

RELY ON EXCELLENCE

## Mechanical seals

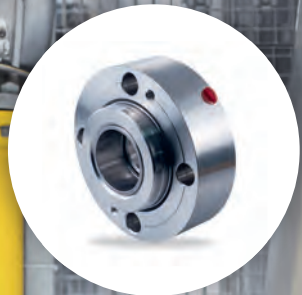
Product catalog 2025

Pump seals

Agitator seals

Compressor seals

Marine seals



## Mechanical seals

### Mechanical seals for pumps

#### Pusher seals

- AX25
- AX25D
- AX30
- AX40K
- BT-C5
- BT-C5E
- BT-C7
- BT-C8
- BT-FH
- BT-FH balanced
- BT-FN
- BT-RN
- BT-RN balanced
- eHJ
- EK700
- H3B
- H7N
- H10 / H8
- H12N
- H74-D
- HA211
- HJ92N
- HRN
- LB500
- M2N
- M3N
- M7N
- M74-D
- Pulace

#### Standard cartridge seals

- Cartex Dual seals
- Cartex Single seals
- Cartex ANSI Single seals
- Cartex ANSI Dual seals
- eCartex ANSI Single seals
- eCartex Dual seals
- eCartex Single seals
- eCartex ANSI Dual seals
- MA290 / MA291
- MA390 / MA391
- Mtex Dual seals
- Mtex Single seals
- Unitex

#### Elastomer bellows seals

- AX05
- BT-A2
- BT-AR
- BT-ARP
- BT-PN
- BT-PTN
- EA100
- EA560
- ED560
- EH700

- eMG
- eMG1
- eMG12
- eMG13
- MG9

#### Metal bellows seals

- MF95N
- MFL85N
- MFLCT8
- MFLWT8
- YE400

#### Engineered seals

- DF-(P)DGS6 DiamondFace
- DF-SA DiamondFace
- HR
- HRC...N
- LP-D
- LP-S
- SAF(V) / SAP(V)
- SHI300
- SHI366
- SHV
- SHV-D

#### Split seals

- HGH201
- Splitex

#### Gas-lubricated seals

- CGSH-K
- EM300
- GSO-DN
- HRGS-D

### API 682 product range

- APItex-S
- APItex-T
- CGSH-KD
- H75A4-B
- H75A4-C
- H75A4-T
- H75LG4-C
- H75VA4-S
- HRGS-DD
- LEK777
- LL9DJUE
- LL9DJUU
- LL9DKUU
- LL9DSUU
- LL9DTUE
- LL9DTUU
- LL9UC
- LNF992
- LY9TCR
- LY9TCS
- RGS-D

### Agitator seals

#### Dry running seals

- AD510 / AD520
- SeccoLip 461
- SeccoLip 481
- SeccoMix1
- SeccoMix461
- SeccoMix481
- SeccoMixR
- SeccoMix1-E32
- SeccoMix1-E32-D

#### Gas-lubricated seals

- AGSR
- AGSZ

#### Liquid-lubricated seals

- ERB
- HS-D
- HSH(L)U-D
- HSH-D
- HSMR34
- M461CL
- M461CL-E3
- M481C
- M461K
- M481K
- MR-D

#### Shut-down seals

- STD1

### Compressor seals

#### Gas-lubricated seals

- CobaDGS - Zero Emission Solution
- DGS
- MDGS
- NF94
- PDGS
- RigiSeal
- RoTechSeal
- TDGS

#### Separation seals

- CobaSeal
- CSE
- CSR

#### Oil-lubricated seals

- B800
- WRS

### Marine seals

#### Stern tube seals

- Type 4600
- Type 4600 with Shut Down Seal
- Type 4604

RELY ON EXCELLENCE

## AX25

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- External configuration
- Balanced
- Independent of direction of rotation
- Independent of pressure direction

### Advantages

- Robust and easy to install design
- Springs protected from the product
- No metal parts on the product side
- Simple conversion of gland packings

### Operating range

Shaft diameter:

d1 = 15 ... 300 mm (0.59" ... 11.81")

Pressure: p1 = 16 bar (232 PSI)

Temperature:

t = -40 °C ... 220 °C (-40 °F ... 428 °F)

Sliding velocity: vg = 20 m/s (66 ft/s)

### Materials

Seal face:

Silicon Carbide (Q2), CrMo cast steel (S)

Seat: Carbon graphite resin impregnated (B), Silicon carbide (Q2)

Secondary seals:

EPDM (E), NBR (P), FKM (V), FFKM (K), coated (M)

Springs: CrNiMo steel (G)

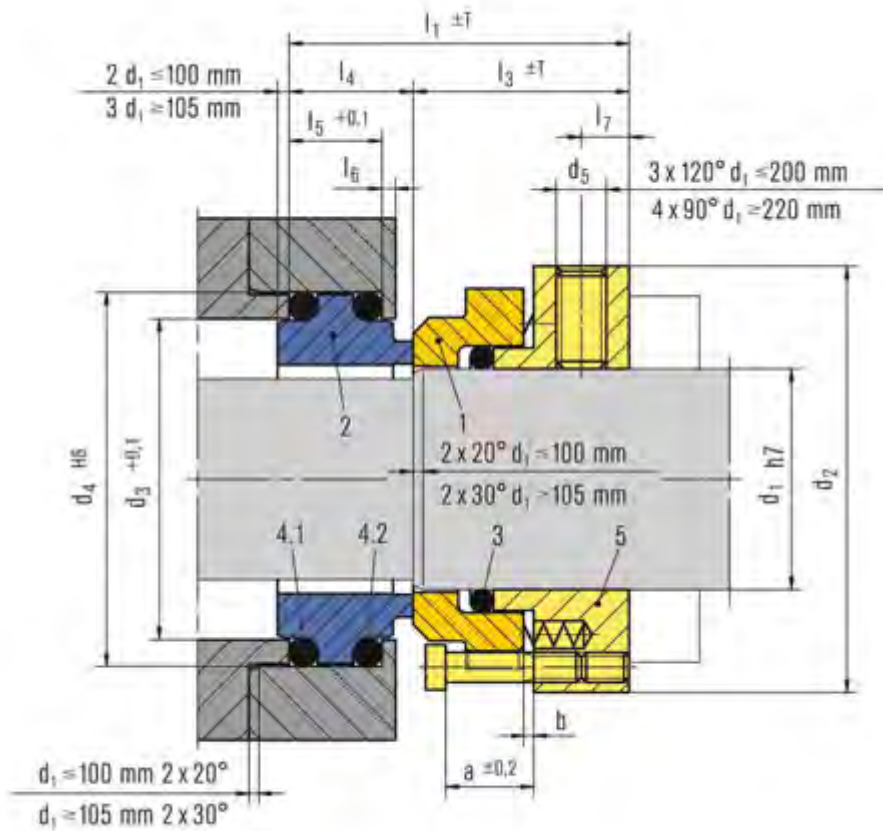
Metal parts: CrNiMo steel (G)

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Building services industry
- Food and beverage industry
- Shipbuilding
- Sugar industry
- Metal production and processing



## RELY ON EXCELLENCE



Item	Description
1	Seal ring
2	Mating ring
3, 4.1, 4.2	O-Ring
5	Thrust unit



## RELY ON EXCELLENCE

### Dimensions

d1	d2	l1	l3	T	l4	l7	d5	a	b	d3	d4	l5	l6
15	42	48	31	0.5	17	8	M6	12.0	2	23.0	29	12	2.0
16	43	48	31	0.5	17	8	M6	12.0	2	24.0	30	12	2.0
18	45	48	31	0.5	17	8	M6	12.0	2	27.0	33	12	2.0
20	47	48	31	0.5	17	8	M6	12.0	2	29.0	35	12	2.0
22	49	48	31	0.5	17	8	M6	12.0	2	31.0	37	12	2.0
24	51	48	31	0.5	17	8	M6	12.0	2	33.0	39	12	2.0
25	52	48	31	0.5	17	8	M6	12.0	2	34.0	40	12	2.0
28	55	48	31	0.5	17	8	M6	12.0	2	37.0	43	12	2.0
30	57	48	31	0.5	17	8	M6	12.0	2	39.0	45	12	2.0
32	59	48	31	0.5	17	8	M6	12.0	2	42.0	48	12	2.0
33	60	48	31	0.5	17	8	M6	12.0	2	42.0	48	12	2.0
35	62	48	31	0.5	17	8	M6	12.0	2	44.0	50	12	2.0
38	71	52	33	0.5	19	8	M8	13.5	2	49.0	56	14	2.0
40	73	52	33	0.5	19	8	M8	13.5	2	51.0	58	14	2.0
43	76	52	33	0.5	19	8	M8	13.5	2	54.0	61	14	2.0
45	78	52	33	0.5	19	8	M8	13.5	2	56.0	63	14	2.0
48	81	52	33	0.5	19	8	M8	13.5	2	59.0	66	14	2.0
50	83	54	33	0.5	21	8	M8	13.5	2	62.0	70	16	2.0
53	86	54	33	0.5	21	8	M8	13.5	2	65.0	73	16	2.0
55	88	54	33	0.5	21	8	M8	13.5	2	67.0	75	16	2.0
58	98	63	41	1.0	22	10	M10	15.0	2	72.0	80	16	2.5
60	100	63	41	1.0	22	10	M10	15.0	2	75.0	83	16	2.5
63	103	63	41	1.0	22	10	M10	15.0	2	77.0	85	16	2.5
65	105	65	41	1.0	24	10	M10	15.0	2	81.0	90	18	2.5
68	108	65	41	1.0	24	10	M10	15.0	2	83.0	92	18	2.5
70	111	68	43	1.0	25	10	M10	17.5	2	88.0	97	19	2.5
75	116	68	43	1.0	25	10	M10	17.5	2	95.0	105	19	2.5
80	121	68	43	1.0	25	10	M10	17.5	2	100.0	110	19	2.5
85	126	68	43	1.0	25	10	M10	17.5	2	105.0	115	19	2.5
90	131	68	43	1.0	25	10	M10	17.5	2	110.0	120	19	2.5
95	136	68	43	1.0	25	10	M10	17.5	2	115.0	125	19	2.5
100	141	68	43	1.0	25	10	M10	17.5	2	120.0	130	19	2.5
105	148	75	47	2.0	28	10	M10	21.0	3	123.0	135	22	2.5
110	153	75	47	2.0	28	10	M10	21.0	3	128.0	140	22	2.5
115	158	75	47	2.0	28	10	M10	21.0	3	133.0	145	22	2.5
120	171	78	50	2.0	28	10	M10	21.0	3	140.0	152	22	2.5
125	176	78	50	2.0	28	10	M10	21.0	3	145.0	157	22	2.5
130	181	78	50	2.0	28	10	M10	21.0	3	150.0	162	22	2.5
135	186	78	50	2.0	28	10	M10	21.0	3	155.0	167	22	2.5
140	191	78	50	2.0	28	10	M10	21.0	3	160.0	172	22	2.5
145	196	78	50	2.0	28	10	M10	21.0	3	165.0	177	22	2.5
150	203	86	55	2.0	31	10	M10	25.0	4	171.0	183	24	3.0
160	213	86	55	2.0	31	10	M10	25.0	4	181.0	193	24	3.0
170	223	86	55	2.0	31	10	M10	25.0	4	191.0	203	24	3.0
180	233	86	55	2.0	31	10	M10	25.0	4	203.0	215	24	3.5
190	243	86	55	2.0	31	10	M10	25.0	4	213.0	225	24	3.5
200	253	86	55	2.0	31	10	M10	25.0	4	223.0	235	24	3.5
220	275	92	62	3.0	33	10	M10	29.0	5	246.5	258	25	3.5

## RELY ON EXCELLENCE

d1	d2	l1	l3	T	l4	l7	d5	a	b	d3	d4	l5	l6
240	295	92	62	3.0	33	10	M10	29.0	5	266.5	278	25	3.5
260	315	92	62	3.0	33	10	M10	29.0	5	286.5	298	25	3.5
280	335	92	62	3.0	33	10	M10	29.0	5	306.5	318	25	3.5
300	355	92	62	3.0	33	10	M10	29.0	5	326.5	338	25	3.5

Dimensions in millimeter.

From d1 > 100 mm torque transmission by set screw with cone point.

RELY ON EXCELLENCE

## AX25D

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- Dual seal
- Balanced
- Independent of direction of rotation
- Independent of pressure direction

### Advantages

- Robust and easy to install design
- Springs protected from the product
- No metal parts on the product side
- Simple conversion of gland packings

### Operating range

Shaft diameter:

d1 = 20 ... 300 mm (0.79" ... 11.81")

Pressure: p1 = 16 bar (232 PSI)

Temperature:

t = -40 °C ... 220 °C (-40 °F ... 428 °F)

Sliding velocity: vg = 20 m/s (66 ft/s)

### Materials

Seal face:

Silicon Carbide (Q2), CrMo cast steel (S)

Seat: Carbon graphite resin impregnated (B), Silicon carbide (Q2)

Secondary seals:

EPDM (E), NBR (P), FKM (V), FFKM (K), coated (M)

Springs: CrNiMo steel (G)

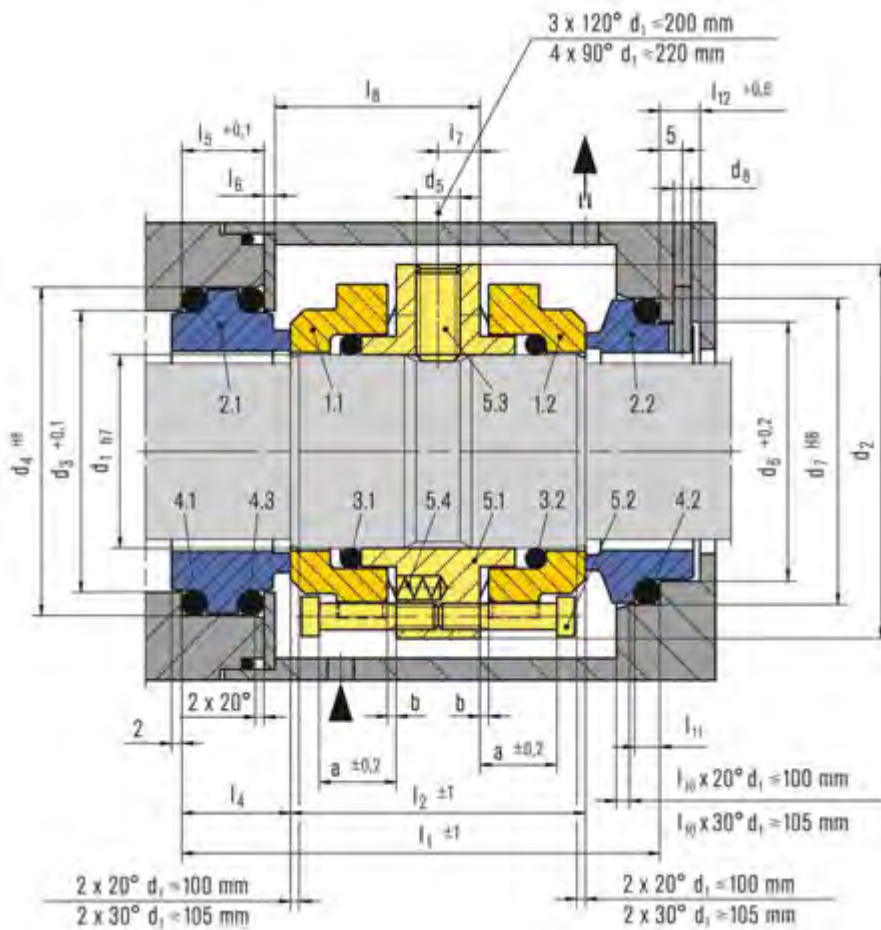
Metal parts: CrNiMo steel (G)

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Building services industry
- Food and beverage industry
- Shipbuilding
- Sugar industry
- Metal production and processing



## RELY ON EXCELLENCE



Item	Description
1.1, 1.2	Seal ring
2.1, 2.2	Mating ring
3.1, 3.2, 4.1, 4.2, 4.3	O-Ring
5.1	Clamping ring
5.2	Screw
5.3	Set screw
5.4	Spring

## RELY ON EXCELLENCE

### Dimensions

d1	d2	l1	l2	T	l4	l7	d5	l8	a	d3	d4	l5	l6	d6	d7	l10	l11	l7	l9	d8
20	47	76	48	0.5	17	7	M6	34	12	29	35	12	2	29	35	2	5	9	5	3
22	49	76	48	0.5	17	7	M6	34	12	31	37	12	2	31	37	2	5	9	5	3
24	51	76	48	0.5	17	7	M6	34	12	33	39	12	2	33	39	2	5	9	5	3
25	52	76	48	0.5	17	7	M6	34	12	34	40	12	2	34	40	2	5	9	5	3
28	55	76	48	0.5	17	7	M6	34	12	37	43	12	2	37	43	2	5	9	5	3
30	57	76	48	0.5	17	7	M6	34	12	39	45	12	2	39	45	2	5	9	5	3
32	59	76	48	0.5	17	7	M6	34	12	42	48	12	2	42	48	2	5	9	5	3
33	60	76	48	0.5	17	7	M6	34	12	42	48	12	2	42	48	2	5	9	5	3
35	62	76	48	0.5	17	7	M6	34	12	44	50	12	2	44	50	2	5	9	5	3
38	71	84	52	0.5	19	7	M8	36	13.5	49	56	14	2	49	56	2	6	9	5	4
40	73	84	52	0.5	19	7	M8	36	13.5	51	58	14	2	51	58	2	6	9	5	4
43	76	84	52	0.5	19	7	M8	36	13.5	54	61	14	2	54	61	2	6	9	5	4
45	78	84	52	0.5	19	7	M8	36	13.5	56	63	14	2	56	63	2	6	9	5	4
48	81	84	52	0.5	19	7	M8	36	13.5	59	66	14	2	59	66	2	6	9	5	4
50	83	87.5	52	0.5	21	7	M8	36	13.5	62	70	16	2	62	70	2.5	6	9	5	4
53	86	87.5	52	0.5	21	7	M8	36	13.5	65	73	16	2	65	73	2.5	6	9	5	4
55	88	87.5	52	0.5	21	7	M8	36	13.5	67	75	16	2	67	75	2.5	6	9	5	4
58	98	99	62.5	1	22	9.8	M10	44.5	15	72	80	16	2.5	70	78	2.5	6	9	5	4
60	100	99	62.5	1	22	9.8	M10	44.5	15	75	83	16	2.5	72	80	2.5	6	9	5	4
63	103	99	62.5	1	22	9.8	M10	44.5	15	77	85	16	2.5	75	83	2.5	6	9	5	4
65	105	101	62.5	1	24	9.8	M10	44.5	15	81	90	18	2.5	77	85	2.5	6	9	5	4
68	108	101	62.5	1	24	9.8	M10	44.5	15	83	92	18	2.5	81	90	2.5	7	9	5	4
70	111	109	67	1	25	9.5	M10	46.5	17.5	88	97	19	2.5	83	92	2.5	7	9	5	4
75	116	109	67	1	25	9.5	M10	46.5	17.5	95	105	19	2.5	88	97	2.5	7	9	5	4
80	121	109	67	1	25	9.5	M10	46.5	17.5	100	110	19	2.5	95	105	3	7	9	5	4
85	126	109	67	1	25	9.5	M10	46.5	17.5	105	115	19	2.5	100	110	3	7	9	5	4
90	131	109	67	1	25	9.5	M10	46.5	17.5	110	120	19	2.5	105	115	3	7	9	5	4
95	136	109	67	1	25	9.5	M10	46.5	17.5	115	125	19	2.5	110	120	3	7	9	5	4
100	141	109	67	1	25	9.5	M10	46.5	17.5	120	130	19	2.5	115	125	3	7	9	5	4
105	148	124	76	2	28	10	M10	50.5	21	123	135	22	2.5	123	135	2	10	10	5	5
110	153	124	76	2	28	10	M10	50.5	21	128	140	22	2.5	128	140	2	10	10	5	5
115	158	124	76	2	28	10	M10	50.5	21	133	145	22	2.5	133	145	2	10	10	5	5
120	171	128.5	80.5	2	28	10	M10	53.5	21	140	152	22	2.5	140	152	2	10	10	5	5
125	176	128.5	80.5	2	28	10	M10	53.5	21	145	157	22	2.5	145	157	2	10	10	5	5
130	181	128.5	80.5	2	28	10	M10	53.5	21	150	162	22	2.5	150	162	2	10	10	5	5
135	186	128.5	80.5	2	28	10	M10	53.5	21	155	167	22	2.5	155	167	2	10	10	5	5
140	191	128.5	80.5	2	28	10	M10	53.5	21	160	172	22	2.5	160	172	2	10	10	5	5
145	196	128.5	80.5	2	28	10	M10	53.5	21	165	177	22	2.5	165	177	2	10	10	5	5
150	203	144.5	90.5	2	31	10	M10	59	25	171	183	24	3	171	183	2	10	10	5	5
160	213	144.5	90.5	2	31	10	M10	59	25	181	193	24	3	181	193	2	10	10	5	5
170	223	144.5	90.5	2	31	10	M10	59	25	191	203	24	3	191	203	2	10	10	5	5
180	233	144.5	90.5	2	31	10	M10	59	25	203	215	24	3	203	215	2	10	10	5	5
190	243	144.5	90.5	2	31	10	M10	59	25	213	225	24	3	213	225	2	10	10	5	5
200	253	144.5	90.5	2	31	10	M10	59	25	223	235	24	3	223	235	2	10	10	5	5
220	275	162	103	3	33	10	M10	63.5	29	246.5	258	25	3.5	246.5	258	2	10	12	6	6
240	295	162	103	3	33	10	M10	63.5	29	266.5	278	25	3.5	266.5	278	2	10	12	6	6
260	315	162	103	3	33	10	M10	63.5	29	286.5	298	25	3.5	286.5	298	2	10	12	6	6
280	335	162	103	3	33	10	M10	63.5	29	306.5	318	25	3.5	306.5	318	2	10	12	6	6

## RELY ON EXCELLENCE

d1	d2	l1	l2	T	l4	l7	d5	l8	a	d3	d4	l5	l6	d6	d7	l10	l11	l7	l9	d8
300	355	162	103	3	33	10	M10	63.5	29	326.5	338	25	3.5	326.5	338	2	10	12	6	6

Dimensions in millimeter



RELY ON EXCELLENCE

## AX30

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Advantages

- Suitable-to-ceramic design
- Only few parts
- Easy to flush

### Operating range

Shaft diameter:  
d1 = 10 ... 80 mm (0.39" ... 3.15")  
Pressure: p1 = 20 bar (290 PSI)  
Temperature:  
t = -40 °C ... 220 °C (-40 °F ... 428 °F)  
Sliding velocity: v<sub>g</sub> = 15 m/s (49 ft/s)

### Materials

Seal face: Silicon Carbide (Q1, Q2)  
Seat: Carbon graphite resin impregnated (B),  
Silicon carbide (Q1, Q2)  
Secondary seals: EPDM (E), NBR (P), FKM (V),  
FFKM (K)  
Springs: CrNiMo steel (G)

### Standards and approvals

- EN 12756

### Recommended applications

- Chemical industry
- Pharmaceutical industry
- Food and beverage industry

### Features

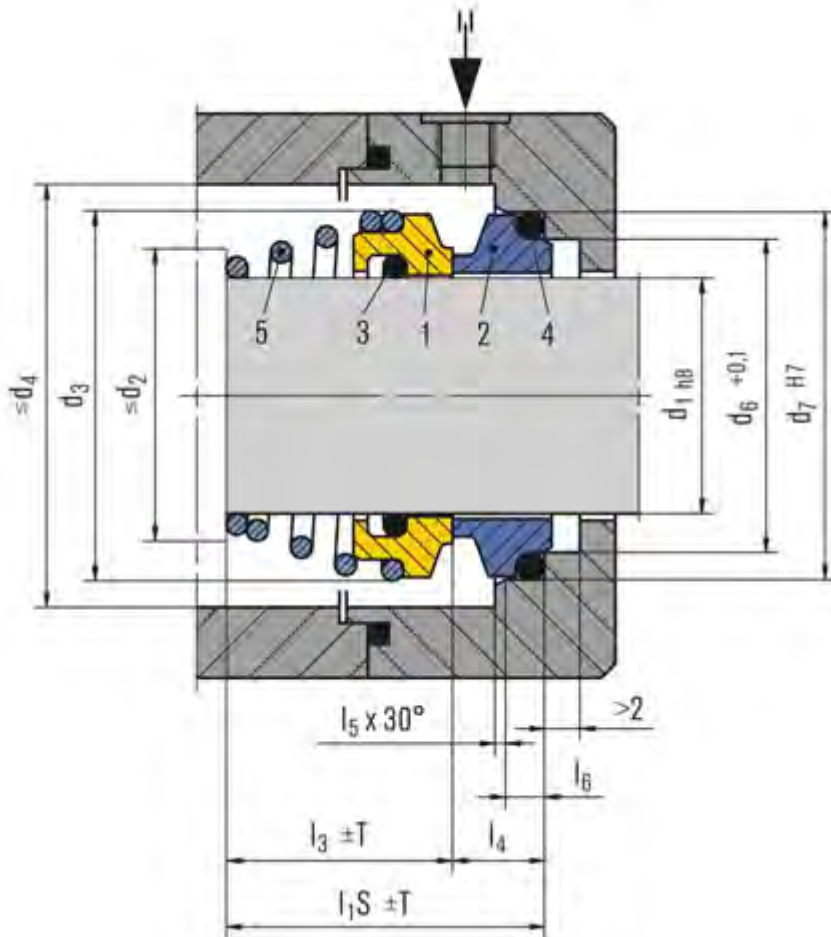
- Unbalanced
- Dependent on direction of rotation
- Solid seats

RELY ON EXCELLENCE

**Item Description**

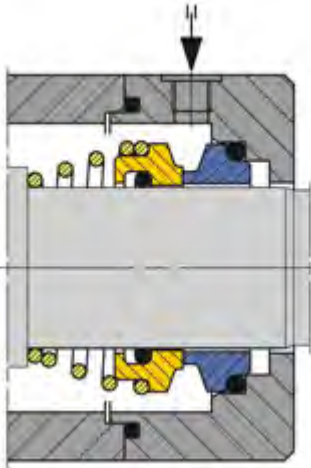
- 1 Seal ring
- 2 Mating ring
- 3, 4 O-Ring
- 5 Spring

Drawing shows type AX30S



## RELY ON EXCELLENCE

### Product variants



#### AX30K

For installation space acc. to EN12756.

### Dimensions

d1	d2	d3	IIS	I3	I4	T	d4	d6	d7	I5	I6
10	13	22	22.5	15	7.5	0.5	24	15.5	19.2	1.2	3.8
12	15	24	23	15	8	0.5	26	17.5	21.6	1.2	3.8
14	17	26	23	15	8	0.5	28	20.5	24.6	1.2	3.8
15	18	27	24	16	8	0.5	29	20.5	24.6	1.2	3.8
16	19	28	26.5	17	9.5	0.5	30	22	28	1.5	5
18	22	33	28.5	19	9.5	0.5	35	24	30	1.5	5
20	24	35	29.5	18.5	11	0.5	37	29.5	35	1.5	5
22	26	37	31	21.5	9.5	2	39	29.5	35	1.5	5
24	28	39	32.5	23	9.5	2	41	32	38	1.5	5
25	29	41	34	24.5	9.5	2	43	32	38	1.5	5
26	30	42	34.5	24	10.5	2	44	34	40	1.5	5
28	32	44	35.5	26	9.5	2	46	36	42	1.5	5
30	34	46	35.5	24.5	11	2	48	39.2	45	1.5	5
32	36	48	39	28	11	2	50	42.2	48	1.5	5
35	39	52	39.5	28.5	11	2	54	46.2	52	1.5	5
38	44	56	42.5	31.5	11	2	60	49.2	55	1.5	5
40	46	58	45.5	34.5	11	2	62	52.2	58	1.5	5
42	48	60	49	35	14	2	64	53.3	62	2	6
45	51	64	50.5	36.5	14	2	68	55.3	64	2	6
48	54	67	56	42	14	2	71	59.7	68.4	2	6
50	56	69	57	43	14	2	73	60.8	69.3	2	6
55	61	75	62	47	15	2	79	66.5	75.4	2	6
58	66	80	65	50	15	2	85	69.5	78.4	2	6
60	68	82	66	51	15	2	87	71.5	80.4	2	6
65	73	87	67	52	15	2	92	76.5	85.4	2	6
68	76	91	69	54	15	2	95	82.7	91.5	2	6
70	78	93	69	52	17	2	97	83	92	2	6
75	83	101	70	53	17	2	106	90.2	99	2	6
80	88	106	74	57	17	2	111	95.2	104	2	6



## RELY ON EXCELLENCE

### Dimension table for type AX30S

Dimensions in millimeter

Installation space according to EagleBurgmann standard.

