	175	67.5
320	346	305.5	406	93.5	299.5	406	185	302	422	185	305.5	417	176.5	68
330	356	315	417	95.5	310	417	190	312	433	190	315	427	183	69
350	375.8	335.5	440	102	329.5	440	195	332	455	195	335.5	450	195.5	71
390	415.8	375.5	484	108	369.5	484	210	371	499	210	375.5	495	207.5	74
450	480	435	551	118	430	551	230	431	566	230	435	564	227	80