### Dimensions

d1	d2	d3*	I1K	I3	I4	T	d4	d6	d7	I5	I6
10	13	22	32.5	22.5	10	1	24	17	21	1.5	4
12	15	24	32.5	22.5	10	1	26	19	23	1.5	4
14	17	26	35	25	10	1	28	21	25	1.5	4
16	19	28	35	25	10	1	30	23	27	1.5	4
18	22	33	37.5	26.5	11	2	35	27	33	2	5
20	24	35	37.5	26.5	11	2	37	29	35	2	5
22	26	37	37.5	26.5	11	2	39	31	37	2	5
24	28	39	40	29	11	2	41	33	39	2	5
25	29	41	40	29	11	2	43	34	40	2	5
28	32	44	42.5	31.5	11	2	46	37	43	2	5
30	34	46	42.5	31.5	11	2	48	39	45	2	5
32	36	48	42.5	31.5	11	2	50	42	48	2	5
33	37	50	42.5	31.5	11	2	52	42	48	2	5
35	39	52	42.5	31.5	11	2	54	44	50	2	5
38	44	56	45	32	13	2	60	49	56	2	6
40	46	58	45	32	13	2	62	51	58	2	6
43	49	62	45	32	13	2	66	54	61	2	6
45	51	64	45	32	13	2	68	56	63	2	6
48	54	67	45	32	13	2	71	59	66	2	6
50	56	69	47.5	33	14.5	2	73	62	70	2.5	6
53	59	73	47.5	33	14.5	2	76	65	73	2.5	6
55	61	75	47.5	33	14.5	2	79	67	75	2.5	6
58	66	80	52.5	38	14.5	2	85	70	78	2.5	6
60	68	82	52.5	38	14.5	2	87	72	80	2.5	6
63	71	85	52.5	38	14.5	2	90	75	83	2.5	6
65	73	87	52.5	38	14.5	2	92	77	85	2.5	6
68	76	91	52.5	38	14.5	2	95	81	90	2.5	7
70	78	93	60	43	17	2	97	83	92	2.5	7
75	83	101	60	43	17	2	106	88	97	2.5	7
80	88	106	60	43	17	2	111	95	105	3	7

### Dimension table for type AX30K

Dimensions in millimeter

Installation space according to EN12756

\* Dimension d3 according to EN12756 will be exceeded

RELY ON EXCELLENCE

## AX40K

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- Stationary springs
- Balanced
- Independent of direction of rotation
- Independent of pressure direction

### Advantages

- Balanced seal in the installation space of a unbalanced seal
- Springs protected from the product
- Suitable-to-ceramic design
- Smooth external contours

### Operating range

Shaft diameter:  $d_1 = 18 \dots 300 \text{ mm}$

Pressure:  $p_1 = 25 \text{ bar (363 PSI)}$

Temperature:  $t = -40 \dots 220^\circ \text{ C (-40} \dots 428^\circ \text{ F)}$

Sliding velocity:  $v_g = 20 \text{ m/s (66 ft/s)}$

### Materials

Seal face: Silicon Carbide (Q1, Q2)

Seat: Carbon graphite resin impregnated (B), Silicon carbide (Q1, Q2)

Secondary seals:

EPDM (E), FKM (V), FFKM (K)

Springs: CrNiMo steel (G)

Metal parts: CrNiMo steel (G)

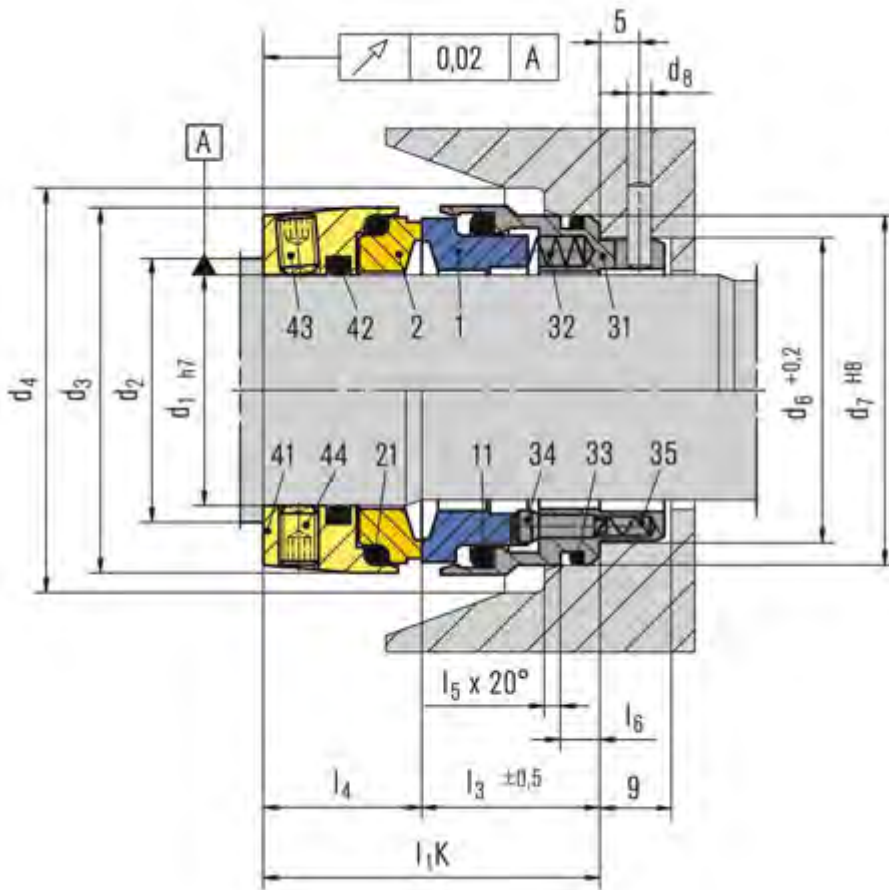
### Standards and approvals

- EN 12756

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Building services industry
- Food and beverage industry
- Shipbuilding
- Sugar industry
- Metal production and processing

## RELY ON EXCELLENCE



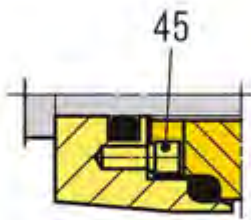
Item	Description
1	Seal ring
2	Mating ring
41	Adjusting ring
11, 21, 33, 42	O-Ring
31	Housing
32, 35	Spring
34	Pin
43, 44	Set screw



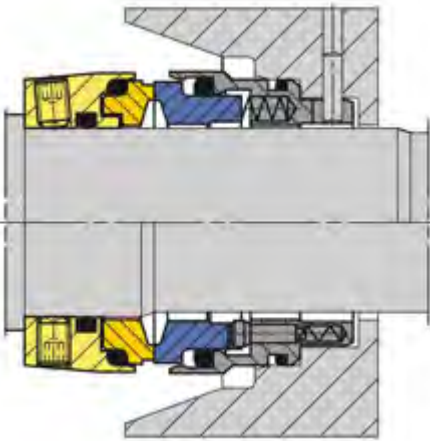
## RELY ON EXCELLENCE

### Installation, details, options

Mating ring design  $d1 \geq 70$  mm  
Item 45: Pin



### Product variants



#### AX40KG

Dimensions and design characteristics as AX40K  
The torque transmission at the seal ring and the mating ring is form locked. Equally at the circumference of the adjusting ring arranged drivers allow high torques. This variant is applied for media which tend to jamming or if high starting torque is expected.

Seal face: Silicon carbide (Q1, Q2)  
Seat: Silicon carbide (Q1, Q2)

## RELY ON EXCELLENCE

### Dimensions

d1	d2	d3*	l1k**	l3	l4	d4	d6	d7	d8	l5	l6
18	22	35	45	26.5	18.5	40	27	33	3	2	5
20	24	37	45	26.5	18.5	42	29	35	3	2	5
22	26	39	45	26.5	18.5	44	31	37	3	2	5
24	28	41	40	21.5	18.5	46	33	39	3	2	5
25	30	42	40	21.5	18.5	47	34	40	3	2	5
28	33	45	42.5	22.5	20	50	37	43	3	2	5
30	35	47	42.5	22.5	20	52	39	45	3	2	5
32	38	50	42.5	22.5	20	55	42	48	3	2	5
33	38	50	42.5	22.5	20	55	42	48	3	2	5
35	40	52	42.5	22.5	20	57	44	50	3	2	5
38	43	58	45	23.5	21.5	63	49	56	4	2	6
40	45	60	45	23.5	21.5	65	51	58	4	2	6
43	48	63	45	23.5	21.5	68	54	61	4	2	6
45	50	65	45	23.5	21.5	70	56	63	4	2	6
48	53	68	45	23.5	21.5	73	59	66	4	2	6
50	55	72	47.5	25.5	22	77	62	70	4	2.5	6
53	58	75	47.5	25.5	22	80	65	73	4	2.5	6
55	60	77	47.5	25.5	22	82	67	75	4	2.5	6
58	63	81	52.5	27.5	25	86	70	78	4	2.5	6
60	65	83	52.5	27.5	25	88	72	80	4	2.5	6
63	68	86	52.5	27.5	25	91	75	83	4	2.5	6
65	70	88	52.5	27.5	25	93	77	85	4	2.5	6
70	75	95	60	30.5	29.5	100	83	92	4	2.5	7
75	80	100	60	30.5	29.5	105	88	97	4	2.5	7
80	85	108	60	30.5	29.5	113	95	105	4	3	7
85	90	113	60	30.5	29.5	118	100	110	4	3	7
90	95	118	65	34	31	123	105	115	4	3	7
95	100	123	65	34	31	128	110	120	4	3	7
100	105	128	65	34	31	133	115	125	4	3	7

Dimensions in millimeter

\* Dimension d<sub>3</sub> acc. to EN 12756 exceeded

\*\* d1 = 18 ... 22: l<sub>1k</sub> acc. to EN 12756 Form B,

d1 = 24 ... 100: l<sub>1k</sub> acc. to EN 12756 Form U

RELY ON EXCELLENCE

## BT-C5

### EagleBurgmann BT Mechanical seals



#### Features

- Single pusher-type seal
- Unbalanced, short length (KU)
- Balanced, short length (KB)
- Multiple springs
- Independent of direction of rotation

#### Advantages

The BT-C5 is available in many material combinations with various application opportunities, especially in chemical applications. Torque transmission through set screws. Dimensions according to EN 12756, short length  $l_{1K}$ .

#### Operating range

Shaft diameter:  
 $d_1 = 18 \dots 100 \text{ mm} (0.71" \dots 3.94")$   
 Pressure:  
 Unbalanced type BT-C5.KU  
 $p_1^* = 12 (16) \text{ bar} (174 (232) \text{ PSI})$   
 Balanced type BT-C5.KB  
 $p_1^* = 25 (40) \text{ bar} (360 (580) \text{ PSI})$   
 Temperature:  
 $t^* = -35 \text{ }^\circ\text{C} \dots +180 \text{ }^\circ\text{C} (-31 \text{ }^\circ\text{F} \dots +356 \text{ }^\circ\text{F})$   
 Sliding velocity:  $v_g = 20 \text{ m/s} (66 \text{ ft/s})$

\* Dependent on medium, size and material

#### Materials

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)  
 Seat: Aluminium oxide (V), Silicon carbide (Q1)  
 Elastomers:  
 NBR (P), EPDM (E), FKM (V), FFKM (K)  
 Metal parts: CrNiMo steel (G)

#### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

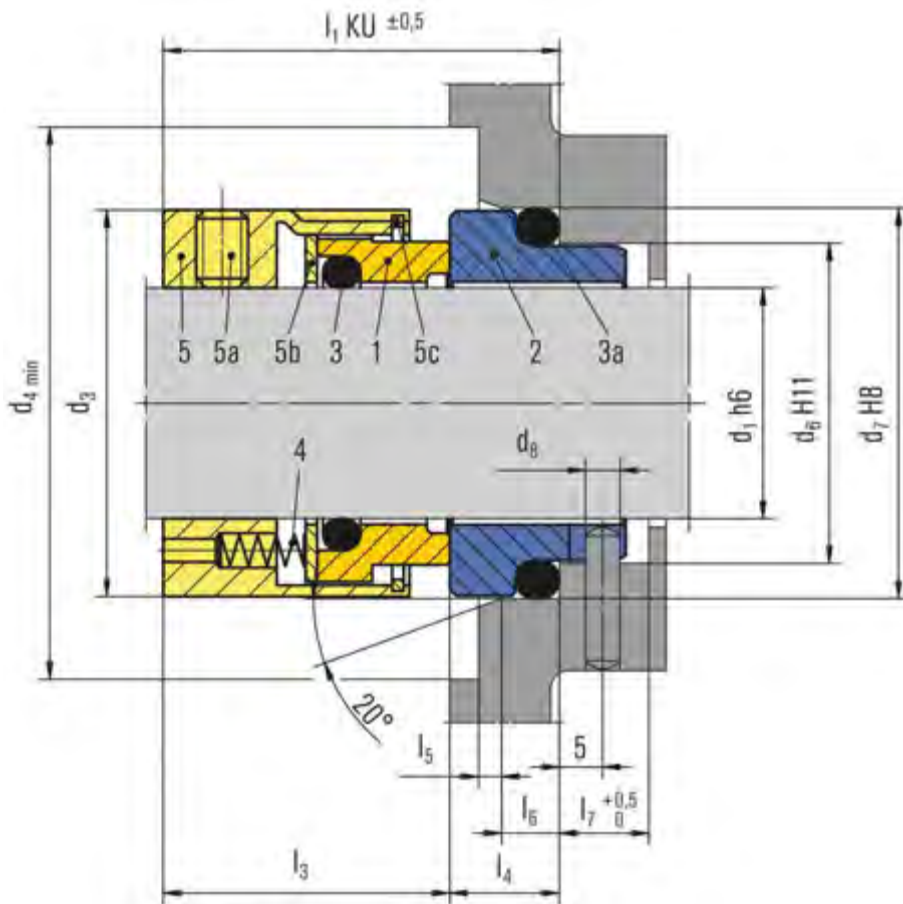
#### Notes

Seat ring of alternative seats can be supplied with short tail or with pin to block the seat and prevent seat rotation.

#### Recommended applications

- Chemical industry
- Pharmaceutical industry
- Building services industry
- Centrifugal pumps
- Clean water pumps

RELY ON EXCELLENCE



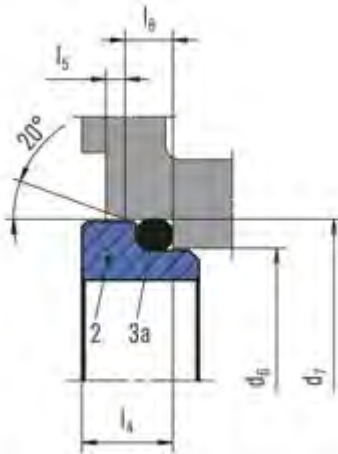
## BT-C5.KU

### Item Description

- 1 Seal face
- 2 Stationary seat
- 3, 3a O-Ring
- 4 Spring
- 5 Collar
- 5a Set screw
- 5b Ring
- 5c Locking ring

RELY ON EXCELLENCE

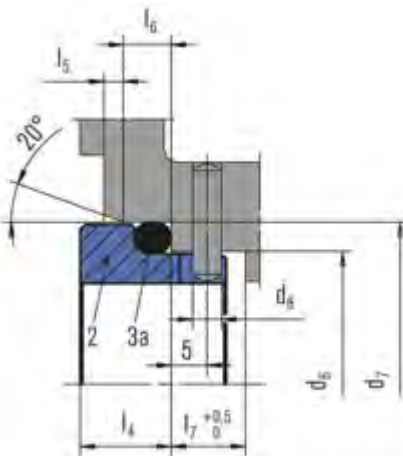
## Seat alternatives



PF L

**Item Description**

- 2 Stationary seat
- 3a O-Ring



PF L1

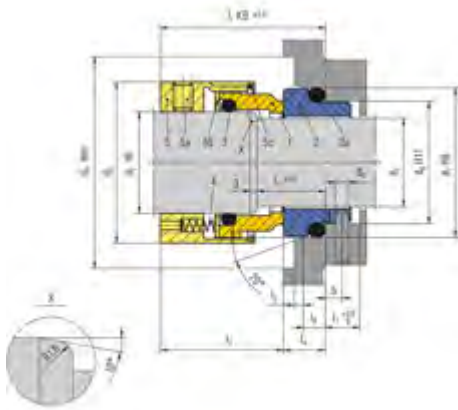
**Item Description**

- 2 Stationary seat
- 3a O-Ring



RELY ON EXCELLENCE

## Product variants

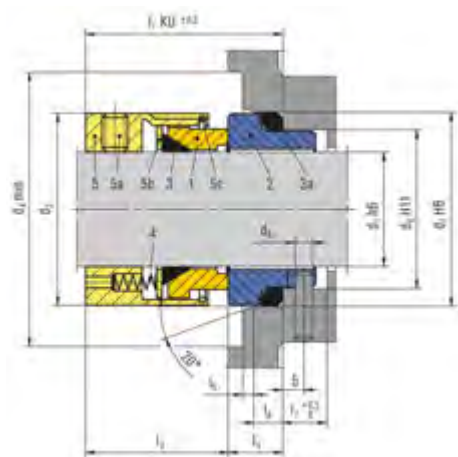


### BT-C5.KB

BT-C5.KB is the balanced version of the BT-C5.KU. Suitable for a higher pressure range. Dimensions according to EN 12756, short length  $l_{KB}$ .

#### Item Description

- 1 Seal face
- 2 Stationary seat
- 3, 3a O-Ring
- 4 Spring
- 5 Collar
- 5a Set screw
- 5b Ring
- 5c Locking ring

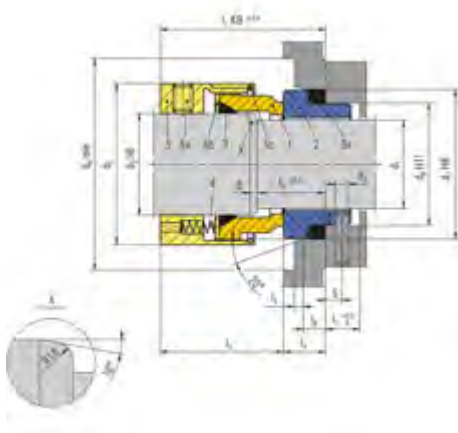


### BT-C56.KU

Product variant with PTFE secondary seal elements instead of elastomers. Mainly used in the chemical industry and for corrosive media.

#### Item Description

- 1 Seal face
- 2 Stationary seat
- 3 Wedge gasket (PTFE)
- 3a Gasket (PTFE)



### BT-C56.KB

Product variant with PTFE secondary seal elements instead of elastomers. Mainly used in the chemical industry and for corrosive media.

#### Item Description

- 1 Seal face
- 2 Stationary seat
- 3 Wedge gasket (PTFE)
- 3a Gasket (PTFE)
- 4 Spring
- 5 Collar
- 5a Set screw
- 5b Ring
- 5c Locking ring

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1KU</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>
20	34	36	29	35	3	37.5	34.0	24.0	10.0	2.0	5	9
22	36	38	31	37	3	37.5	34.0	24.0	10.0	2.0	5	9
24	38	40	33	39	3	40.0	37.0	27.0	10.0	2.0	5	9
25	39	41	34	40	3	40.0	37.0	27.0	10.0	2.0	5	9
28	42	44	37	43	3	42.5	40.0	30.0	10.0	2.0	5	9
30	44	46	39	45	3	42.5	40.0	30.0	10.0	2.0	5	9
32	46	48	42	48	3	42.5	40.0	30.0	10.0	2.0	5	9
33	47	49	42	48	3	42.5	40.0	30.0	10.0	2.0	5	9
35	49	51	44	50	3	42.5	40.0	30.0	10.0	2.0	5	9
38	54	58	49	56	4	45.0	43.0	32.0	11.0	2.0	6	9
40	56	60	51	58	4	45.0	43.0	32.0	11.0	2.0	6	9
43	59	63	54	61	4	45.0	43.0	32.0	11.0	2.0	6	9
45	61	65	56	63	4	45.0	43.0	32.0	11.0	2.0	6	9
48	64	68	59	66	4	45.0	43.0	32.0	11.0	2.0	6	9
50	66	70	62	70	4	47.5	47.5	34.5	13.0	2.5	6	9
53	69	73	65	73	4	47.5	47.5	34.5	13.0	2.5	6	9
55	71	75	67	75	4	47.5	47.5	34.5	13.0	2.5	6	9
58	78	83	70	78	4	52.5	52.5	39.5	13.0	2.5	6	9
60	80	85	72	80	4	52.5	52.5	39.5	13.0	2.5	6	9
63	83	88	75	83	4	52.5	52.5	39.5	13.0	2.5	6	9
65	85	90	77	85	4	52.5	52.5	39.5	13.0	2.5	6	9
68	88	93	81	90	4	52.5	52.5	37.5	15.0	2.5	7	9
70	90	95	83	92	4	60.0	60.0	45.0	15.0	2.5	7	9
75	99	104	88	97	4	60.0	60.0	45.0	15.0	2.5	7	9
80	104	109	95	105	4	60.0	60.0	44.5	15.5	3.0	7	9
85	109	114	100	110	4	60.0	60.0	44.5	15.5	3.0	7	9
90	114	119	105	115	4	65.0	65.0	49.5	15.5	3.0	7	9
95	119	124	110	120	4	65.0	65.0	49.5	15.5	3.0	7	9
100	124	129	115	125	4	65.0	65.0	49.5	15.5	3.0	7	9

l<sub>1KU</sub> complies with EN 12756 (short length, unbalanced)

**BT-C5.KU** - Dimensions in millimeter

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1KB</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>
18	22	36	38	27	33	3	45.0	20	35.0	10.0	2.0	5	9
20	24	38	40	29	35	3	45.0	20	35.0	10.0	2.0	5	9
22	26	40	42	31	37	3	45.0	20	35.0	10.0	2.0	5	9
24	28	42	44	33	39	3	47.5	20	37.5	10.0	2.0	5	9
25	30	44	46	34	40	3	47.5	20	37.5	10.0	2.0	5	9
28	33	47	49	37	43	3	50.0	20	40.0	10.0	2.0	5	9
30	35	49	51	39	45	3	50.0	20	40.0	10.0	2.0	5	9
32	38	54	58	42	48	3	50.0	20	40.0	10.0	2.0	5	9
33	38	54	58	42	48	3	50.0	20	40.0	10.0	2.0	5	9
35	40	56	60	44	50	3	50.0	20	40.0	10.0	2.0	5	9
38	43	59	63	49	56	4	52.5	23	41.5	11.0	2.0	6	9
40	45	61	65	51	58	4	52.5	23	41.5	11.0	2.0	6	9
43	48	64	68	54	61	4	52.5	23	41.5	11.0	2.0	6	9
45	50	66	70	56	63	4	52.5	23	41.5	11.0	2.0	6	9
48	53	69	73	59	66	4	52.5	23	41.5	11.0	2.0	6	9
50	55	71	75	62	70	4	57.5	25	44.5	13.0	2.5	6	9
53	58	78	83	65	73	4	57.5	25	44.5	13.0	2.5	6	9
55	60	80	85	67	75	4	57.5	25	44.5	13.0	2.5	6	9
58	63	83	88	70	78	4	62.5	25	49.5	13.0	2.5	6	9
60	65	85	90	72	80	4	62.5	25	49.5	13.0	2.5	6	9
63	68	88	93	75	83	4	62.5	25	49.5	13.0	2.5	6	9
65	70	90	95	77	85	4	62.5	25	49.5	13.0	2.5	6	9
70	75	99	104	83	92	4	70.0	28	55.0	15.0	2.5	7	9
75	80	104	109	88	97	4	70.0	28	55.0	15.0	2.5	7	9
80	85	109	114	95	105	4	70.0	28	54.5	15.5	3.0	7	9
85	90	114	119	100	110	4	75.0	28	59.5	15.5	3.0	7	9
90	95	119	124	105	115	4	75.0	28	59.5	15.5	3.0	7	9
95	100	124	129	110	120	4	75.0	28	59.5	15.5	3.0	7	9
100	105	129	134	115	125	4	75.0	28	59.5	15.5	3.0	7	9

l<sub>1KB</sub> complies with EN 12756 (short length, balanced)

**BT-C5.KB** - Dimensions in millimeter

RELY ON EXCELLENCE

## BT-C5E

### EagleBurgmann BT Mechanical seals



#### Features

- Single pusher-type seal
- Multiple springs
- Independent of direction of rotation
- External mounting
- For high viscosity media

#### Advantages

The BT-C5E is designed for external mounting and is characterized by a short installation length. The advantage of a seal mounted on the outside is that all metal parts, including springs, are not in contact with the media. Torque transmission via robust axial notches on the metal collar. The collar is fixed on the shaft with set screws.

Typical applications are volumetric lobe pumps for food, cosmetics and pharmaceuticals and for sticky and highly viscous media (e.g. paste, paints).

#### Operating range

Shaft diameter:

$d_1 = 20 \dots 80 \text{ mm (0.79" } \dots \text{ 3.15")}$

Pressure:  $p_1^* = 12 \text{ bar (174 PSI)}$

Temperature:

$t^* = -35 \text{ }^\circ\text{C } \dots \text{ } +180 \text{ }^\circ\text{C (-31 }^\circ\text{F } \dots \text{ } +356 \text{ }^\circ\text{F)}$

Sliding velocity:  $v_g = 15 \text{ m/s (49 ft/s)}$

\* Dependent on medium, size and material

#### Materials

Seal face:

Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), PTFE reinforced (Y1)

Seat:

Aluminium oxide (V), Silicon carbide (Q1), CrNiMo steel (G), Tungsten carbide (U)

Elastomers:

NBR (P), EPDM (E), FKM (V), FFKM (K)

Metal parts: CrNiMo steel 1.4401 (G)

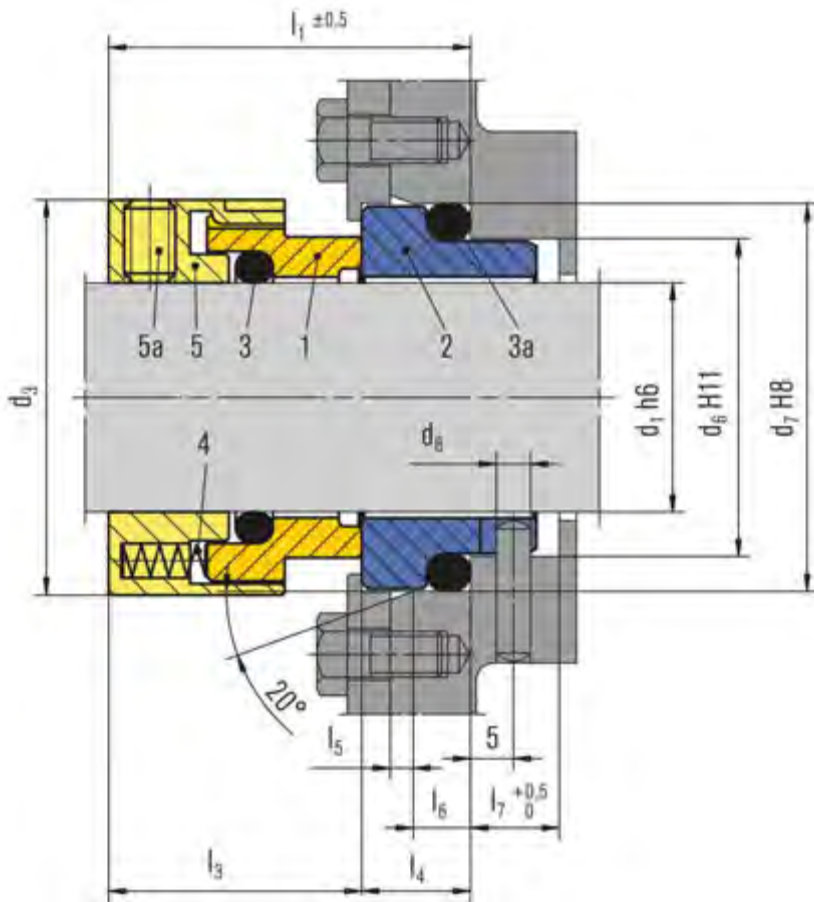
#### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

#### Recommended applications

- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Centrifugal pumps
- Industrial pumps

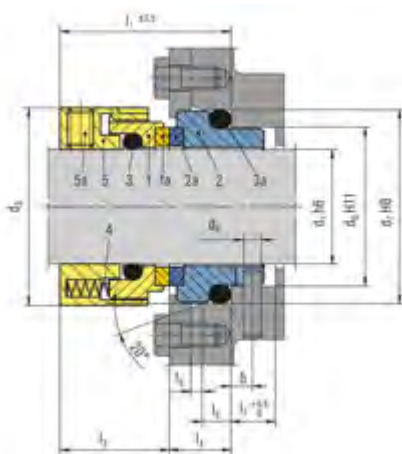
## RELY ON EXCELLENCE



### Item Description

- 1 Seal face
- 2 Stationary seat
- 3, 3a O-Ring
- 4 Spring
- 5 Collar
- 5a Set screw

## Product variants



### BT-C53E

Seal faces made of brazed tungsten carbide. This version is suitable for media with abrasive characteristics. Installation dimensions same as BT-C5E.

### Item Description

- 1 Seal face housing
- 1a Brazed seal face
- 2 Stationary seat housing
- 2a Brazed stationary seat
- 3, 3a O-Ring
- 4 Spring
- 5 Collar
- 5a Set screw

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>
20	36	29	35	3	29.0	19.0	10	2.0	5	9
25	41	34	40	3	29.0	19.0	10	2.0	5	9
30	46	39	45	3	29.0	19.0	10	2.0	5	9
35	51	44	50	3	29.0	19.0	10	2.0	5	9
40	59	51	58	4	34.0	23.0	11	2.0	6	9
45	60	56	63	4	34.0	23.0	11	2.0	6	9
50	66	62	70	4	35.0	22.0	13	2.5	6	9
60	80	72	80	4	39.5	26.5	13	2.5	6	9
65	86	77	85	4	39.5	26.5	13	2.5	6	9
70	92	83	92	4	41.5	26.5	15	2.5	7	9
80	105	95	105	4	42.5	26.5	16	3.0	7	9

BT-C5E - Dimensions in millimeter



RELY ON EXCELLENCE

## BT-C7

### EagleBurgmann BT Mechanical seals



#### Features

- Single pusher-type seal
- Unbalanced
- Super-sinus spring
- Independent of direction of rotation
- Short length, according EN 12756 (L<sub>1KU</sub>).

#### Advantages

The BT-C7 mechanical seal range has a robust design for universal application. The seal is bi-directional, unaffected by the direction of shaft rotation and is positively driven by set screws. With super-sinus spring.

#### Operating range

Shaft diameter:  
 $d_1 = 16 \dots 100 \text{ mm} (0.79" \dots 3.94")$   
 Pressure:  $p_1^* = 12 \text{ bar} (16 \text{ bar}) (174 \text{ PSI})$   
 Temperature:  
 $t^* = -35 \text{ °C} \dots +180 \text{ °C} (-4 \text{ °F} \dots +356 \text{ °F})$   
 Sliding velocity:  $v_g = 20 \text{ m/s} (66 \text{ ft/s})$

\* Dependent on medium, size and material

#### Materials

Seal face: CrNiMo steel (G), Tungsten carbide (U)

Seat: Carbon graphite resin impregnated (B), Carbon graphite antimony impregnated (A), Tungsten carbide (U)

Elastomers:

NBR (P), EPDM (E), FKM (V), FFKM (K)

Metal parts: CrNiMo steel 1.4401 (G)

#### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

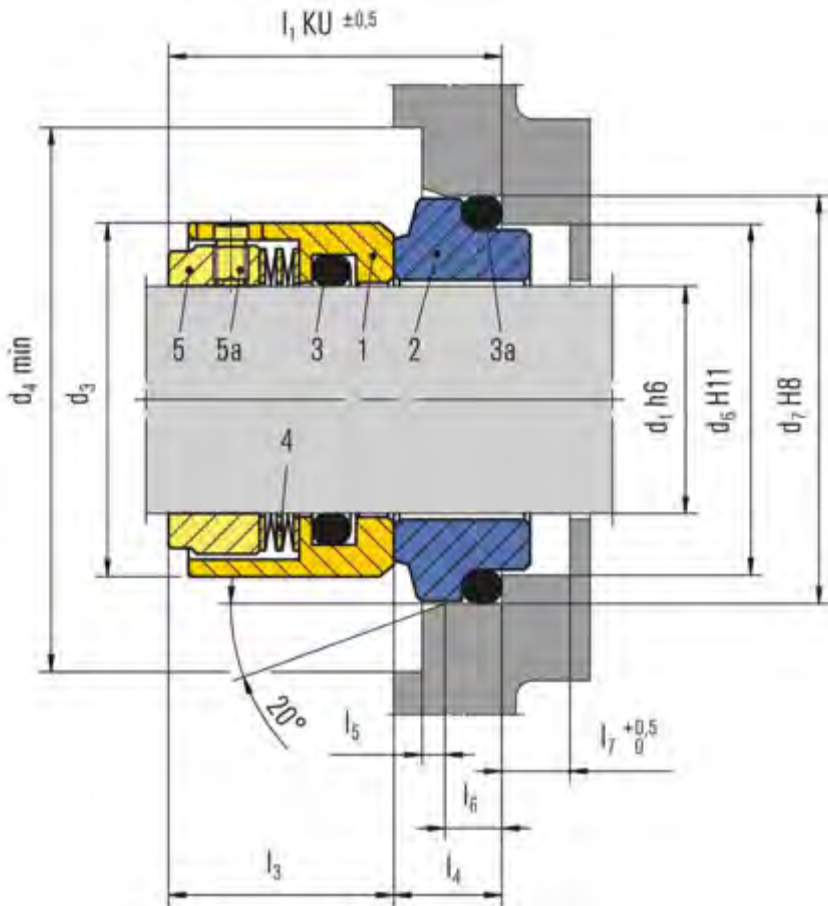
#### Notes

Seat ring of alternative seats can be supplied with short tail or with pin to block the seat and prevent seat rotation.

#### Recommended applications

- Chemical industry
- Pharmaceutical industry
- Building services industry
- Centrifugal pumps
- Clean water pumps

RELY ON EXCELLENCE

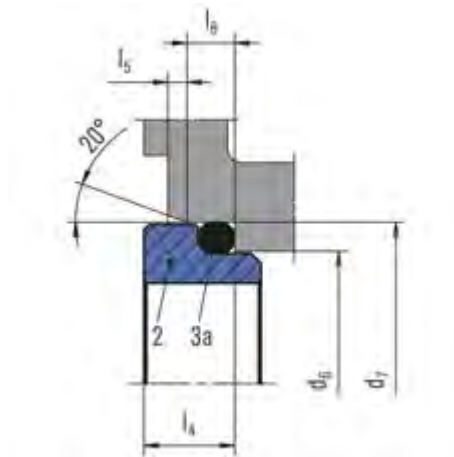


#### Item Description

- 1 Seal face
- 2 Stationary seat
- 3, 3a O-Ring
- 4 Spring
- 5 Driver
- 5a Set screw

RELY ON EXCELLENCE

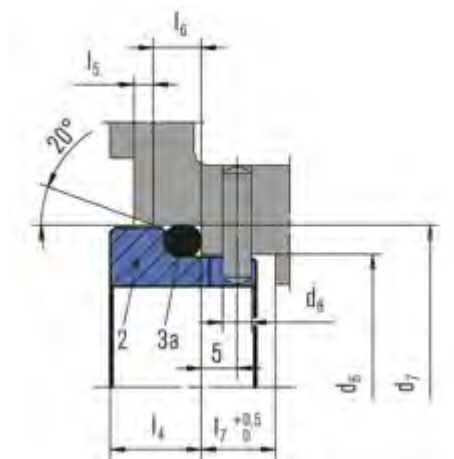
## Seat alternatives



PF L

**Item Description**

- 2 Stationary seat
- 3a O-Ring



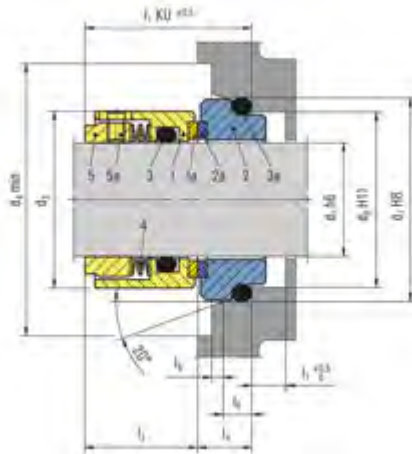
PF L1

**Item Description**

- 2 Stationary seat
- 3a O-Ring

RELY ON EXCELLENCE

## Product variants



### BT-C73

Like the BT-C7, but seal face and seat made of brazed tungsten carbide (U). This version is suitable for media with abrasive characteristics.

#### Item Description

- 1 Seal face housing
- 1a Brazed seal face
- 2 Stationary seat housing
- 2a Brazed stationary seat
- 3, 3a O-Ring
- 4 Spring
- 5 Driver
- 5a Set screw

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1KU</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>
16	26	28	23	27	3	35.0	28.0	7	1.5	4	8.5
18	32	34	27	33	3	37.5	27.5	10	2.0	5	9.0
20	34	36	29	35	3	37.5	27.5	10	2.0	5	9.0
22	36	38	31	37	3	37.5	27.5	10	2.0	5	9.0
24	38	40	33	39	3	40.0	30.0	10	2.0	5	9.0
25	39	41	34	40	3	40.0	30.0	10	2.0	5	9.0
28	42	44	37	43	3	42.5	32.5	10	2.0	5	9.0
30	44	46	39	45	3	42.5	32.5	10	2.0	5	9.0
32	46	48	42	48	3	42.5	32.5	10	2.0	5	9.0
33	47	49	42	48	3	42.5	32.5	10	2.0	5	9.0
35	49	51	44	50	3	42.5	32.5	10	2.0	5	9.0
38	54	58	49	56	4	45.0	32.0	13	2.0	6	9.0
40	56	60	51	58	4	45.0	32.0	13	2.0	6	9.0
43	59	63	54	61	4	45.0	32.0	13	2.0	6	9.0
45	61	65	56	63	4	45.0	32.0	13	2.0	6	9.0
48	64	68	59	66	4	45.0	32.0	13	2.0	6	9.0
50	66	70	62	70	4	47.5	33.5	14	2.5	6	9.0
53	69	73	65	73	4	47.5	33.5	14	2.5	6	9.0
55	71	75	67	75	4	47.5	33.5	14	2.5	6	9.0
58	78	83	70	78	4	52.5	38.5	14	2.5	6	9.0
60	80	85	72	80	4	52.5	38.5	14	2.5	6	9.0
63	83	88	75	83	4	52.5	38.5	14	2.5	6	9.0
65	85	90	77	85	4	52.5	38.5	14	2.5	6	9.0
68	88	93	81	90	4	52.5	36.5	16	2.5	7	9.0
70	90	95	83	92	4	60.0	44.0	16	2.5	7	9.0
75	99	104	88	97	4	60.0	44.0	16	2.5	7	9.0
80	104	109	95	105	4	60.0	42.0	18	3.0	7	9.0
85	109	114	100	110	4	60.0	42.0	18	3.0	7	9.0
90	114	119	105	115	4	65.0	47.0	18	3.0	7	9.0
95	119	124	110	120	4	65.0	47.0	18	3.0	7	9.0
100	124	129	115	125	4	65.0	47.0	18	3.0	7	9.0

l<sub>1KU</sub> complies with EN 12756 (short length, unbalanced)

**BT-C7** - Dimensions in millimeter

RELY ON EXCELLENCE

## BT-C8

### EagleBurgmann BT Mechanical seals



#### Features

- Single pusher-type seal
- Unbalanced
- Independent of direction of rotation
- Super-sinus spring
- Short installation length, according to EN 12756 (L<sub>1KU</sub>)

#### Advantages

The BT-C8 mechanical seal range is designed for universal application and is ideally suited for standardization. The seal is bi-directional, unaffected by the direction of shaft rotation and is positively driven by set screws. With super-sinus spring. The advantages of this mechanical seal are the easily interchangeable seal faces which permit all material combinations.

#### Operating range

Shaft diameter:  
 $d_1 = 16 \dots 100 \text{ mm (0.79" ... 3.94")}$   
 Pressure:  $p_1^* = 12 \text{ bar (16 bar) (174 PSI)}$   
 Temperature:  
 $t^* = -35 \text{ °C ... +180 °C (-4 °F ... +356 °F)}$   
 Sliding velocity:  $v_g = 20 \text{ m/s (66 ft/s)}$

\* Dependent on medium, size and material

#### Materials

Seal face:  
 Silicon carbide (Q1), Aluminium oxide (V)  
 Seat:  
 Carbon graphite resin impregnated (B),  
 Carbon graphite antimony impregnated (A),  
 Silicon carbide (Q1)  
 Elastomers:  
 NBR (P), EPDM (E), FKM (V), FFKM (K)  
 Metal parts: CrNiMo steel 1.4401 (G)

#### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

#### Notes

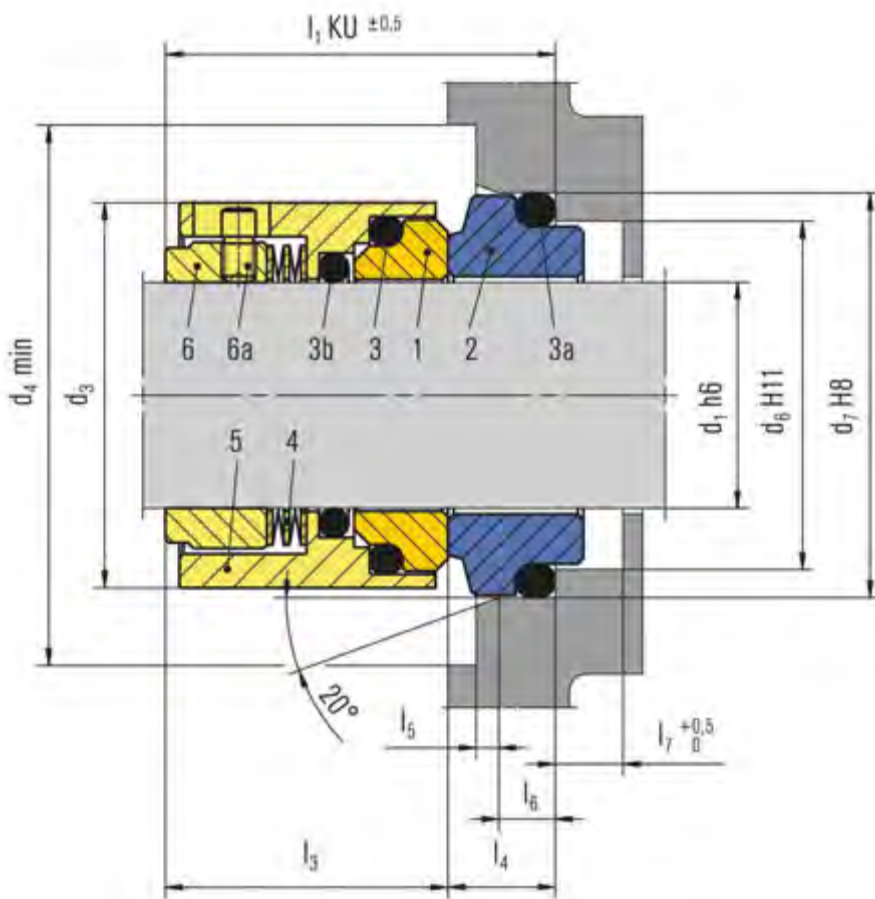
Seat ring of alternative seats can be supplied with short tail or with pin to block the seat and prevent seat rotation.

#### Recommended applications

- Chemical industry
- Pharmaceutical industry
- Building services industry
- Centrifugal pumps
- Clean water pumps



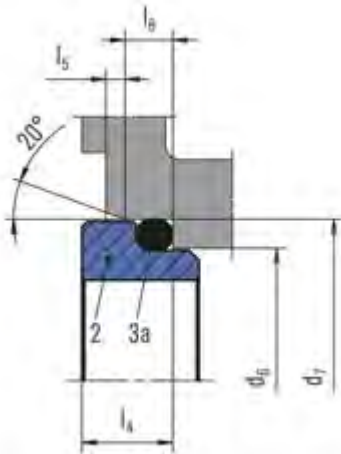
## RELY ON EXCELLENCE



Item	Description
1	Seal face
2	Stationary seat
3, 3a, 3b	O-Ring
4	Spring
5	Collar
6	Driver
6a	Set screw

RELY ON EXCELLENCE

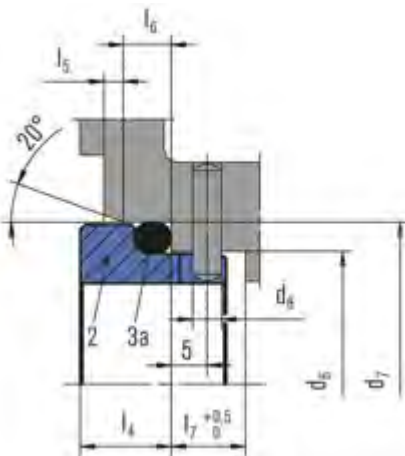
## Seat alternatives



PF L

**Item Description**

- 2 Stationary seat
- 3a O-Ring



PF L1

**Item Description**

- 2 Stationary seat
- 3a O-Ring

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1KU</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>
16	29	32	23	27	3	35.0	28.0	7	1.5	4	8.5
18	33	36	27	33	3	37.5	27.5	10	2.0	5	9.0
20	33	36	29	35	3	37.5	27.5	10	2.0	5	9.0
22	38	41	31	37	3	37.5	27.5	10	2.0	5	9.0
24	38	41	33	39	3	40.0	30.0	10	2.0	5	9.0
25	40	45	34	40	3	40.0	30.0	10	2.0	5	9.0
28	46	50	37	43	3	42.5	32.5	10	2.0	5	9.0
30	46	50	39	45	3	42.5	32.5	10	2.0	5	9.0
32	46	50	42	48	3	42.5	32.5	10	2.0	5	9.0
33	52	56	42	48	3	42.5	32.5	10	2.0	5	9.0
35	56	62	44	50	3	42.5	32.5	10	2.0	5	9.0
38	63	70	49	56	4	45.0	32.0	13	2.0	6	9.0
40	63	70	51	58	4	45.0	32.0	13	2.0	6	9.0
43	63	70	54	61	4	45.0	32.0	13	2.0	6	9.0
45	69	75	56	63	4	45.0	32.0	13	2.0	6	9.0
48	69	75	59	66	4	45.0	32.0	13	2.0	6	9.0
50	76	83	62	70	4	47.5	33.5	14	2.5	6	9.0
53	76	83	65	73	4	47.5	33.5	14	2.5	6	9.0
55	76	83	67	75	4	47.5	33.5	14	2.5	6	9.0
58	82	88	70	78	4	52.5	38.5	14	2.5	6	9.0
60	84	90	72	80	4	52.5	38.5	14	2.5	6	9.0
63	86	93	75	83	4	52.5	38.5	14	2.5	6	9.0
65	89	96	77	85	4	52.5	38.5	14	2.5	6	9.0
68	92	99	81	90	4	52.5	36.5	16	2.5	7	9.0
70	94	101	83	92	4	60.0	44.0	16	2.5	7	9.0
75	100	106	88	97	4	60.0	44.0	16	2.5	7	9.0
80	105	111	95	105	4	60.0	42.0	18	3.0	7	9.0
85	115	125	100	110	4	60.0	42.0	18	3.0	7	9.0
90	120	132	105	115	4	65.0	47.0	18	3.0	7	9.0
95	126	137	110	120	4	65.0	47.0	18	3.0	7	9.0
100	130	143	115	125	4	65.0	47.0	18	3.0	7	9.0

d<sub>3</sub>, d<sub>4</sub> dimensions not always in accordance with EN 12756  
 l<sub>1KU</sub> complies with EN 12756 (short length, unbalanced)

**BT-C8** - Dimensions in millimeter

RELY ON EXCELLENCE

## BT-FH

### EagleBurgmann BT Mechanical seals



#### Features

- Single pusher-type seal
- Unbalanced
- Conical spring
- Dependent on direction of rotation

#### Advantages

The BT-FH is a seal for demanding applications where operating conditions in the pump require machined metal parts for the mechanical seal. The seals are available in a full range of diameters from 10 to 100 mm and in the standard diameters specifically for chemical applications.

#### Operating range

Shaft diameter:

$d_1 = 10 \dots 100 \text{ mm (0.39" ... 3.94")}$

Pressure:  $p_1^* = 12 \text{ (16) bar (174 (232) PSI)}$

Temperature:

$t^* = -35 \text{ °C ... +200 °C (-31 °F ... +392 °F)}$

Sliding velocity:  $vg = 15 \text{ m/s (49 ft/s)}$

\* Dependent on medium, size and material

#### Materials

Seal face:

Aluminium oxide (V), Silicon carbide (Q1),

Tungsten carbide (U1)

Seat:

Carbon graphite antimony impregnated (A),

Carbon graphite resin impregnated (B),

Silicon carbide (Q1), Tungsten carbide (U1)

Elastomers:

NBR (P), EPDM (E), FKM (V), FFKM (K)

Metal parts: CrNiMo steel 1.4401 (G)

#### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

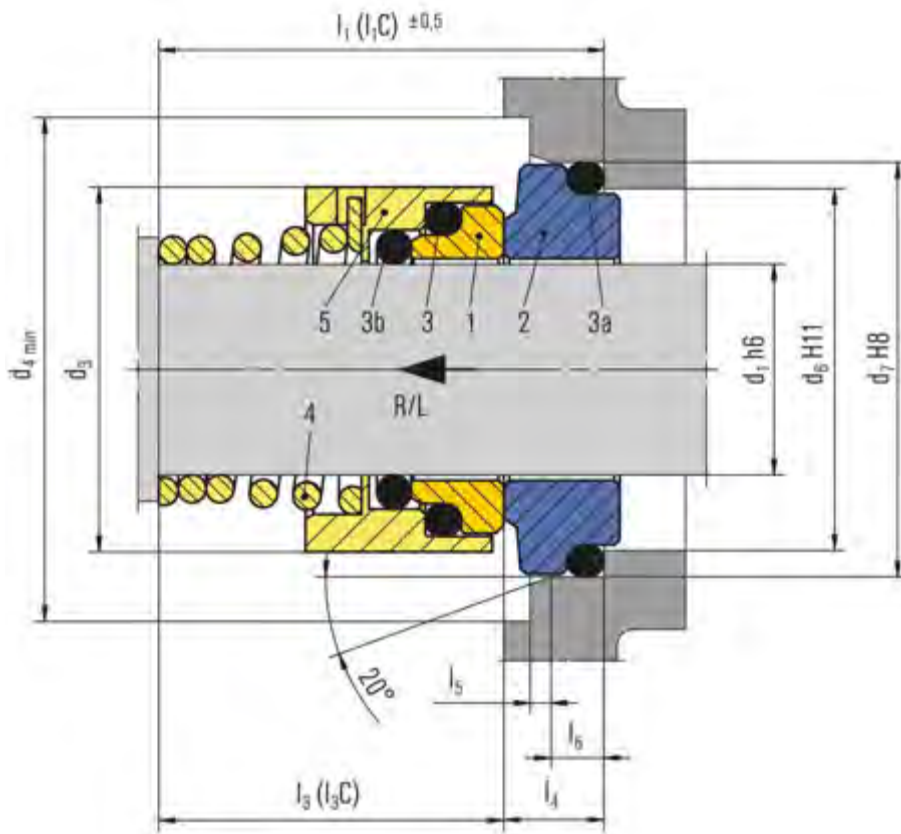
#### Notes

Seat ring of alternative seats can be supplied with short tail or with pin to block the seat and prevent seat rotation.

#### Recommended applications

- Chemical industry
- Building services industry
- Centrifugal pumps
- Clean water pumps

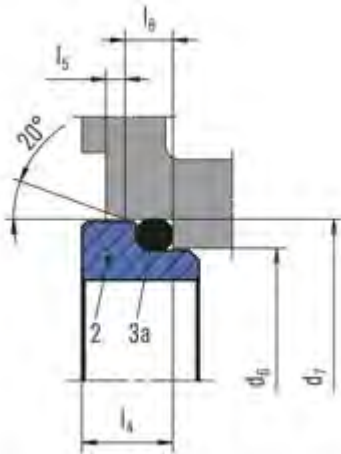
## RELY ON EXCELLENCE



Item	Description
1	Seal face
2	Stationary seat
3, 3a, 3b	O-Ring
4	Spring
5	Collar

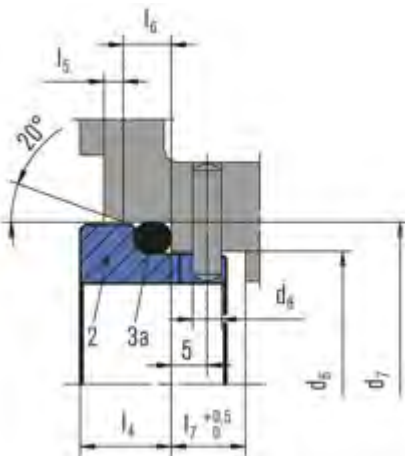
RELY ON EXCELLENCE

## Seat alternatives



PF L

**Item Description**  
 2 Stationary seat  
 3a O-Ring

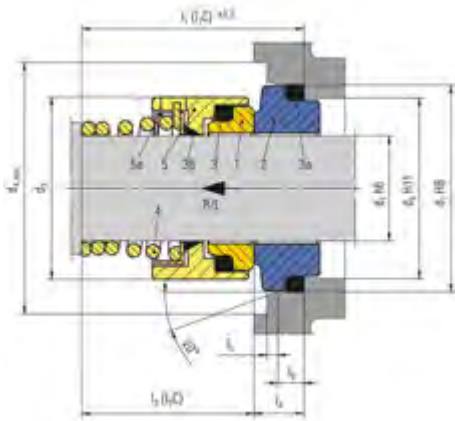


PF L1

**Item Description**  
 2 Stationary seat  
 3a O-Ring

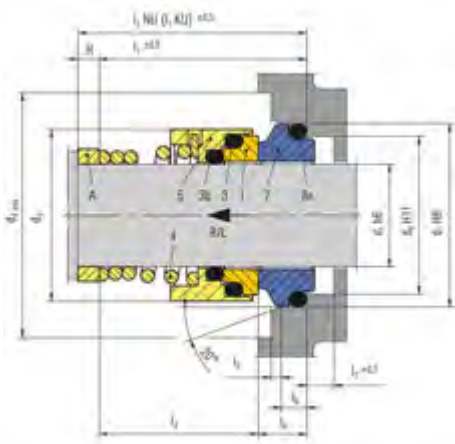
## RELY ON EXCELLENCE

### Product variants



#### BT-FH6

Like BT-FH but with PTFE secondary seal elements instead of elastomers. Mainly used in the chemical industry and for corrosive media.



#### BT-FH.NU / KU

BT-FH.NU has an installation length  $l_{IN}$  and seat dimensions in accordance with EN 12756 (normal length).

BT-FH.KU has an installation length  $l_{IK}$  and seat dimensions in accordance with EN 12756 (short length).

Item	Description
1	Seal face
2	Stationary seat
3, 3a, 3b	O-Ring
4	Spring
5	Collar
A	Spacer (upon request)

#### BT-FHC

Like BT-FH but with shorter installation length (see  $l_{3C}$  in the dimension table). The model BT-FHC has the same installation length as the BT-RN.



## RELY ON EXCELLENCE

### Dimensions

BT-FH d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	BT-FHC l <sub>1C</sub>	l <sub>3C</sub>
10	20	22	14.0	18.1	25.5	20	5.5	1.2	3	20.5	15
12	22	25	16.5	20.6	27.5	22	5.5	1.2	3	23.5	18
14	25	28	19.0	23.1	33.0	27	6.0	1.2	3	28.0	22
15	29	32	21.0	26.9	34.0	27	7.0	1.5	4	28.0	22
16	29	32	21.0	26.9	35.0	28	7.0	1.5	4	30.0	23
18	33	36	25.0	30.9	38.0	30	8.0	1.5	4	32.0	24
20	33	36	25.0	30.9	38.0	30	8.0	1.5	4	33.0	25
22	38	41	30.0	35.4	38.0	30	8.0	2.0	4	33.0	25
24	38	41	30.0	35.4	40.0	32	8.0	2.0	4	35.0	27
25	40	45	33.0	38.2	41.5	33	8.5	2.0	4	35.5	27
26	40	45	33.0	38.2	41.5	33	8.5	2.0	4	35.5	27
28	46	50	38.0	43.3	45.0	36	9.0	2.0	4	38.0	29
30	46	50	38.0	43.3	46.0	37	9.0	2.0	4	39.0	30
32	46	50	38.0	43.3	46.0	37	9.0	2.0	4	39.0	30
34	56	62	45.0	53.3	59.5	48	11.5	2.0	6	50.5	39
35	56	62	45.0	53.5	59.5	48	11.5	2.0	6	50.5	39
36	56	62	45.0	53.5	59.5	48	11.5	2.0	6	50.5	39
38	63	70	52.0	60.5	59.5	48	11.5	2.0	6	50.5	39
40	63	70	52.0	60.5	59.5	48	11.5	2.0	6	50.5	39
42	63	70	52.0	60.5	59.5	48	11.5	2.0	6	50.5	39
43	63	70	52.0	60.5	59.5	48	11.5	2.0	6	52.5	41
45	69	75	57.0	65.5	62.5	51	11.5	2.0	6	52.5	41
48	69	75	57.0	65.5	62.5	51	11.5	2.0	6	52.5	41
50	76	83	64.0	72.5	66.5	55	11.5	2.0	6	56.5	45
55	76	83	64.0	72.5	68.5	57	11.5	2.0	6	58.5	47
60	84	90	72.0	79.3	72.5	61	11.5	2.0	6	60.5	49
65	89	96	77.0	84.5	74.5	63	11.5	2.0	6	62.5	51
70	94	101	82.0	89.5	74.5	63	11.5	2.0	6	62.5	51
75	100	106	87.0	94.5	79.5	68	11.5	2.0	6	68.5	57
80	105	111	92.0	99.5	81.5	70	11.5	2.0	6	70.5	59
85	115	125	98.0	105.5	85.5	72	13.5	2.5	6	72.5	59
90	120	132	105.0	111.5	88.5	75	13.5	2.5	6	75.5	62
95	126	137	110.0	116.5	88.5	75	13.5	2.5	6	75.5	62
100	130	143	114.0	119.5	98.5	85	13.5	2.5	6	88.5	75

BT-FH / BT-FHC - Dimensions in millimeter

## RELY ON EXCELLENCE

### Dimensions

BT-FH.NU d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>			H	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	BT-FH.KU l <sub>1KU</sub>	l <sub>3</sub>
10	20	22	17	21	40	18	22	15	7	1.5	4	8.5	32.5	25.5
12	22	25	19	23	40	15	25	18	7	1.5	4	8.5	32.5	25.5
14	25	28	21	25	40	11	29	22	7	1.5	4	8.5	35.0	28.0
16	29	32	23	27	40	10	30	23	7	1.5	4	8.5	35.0	28.0
18	33	36	27	33	45	11	34	24	10	2.0	5	9.0	37.5	27.5
18	33	36	27	33	45	11	34	24	10	2.0	5	9.0	37.5	27.5
20	33	36	29	35	45	10	35	25	10	2.0	5	9.0	37.5	27.5
22	38	41	31	37	45	10	35	25	10	2.0	5	9.0	37.5	27.5
24	38	41	33	39	50	13	37	27	10	2.0	5	9.0	40.0	30.0
25	40	45	34	40	50	13	37	27	10	2.0	5	9.0	40.0	30.0
28	46	50	37	43	50	11	39	27	10	2.0	5	9.0	42.5	32.5
30	46	50	39	45	50	10	40	29	10	2.0	5	9.0	42.5	32.5
32	46	50	42	48	55	15	40	30	10	2.0	5	9.0	42.5	32.5
33	52	56	42	48	55	6	49	39	10	2.0	5	9.0	42.5	32.5
35	56	62	44	50	55	6	49	39	10	2.0	5	9.0	42.5	32.5
38	63	70	49	56	55	-	55	42	13	2.0	6	9.0	45.0	32.0
40	63	70	51	58	55	-	55	42	13	2.0	6	9.0	45.0	32.0
43	63	70	54	61	60	-	60	47	13	2.0	6	9.0	45.0	32.0
45	69	75	56	63	60	-	60	47	13	2.0	6	9.0	45.0	32.0
48	69	75	59	66	60	-	60	47	13	2.0	6	9.0	45.0	32.0
50	76	83	62	70	60	-	60	46	14	2.5	6	9.0	47.5	33.5
53	76	83	65	73	70	-	70	56	14	2.5	6	9.0	47.5	33.5
55	76	83	67	75	70	-	70	56	14	2.5	6	9.0	47.5	33.5
58	82	88	70	78	70	-	70	56	14	2.5	6	9.0	52.5	38.5
60	84	90	72	80	70	-	70	56	14	2.5	6	9.0	52.5	38.5
63	86	93	75	83	70	-	70	56	14	2.5	6	9.0	52.5	38.5
65	89	96	77	85	80	-	80	66	14	2.5	6	9.0	52.5	38.5
68	92	99	81	90	80	-	80	64	16	2.5	7	9.0	52.5	36.5
70	94	101	83	92	80	-	80	64	16	2.5	7	9.0	60.0	44.0
75	100	106	88	97	80	-	80	64	16	2.5	7	9.0	60.0	44.0
80	105	111	95	105	90	-	90	72	18	3.0	7	9.0	60.0	42.0
85	115	125	100	110	90	-	90	72	18	3.0	7	9.0	60.0	42.0
90	120	132	105	115	90	-	90	72	18	3.0	7	9.0	65.0	47.0
95	126	137	110	120	90	-	90	72	18	3.0	7	9.0	65.0	47.0
100	130	143	115	125	90	-	90	72	18	3.0	7	9.0	65.0	47.0

d<sub>3</sub>, d<sub>4</sub> dimensions not always in accordance with EN 12756

l<sub>1NU</sub> complies with EN 12756 (normal length, unbalanced)

l<sub>1KU</sub> complies with EN 12756 (short length, unbalanced)

BT-FH.NU / KU - Dimensions in millimeter

RELY ON EXCELLENCE

## BT-FH Balanced

### EagleBurgmann BT Mechanical seals



#### Features

- Single pusher-type seal
- Balanced
- Dependent on direction of rotation
- Conical spring
- Length according to EN 12756
- Version NB (normal length, balanced L<sub>1NB</sub>)

#### Advantages

The BT-FH mechanical seal range has been designed for universal application and is ideally suited for standardization. It is a cost-effective version of a balanced seal with the added advantage of only having to replace the wearing faces during overhauls. Installation length in accordance with EN 12756 (L<sub>1NB</sub>).

#### Operating range

Shaft diameter:  
d1 = 16 ... 70 mm (0.63" ... 2.76")  
Pressure: p1\* = 25 bar (363 PSI)  
Temperature:  
t\* = -35 °C ... +180 °C (-31 °F ... +356 °F)  
Sliding velocity: vg = 15 m/s (49 ft/s)

\* Dependent on medium, size and material

#### Materials

Seal face: Silicon carbide (Q1)  
Seat: Carbon graphite resin impregnated (B), Carbon graphite, full carbon (B3), Carbon graphite antimony impregnated (A), Silicon carbide (Q1)  
Elastomers: NBR (P), EPDM (E), FKM (V), FFKM (K)  
Metal parts: CrNiMo steel (G)

#### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

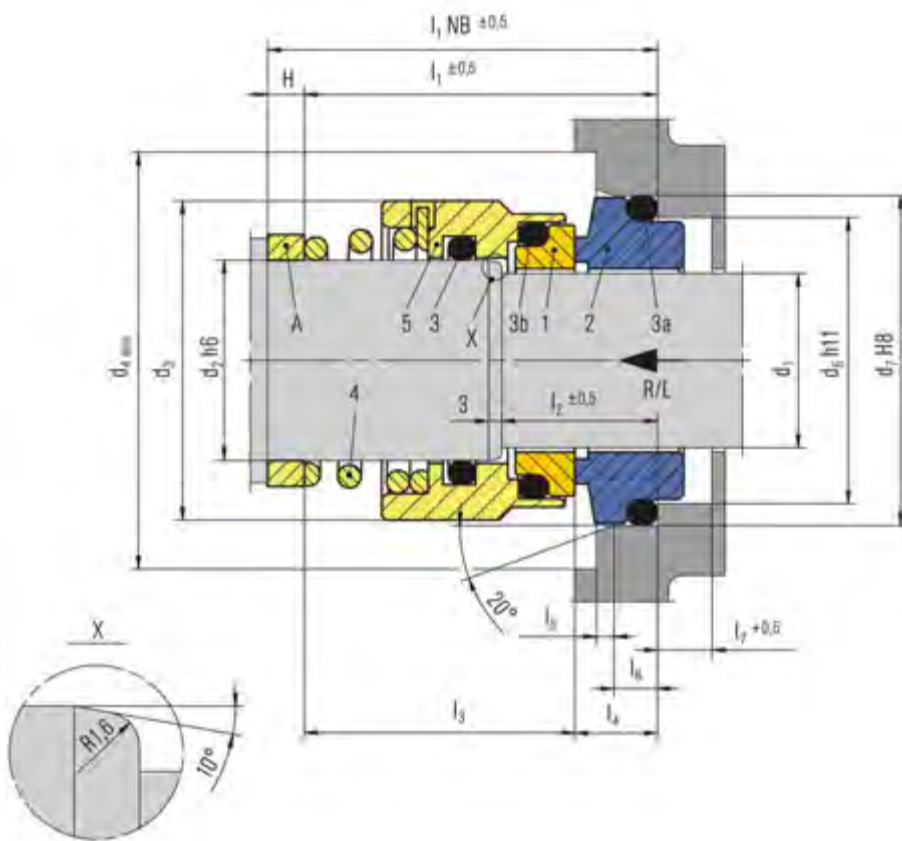
#### Notes

Seat ring of alternative seats can be supplied with short tail or with pin to block the seat and prevent seat rotation.

#### Recommended applications

- Chemical industry
- Building services industry
- Centrifugal pumps
- Clean water pumps

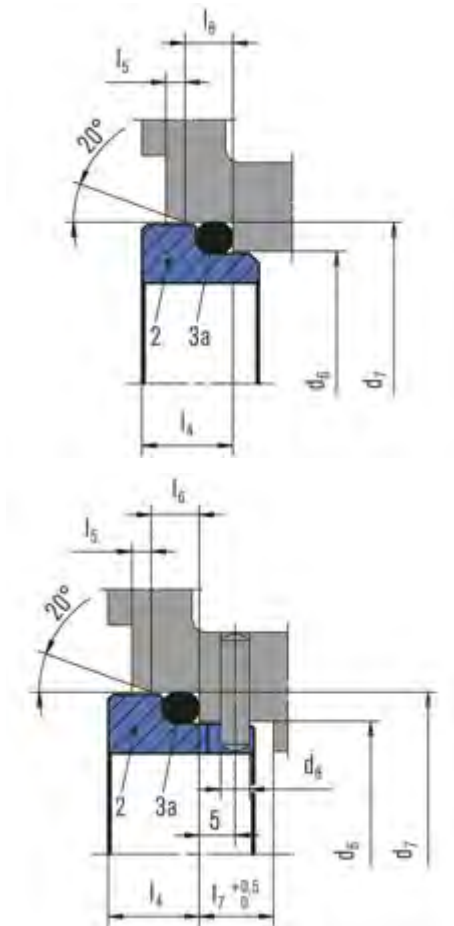
## RELY ON EXCELLENCE



Item	Description
1	Seal face
2	Stationary seat
3, 3a, 3b	O-Ring
4	Spring
5	Collar
A	Spacer (upon request)

## RELY ON EXCELLENCE

### Seat alternatives



PFL

#### Item Description

- 2 Stationary seat
- 3a O-Ring

PFL1

#### Item Description

- 2 Stationary seat
- 3a O-Ring

### Product variants

#### BT-FH.NB DV

The BT-FH.NB DV is a variant of the BT-FH.NB with a vertical pin for torque transmission in the conical spring. Same installation length as BT-FH.NB, in accordance with EN 12756 (L<sub>1NB</sub>).

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1NB</sub>	H	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>
16	20	34	36	23	27	3	55	8	47	18	40	7	1.5	4	8.5
18	22	36	38	27	33	3	55	4	51	20	41	10	2.0	5	9.0
20	24	38	40	29	35	3	60	7	53	20	43	10	2.0	5	9.0
22	26	40	42	31	37	3	60	7	53	20	43	10	2.0	5	9.0
24	28	42	44	33	39	3	60	-	60	20	50	10	2.0	5	9.0
25	30	44	46	34	40	3	60	-	60	20	50	10	2.0	5	9.0
28	33	47	49	37	43	3	65	-	65	20	55	10	2.0	5	9.0
30	35	49	51	39	45	3	65	-	65	20	55	10	2.0	5	9.0
32	38	54	58	42	48	3	65	-	65	20	55	10	2.0	5	9.0
33	38	54	58	42	48	3	65	-	65	20	55	10	2.0	5	9.0
35	40	56	60	44	50	3	65	-	65	20	55	10	2.0	5	9.0
38	43	59	63	49	56	4	75	-	75	23	62	13	2.0	6	9.0
40	45	61	65	51	58	4	75	-	75	23	62	13	2.0	6	9.0
43	48	64	68	54	61	4	75	-	75	23	63	13	2.0	6	9.0
45	50	66	70	56	63	4	75	-	75	23	62	13	2.0	6	9.0
48	53	69	73	59	66	4	85	-	85	23	72	13	2.0	6	9.0
50	55	71	75	62	70	4	85	-	85	25	71	14	2.5	6	9.0
53	58	78	83	65	73	4	85	-	85	25	71	14	2.5	6	9.0
55	60	80	88	67	75	4	85	-	85	25	71	14	2.5	6	9.0
58	63	83	85	70	78	4	85	-	85	25	71	14	2.5	6	9.0
60	65	85	90	72	80	4	95	-	95	25	81	14	2.5	6	9.0
63	68	88	93	75	83	4	95	-	95	25	81	14	2.5	6	9.0
65	70	90	95	77	85	4	95	-	95	25	81	14	2.5	6	9.0
70	75	99	104	83	92	4	95	-	95	28	79	16	2.5	7	9.0

**BT-FH.NB Balanced** - Dimensions in millimeter

l<sub>1NB</sub> complies with EN 12756 (normal length, balanced)

RELY ON EXCELLENCE

## BT-FN

### EagleBurgmann BT Mechanical seals



#### Features

- Single pusher-type seal
- Unbalanced
- Conical spring
- Dependent on direction of rotation

#### Advantages

The BT-FN combines a spring loaded ceramic seal face and the traditional pusher mechanical seals. The competitive price and the wide range of applications have made the BT-FN seal a success. The seal is produced with punched metal parts that allow an economical design.

BT-FN mechanical seals are also the ideal solution for light chemicals media applications. To ensure the best reliable performance, we recommend a material combination of hard material sliding faces and proper elastomer O-Rings.

#### Operating range

Shaft diameter:  
 $d1^* = 10 \dots 40 \text{ mm (0.39" ... 1.57")}$   
 Pressure:  $p1^* = 12 \text{ (16) bar (174 (232) PSI)}$   
 Temperature:  
 $t^* = -35 \text{ °C ... } +180 \text{ °C (-31 °F ... } +356 \text{ °F)}$   
 Sliding velocity:  $vg = 15 \text{ m/s (49 ft/s)}$

\* Dependent on medium, size and material

#### Materials

Seal face:

Steatite (X), Aluminium oxide (V), Silicon carbide (Q1, Q6), Tungsten carbide (U1)

Seat:

Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (Q1, Q6), Tungsten carbide (U1)

Elastomers:

NBR (P), EPDM (E), FKM (V), FFKM (K)

Metal parts: CrNi steel 1.4301 (F), CrNiMo steel 1.4401 (G)

#### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

#### Notes

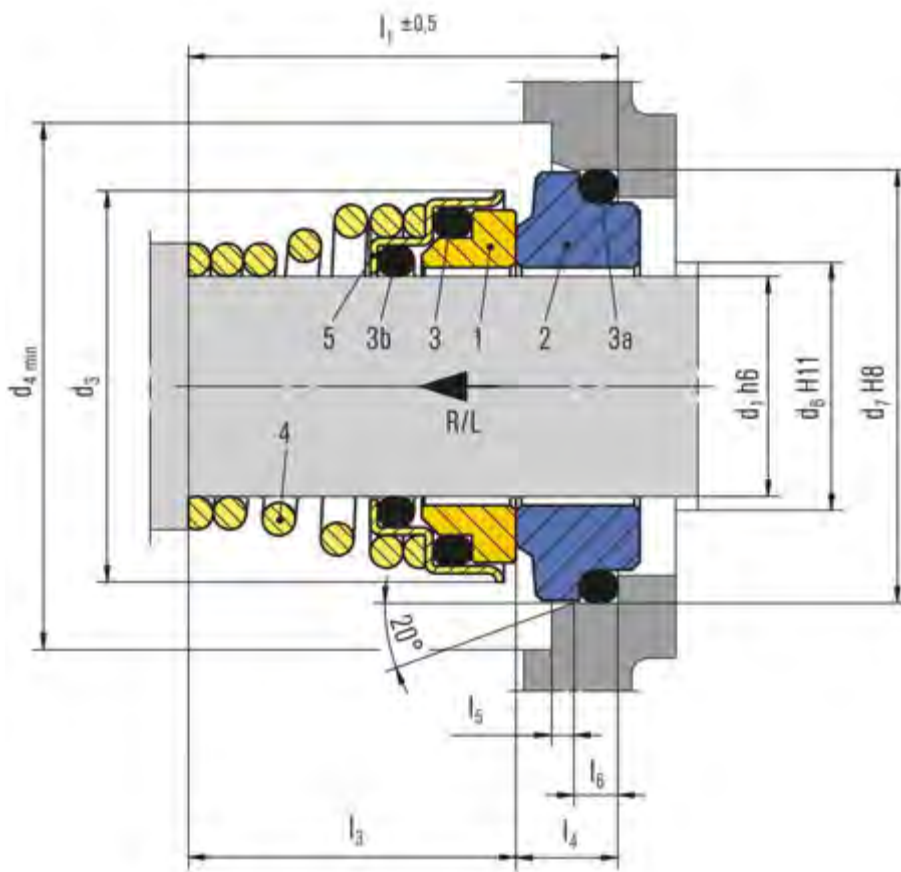
Seat ring of alternative seats can be supplied with short tail or with pin to block the seat and prevent seat rotation.

#### Recommended applications

- Building services industry
- Household appliances
- Centrifugal pumps
- Clean water pumps
- Pumps for domestic applications and gardening



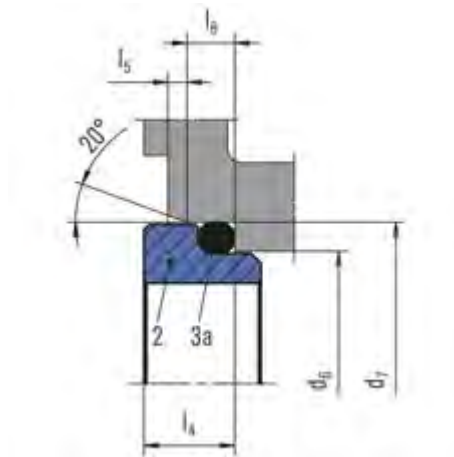
## RELY ON EXCELLENCE



Item	Description
1	Seal face
2	Stationary seat
3, 3a, 3b	O-Ring
4	Spring
5	Collar

RELY ON EXCELLENCE

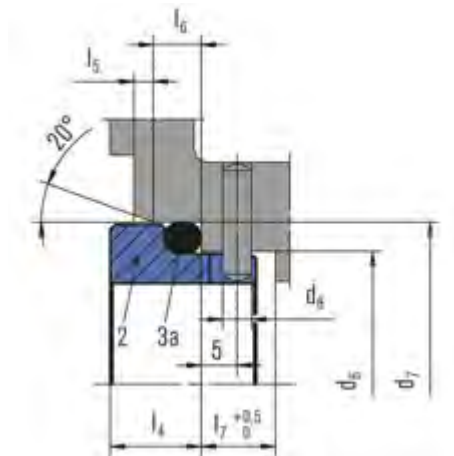
## Seat alternatives



PF L

**Item Description**

- 2 Stationary seat
- 3a O-Ring



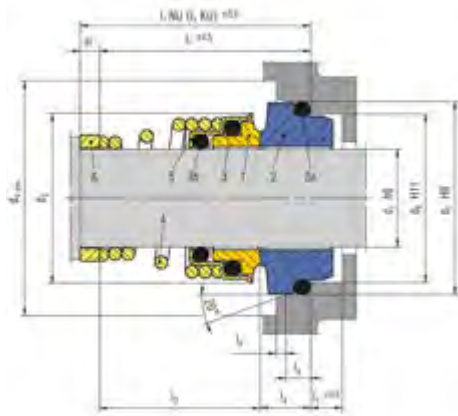
PF L1

**Item Description**

- 2 Stationary seat
- 3a O-Ring

## RELY ON EXCELLENCE

### Product variants



#### BT-FN.NU / KU

BT-FN.NU has an installation length  $l_{1N}$  and dimensions in accordance with EN 12756 (normal length, unbalanced).

BT-FN.KU has an installation length  $l_{1K}$  and dimensions in accordance with EN 12756 (short length, unbalanced).

Item	Description
1	Seal face
2	Stationary seat
3, 3a, 3b	O-Ring
4	Spring
5	Collar
A	Spacer (upon request)

### Dimensions

$d_1$	$d_3$	$d_4$	$d_6$	$d_7$	$l_1$	$l_3$	$l_4$	$l_5$	$l_6$
10	19.5	22	14.0	18.1	20.5	15	5.5	1.2	3
11	22.5	25	16.5	20.6	23.5	18	5.5	1.2	3
12	22.5	25	16.5	20.6	23.5	18	5.5	1.2	3
13	24.5	28	19.0	23.1	28.0	22	6.0	1.2	3
14	24.5	28	19.0	23.1	28.0	22	6.0	1.2	3
15	29.0	32	21.0	26.9	29.0	22	7.0	1.5	4
16	29.0	32	21.0	26.9	30.0	23	7.0	1.5	4
17	29.0	32	21.0	26.9	30.0	23	7.0	1.5	4
18	32.5	36	25.0	30.9	32.0	24	8.0	1.5	4
19	32.5	36	25.0	30.9	33.0	25	8.0	1.5	4
20	32.5	36	25.0	30.9	33.0	25	8.0	1.5	4
22	37.5	42	30.0	35.4	33.0	25	8.0	2.0	4
24	37.5	42	30.0	35.4	35.0	27	8.0	2.0	4
25	40.0	45	33.0	38.2	35.5	27	8.5	2.0	4
28	46.0	51	38.0	43.3	38.0	29	9.0	2.0	4
30	46.0	51	38.0	43.3	39.0	30	9.0	2.0	4
32	46.0	51	38.0	43.3	39.0	30	9.0	2.0	4
35	50.0	55	45.0	53.5	50.5	39	11.5	2.0	6
38	58.0	68	52.0	60.5	50.5	39	11.5	2.0	6
40	58.0	68	52.0	60.5	50.5	39	11.5	2.0	6

BT-FN - Dimensions in millimeter

## RELY ON EXCELLENCE

### Dimensions

BT-FN.NU d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1N</sub>	H	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	BT-FN.KU l <sub>1KU</sub>	l <sub>3</sub>
10	20.0	22	17	21	3	40	18	22	15	7	1.5	4	8.5	32.5	25.5
12	22.5	26	19	23	3	40	15	25	18	7	1.5	4	8.5	32.5	25.5
14	24.5	28	21	25	3	40	11	29	22	7	1.5	4	8.5	35.0	28.0
16	29.0	32	23	27	3	40	10	30	23	7	1.5	4	8.5	35.0	28.0
18	32.5	36	27	33	3	45	11	34	24	10	2.0	5	9.0	37.5	27.5
20	32.5	36	29	35	3	45	10	35	25	10	2.0	5	9.0	37.5	27.5
22	37.5	40	31	37	3	45	10	35	25	10	2.0	5	9.0	37.5	27.5
24	37.5	40	33	39	3	50	13	37	27	10	2.0	5	9.0	40.0	30.0
25	40.0	42	34	40	3	50	13	37	27	10	2.0	5	9.0	40.0	30.0
28	46.0	48	37	43	3	50	11	39	29	10	2.0	5	9.0	42.5	32.5
30	46.0	48	39	45	3	50	10	40	30	10	2.0	5	9.0	42.5	32.5
32	46.0	48	42	48	3	55	15	40	30	10	2.0	5	9.0	42.5	32.5
35	50.0	53	44	50	3	55	6	49	39	10	2.0	5	9.0	42.5	32.5
38	58.0	68	49	56	4	55	3	52	39	13	2.0	6	9.0	45.0	32.0
40	58.0	68	51	58	4	55	3	52	39	13	2.0	6	9.0	45.0	32.0

d<sub>3</sub>, d<sub>4</sub> dimensions not always in accordance with EN 12756

l<sub>1NU</sub> complies with EN 12756 (normal length, unbalanced)

l<sub>1KU</sub> complies with EN 12756 (short length, unbalanced)

**BT-FN.NU / KU** - Dimensions in millimeter

RELY ON EXCELLENCE

## BT-RN

### EagleBurgmann BT Mechanical seals



#### Features

- Single pusher-type seal
- Unbalanced
- Conical spring
- Dependent on direction of rotation

#### Advantages

The BT-RN represents the traditionally designed robust pusher seal. This type of mechanical seal is easy to install and covers a wide range of applications; its reliability has been proven by millions of units in worldwide operation. It is a convenient solution for the widest range of applications: for clean water as well as chemical media.

#### Operating range

Shaft diameter:

RN, RN3, RN6:

d1 = 6 ... 110 mm (0.24" ... 4.33"),

RN.NU, RN3.NU:

d1 = 10 ... 100 mm (0.39" ... 3.94"),

RN4: upon request

Pressure: p1\* = 12 bar (174 PSI)

Temperature:

t\* = -35 °C ... +180 °C (-31 °F ... +356 °F)

Sliding velocity: vg = 15 m/s (49 ft/s)

\* Dependent on medium, size and material

#### Materials

Seal face:

CrNi steel (F, F1), CrNiMo steel (G), Tungsten carbide (U)

Seat:

Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Tungsten carbide (U)

Elastomers:

NBR (P), EPDM (E), FKM (V), FFKM (K)

Metal parts: CrNi steel 1.4301 (F), CrNiMo steel 1.4401 (G)

#### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

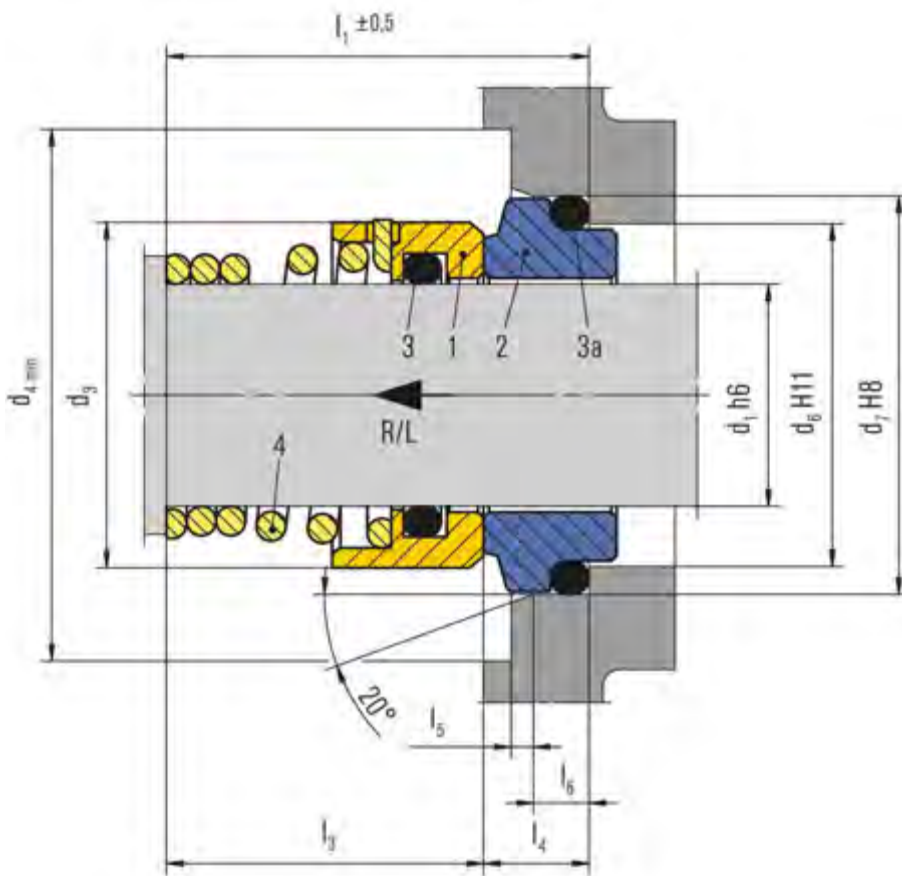
#### Notes

Seat ring of alternative seats can be supplied with short tail or with pin to block the seat and prevent seat rotation.

#### Recommended applications

- Chemical industry
- Building services industry
- Centrifugal pumps
- Clean water pumps

RELY ON EXCELLENCE

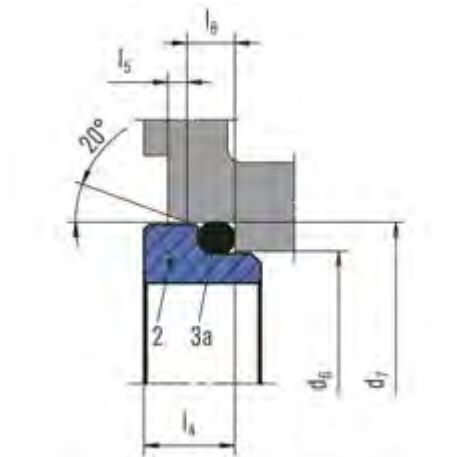


#### Item Description

- 1 Seal face
- 2 Stationary seat
- 3, 3a O-Ring
- 4 Spring

RELY ON EXCELLENCE

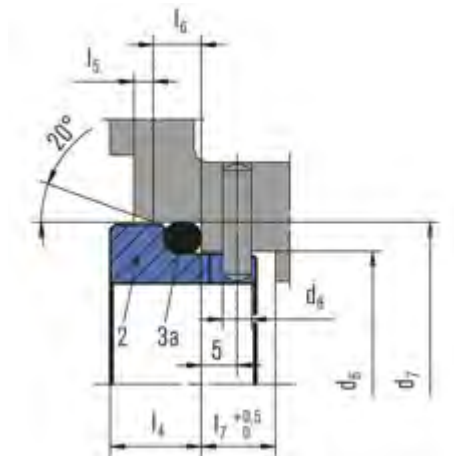
## Seat alternatives



PF L

**Item Description**

- 2 Stationary seat
- 3a O-Ring



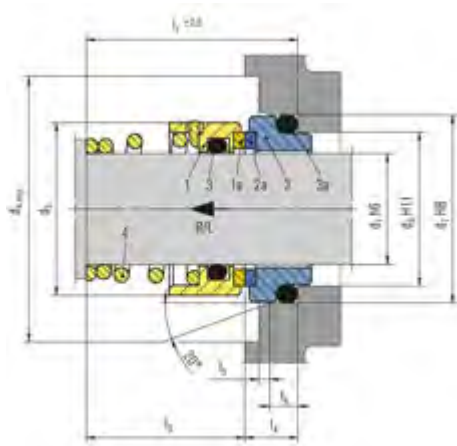
PF L1

**Item Description**

- 2 Stationary seat
- 3a O-Ring

RELY ON EXCELLENCE

## Product variants

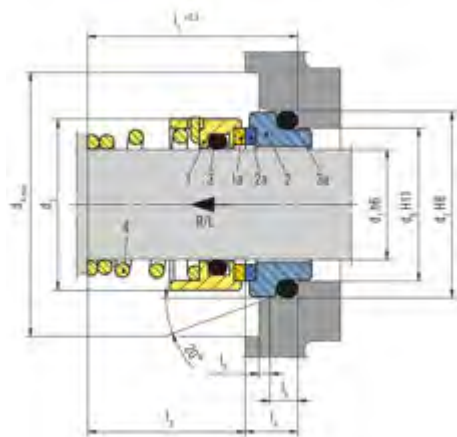


### BT-RN3

Product variant with seal faces made of brazed tungsten carbide which is suitable for media with medium corrosive and abrasive characteristics.

#### Item Description

- 1 Seal face housing
- 1a Brazed seal face
- 2 Stationary seat housing
- 2a Brazed stationary seat
- 3, 3a O-Ring
- 4 Spring

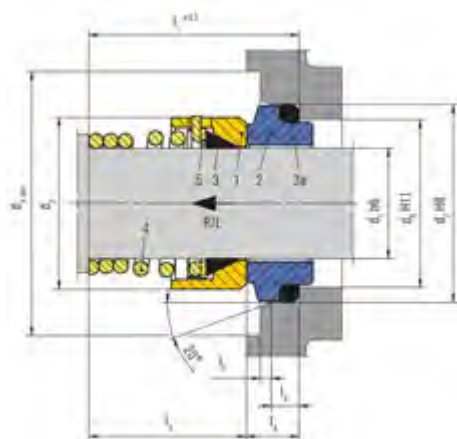


### BT-RN4

Product variant with SiC seal face shrink-fitted into the seal face carrier.

#### Item Description

- 1 Seal face housing
- 1a Shrink fitted seal face
- 2 Stationary seat housing
- 2a Shrink fitted stationary seat
- 3, 3a O-Ring
- 4 Spring



### BT-RN6

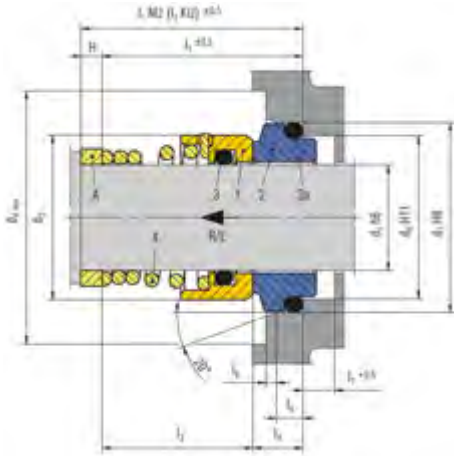
Product variant with PTFE secondary seal elements instead of elastomers. Mainly used in the chemical industry and for corrosive media.

#### Item Description

- 1 Seal face
- 2 Stationary seat
- 3 Wedge gasket (PTFE)
- 3a Gasket (PTFE)
- 4 Spring
- 5 Ring



## RELY ON EXCELLENCE



### BT-RN.NU / KU

Like the BT-RN/-RN3, but with dimensions in accordance with EN 12756.

BT-RN.NU has an installation length  $l_{1N}$  and seat dimensions in accordance with EN 12756 (normal length).

BT-RN.KU has an installation length  $l_{1K}$  and seat dimensions in accordance with EN 12756 (short length).

#### Item Description

- 1 Seal face
- 2 Stationary seat
- 3, 3a O-Ring
- 4 Spring
- A Spacer (upon request)

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>
6	12	16	10.0	13.1	19.5	15	4.5	1.2	2
8	16	20	13.0	17.1	20.5	15	5.5	1.2	3
10	20	22	14.0	18.1	20.5	15	5.5	1.2	3
11	20	24	16.5	20.6	23.5	18	5.5	1.2	3
12	22	24	16.5	20.6	23.5	18	5.5	1.2	3
13	22	26	19.0	23.1	28.0	22	6.0	1.2	3
14	24	26	19.0	23.1	28.0	22	6.0	1.2	3
15	24	31	21.0	26.9	29.0	22	7.0	1.5	4
16	26	31	21.0	26.9	30.0	23	7.0	1.5	4
17	26	31	21.0	26.9	30.0	23	7.0	1.5	4
18	32	36	25.0	30.9	32.0	24	8.0	1.5	4
19	32	36	25.0	30.9	33.0	25	8.0	1.5	4
20	34	36	25.0	30.9	33.0	25	8.0	1.5	4
22	36	41	30.0	35.4	33.0	25	8.0	2.0	4
23	36	41	30.0	35.4	35.0	27	8.0	2.0	4
24	38	41	30.0	35.4	35.0	27	8.0	2.0	4
25	39	45	33.0	38.2	35.5	27	8.5	2.0	4
26	39	45	33.0	38.2	35.5	27	8.5	2.0	4
28	42	50	38.0	43.3	38.0	29	9.0	2.0	4
30	44	50	38.0	43.3	39.0	30	9.0	2.0	4
32	46	50	38.0	43.3	39.0	30	9.0	2.0	4
33	47	60	45.0	53.5	50.5	39	11.5	2.0	6
34	48	60	45.0	53.5	50.5	39	11.5	2.0	6
35	49	60	45.0	53.5	50.5	39	11.5	2.0	6
36	50	60	45.0	53.5	50.5	39	11.5	2.0	6
38	54	68	52.0	60.5	50.5	39	11.5	2.0	6
40	56	68	52.0	60.5	50.5	39	11.5	2.0	6
42	59	68	52.0	60.5	50.5	39	11.5	2.0	6
43	59	68	57.0	60.5	52.5	41	11.5	2.0	6
44	60	72	57.0	65.5	52.5	41	11.5	2.0	6
45	61	72	57.0	65.5	52.5	41	11.5	2.0	6
48	64	72	57.0	65.5	52.5	41	11.5	2.0	6
50	66	80	64.0	72.5	56.5	45	11.5	2.0	6
55	71	80	64.0	72.5	58.5	47	11.5	2.0	6
60	80	87	72.0	79.3	60.5	49	11.5	2.0	6
65	85	92	77.0	84.5	62.5	51	11.5	2.0	6
70	90	97	82.0	89.5	62.5	51	11.5	2.0	6
75	99	102	87.0	94.5	68.5	57	11.5	2.0	6
80	104	107	92.0	99.5	70.5	59	11.5	2.0	6
85	109	113	98.0	105.5	72.5	59	13.5	2.5	6
90	114	120	105.0	111.5	75.5	62	13.5	2.5	6
95	119	130	110.0	116.5	75.5	62	13.5	2.5	6
100	124	136	114.0	119.5	88.5	75	13.5	2.5	6
110	143	150	124.0	132.2	92.5	75	17.5	4.0	7

BT-RN - Dimensions in millimeter

## RELY ON EXCELLENCE

### Dimensions

BT-RN.NU d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1NU</sub>	H	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	BT-RN.KU l <sub>1KU</sub>	l <sub>3</sub>
10	20	22	17	21	3	40	18	22	15	7	1.5	4	8.5	32.5	25.5
12	22	24	19	23	3	40	15	25	18	7	1.5	4	8.5	32.5	25.5
14	24	26	21	25	3	40	11	29	22	7	1.5	4	8.5	35.0	28.0
16	26	28	23	27	3	40	10	30	23	7	1.5	4	8.5	35.0	28.0
18	32	34	27	33	3	45	11	34	24	10	2.0	5	9.0	37.5	27.5
20	34	36	29	35	3	45	10	35	25	10	2.0	5	9.0	37.5	27.5
22	36	38	31	37	3	45	10	35	25	10	2.0	5	9.0	37.5	27.5
24	38	40	33	39	3	50	13	37	27	10	2.0	5	9.0	40.0	30.0
25	39	41	34	40	3	50	13	37	27	10	2.0	5	9.0	40.0	30.0
28	42	44	37	43	3	50	11	39	29	10	2.0	5	9.0	42.5	32.5
30	44	46	39	45	3	50	10	40	30	10	2.0	5	9.0	42.5	32.5
32	46	48	42	48	3	55	15	40	30	10	2.0	5	9.0	42.5	32.5
33	47	49	42	48	3	55	6	49	39	10	2.0	5	9.0	42.5	32.5
35	49	51	44	50	3	55	6	49	39	10	2.0	5	9.0	42.5	32.5
38	54	58	49	56	4	55	-	55	42	13	2.0	6	9.0	45.0	32.0
40	56	60	51	58	4	55	-	55	42	13	2.0	6	9.0	45.0	32.0
43	59	63	54	61	4	60	-	60	47	13	2.0	6	9.0	45.0	32.0
45	61	65	56	63	4	60	-	60	47	13	2.0	6	9.0	45.0	32.0
48	64	68	59	66	4	60	-	60	47	13	2.0	6	9.0	45.0	32.0
50	66	70	62	70	4	60	-	60	46	14	2.5	6	9.0	47.5	33.5
53	69	73	65	73	4	70	-	70	56	14	2.5	6	9.0	47.5	33.5
55	71	75	67	75	4	70	-	70	56	14	2.5	6	9.0	47.5	33.5
58	78	83	70	78	4	70	-	70	56	14	2.5	6	9.0	52.5	38.5
60	80	85	72	80	4	70	-	70	56	14	2.5	6	9.0	52.5	38.5
63	83	88	75	83	4	70	-	70	56	14	2.5	6	9.0	52.5	38.5
65	85	90	77	85	4	80	-	80	66	14	2.5	6	9.0	52.5	38.5
68	88	93	81	90	4	80	-	80	64	16	2.5	7	9.0	52.5	36.5
70	90	95	83	92	4	80	-	80	64	16	2.5	7	9.0	60.0	44.0
75	99	104	88	97	4	80	-	80	64	16	2.5	7	9.0	60.0	44.0
80	104	109	95	105	4	90	-	90	72	18	3.0	7	9.0	60.0	42.0
85	109	114	100	110	4	90	-	90	72	18	3.0	7	9.0	60.0	42.0
90	114	119	105	115	4	90	-	90	72	18	3.0	7	9.0	65.0	47.0
95	119	124	110	120	4	90	-	90	72	18	3.0	7	9.0	65.0	47.0
100	124	129	115	125	4	90	-	90	72	18	3.0	7	9.0	65.0	47.0

l<sub>1NU</sub> complies with EN 12756 (normal length, unbalanced), l<sub>1KU</sub> complies with EN 12756 (short length, unbalanced)

BT-RN.NU / KU - Dimensions in millimeter

RELY ON EXCELLENCE

## BT-RN Balanced

### EagleBurgmann BT Mechanical seals



#### Features

- Single pusher-type seal
- Balanced
- Conical spring
- Dependent on direction of rotation
- Short length (KB)
- Normal length (NB)

#### Advantages

The BT-RN.NB/KB represents a traditional pusher seal and is the balanced version of a BT-RN. Designed for high pressure fluids, it is made from the same material range as the BT-RN. The main characteristic is a short design combined with an economical seal solution. Length and dimensions according to EN 12756 (RN.NB normal length, RN.KB short length).

#### Operating range

Shaft diameter:

$d_1 = 10 \dots 100 \text{ mm (0.39" } \dots \text{ 3.94")}$

Pressure:  $p_1^* = 25 \text{ (40) bar (363 (580) PSI)}$

Temperature:

$t^* = -35 \text{ }^\circ\text{C } \dots \text{ } +180 \text{ }^\circ\text{C (-31 }^\circ\text{F } \dots \text{ } +292 \text{ }^\circ\text{F)}$

Sliding velocity:  $v_g = 15 \text{ m/s (49 ft/s)}$

\* Dependent on medium, size and material

#### Materials

Seal face:

CrNi steel 1.4057 (F1), CrNiMo steel 1.4401 (G), Tungsten carbide (U)

Seat:

Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Tungsten carbide (U) Elastomers: NBR (P), EPDM (E), FKM (V), FFKM (V)

Metal parts: CrNiMo steel (G), CrNi steel (F, F1)

#### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

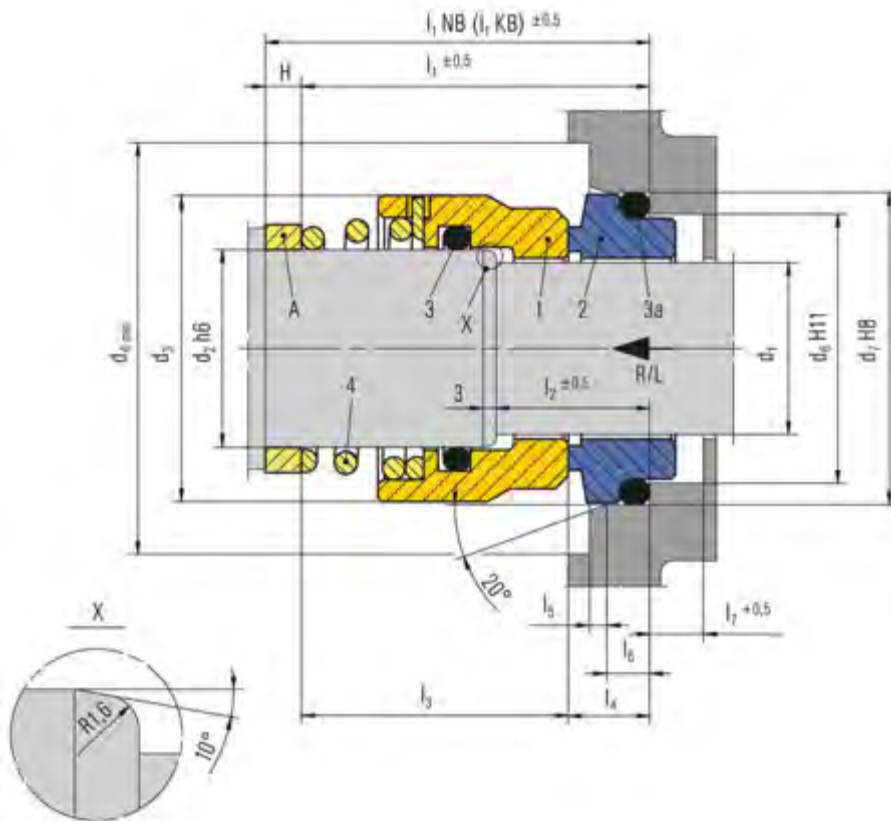
#### Notes

Seat ring of alternative seats can be supplied with short tail or with pin to block the seat and prevent seat rotation.

#### Recommended applications

- Building services industry
- Chemical industry
- Centrifugal pumps
- Clean water pumps

## RELY ON EXCELLENCE



### Item Description

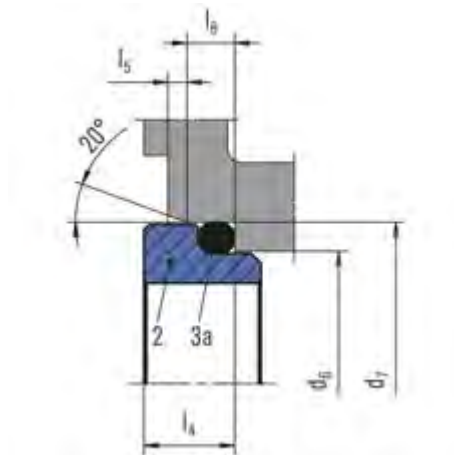
- 1 Seal face
- 2 Stationary seat
- 3, 3a O-Ring
- 4 Spring
- A Spacer (upon request)

BT-RN.NB has an installation length  $l_{1N}$  in accordance with EN 12756 (normal length).

BT-RN.KB has an installation length  $l_{1K}$  in accordance with EN 12756 (short length).

RELY ON EXCELLENCE

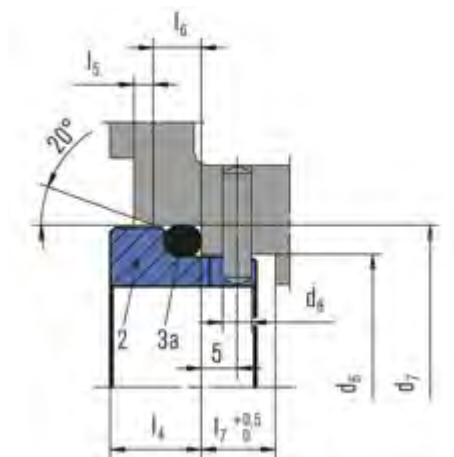
## Seat alternatives



PF L

**Item Description**

- 2 Stationary seat
- 3a O-Ring



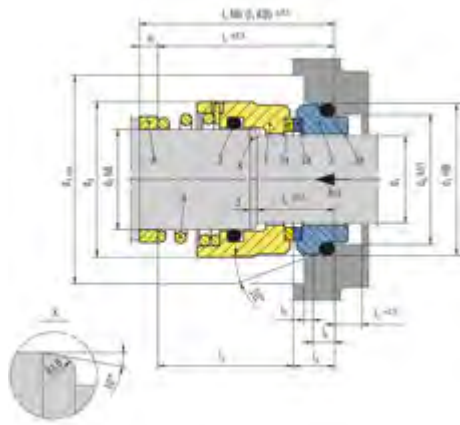
PF L1

**Item Description**

- 2 Stationary seat
- 3a O-Ring

RELY ON EXCELLENCE

## Product variants



### BT-RN3.NB / KB

Seal faces made of brazed tungsten carbide which is suitable for media with medium corrosive and abrasive characteristics.

#### Item Description

- 1 Seal face housing
- 1a Brazed seal face
- 2 Stationary seat housing
- 2a Brazed stationary seat
- 3, 3a O-Ring
- 4 Spring
- A Spacer (upon request)

## RELY ON EXCELLENCE

### Dimensions

BT-RN.NB d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1NB</sub>	H	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	BT.RN.KB l <sub>1KB</sub>	l <sub>3</sub>
10	14	24	26	17	21	3	50	-	50	18	43	7	1.5	4	8.0	40.0	33.0
12	16	26	28	19	23	3	50	-	50	18	43	7	1.5	4	8.5	40.0	33.0
14	18	32	34	21	25	3	55	9	46	18	39	7	1.5	4	8.5	42.5	35.5
16	20	34	36	23	27	3	55	8	47	18	40	7	1.5	4	8.5	42.5	35.5
18	22	36	38	27	33	3	55	4	51	20	41	10	2.0	5	9.0	45.0	35.0
20	24	38	40	29	35	3	60	7	53	20	43	10	2.0	5	9.0	45.0	35.0
22	26	40	42	31	37	3	60	7	53	20	43	10	2.0	5	9.0	45.0	35.0
24	28	42	44	33	39	3	60	-	60	20	50	10	2.0	5	9.0	47.5	37.5
25	30	44	46	34	40	3	60	-	60	20	50	10	2.0	5	9.0	47.5	37.5
28	33	47	49	37	43	3	65	-	65	20	55	10	2.0	5	9.0	50.0	40.0
30	35	49	51	39	45	3	65	-	65	20	55	10	2.0	5	9.0	50.0	40.0
32	38	54	58	42	48	3	65	-	65	20	55	10	2.0	5	9.0	50.0	40.0
33	38	54	58	42	48	3	65	-	65	20	55	10	2.0	5	9.0	50.0	40.0
35	40	56	60	44	50	3	65	-	65	20	55	10	2.0	5	9.0	50.0	40.0
38	43	59	63	49	56	4	75	-	75	23	62	13	2.0	6	9.0	52.5	39.5
40	45	61	65	51	58	4	75	-	75	23	62	13	2.0	6	9.0	52.5	39.5
43	48	64	68	54	61	4	75	-	75	23	62	13	2.0	6	9.0	52.5	39.5
45	50	66	70	56	63	4	75	-	75	23	62	13	2.0	6	9.0	52.5	39.5
48	53	69	73	59	66	4	85	-	85	23	72	13	2.0	6	9.0	52.5	39.5
50	55	71	75	62	70	4	85	-	85	25	71	14	2.5	6	9.0	57.5	43.5
53	58	78	83	65	73	4	85	-	85	25	71	14	2.5	6	9.0	57.5	43.5
55	60	80	85	67	75	4	85	-	85	25	71	14	2.5	6	9.0	57.5	43.5
58	63	83	88	70	78	4	85	-	85	25	71	14	2.5	6	9.0	62.5	48.5
60	65	85	90	72	80	4	95	-	95	25	81	14	2.5	6	9.0	62.5	48.5
63	68	88	93	75	83	4	95	-	95	25	81	14	2.5	6	9.0	62.5	48.5
65	70	90	95	77	85	4	95	-	95	25	81	14	2.5	6	9.0	62.5	48.5
70	75	99	104	83	92	4	95	-	95	28	79	16	2.5	7	9.0	70.0	54.0
75	80	104	109	88	97	4	105	-	105	28	89	16	2.5	7	9.0	70.0	54.0
80	85	109	114	95	105	4	105	-	105	28	87	18	3.0	7	9.0	70.0	52.0
85	90	114	119	100	110	4	105	-	105	28	87	18	3.0	7	9.0	75.0	57.0
90	95	119	124	105	115	4	105	-	105	28	87	18	3.0	7	9.0	75.0	57.0
95	100	124	129	110	120	4	105	-	105	28	87	18	3.0	7	9.0	75.0	57.0
100	105	129	134	115	125	4	105	-	105	28	87	18	3.0	7	9.0	75.0	57.0

l<sub>1NB</sub> complies with EN 12756 (normal length, unbalanced)

BT-RN.NB / KB Balanced - Dimensions in millimeter



RELY ON EXCELLENCE

## eHJ

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- For unstepped shafts
- Single seal
- Balanced
- Independent of direction of rotation
- Encapsulated rotating spring

### Advantages

- Especially designed for solids containing and highly viscous media
- Springs are protected from the product
- Rugged and reliable design
- No damage of the shaft by dynamically loaded O-Ring
- Universal application
- Variants for sterile operation available
- Increased axial movement
- DiamondFace coating possible
- Spring protection and vibration damping
- Insensitive to temperature changes
- 100 % compatible to HJ9... for 11k

### Operating range

Shaft diameter:

$d_1 = 18 \dots 100 \text{ mm} (0.71" \dots 4")$

Pressure:

$p_1^*) = \text{vacuum} \dots 40 \text{ bar} (\text{vacuum} \dots 580 \text{ PSI})$

Temperature:

$t = -50 \text{ °C} \dots +220 \text{ °C} (-58 \text{ °F} \dots +430 \text{ °F})$

Sliding velocity:  $v_g = 20 \text{ m/s} (66 \text{ ft/s})$

Axial movement:

$d_1 = 18 \dots 25 \text{ mm}: \pm 0,5 \text{ mm}$

$d_1 = 28 \dots 55 \text{ mm}: \pm 0,8 \text{ mm}$

$d_1 = 60 \dots 100 \text{ mm}: \pm 1,0 \text{ mm}$

\* An integral stationary seat lock is not needed within the permissible low pressure range. For prolonged operation under vacuum it is necessary to arrange for quenching on the atmospheric side.

### Materials

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (eSIC-Q7)  
 Seat G6: Silicon carbide (eSIC-Q7)  
 Secondary seals: E, EL, V, V16, K, KL, P  
 Springs: CrNiMo steel (G)  
 Face housing: CrNiMo steel (G)  
 Driver: Duplex (G1)

### Standards and approvals

- EN 12756

### Notes

Variant for sterile applications available. Please inquire.

### Recommended applications

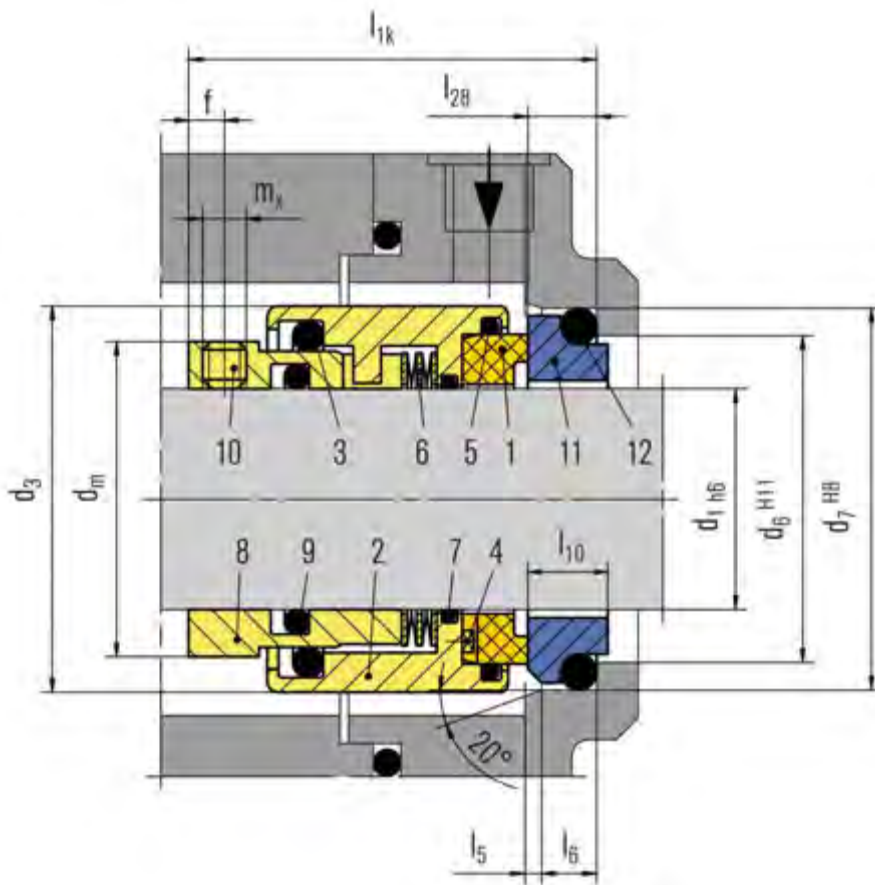
#### eHJ

- Water and waste water technology
- Drinking water
- Chemical industry
- Oil and Gas
- Petrochemical industry
- Refining technology
- Pulp and paper industry
- Power plant technology
- Mining industry
- Metal production and processing
- Special applications (Cement, ...)
- Shipping Industry

#### eSHJ

- Food and beverage industry
- Pharmaceutical industry

RELY ON EXCELLENCE

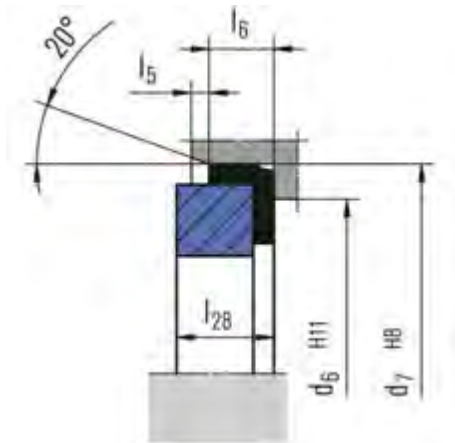


eHJ

Item	Description
1	Seal face
2	Face housing
3, 5, 7, 9, 12	O-Ring
4	Square pin
6	Spring
8	Driver
10	Set screw
11	Seat

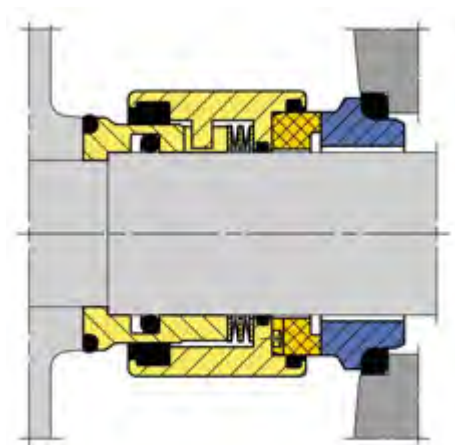
## RELY ON EXCELLENCE

### Seat alternatives



**G60** (EN 12756)

### Product variants



**eSHJ**  
Variant for sterile applications.  
Please inquire.

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>m</sub>	l <sub>1K</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>10</sub>	l <sub>28</sub>	f	m <sub>x</sub>
18	32	27	33	26	37.5	2	5	8.5	7.5	2.8	M4
20	34	29	35	28	37.5	2	5	8.5	7.5	2.8	M4
22	36	31	37	30	37.5	2	5	8.5	7.5	2.8	M4
24	38	33	39	32.5	40	2	5	8.5	7.5	3.3	M5
25	39	34	40	33.5	40	2	5	8.5	7.5	3.3	M5
28	42	37	43	36.5	42.5	2	5	8.5	7.5	3.3	M5
30	44	39	45	38.5	42.5	2	5	8.5	7.5	3.3	M5
32	47	42	48	40.5	42.5	2	5	8.5	7.5	3.3	M5
33	47	42	48	41.5	42.5	2	5	8.5	7.5	3.3	M5
35	49	44	50	43.5	42.5	2	5	8.5	7.5	3.3	M5
38	54	49	56	47.5	45	2	6	10	9	3.3	M5
40	56	51	58	49.5	45	2	6	10	9	3.3	M5
43	59	54	61	52.5	45	2	6	10	9	3.3	M5
45	61	56	63	54.5	45	2	6	10	9	3.3	M5
48	64	59	66	57.5	45	2	6	10	9	3.3	M5
50	66	62	70	59.5	47.5	2.5	6	10.5	9.5	3.8	M6
53	69	65	73	62.5	47.5	2.5	6	12	11	3.8	M6
55	71	67	75	64.5	47.5	2.5	6	12	11	3.8	M6
60	80	72	80	70.5	52.5	2.5	6	12	11	3.8	M6
65	85	77	85	75.5	52.5	2.5	6	12	11	3.8	M6
70	90	83	92	84	60	2.5	7	12.5	11.3	5	M8
75	99	88	97	89	60	2.5	7	12.5	11.3	5	M8
80	104	95	105	94	60	3	7	13	12	5	M8
85	109	100	110	99	60	3	7	15	14	5	M8
90	114	105	115	104	65	3	7	15	14	5	M8
95	119	110	120	109	65	3	7	15	14	5	M8
100	124	115	125	114	65	3	7	15	14	5	M8

**eHJ** Dimensions in millimeter

RELY ON EXCELLENCE

## EK700

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Advantages

- Unitized construction allows easy conversion
- Springs located on the atmospheric side, no clogging
- High precision rotating assembly reduces "swashing" of seal head

### Operating range

Pressure:  $p = \dots 35 \text{ bar}$  ( ... 508 PSI)  
Temperature:  $t = 160 \text{ }^\circ\text{C}$  (320 °F)  
Sliding velocity:  $v_g = 30 \text{ m/s}$  (98 ft/s)  
Viscosity: ... 0.5 Pa·s  
Solids content: ... 0.5 %

### Features

- Single seal
- Balanced
- Independent of direction of rotation
- Stationary multiple springs

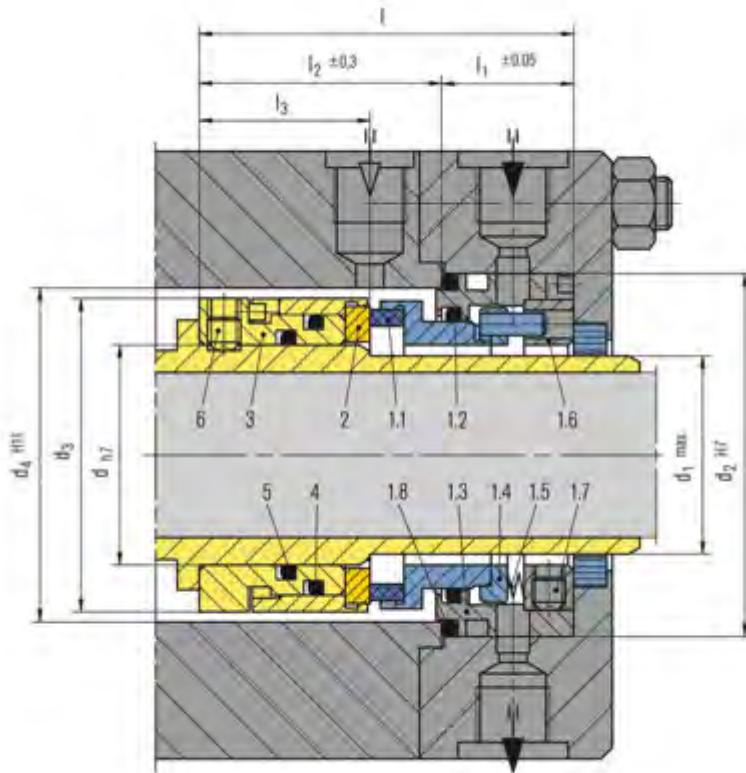
### Materials

Seal face: High density carbon graphite (B)  
Seat: Silicon carbide (Q1)  
Secondary seals: FKM (V)  
Metal parts: 1.4401 (G)

### Recommended applications

- Chemical industry
- Refining technology
- Petrochemical industry
- Lubrication oil
- Light oil
- Gasoline
- Naphtha
- Water
- Process pumps

## RELY ON EXCELLENCE



### Item Description

- 1.1 Seal face
- 1.2 O-Ring
- 1.3 Housing
- 1.4 Thrust ring
- 1.5 Spring
- 1.6 Thrust ring
- 1.7 Set screw
- 1.8 O-Ring
- 2 Seat
- 3 Drive collar
- 4 O-Ring
- 5 O-Ring
- 6 Set screw

## RELY ON EXCELLENCE

### Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
20	18	42	33	36	63	23	40	30
25	23	47	39	41	65	24	41	30
30	28	53	44	46	66	24	42	30
35	33	58	49	51	66	24	42	30
40	38	66	57	60	68	24	44	31
45	43	71	60	65	68	24	44	31
50	48	76	67	70	68	24	44	31
55	53	81	72	75	69	25	44	31
60	58	91	79	85	72.5	27.5	45	31
65	63	96	86	90	77	29	48	31
70	68	101	92	95	79.5	28.5	51	32
75	73	110	99	104	79.5	28.5	51	32
80	78	115	102	109	79.5	28.5	51	32
85	83	120	108	114	80.5	28.5	52	33
90	88	125	115	119	81.5	29.5	52	33
95	93	130	118	124	81.5	29.5	52	33
100	98	135	124	129	81.5	29.5	52	33
110	110	145	134	139	84.5	29.5	55	36
120	120	160	147	150	91	34	57	38
130	130	170	157	160	96	37	59	40
140	140	185	172	175	98	38	60	40
150	150	200	184	190	100	38	62	42

Dimensions in millimeter

RELY ON EXCELLENCE

## H3B

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Advantages

Excellent torque transmission due to clutch drive between seal head and drive collar.

### Operating range

Pressure:  $p = 12$  bar (174 PSI)

Temperature:

$t = -20$  °C ...  $+160$  °C ( $-4$  °F ...  $320$  °F)

Sliding velocity:  $v_g = 20$  m/s (66 ft/s)

Viscosity: ... 300 mPa·s

Solids content: ... 7 %

### Materials

Seal face and seat: Silicon carbide (Q1),

Tungsten carbide (U7)

Secondary seals: FKM (V)

Metal parts: CrNiMo steel (G)

### Standards and approvals

- ISO 3096

### Recommended applications

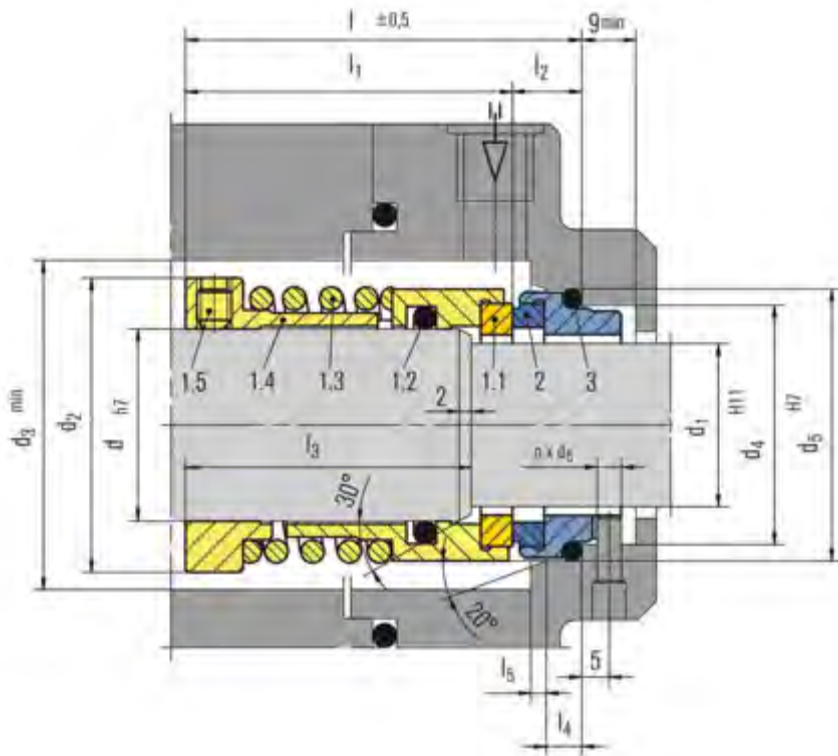
- Process industry
- Oil and gas industry
- High viscous media (tar, heavy oils)
- Process pumps

### Features

- Single Seal
- Balanced
- Independent of direction of rotation



## RELY ON EXCELLENCE



### Item Description

- 1.1 Seal face
- 1.2 O-Ring
- 1.3 Spring
- 1.4 Drive collar
- 1.5 Set screw
- 2 Seat
- 3 O-Ring

## RELY ON EXCELLENCE

### Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>
24	20	38	40	29	35	3	62	49	13	42	5	2
26	22	40	42	31	37	3	62	49	13	42	5	2
28	24	42	44	33	39	3	64	51	13	44	5	2
30	25	44	46	34	40	3	64	51	13	44	5	2
33	28	47	49	37	43	3	64	51	13	44	5	2
35	30	49	51	39	45	3	68	55	13	48	5	2
38	33	54	58	42	48	3	71	58	13	51	5	2
40	35	56	60	44	50	3	73	60	13	53	5	2
43	38	59	63	50	56	4	76	61	15	53	5	2
45	40	61	65	52	58	4	76	61	15	53	5	2
48	43	64	68	55	61	4	76	61	15	53	5	2
50	45	66	70	57	63	4	80	65	15	57	5	2
53	48	69	73	60	66	4	80	65	15	57	5	2
55	50	71	75	62	68	4	82	65	17	57	5	2
58	53	76	83	65	71	4	84	68	16	59	5	2
60	55	78	85	67	73	4	84	68	16	59	5	2
63	58	81	88	70	79	4	84	68	16	59	7	2.5
65	60	84	90	72	81	4	88	72	16	63	7	2.5
68	63	87	93	75	84	4	88	72	16	63	7	2.5
70	65	90	95	77	86	4	89	73	16	64	7	2.5
75	70	95	104	83	92	4	94	75	19	66	7	2.5
80	75	100	109	88	97	4	94	75	19	66	7	2.5
85	80	107	114	96	105	4	100	81	19	72	7	2.5
90	85	112	119	101	110	4	100	82	18	72	7	2.5
95	90	119	124	106	115	4	105	87	18	77	7	2.5
100	95	124	129	111	120	4	105	87	18	77	7	2.5
105	100	129	134	116	125	4	105	87	18	77	7	2.5

Dimensions in millimeter

RELY ON EXCELLENCE

## H7N

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- For stepped shafts
- Single seal
- Balanced
- Super-Sinus-spring or multiple springs rotating
- Independent of direction of rotation
- Integrated pumping device available (H7F, H75F)
- Variant with seat cooling available (H75G115)

### Advantages

- Universal application opportunities (standardization)
- Efficient stock keeping due to easily interchangeable faces
- Extended selection of materials
- Flexibility in torque transmissions
- Self cleaning effect
- Short Installation length possible (G16)

### Operating range

Shaft diameter:

d1 = 14 ... 100 mm (0.55" ... 3.94")

(Single spring: d1 = max. 100 mm (3.94"))

Pressure:

p1 = 80 bar (1,160 PSI) for d1 = 14 ... 100 mm,

p1 = 25 bar (363 PSI) for d1 = 100 ... 200 mm,

p1 = 16 bar (232 PSI) for d1 > 200 mm

Temperature:

t = -50 °C ... 220 °C (-58 °F ... 428 °F)

Sliding velocity: v<sub>g</sub> = 20 m/s (66 ft/s)

Axial movement:

d1 up to 22 mm: ± 1.0 mm

d1 24 up to 58 mm: ± 1.5 mm

d1 from 60 mm: ± 2.0 mm

### Materials

Seal face: Silicon carbide (Q1, Q2), Carbon graphite antimony impregnated (A), Aluminium oxide (V), CrMo cast steel (S)

Seat G9: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (Q1\*, Q2\*)

Secondary seals: EPDM (E), NBR (P), FKM (V), FFKM (K)

Springs: CrNiMo steel (G)

Metal parts: CrNiMo steel (G), Duplex (G1)

\* Cannot be combined with seal face made of S

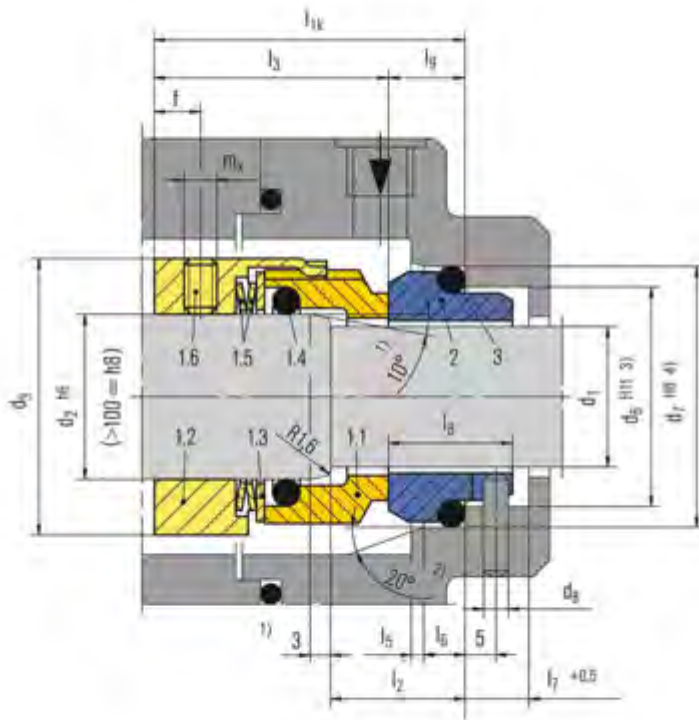
### Standards and approvals

- EN 12756

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Power plant technology
- Pulp and paper industry
- Food and beverage industry
- Hot water applications
- Light hydrocarbons
- Boiler feed pumps
- Process pumps

## RELY ON EXCELLENCE



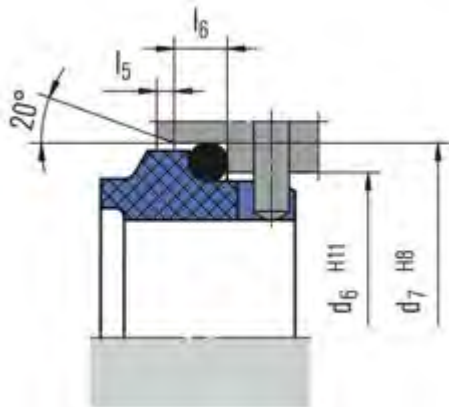
Item	Part no. to DIN 24250	Description
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1.1	472	Seal face
1.2	485	Drive collar
1.3	474	Thrust ring
1.4	412.1	O-Ring
1.5	477	Spring
1.6	904	Set screw
2	475	Seat (G9)
3	412.2	O-Ring

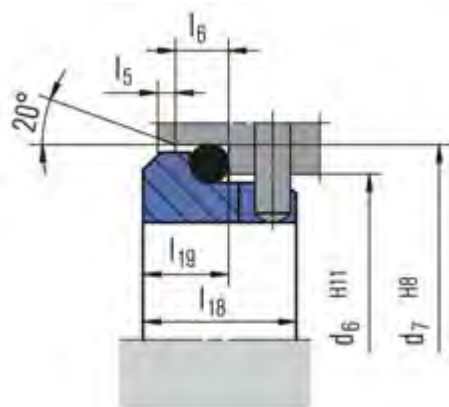
- 1)  $d_1 > 100 \text{ mm}$ :  $2 \text{ mm} \times 30^\circ$
- 2)  $d_1 > 100 \text{ mm}$ :  $30^\circ$
- 3)  $d_1 > 100 \text{ mm}$ :  $+0.1$
- 4)  $d_1 > 100 \text{ mm}$ : H7

RELY ON EXCELLENCE

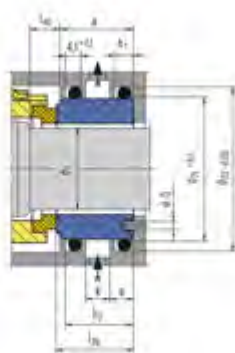
## Seat alternatives



**G9**  
(EN 12756)



**G16**  
(EN 12756, but  $l_{1k}$  and  $l_2$  are shorter than specified)



**G115**  
Cooled seat especially for hot water applications.

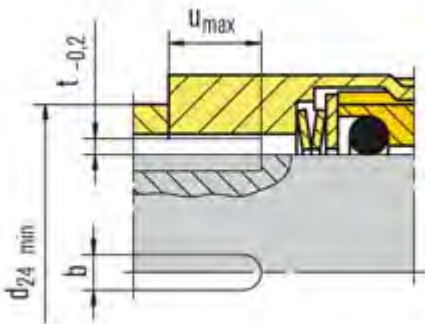
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## Torque transmissions

$d_1 > 100 \text{ mm (3.94")}$  Torque transmission by **4 set screws** with cone point. Offset:  $90^\circ$

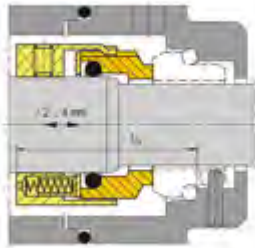


**Drive key**  
(H7S2 / H75S2)



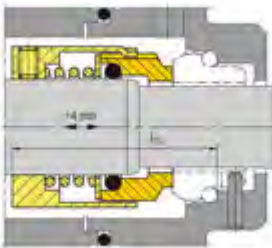
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## Product variants



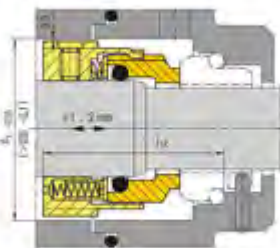
### H75

Shaft diameter:  $d_1 = 28 \dots 200 \text{ mm}$  (1.10" ... 7.87")  
 As H7N, but with multiple springs in sleeves (Item no. 1.5)  
 Axial movement:  $\pm 2 \dots 4 \text{ mm}$ , dependent on diameter.



### H76

Shaft diameter:  $d_1 = 14 \dots 100 \text{ mm}$  (0.55" ... 3.94")  
 Dimensions, items and description as for H7N, but with special single spring (Item no. 1.5) for compensating large axial movements ( $\pm 4 \text{ mm}$ ).



### H7F

Shaft diameter:  $d_1 = \text{max. } 100 \text{ mm}$  (3.94")  
 Dimensions, items and descriptions as for H7N, but with single spring and pumping screw.  
 Dependent on direction of rotation. (Viscosity  $\leq$  ISO VG10).

## RELY ON EXCELLENCE

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### H75F

Shaft diameter: d1 = 28 ... 200 mm (1.10" ... 7.87")

Dimensions, items and descriptions as for H7N, but with single spring and pumping screw.

Dependent on direction of rotation.

(Viscosity  $\leq$  ISO VG10).



## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>24</sub>	d <sub>21</sub>	d <sub>22</sub>	d <sub>s</sub>	l <sub>1K</sub>	l <sub>1N</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	l <sub>39</sub>	l <sub>40</sub>	A	b	e	f	h <sub>1</sub>	h <sub>2</sub>	k	m <sub>x</sub>	u <sub>max.</sub>	t
14*	18	33	21.0	25.0	3	20	-	-	38	42.5	-	18	32.5	1.5	4	8.5	17.5	10.0	-	-	-	5	-	6.0	-	-	-	M5	9	1.1
16*	20	35	23.0	27.0	3	22	-	-	40	42.5	-	18	32.5	1.5	4	8.5	17.5	10.0	-	-	-	5	-	6.0	-	-	-	M5	9	1.1
18*	22	37	27.0	33.0	3	24	-	-	42	45.0	55	20	33.5	2.0	5	9.0	19.5	11.5	-	-	-	6	-	7.0	-	-	-	M5	9	1.5
20*	24	39	29.0	35.0	3	26	-	-	44	45.0	60	20	33.5	2.0	5	9.0	19.5	11.5	-	-	-	6	-	5.5	-	-	-	M5	9	1.5
22*	26	41	31.0	37.0	3	28	-	-	45	45.0	60	20	33.5	2.0	5	9.0	19.5	11.5	-	-	-	6	-	8.0	-	-	-	M5	9	1.5
24*	28	43	33.0	39.0	3	30	-	-	47	47.5	60	20	36.0	2.0	5	9.0	19.5	11.5	-	-	-	6	-	5.5	-	-	-	M6	9	1.5
25*	30	45	34.0	40.0	3	32	-	-	49	47.5	60	20	36.0	2.0	5	9.0	19.5	11.5	-	-	-	6	-	5.5	-	-	-	M6	9	1.5
28*	33	48	37.0	43.0	3	35	44.65	50.57	51	50.0	65	20	38.5	2.0	5	9.0	19.5	11.5	24.0	8.5	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
30*	35	50	39.0	45.0	3	37	47.83	53.75	54	50.0	65	20	38.5	2.0	5	9.0	19.5	11.5	24.5	9.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
32*	38	55	42.0	48.0	3	40	47.83	53.75	59	50.0	65	20	38.5	2.0	5	9.0	19.5	11.5	24.5	9.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
33*	38	55	42.0	48.0	3	40	47.83	53.75	59	50.0	65	20	38.5	2.0	5	9.0	19.5	11.5	24.5	9.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
35*	40	57	44.0	50.0	3	42	51.00	56.92	61	50.0	65	20	38.5	2.0	5	9.0	19.5	11.5	24.5	9.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
38*	43	60	49.0	56.0	4	45	54.18	60.10	65	52.5	75	23	38.5	2.0	6	9.0	22.0	14.0	26.0	11.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
40*	45	62	51.0	58.0	4	47	60.53	66.45	66	52.5	75	23	38.5	2.0	6	9.0	22.0	14.0	26.0	11.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
43*	48	65	54.0	61.0	4	50	63.70	69.62	69	52.5	75	23	38.5	2.0	6	9.0	22.0	14.0	26.0	11.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
45*	50	67	56.0	63.0	4	52	63.70	69.62	71	52.5	75	23	38.5	2.0	6	9.0	22.0	14.0	26.0	11.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
48*	53	70	59.0	66.0	4	55	66.88	72.80	75	52.5	85	23	38.5	2.0	6	9.0	22.0	14.0	26.0	11.0	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
50*	55	72	62.0	70.0	4	57	70.05	75.97	76	57.5	85	25	42.5	2.5	6	9.0	23.0	15.0	26.5	12.5	24.0	6	8.0	8.0	6.6	22.6	9	M6	12	1.5
53*	58	79	65.0	73.0	4	60	76.40	82.32	83	57.5	85	25	42.5	2.5	6	9.0	23.0	15.0	26.5	12.5	24.0	8	8.0	9.0	6.6	22.6	9	M8	12	1.9
55*	60	81	67.0	75.0	4	62	76.40	82.32	85	57.5	85	25	42.5	2.5	6	9.0	23.0	15.0	28.5	12.5	26.0	8	8.0	9.0	6.6	24.6	11	M8	12	1.9
58*	63	84	70.0	78.0	4	65	79.58	85.50	88	62.5	85	25	47.5	2.5	6	9.0	23.0	15.0	28.5	12.5	26.0	8	8.0	9.0	6.6	24.6	11	M8	15	1.9
60*	65	86	72.0	80.0	4	67	82.75	88.67	95	62.5	95	25	47.5	2.5	6	9.0	23.0	15.0	28.5	12.5	26.0	8	8.0	9.0	6.6	24.6	11	M8	15	1.9
63*	68	89	75.0	83.0	4	70	85.93	91.85	93	62.5	95	25	47.5	2.5	6	9.0	23.0	15.0	28.5	12.5	26.0	8	8.0	9.0	6.6	24.6	11	M8	14	1.9
65*	70	91	77.0	85.0	4	72	85.93	91.85	95	62.5	95	25	47.5	2.5	6	9.0	23.0	15.0	28.5	12.5	26.0	8	8.0	9.0	6.6	24.6	11	M8	15	1.9
70*	75	99	83.0	92.0	4	77	89.10	95.02	105	70.0	95	28	52.0	2.5	7	9.0	26.0	18.0	30.5	14.5	26.0	8	8.0	10.0	6.6	24.6	11	M8	15	1.9
75*	80	104	88.0	97.0	4	82	98.63	104.55	109	70.0	105	28	52.0	2.5	7	9.0	26.0	18.0	30.5	14.5	26.0	8	8.0	10.0	6.6	24.6	11	M8	15	1.9
80*	85	109	95.0	105.0	4	87	101.80	107.72	114	70.0	105	28	51.8	3.0	7	9.0	26.2	18.2	30.2	14.0	26.0	8	8.0	10.0	6.6	24.6	11	M8	15	1.9
85*	90	114	100.0	110.0	4	92	108.15	114.07	119	75.0	105	28	56.8	3.0	7	9.0	26.2	18.2	30.2	14.0	26.0	10	8.0	10.0	6.6	24.6	11	M8	18	2.3
90*	95	119	105.0	115.0	4	97	114.50	120.42	124	75.0	105	28	56.8	3.0	7	9.0	26.2	18.2	30.2	14.0	26.0	10	8.0	10.0	6.6	24.6	11	M8	18	2.3
95*	100	124	110.0	120.0	4	102	117.68	123.60	129	75.0	105	28	57.8	3.0	7	9.0	25.2	17.2	29.2	14.0	26.0	10	8.0	10.0	6.6	24.6	11	M8	18	2.3
100*	105	129	115.0	125.0	4	107	124.03	129.95	134	75.0	105	28	57.8	3.0	7	9.0	25.2	17.2	29.2	14.0	26.0	10	8.0	10.0	6.6	24.6	11	M8	18	2.3
105*	115	148	122.2	134.3	5	118	128.98	134.90	153	73.0	-	32	53.0	2.0	10	-	30.0	20.0	29.2	15.2	26.0	10	8.0	10.0	6.6	24.6	11	M8	18	2.3
110*	120	153	128.2	140.3	5	123	135.30	141.20	158	73.0	-	32	53.0	2.0	10	-	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
115*	125	158	136.2	148.3	5	128	140.30	146.20	163	73.0	-	32	53.0	2.0	10	-	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
120*	130	163	138.2	150.3	5	133	145.30	151.20	168	73.0	-	32	53.0	2.0	10	-	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
125*	135	168	142.2	154.3	5	138	150.30	156.20	173	73.0	-	32	53.0	2.0	10	-	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
130*	140	173	146.2	158.3	5	143	155.30	161.20	178	73.0	-	32	53.0	2.0	10	-	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
135*	145	178	152.2	164.3	5	148	160.30	166.20	183	73.0	-	32	53.0	2.0	10	-	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
140*	150	183	156.2	168.3	5	153	165.30	171.20	188	73.0	-	32	53.0	2.0	10	-	30.0	20.0	32.5	14.5	30.0	10	9.5	10.0	6.6	28.6	13	M8	18	2.3
145*	155	191	161.2	173.3	5	158	172.30	178.20	196	83.0	-	34	63.0	2.0	10	-	30.0	20.0	34.5	16.5	32.0	12	10.0	12.0	7.1	30.1	14	M8	22	2.1
150*	160	196	168.2	180.3	5	163	177.30	183.20	201	85.0	-	36	63.0	2.0	10	-	32.0	22.0	34.5	16.5	32.0	12	10.0	12.0	7.1	30.1	14	M8	22	2.1
155*	165	201	173.2	185.3	5	168	182.30	188.20	206	87.0	-	38	63.0	2.0	12	-	34.0	24.0	34.5	16.5	32.0	12	10.0	12.0	7.1	30.1	14	M8	22	2.1
160*	170	206	178.2	190.3	5	173	187.30	193.20	211	87.0	-	38	63.0	2.0	12	-	34.0	24.0	34.5	16.5	32.0	12	10.0	12.0	7.1	30.1	14	M8	22	2.1
165*	175	211	183.2	195.3	5	178	192.30	198.20	216	87.0	-	38	63.0	2.0	12	-	34.0	24.0	34.5	16.5	32.0	12	10.0	12.0	7.1	30.1	14	M8	22	2.1
170*	180	216	188.2	200.3	5	183	197.30	203.20	221	87.0	-	38	63.0	2.0	12	-	34.0	24.0	37.0	16.5	34.5	12	10.0	12.0	7.1	32.1	16	M8	22	2.1
175*	185	221	193.2	205.3	5	188	202.30	208.20	226	87.0	-	38	63.0	2.0	12	-	34.0	24.0	37.0	16.5	34.5	12	10.0	12.0	7.1	32.1	16	M8	22	2.1
180*	190	226	207.5	219.3	5	193	207.30	213.20	231	91.0	-	42	63.0	2.0	12	-	38.0	28.0	37.0	16.5	34.5	12	10.0	12.0	7.1	32.1	16	M8	22	2.1
185*	195	231	212.5	224.3	5	198	212.30	218.20	236	91.0	-	42	63.0	2.0																

## RELY ON EXCELLENCE

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>24</sub>	d <sub>21</sub>	d <sub>22</sub>	d <sub>s</sub>	l <sub>1K</sub>	l <sub>1N</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	l <sub>39</sub>	l <sub>40</sub>	A	b	e	f	h <sub>1</sub>	h <sub>2</sub>	k	m <sub>x</sub>	u <sub>max.</sub>	t
190*	200	236	217.5	229.3	5	203	217.30	223.20	241	91.0	-	42	63.0	2.0	12	-	38.0	28.0	37.0	16.5	34.5	12	10.0	12.0	7.1	32.1	16	M8	22	2.1
195*	205	245	222.5	234.2	5	208	225.30	231.20	250	94.0	-	43	66.0	2.0	12	-	38.0	28.0	37.0	17.5	34.5	12	10.0	14.0	7.1	32.1	16	M10	22	2.1
200*	210	250	227.5	239.3	5	213	230.30	236.20	255	94.0	-	43	66.0	2.0	12	-	38.0	28.0	37.0	17.5	34.5	12	10.0	14.0	7.1	32.1	16	M10	22	2.1

Dimensions in millimeter

\* EN 12756

RELY ON EXCELLENCE

## H10 / H8

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- Single seal
- Balanced
- Independent of direction of rotation
- Stationary multiple springs

### Advantages

- Insensitive to solids in the medium
- Very short axial installation length (analog lip seals) combined with high pressure capability
- No damage of the shaft by dynamically loaded O-Ring
- Due to the stationary design insensitive to shaft misalignments
- Compact ready-to-install unit

### Operating range

Shaft Diameter:

d1 = 15 ... 100 mm (0.6" ... 3.9")

Pressure: p1 = 25 bar (363 PSI)

Temperature:

t = -40 ... +180 °C (-40 °F ... 356 °F)

Sliding velocity: v<sub>g</sub> = 35 m/s (115 ft/s)

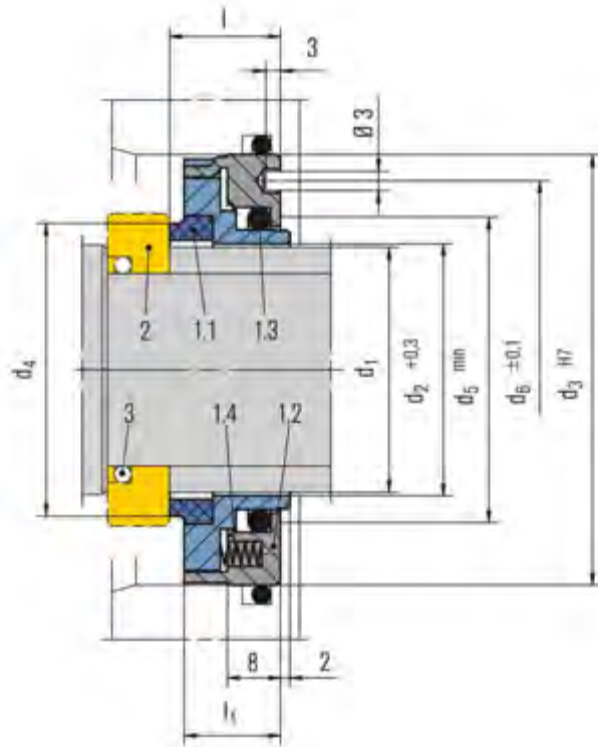
### Materials

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)

### Recommended applications

- Process industry
- Chemical industry
- Water and waste water technology
- Lube oils
- Roller seal
- Bearing seal
- All seal chambers with a very short axial installation length

## RELY ON EXCELLENCE



Item	Part no.	Description
<b>DIN 24250</b>		
1.1	472	Seal face
	473	Seal face housing
1.2	485	Drive collar
1.3		O-Ring
1.4	477	Spring
2	475	Rotating seat <sup>*)</sup>
3	412.2	O-Ring

<sup>\*)</sup> The stationary seat design is chosen according to the specific requirements and conditions of operation.

## Product variants



### H8

Dimensions, items and description as H10. Drive collars and housings for item 1.2 are made of deep-drawn stainless steel sheet.

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>2</sub> '	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	l	l <sub>1</sub>	l <sub>1</sub> '
15	16	17	42	22.6	21	34	17	15.0	16
18	19	-	45	25.6	24	37	17	15.0	-
20	21	22	48	27.6	26	40	17	15.0	16
22	23	24	50	29.6	28	42	17	15.0	16
25	26	27	52	32.8	31	44	17	15.0	16
28	29	-	55	35.8	34	47	17	15.0	-
30	31	32	58	37.8	36	50	17	15.0	16
32	33	34	60	39.8	38	52	17	15.0	16
35	36	37	62	42.8	41	54	17	15.0	16
38	39	40	65	45.9	44	57	17	15.0	16
40	41	42	68	47.9	46	60	17	15.0	16
42	43	44	72	49.9	48	64	17	15.0	16
45	46	47	75	52.9	51	67	17	15.0	16
48	49	-	80	55.9	54	72	17	15.0	-
50	51	52	80	58.2	56	72	17	15.0	16
52	53	-	82	60.2	58	74	17	15.0	-
55	56	57	85	63.2	61	77	17	15.0	16
58	59	-	90	66.7	64	82	17	15.0	-
60	61	62	90	68.7	66	82	17	15.0	16
65	66	67	95	73.7	71	87	19	16.5	18
68	69	70	100	76.7	74	92	19	16.5	18
70	71	72	100	78.7	76	92	19	16.5	18
75	76	77	108	83.7	81	100	19	16.5	18
80	81	82	112	88.7	86	104	19	16.5	18
85	86	87	118	93.7	91	110	19	16.5	18
90	91	92	122	99.5	96	114	19	16.5	18
95	96	97	128	104.5	101	120	19	16.5	18
100	101	102	132	109.5	106	124	19	16.5	18

Dimensions in millimeter

Axial tolerances: l ± 0.5 H10, l ± 0.2 H8

RELY ON EXCELLENCE

## H12N

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- For stepped shafts
- Single seal
- Balanced
- Dependent of direction of rotation
- Torque transmission via conical spring

### Advantages

- High flexibility due to extended selection of materials
- Insensitive to low solids contents
- Short Installation length possible (G16)
- Economical balanced seal
- Seat cooling for hot water applications available (G115)
- No damage of the shaft by set screws

### Operating range

Shaft diameter:  
d1 = 10 ... 80 mm (0.4" ... 3.125")  
Pressure: p1 = 25 bar (363 PSI)  
Temperature:  
t = -50 °C ... +220 °C (-58 °F ... +430 °F)  
Sliding velocity: vg = 15 m/s (50 ft/s)  
Axial movement: ±1.0 mm

### Materials

Seal face: Carbon graphite antimony impregnated (A)  
Seat G9: Silicon carbide (Q1), Special cast CrMo steel (S)

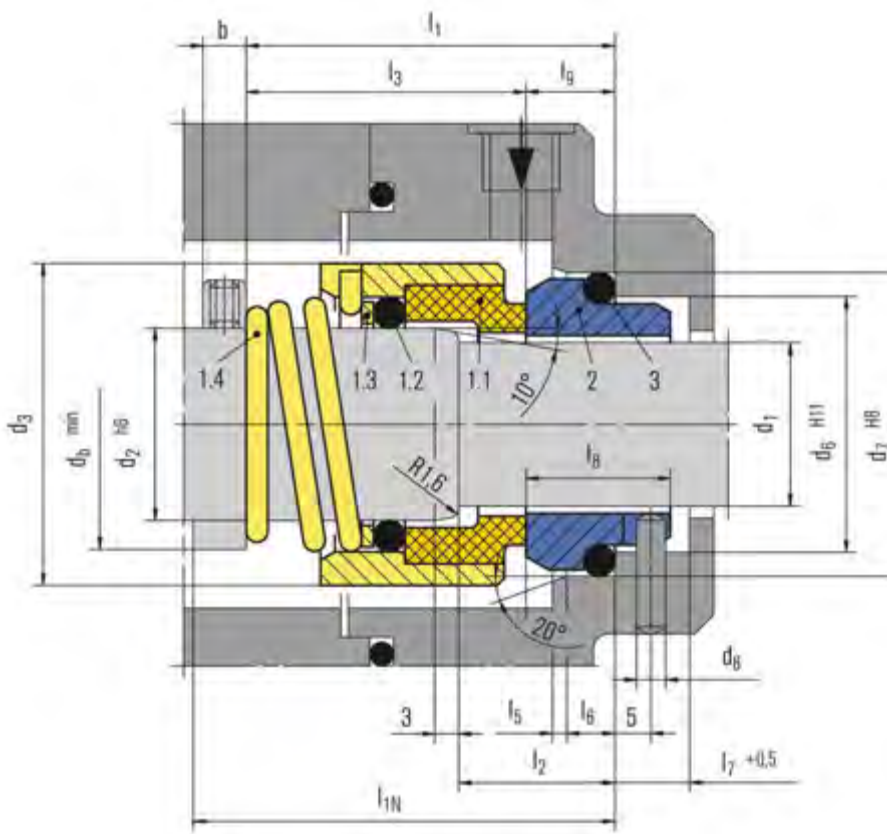
### Standards and approvals

- EN 12756

### Recommended applications

- Chemical industry
- Pulp and paper industry
- Water and waste water technology
- Low solids content media (H12GN)
- Hot water
- Chemical standard pumps
- Water and sewage pumps

## RELY ON EXCELLENCE

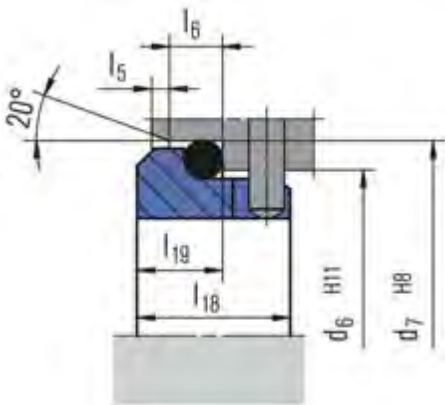


### Item Part no. to Description DIN 24250

Item	Part no.	Description
1.1	472/473	Seal face
1.2	412.1	O-Ring
1.3	474	Thrust ring
1.4	478	Righthand spring
1.4	479	Lefthand spring
2	475	Seat (G9)
3	412.2	O-Ring

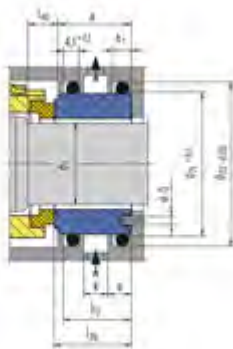
## RELY ON EXCELLENCE

### Seat alternatives



#### G16

(EN 12756 but  $l_{1K}$  and  $l_2$  are shorter than specified)



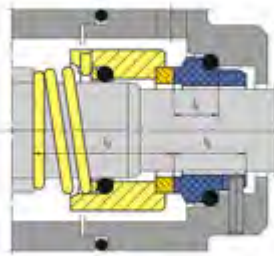
#### G115

Cooled seat especially for hot water applications. In this case, the dimensions of the H12N rotating unit are modified. Seal designation: H127G115. Please inquire.



RELY ON EXCELLENCE

## Product variants



### H17GN

Dimensions, items and descriptions as for H12N, but with shrink-fitted seal face (Q12), item no. 1.1.  
Temperature:  $t = -20\text{ °C} \dots +180\text{ °C}$  ( $-4\text{ °F} \dots +356\text{ °F}$ )  
Seal face: Silicon carbide (Q12)  
Seat G9: Silicon carbide (Q1, Q2), Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)

### H12

Dimensions, items and descriptions as for H12N, but with seat G16.  
Seal face: Carbon graphite antimony impregnated (A)  
Seat G16: Silicon carbide (Q1), CrMo cast steel (S), Aluminium oxide (V)

### H17G

Dimensions, items and descriptions as for H12N, but with shrink-fitted seal face (Q12) and seat G16.  
Temperature:  $t = -20\text{ °C} \dots +180\text{ °C}$  ( $-4\text{ °F} \dots +356\text{ °F}$ )  
Seal face: Silicon carbide (Q12)  
Seat G16: Silicon carbide (Q1)

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>21</sub>	d <sub>22</sub>	d <sub>b</sub>	l <sub>1N</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	l <sub>18</sub>	l <sub>19</sub>	l <sub>39</sub>	l <sub>40</sub>	a	b	e	h <sub>1</sub>	h <sub>2</sub>	k	b*)
10	14	24	17	21	3	-	-	18	50	35.5	18	25.5	1.5	4	8.5	17.5	10.0	-	-	-	-	-	5	-	-	-	-	8.0
12	16	26	19	23	3	-	-	21	50	36.5	18	26.5	1.5	4	8.5	17.5	10.0	-	-	-	-	-	5	-	-	-	-	8.0
14	18	31	21	25	3	-	-	23	55	39.5	18	29.5	1.5	4	8.5	17.5	10.0	-	-	-	-	-	6	-	-	-	-	8.0
16	20	34	23	27	3	-	-	26	55	41.0	18	31.0	1.5	4	8.5	17.5	10.0	-	-	-	-	-	6	-	-	-	-	8.0
18	22	36	27	33	3	-	-	28	55	44.0	20	32.5	2.0	5	9.0	19.5	11.5	15	7	-	-	-	6	-	-	-	-	8.0
20	24	38	29	35	3	-	-	30	60	44.0	20	32.5	2.0	5	9.0	19.5	11.5	15	7	-	-	-	6	-	-	-	-	8.0
22	26	40	31	37	3	-	-	31	60	44.0	20	32.5	2.0	5	9.0	19.5	11.5	15	7	-	-	-	6	-	-	-	-	8.0
24	28	42	33	39	3	-	-	35	60	44.0	20	32.5	2.0	5	9.0	19.5	11.5	15	7	-	-	-	6	-	-	-	-	8.0
25	30	44	34	40	3	-	-	37	60	45.0	20	33.5	2.0	5	9.0	19.5	11.5	15	7	-	-	-	6	-	-	-	-	8.0
28	33	47	37	43	3	44.65	50.57	40	65	47.0	20	35.5	2.0	5	9.0	19.5	11.5	15	7	24	8.5	24	6	8	6.6	22.6	9	8.0
30	35	49	39	45	3	47.83	53.75	43	65	47.0	20	35.5	2.0	5	9.0	19.5	11.5	15	7	24.5	9.0	24	6	8	6.6	22.6	9	8.0
32	38	54	42	48	3	47.83	53.75	45	65	51.0	20	39.5	2.0	5	9.0	19.5	11.5	15	7	24.5	9.0	24	6	8	6.6	22.6	9	7.5
33	38	54	42	48	3	47.83	53.75	45	65	51.0	20	39.5	2.0	5	9.0	19.5	11.5	15	7	24.5	9.0	24	6	8	6.6	22.6	9	7.5
35	40	56	44	50	3	51	56.92	49	65	55.0	20	43.5	2.0	5	9.0	19.5	11.5	15	7	24.5	9.0	24	6	8	6.6	22.6	9	8.0
38	43	59	49	56	4	54.18	60.10	52	75	60.0	23	46.0	2.0	6	9.0	22.0	14.0	16	8	26	11	24	6	8	6.6	22.6	9	7.5
40	45	61	51	58	4	60.53	66.45	55	75	62.0	23	48.0	2.0	6	9.0	22.0	14.0	16	8	26	11	24	6	8	6.6	22.6	9	8.0
43	48	64	54	61	4	63.7	69.62	58	75	65.0	23	51.0	2.0	6	9.0	22.0	14.0	16	8	26	11	24	6	8	6.6	22.6	9	8.0
45	50	66	56	63	4	63.7	69.62	61	75	69.0	23	55.0	2.0	6	9.0	22.0	14.0	16	8	26	11	24	6	8	6.6	22.6	9	(8)
48	53	69	59	66	4	66.88	72.80	64	85	69.0	23	55.0	2.0	6	9.0	22.0	14.0	16	8	26	11	24	8	8	6.6	22.6	9	8.0
50	55	71	62	70	4	70.05	75.97	66	85	73.0	25	58.0	2.5	6	9.0	23.0	15.0	17	9.5	26.5	12.5	24	8	8	6.6	22.6	9	8.0
53	58	78	65	73	4	76.4	82.32	69	85	75.0	25	60.0	2.5	6	9.0	23.0	15.0	17	9.5	26.5	12.5	24	8	8	6.6	22.6	9	8.0
55	60	79	67	75	4	76.4	82.32	71	85	75.0	25	60.0	2.5	6	9.0	23.0	15.0	17	9.5	28.5	12.5	26	8	8	6.6	24.6	11	8.0
58	63	83	70	78	4	79.58	85.50	74	85	75.0	25	60.0	2.5	6	9.0	23.0	15.0	18	10.5	28.5	12.5	26	8	8	6.6	24.6	11	8.0
60	65	85	72	80	4	82.75	88.67	77	95	75.0	25	60.0	2.5	6	9.0	23.0	15.0	18	10.5	28.5	12.5	26	8	8	6.6	24.6	11	8.0
63	68	88	75	83	4	85.93	91.85	80	95	75.0	25	60.0	2.5	6	9.0	23.0	15.0	18	10.5	28.5	12.5	26	8	8	6.6	24.6	11	8.0
65	70	90	77	85	4	85.93	91.85	83	95	76.0	25	61.0	2.5	6	9.0	23.0	15.0	18	10.5	28.5	12.5	26	8	8	6.6	24.6	11	10.0
70	75	98	83	92	4	89.1	95.02	88	95	81.0	28	63.0	2.5	7	9.0	26.0	18.0	19	11.5	30.5	14.5	26	8	8	6.6	24.6	11	10.0
75	80	103	88	97	4	98.63	104.55	93	105	86.0	28	68.0	2.5	7	9.0	26.0	18.0	19	11.5	30.5	14.5	26	10	8	6.6	24.6	11	10.0
80	85	109	95	105	4	101.8	107.72	98	105	86.0	28	68.0	3.0	7	9.0	26.2	18.2	19	11.5	30.2	14	26	10	8	6.6	24.6	11	10.0

\*) l<sub>1N</sub> acc. to EN 12756 is exceeded.

RELY ON EXCELLENCE

## H74-D

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- For stepped shafts
- Dual seal
- Balanced
- Rotating multiple springs
- Independent of direction of rotation
- Seal concept based on the H7 range
- Variant with pumping screw available (H74F-D)

### Advantages

- Efficient stock keeping due to easily interchangeable faces
- Extended selection of materials
- Flexibility in torque transmissions
- Insensitive to low solids contents
- EN 12756 (For connection dimensions d1 up to 100 mm (3.94"))

### Operating range

Shaft diameter:

d1 = 14 ... 200 mm (0.55" ... 7.87")

Pressure:

p1 = 80 bar (1,160 PSI) for d1 = 14 ... 100 mm,

p1 = 25 bar (363 PSI) for d1 = 100 ... 200 mm,

p1 = 16 bar (232 PSI) for d1 > 200 mm

Temperature:

t = -50 °C ... 220 °C (-58 °F ... 428 °F)

Sliding velocity: v<sub>g</sub> = 20 m/s (66 ft/s)

Axial movement:

d1 up to 100 mm: ± 0.5 mm

d1 from 100 mm: ± 2.0 mm

### Materials

Seal face: Silicon carbide (Q1, Q2), Carbon graphite antimony impregnated (A), Aluminium oxide (V), Special cast CrMo steel (S)

Seat G9: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (Q1\*, Q2\*)  
Secondary seals: EPDM (E), NBR (P), FKM (V), FFKM (K)

Springs: CrNiMo steel (G)

Metal parts: CrNiMo steel (G), Duplex (G1)

\* Cannot be combined with seal face made of S

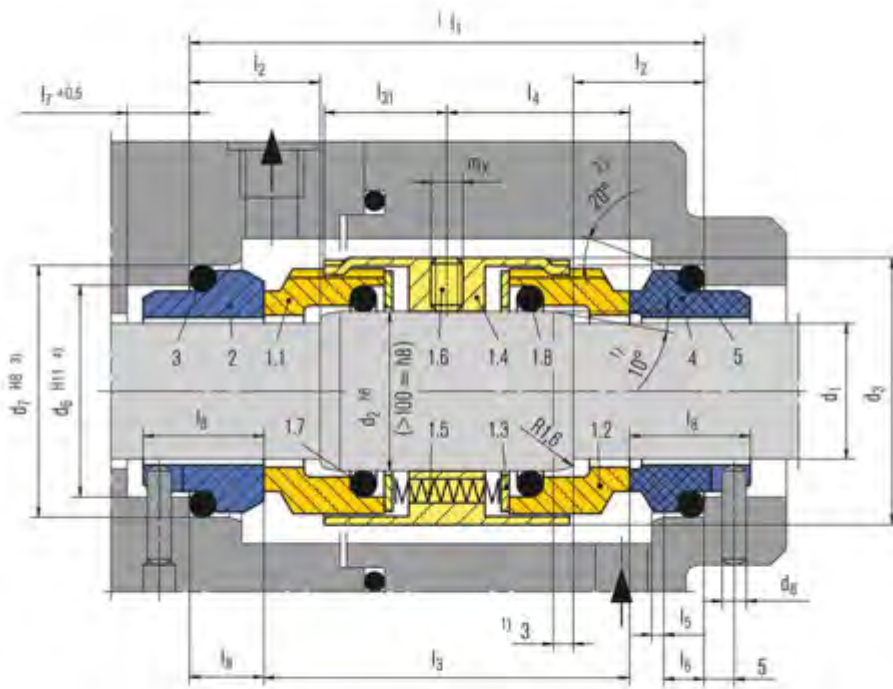
### Standards and approvals

- EN 12756

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Power plant technology
- Pulp and paper industry
- Low solids content and low abrasive media
- Toxic and hazardous media
- Media with poor lubrication properties
- Adhesives
- Chemical standard pumps

## RELY ON EXCELLENCE



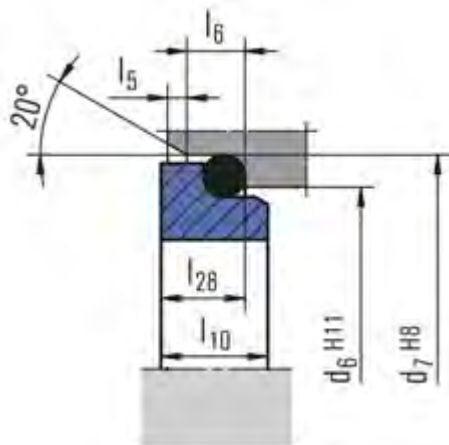
Item	Part no.	Description
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Item	Part no.	Description
1.1	472.1	Seal face
1.2	472.2	Seal face
1.3	474	Thrust ring
1.4	485	Drive collar
1.5	477	Spring
1.6	904	Set screw
1.7	412.1	O-Ring
1.8	412.2	O-Ring
2	475.1	Seat (G9)
3	412.3	O-Ring
4	475.2	Seat (G9)
5	412.4	O-Ring

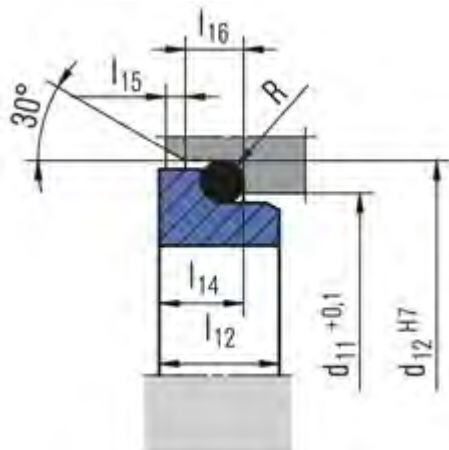
- 1)  $d_1 > 100$  mm: 2 mm x  $30^\circ$
- 2)  $d_1 > 100$  mm:  $30^\circ$
- 3)  $d_1 > 100$  mm: H7
- 4)  $d_1 > 100$  mm: +0.1

RELY ON EXCELLENCE

## Seat alternatives



G6 (EN 12756)



G4

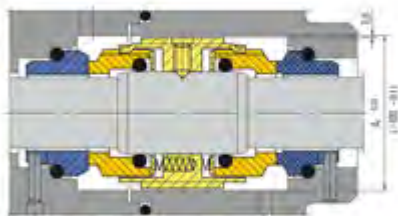
## RELY ON EXCELLENCE

### Torque transmissions



$d_{12} \geq 105$  mm Torque transmission by **4 set screws**  
with cone point. Offset:  $90^\circ$

### Product variants



#### H74F-D

Dimensions, items and descriptions as for H74-D,  
but with pumping screw.  
Dependent on direction of rotation.

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>s</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	l <sub>12</sub>	l <sub>14</sub>	l <sub>10</sub>	l <sub>15</sub>	l <sub>28</sub>	l <sub>16</sub>	l <sub>31</sub>	m <sub>x</sub>	R
14	18	33	21	25	3	24	30	-	73	18	53	26.5	1.5	4	8.5	17.5	10	6.5	5.6	7.5	1.5	6.6	5	17	M5	1.2
16	20	35	23	27	3	29.5	35	-	73	18	53	26.5	1.5	4	8.5	17.5	10	8.5	7.5	7.5	1.5	6.6	5	17	M5	1.5
18	22	37	27	33	3	29.5	35	42	76	20	53	26.5	2	5	9	19.5	11.5	9	8	8.5	1.5	7.5	5	17	M5	1.5
20	24	39	29	35	3	32	38	44	76	20	53	26.5	2	5	9	19.5	11.5	8.5	7.5	8.5	1.5	7.5	5	17	M5	1.5
22	26	41	31	37	3	32	38	45	76	20	53	26.5	2	5	9	19.5	11.5	8.5	7.5	8.5	1.5	7.5	5	17	M5	1.5
24	28	43	33	39	3	36	42	47	77	20	54	27	2	5	9	19.5	11.5	8.5	7.5	8.5	1.5	7.5	5	17.5	M6	1.5
25	30	45	34	40	3	39.2	45	49	77	20	54	27	2	5	9	19.5	11.5	8.5	7.5	8.5	1.5	7.5	5	17.5	M6	1.5
28	33	48	37	43	3	42.2	48	51	77	20	54	27	2	5	9	19.5	11.5	10	9	8.5	1.5	7.5	5	17.5	M6	1.5
30	35	50	39	45	3	44.2	50	54	77	20	54	27	2	5	9	19.5	11.5	11.5	10.5	8.5	1.5	7.5	5	17.5	M6	1.5
32	38	55	42	48	3	46.2	52	59	79	20	56	28	2	5	9	19.5	11.5	11.5	10.5	8.5	1.5	7.5	5	18.5	M6	1.5
33	38	55	42	48	3	49.2	55	59	79	20	56	28	2	5	9	19.5	11.5	12	10.5	8.5	1.5	7.5	5	18.5	M6	1.5
35	40	57	44	50	3	52.2	58	61	80	20	57	28.5	2	5	9	19.5	11.5	12	11	8.5	1.5	7.5	5	19	M6	1.5
38	43	60	49	56	4	53.3	62	65	85	23	57	28.5	2	6	9	22	14	11.3	10.3	10	2	9	6	19	M6	1.5
40	45	62	51	58	4	55.3	64	66	85	23	57	28.5	2	6	9	22	14	11.8	10.8	10	2	9	6	19	M6	1.5
43	48	65	54	61	4	59.7	68.4	69	85	23	57	28.5	2	6	9	22	14	13.2	12	10	2	9	6	19	M6	2.5
45	50	67	56	63	4	60.8	69.3	71	84	23	56	28	2	6	9	22	14	12.8	11.6	10	2	9	6	19.5	M6	2.5
48	53	70	59	66	4	63.8	72.3	75	84	23	56	28	2	6	9	22	14	12.8	11.6	10	2	9	6	19.5	M6	2.5
50	55	72	62	70	4	66.5	75.4	76	93	25	63	31.5	2.5	6	9	23	15	12.8	11.6	10.5	2	9.5	6	19.5	M6	2.5
53	58	79	65	73	4	69.5	78.4	83	97	25	67	33.5	2.5	6	9	23	15	13.5	12.3	12	2	11	6	23.5	M8	2.5
55	60	81	67	75	4	71.5	80.4	85	97	25	67	33.5	2.5	6	9	23	15	14.5	13.3	12	2	11	6	23.5	M8	2.5
58	63	84	70	78	4	74.5	83.4	88	104	25	74	37	2.5	6	9	23	15	14.5	13.3	12	2	11	6	24.5	M8	2.5
60	65	86	72	80	4	76.5	85.4	95	104	25	74	37	2.5	6	9	23	15	14.5	13.3	12	2	11	6	24.5	M8	2.5
63	68	89	75	83	4	82.7	91.5	93	109	25	79	39.5	2.5	6	9	23	15	14.2	13.3	12	2	11	6	24.5	M8	2.5
65	70	91	77	85	4	83	92	95	98	25	68	34	2.5	6	9	23	15	14.2	13	12	2	11	6	23.5	M8	2.5
70	75	99	83	92	4	90.2	99	105	112.5	28	76.4	38.2	2.5	7	9	26	18	14.9	13.7	12.5	2	11.3	6	25.5	M8	2.5
75	80	104	88	97	4	95.2	104	109	112.5	28	76.4	38.2	2.5	7	9	26	18	14.2	13	12.5	2	11.3	6	25.5	M8	2.5
80	85	109	95	105	4	100.2	109	114	112.5	28	76	38	3	7	9	26.2	18.2	15.2	14	12.5	2	11.3	6	25	M8	2.5
85	90	114	100	110	4	105.2	114	119	112.5	28	76	38	3	7	9	26.2	18.2	16.2	15	13	2	12	6	25.5	M8	2.5
90	95	119	105	115	4	111.6	120.3	124	112.5	28	76	38	3	7	9	26.2	18.2	16	14.8	15	2	14	6	25	M8	2.5
95	100	124	110	120	4	114.5	123.3	129	110.5	28	76	38	3	7	9	25.2	17.2	16	14.8	15	2	14	6	25	M8	2.5
100	105	129	115	125	4	-	-	134	110.5	28	76	38	3	7	9	25.2	17.2	17	15.8	15	-	14	-	25.5	M8	2.5
105	115	148	122.2	134.3	5	-	-	153	122	32	82	41	2	10	-	30	20	17	15.8	15	-	14	-	31.5	M8	2.5
110	120	153	128.2	140.3	5	-	-	158	122	32	82	41	2	10	-	30	20	-	-	-	-	-	-	31.5	M8	-
115	125	158	136.2	148.3	5	-	-	163	122	32	82	41	2	10	-	30	20	-	-	-	-	-	-	31.5	M8	-
120	130	163	138.2	150.3	5	-	-	168	122	32	82	41	2	10	-	30	20	-	-	-	-	-	-	31.5	M8	-
125	135	168	142.2	154.3	5	-	-	173	122	32	82	41	2	10	-	30	20	-	-	-	-	-	-	31.5	M8	-
130	140	173	146.2	158.3	5	-	-	178	122	32	82	41	2	10	-	30	20	-	-	-	-	-	-	31.5	M8	-
135	145	178	152.2	164.3	5	-	-	183	122	32	82	41	2	10	-	30	20	-	-	-	-	-	-	31.5	M8	-
140	150	183	156.2	168.3	5	-	-	188	122	32	82	41	2	10	-	30	20	-	-	-	-	-	-	31.5	M8	-
145	155	191	161.2	173.3	5	-	-	196	133	34	93	46.5	2	10	-	30	20	-	-	-	-	-	-	35.5	M8	-
150	160	196	168.2	180.3	5	-	-	201	137	36	93	46.5	2	10	-	32	22	-	-	-	-	-	-	35.5	M8	-
155	165	201	173.2	185.3	5	-	-	206	141	38	93	46.5	2	12	-	34	24	-	-	-	-	-	-	35.5	M8	-
160	170	206	178.2	190.3	5	-	-	211	141	38	93	46.5	2	12	-	34	24	-	-	-	-	-	-	35.5	M8	-
165	175	211	183.2	195.3	5	-	-	216	141	38	93	46.5	2	12	-	34	24	-	-	-	-	-	-	35.5	M8	-
170	180	216	188.2	200.3	5	-	-	221	141	38	93	46.5	2	12	-	34	24	-	-	-	-	-	-	35.5	M8	-
175	185	221	193.2	205.3	5	-	-	226	141	38	93	46.5	2	12	-	34	24	-	-	-	-	-	-	35.5	M8	-
180	190	226	207.5	219.3	5	-	-	231	149	42	93	46.5	2	12	-	38	28	-	-	-	-	-	-	35.5	M8	-
185	195	231	212.5	224.3	5	-	-	236	149	42	93	46.5	2	12	-	38	28	-	-	-	-	-	-	35.5	M8	-

## RELY ON EXCELLENCE

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>s</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	l <sub>12</sub>	l <sub>14</sub>	l <sub>10</sub>	l <sub>15</sub>	l <sub>28</sub>	l <sub>16</sub>	l <sub>31</sub>	m <sub>x</sub>	R	
190	200	236	217.5	229.3	5	-	-	241	149	42	93	46.5	2	12	-	38	28	-	-	-	-	-	-	-	35.5	M8	-
195	205	245	222.5	234.3	5	-	-	250	151	43	95	47.5	2	12	-	38	28	-	-	-	-	-	-	-	-	M10	-
200	210	250	227.5	239.3	5	-	-	255	151	43	95	47.5	2	12	-	38	28	-	-	-	-	-	-	-	-	-	-

Dimensions in millimeter



RELY ON EXCELLENCE

## HA211

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Advantages

#### Operating range

Pressure:  $p = 12 \text{ bar}$  (174 PSI)

Temperature:

$t = -20 \text{ °C} \dots 160 \text{ °C}$  (-4 °F ... +320 °F)

Sliding velocity: ... 20 m/s (66 ft/s)

Viscosity: ... 300 Pa·s

Solids content: ... 7 %

### Materials

Seal face: Silicon carbide (Q1)

Seat: Silicon carbide (Q1)

Secondary seals: EPDM (E), FKM (V)

Metal parts: CrNiMo steel (G)

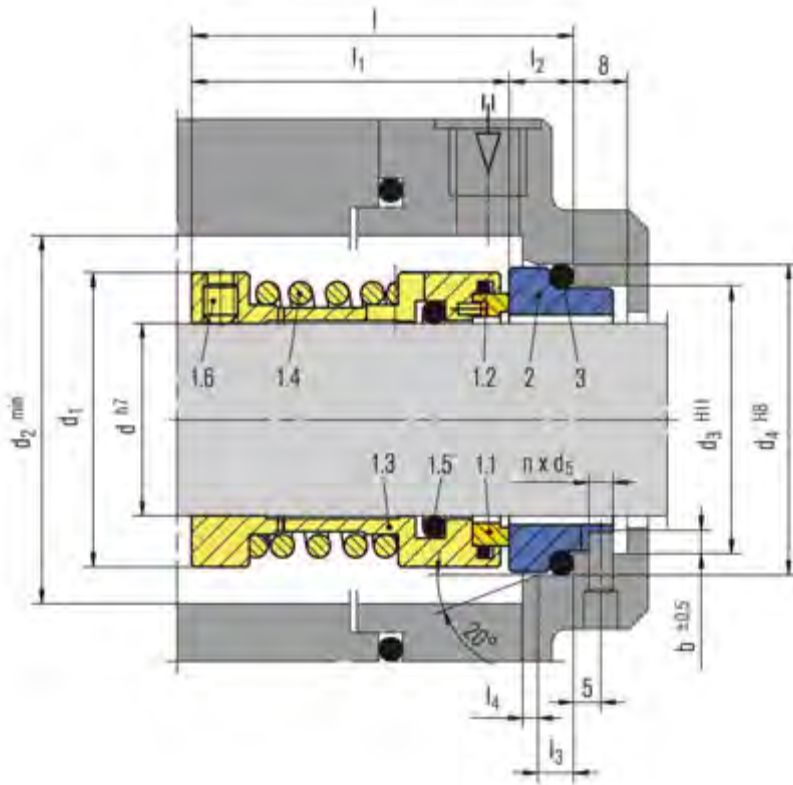
### Recommended applications

- Pulp and paper industry
- Water and waste water technology
- High-viscosity liquids
- Pulp suspensions
- Process pumps
- Pulp pumps

### Features

- Single seal
- Unbalanced
- Independent of direction of rotation
- Positive torque transmission due to bayonet drive between seal head and drive collar
- O-Ring groove for ventilation prevents solids build-up and enhances flexibility

RELY ON EXCELLENCE



### Item Description

- 1.1 Seal face
- 1.2 O-Ring
- 1.3 Drive collar
- 1.4 Spring
- 1.5 O-Ring
- 1.6 Set screw
- 2 Seat
- 3 O-Ring

## RELY ON EXCELLENCE

### Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	b
20	34	36	29	35	3	51	41	10.0	5,5	2.0	3.5
24	38	40	33	39	3	53	43	10.0	5,5	2.0	3.5
25	39	41	34	40	3	53	43	10.0	5,5	2.0	3.5
28	42	44	37	43	3	55	45	10.0	5,5	2.0	3.5
30	44	46	39	45	3	55	45	10.0	5,5	2.0	3.5
32	46	48	42	48	3	55	45	10.0	5,5	2.0	3.5
33	47	49	42	48	3	55	45	10.0	5,5	2.0	3.5
35	49	51	44	50	3	59	49	10.0	5,5	2.0	3.5
38	54	58	49	56	4	64	53	11.0	6	2.0	4.0
40	56	60	51	58	4	66	55	11.0	6	2.0	4.0
43	59	63	54	61	4	66	55	11.0	6	2.0	4.0
45	61	65	56	63	4	66	55	11.0	6	2.0	4.5
48	64	68	59	66	4	66	55	11.0	6	2.0	4.5
50	66	70	62	70	4	73	60	13.0	6	2.5	4.5
53	69	73	65	73	4	74	61	13.0	6	2.5	5.0
55	71	75	67	75	4	74	61	13.0	6	2.5	5.0
60	78	85	72	80	4	76	63	13.0	6	2.5	5.0
63	81	88	75	83	4	76	63	13.0	6	2.5	5.0
65	84	90	77	85	4	80	67	13.0	6	2.5	5.0
70	90	95	83	92	4	83	68	15.0	7	2.5	5.0
75	95	104	88	97	4	87	72	15.0	7	2.5	5.0
80	100	109	95	105	4	87.5	72	15.5	7	3.0	6.0
85	107	114	100	110	4	92.5	77	15.5	7	3.0	6.0
90	112	119	105	115	4	92.5	77	15.5	7	3.0	6.0
95	119	124	110	120	4	97.5	82	15.5	7	3.0	6.0
100	124	129	115	125	4	97.5	82	15.5	7	3.0	6.0

Dimensions in millimeter

RELY ON EXCELLENCE

## HJ92N

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- For unstepped shafts
- Single seal
- Balanced
- Independent of direction of rotation
- Encapsulated rotating spring

### Advantages

- Especially designed for solids containing and highly viscous media
- Springs are protected from the product
- Rugged and reliable design
- No damage of the shaft by dynamically loaded O-Ring
- Universal application
- Variant for operation under vacuum available
- Variants for sterile operation available

### Operating range

Shaft diameter:

$d_1 = 18 \dots 100 \text{ mm (0.625" ... 4")}$

Pressure:

$p_1^*) = 0.8 \text{ abs.} \dots 25 \text{ bar (12 abs.} \dots 363 \text{ PSI)}$

Temperature:

$t = -50 \text{ }^\circ\text{C} \dots +220 \text{ }^\circ\text{C (-58 }^\circ\text{F} \dots +430 \text{ }^\circ\text{F)}$

Sliding velocity:  $v_g = 20 \text{ m/s (66 ft/s)}$

Axial movement:  $\pm 0.5 \text{ mm}$

\* An integral stationary seat lock is not needed within the permissible low pressure range. For prolonged operation under vacuum it is necessary to arrange for quenching on the atmospheric side.

### Materials

Seal face: Carbon graphite antimony impregnated (A),  
Carbon graphite resin impregnated (B)  
Seat G16: Silicon carbide (Q1)

### Standards and approvals

- EN 12756

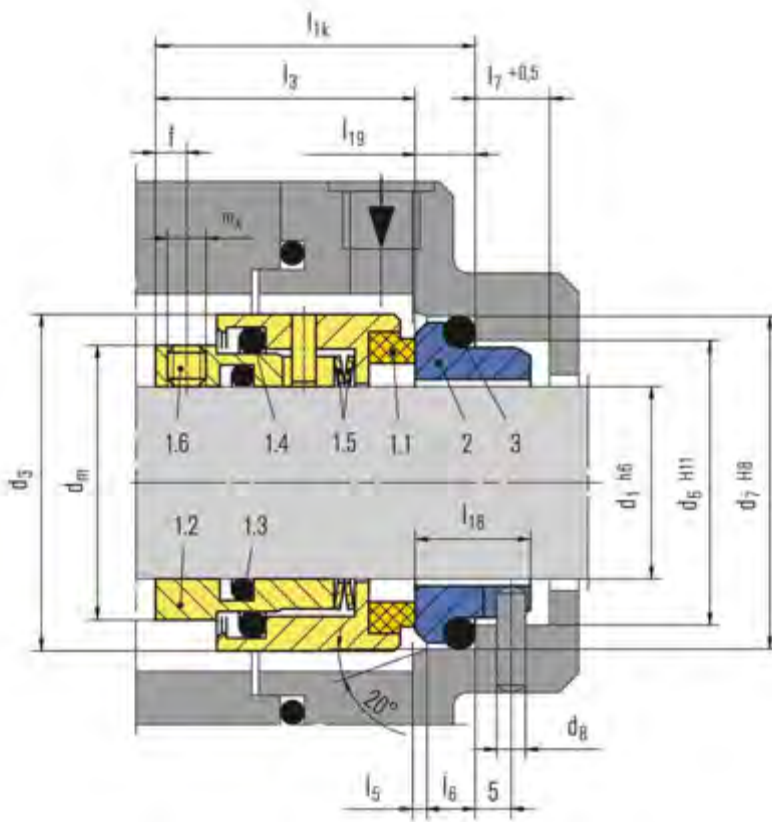
### Notes

Variant for sterile applications available. Please inquire.

### Recommended applications

- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Food and beverage industry
- Sugar industry
- Dirty, abrasive and solids containing media
- Thick juice (70 ... 75 % sugar content)
- Raw sludge, sewage slurries
- Raw sludge pumps
- Thick juice pumps
- Conveying and bottling of dairy products

RELY ON EXCELLENCE

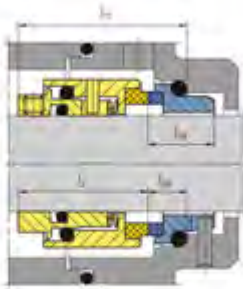


**Item Part no. to Description**  
**DIN 24250**

1.1	472/473	Seal face
1.2	485	Drive collar
1.3	412.2	O-Ring
1.4	412.1	O-Ring
1.5	477	Spring
1.6	904	Set screw
2	475	Seat (G16)
3	412.3	O-Ring

RELY ON EXCELLENCE

## Product variants



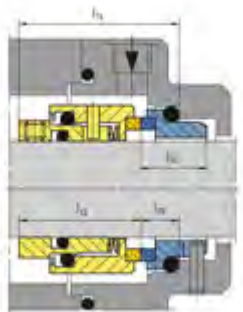
### HJ927GN

Items and description as HJ92N.

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)

Seat G46: Silicon carbide (Q12)

Installation length  $l_{11}$  ( $= l_{13} + l_{13g}$ ) is longer than  $l_{1k}$ .



### HJ977GN

Items and description as HJ92N.

Seal face: Silicon carbide (Q12)

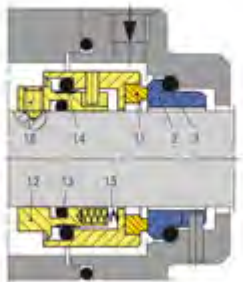
Seat G46: Silicon carbide (Q12)

Installation length  $l_{1k}$

Operating range:

Temperature:  $t = -20\text{ °C} \dots +180\text{ °C}$  ( $-4\text{ °F} \dots +356\text{ °F}$ )

Sliding velocity:  $v_g = 10\text{ m/s}$  (33 ft/s)



### HJ4...

Mechanical seals with product-protected multiple springs, for high pressure applications.

Pressure:  $p = \text{max. } 50\text{ bar}$  (725 PSI)

Shaft diameter:  $d_1 > 100\text{ mm}$  (3.94").

Smaller diameters and higher pressures on request.

## RELY ON EXCELLENCE

### HJ97GN5

Items and description as HJ92N.

Seal face: Silicon carbide (Q12)

Seat G16: Silicon carbide (Q1)

Installations length  $l_{12}$  (=  $l_{13} + l_{19}$ ) is shorter than  $l_{1k}$ .

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>m</sub>	l <sub>1k</sub>	l <sub>3</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>18</sub>	l <sub>19</sub>	l <sub>11</sub> <sup>1)</sup>	l <sub>12</sub> <sup>2)</sup>	l <sub>13</sub>	l <sub>38</sub>	l <sub>39</sub>	f	m <sub>x</sub>
18	32	27	33	3	26.0	37.5	30.5	2.0	5	9	15.0	7.0	39.5	35.5	28.5	17.0	9.0	3.0	M4
20	34	29	35	3	28.0	37.5	30.5	2.0	5	9	15.0	7.0	39.5	35.5	28.5	17.0	9.0	3.0	M4
22	36	31	37	3	30.0	37.5	30.5	2.0	5	9	15.0	7.0	39.5	35.5	28.5	17.0	9.0	3.0	M4
24	38	33	39	3	32.5	40.0	33.0	2.0	5	9	15.0	7.0	42.0	38.0	31.0	17.0	9.0	3.5	M5
25	39	34	40	3	33.5	40.0	33.0	2.0	5	9	15.0	7.0	42.0	38.0	31.0	17.0	9.0	3.5	M5
28	42	37	43	3	36.5	42.5	35.5	2.0	5	9	15.0	7.0	45.0	40.0	33.0	17.5	9.5	3.5	M5
30	44	39	45	3	38.5	42.5	35.5	2.0	5	9	15.0	7.0	45.0	40.0	33.0	17.5	9.5	3.5	M5
32	47	42	48	3	41.5	42.5	35.5	2.0	5	9	15.0	7.0	45.0	40.0	33.0	17.5	9.5	3.5	M5
33	47	42	48	3	41.5	42.5	35.5	2.0	5	9	15.0	7.0	45.0	40.0	33.0	17.5	9.5	3.5	M5
35	49	44	50	3	43.5	42.5	35.5	2.0	5	9	15.0	7.0	45.0	40.0	33.0	17.5	9.5	3.5	M5
38	54	49	56	4	47.5	45.0	37.0	2.0	6	9	16.0	8.0	47.5	42.5	34.5	18.5	10.5	4.0	M5
40	56	51	58	4	49.5	45.0	37.0	2.0	6	9	16.0	8.0	47.5	42.5	34.5	18.5	10.5	4.0	M5
43	59	54	61	4	52.5	45.0	37.0	2.0	6	9	16.0	8.0	47.5	42.5	34.5	18.5	10.5	4.0	M5
45	61	56	63	4	54.5	45.0	37.0	2.0	6	9	16.0	8.0	47.5	42.5	34.5	18.5	10.5	4.0	M5
48	64	59	66	4	57.5	45.0	37.0	2.0	6	9	16.0	8.0	47.5	42.5	34.5	18.5	10.5	4.0	M5
50	66	62	70	4	59.5	47.5	38.0	2.5	6	9	17.0	9.5	50.0	45.0	35.5	19.5	12.0	4.5	M6
53	69	65	73	4	62.5	47.5	38.0	2.5	6	9	17.0	9.5	50.0	45.0	35.5	19.5	12.0	4.5	M6
55	71	67	75	4	64.5	47.5	38.0	2.5	6	9	17.0	9.5	50.0	45.0	35.5	19.5	12.0	4.5	M6
58	78	70	78	4	68.5	52.5	42.0	2.5	6	9	18.0	10.5	55.0	50.0	39.5	20.5	13.0	4.5	M6
60	80	72	80	4	70.5	52.5	42.0	2.5	6	9	18.0	10.5	55.0	50.0	39.5	20.5	13.0	4.5	M6
63	83	75	83	4	73.5	52.5	42.0	2.5	6	9	18.0	10.5	55.0	50.0	39.5	20.5	13.0	4.5	M6
65	85	77	85	4	75.5	52.5	42.0	2.5	6	9	18.0	10.5	55.0	50.0	39.5	20.5	13.0	4.5	M6
68	88	81	90	4	78.5	52.5	41.5	2.5	7	9	18.5	11.0	55.0	50.0	39.0	21.0	13.5	4.5	M6
70	90	83	92	4	80.5	60.0	48.5	2.5	7	9	19.0	11.5	62.5	57.5	46.0	21.5	14.0	5.0	M6
75	99	88	97	4	89.0	60.0	48.5	2.5	7	9	19.0	11.5	62.5	57.5	46.0	21.5	14.0	5.5	M8
80	104	95	105	4	94.0	60.0	48.5	3.0	7	9	19.0	11.5	62.5	57.5	46.0	21.5	14.0	5.5	M8
85	109	100	110	4	99.0	60.0	48.5	3.0	7	9	19.0	11.5	62.5	57.5	46.0	21.5	14.0	5.5	M8
90	114	105	115	4	104.0	65.0	52.0	3.0	7	9	20.5	13.0	67.5	62.5	49.5	23.0	15.5	5.5	M8
95	119	110	120	4	109.0	65.0	52.0	3.0	7	9	20.5	13.0	67.5	62.5	49.5	23.0	15.5	5.5	M8
100	124	115	125	4	114.0	65.0	52.0	3.0	7	9	20.5	13.0	67.5	62.5	49.5	23.0	15.5	5.5	M8

Dimensions in millimeter

RELY ON EXCELLENCE

## HRN

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- Single seal
- Balanced
- Independent of direction of rotation
- Stationary springs
- Dual seals in tandem as well as back-to-back arrangements (also in combination with H10 seal)

### Advantages

- Safe operation (no fractures) because of seal face locking by square pin
- Spring unit averted from the product so no sticking and clogging of the springs
- Suitable for pressure reversals
- Operation in vacuum without additional seat locking possible
- No damage of the shaft by a dynamically loaded O-Ring
- Small installation sizes
- Best suitable for conversions, no adaptations of the pump
- Insensitive to solid containing and abrasive media
- Advantages of a balanced seal even with plain shafts
- Insensitive to shaft movements because of the stationary design

### Operating range

Shaft diameter:

$d = 18 \dots 100 \text{ mm} (0.71 \dots 3.94 \text{")}$

Pressure:  $p_1^*) = 25 \text{ bar} (363 \text{ PSI})$

Temperature:

$t = -40 \text{ °C} \dots +220 \text{ °C} (-40 \text{ °F} \dots 428 \text{ °F})$

Sliding velocity:  $v_g = 20 \text{ m/s} (66 \text{ ft/s})$

Axial movement:  $\pm 1.0 \text{ mm}$

\* Additional seat locking is not needed in vacuum operation. For operation under vacuum it is necessary to arrange for quenching on the atmosphere side.

### Materials

Seal face: Carbon graphite resin impregnated (B), Silicon carbide (Q1)

Seat: Silicon carbide (Q1)

Secondary seals: FKM (V), NBR (P), FFKM (K), PTFE (T)

Springs: Hastelloy® C-4 (M)

Metal parts: CrNiMo steel (G)

### Standards and approvals

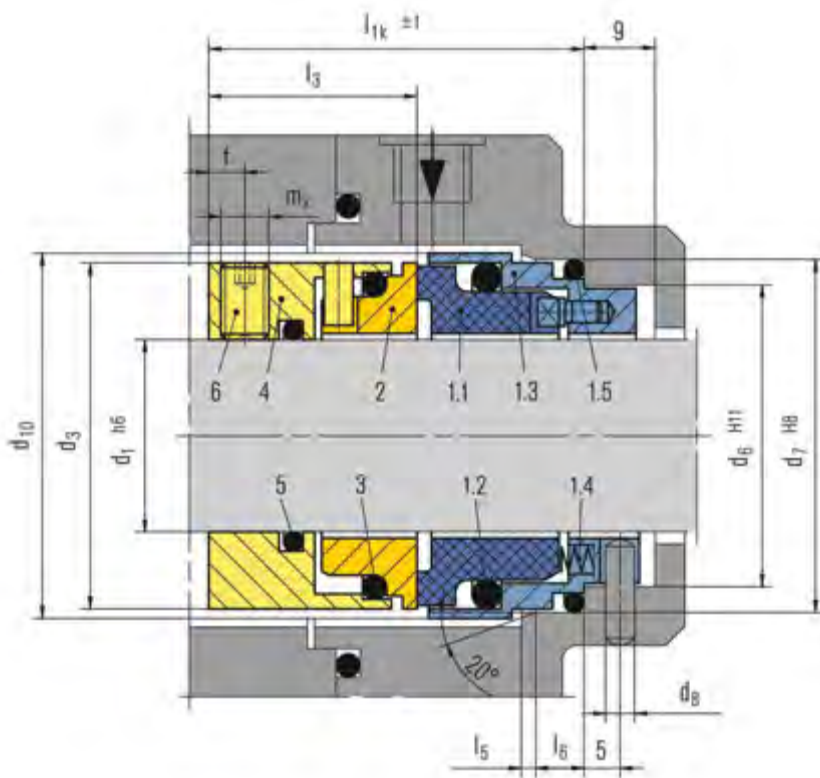
- EN 12756

### Recommended applications

- Water and waste water technology
- Refining technology
- Dirty, abrasive and solid containing media
- Fugitive hydrocarbons (no API seal!)
- Sticky and stringy media
- Chemical standard pumps
- Sewage pumps



RELY ON EXCELLENCE



**Item Part no. to Description  
DIN 24250**

1.1	472	Seal face
1.2	412.1	O-Ring
1.3	485	Retainer
1.4	477	Spring
1.5	412.2	O-Ring
2	475	Seat
3	412.3	O-Ring
4	485	Drive collar
5	412.4	O-Ring
6	904	Set screw

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>10</sub>	l <sub>1k</sub>	l <sub>3</sub>	l <sub>5</sub>	l <sub>6</sub>	f	m <sub>x</sub>
18	33	27	33	3	34.7	37.5	19.5	2.0	5	3.0	4
20	35	29	35	3	36.7	37.5	19.5	2.0	5	3.0	4
22	37	31	37	3	38.7	37.5	19.5	2.0	5	3.0	4
24	39	33	39	3	40.7	40.0	20.5	2.0	5	3.5	5
25	40	34	40	3	41.7	40.0	20.5	2.0	5	3.5	5
28	43	37	43	3	44.7	42.5	21.5	2.0	5	3.5	5
30	45	39	45	3	46.7	42.5	21.5	2.0	5	3.5	5
32	48	42	48	3	49.7	42.5	21.5	2.0	5	3.5	5
33	48	42	48	3	49.7	42.5	21.5	2.0	5	3.5	5
35	50	44	50	3	51.7	42.5	21.5	2.0	5	3.5	5
38	56	49	56	4	57.7	45.0	24.0	2.0	6	4.0	6
40	58	51	58	4	59.7	45.0	24.0	2.0	6	4.0	6
43	61	54	61	4	62.7	45.0	24.0	2.0	6	4.0	6
45	63	56	63	4	64.7	45.0	24.0	2.0	6	4.0	6
48	66	59	66	4	67.7	45.0	24.0	2.0	6	4.0	6
50	70	62	70	4	71.7	47.5	25.0	2.5	6	4.0	6
53	73	65	73	4	74.7	47.5	25.0	2.5	6	4.0	6
55	75	67	75	4	76.7	47.5	25.0	2.5	6	4.0	6
58	78	70	78	4	80.5	52.5	28.0	2.5	6	4.0	6
60	80	72	80	4	82.5	52.5	28.0	2.5	6	4.0	6
63	83	75	83	4	85.5	52.5	28.0	2.5	6	4.0	6
65	85	77	85	4	87.5	52.5	28.0	2.5	6	4.0	6
68	90	81	90	4	92.5	52.5	28.0	2.5	7	4.0	6
70	92	83	92	4	94.5	60.0	34.0	2.5	7	6.0	8
75	97	88	97	4	100.5	60.0	34.0	2.5	7	6.0	8
80	105	95	105	4	108.5	60.0	34.0	3.0	7	6.0	8
85	110	100	110	4	113.5	60.0	34.0	3.0	7	6.0	8
90	115	105	115	4	118.5	65.0	39.0	3.0	7	10.0	8
95	120	110	120	4	123.5	65.0	39.0	3.0	7	10.0	8
100	125	115	125	4	128.5	65.0	39.0	3.0	7	10.0	8

Dimensions in Millimeter

RELY ON EXCELLENCE

## LB500

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- Single seal
- Balanced
- Independent of direction of rotation
- Rotating multiple springs

### Advantages

- API 682 (Type A) compliant
- Fits to EN and ANSI seal chambers
- Optimized, narrow width seal face design

### Operating range

Pressure: p = vacuum ... 35 bar (508 PSI)

Temperature:

t = -20 °C ... +200 °C (-4 °F ... +392 °F)

Sliding velocity: v<sub>g</sub> = ... 20 m/s (66 ft/s)

Viscosity: ... 500 mPa·s

Solids content: ... 0.5 %

### Materials

Seal face: Carbon graphite resin impregnated (B), High density carbon graphite

Seat: Silicon carbide (Q1)

Secondary seals: FKM (V)

Metal parts: CrNiMo steel (G)

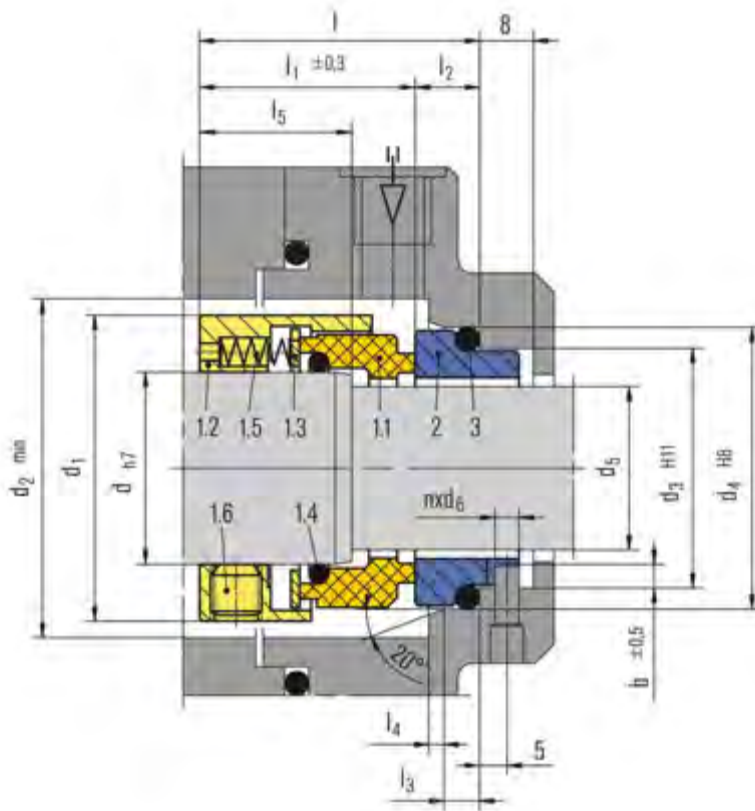
### Standards and approvals

- API 682 / ISO 21049
- ANSI

### Recommended applications

- Chemical industry
- Process industry
- Acids
- Alkaline solutions
- Salt solutions
- Low viscosity oils
- Monomers
- Hydrocarbons
- Water
- Seawater
- Process pumps

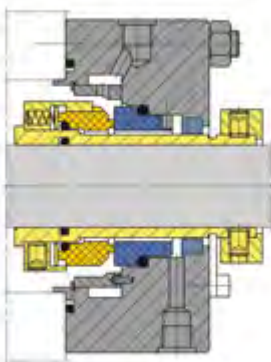
RELY ON EXCELLENCE



**Item Description**

- 1.1 Seal face
- 1.2 Drive collar
- 1.3 Thrust ring
- 1.4 O-Ring
- 1.5 Spring
- 1.6 Set screw
- 2 Seat
- 3 O-Ring

**Product variants**



**Configuration example**

Configuration example acc. to API 682 (1CW-FX)

## RELY ON EXCELLENCE

### Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	b
25	39	41	29	35	20	3	44	34	10	5.5	2.0	24	3.5
28	42	44	33	39	24	3	44	34	10	5.5	2.0	24	3.5
30	44	46	34	40	25	3	44	34	10	5.5	2.0	24	3.5
32	46	48	37	43	27	3	44	34	10	5.5	2.0	24	3.5
33	47	49	37	43	28	3	44	34	10	5.5	2.0	24	3.5
35	49	51	39	45	30	3	44	34	10	5.5	2.0	24	3.5
38	55	58	42	48	33	3	45	35	10	5	2.0	25	3.5
40	57	60	44	50	35	3	45	35	10	5	2.0	25	3.5
42	59	62	49	56	37	4	48	37	11	5	2.0	25	4.0
43	60	63	49	56	38	4	48	37	11	5	2.0	25	4.0
45	62	65	51	58	40	4	48	37	11	5	2.0	25	4.5
48	65	68	54	61	43	4	48	37	11	5	2.0	25	4.5
50	67	70	56	63	45	4	48	37	11	6	2.0	25	4.5
53	70	73	59	66	48	4	48	37	11	6	2.0	25	4.5
55	72	75	62	70	50	4	50	37	13	6	2.5	25	4.5
60	77	85	67	75	55	4	50	37	13	6	2.5	25	5.0
63	80	88	70	78	58	4	50	37	13	6	2.5	25	5.0
65	82	90	72	80	60	4	50	37	13	6	2.5	25	5.0
70	87	95	77	85	65	4	50	37	13	6	2.5	25	5.0
75	92	104	83	92	70	4	53	38	15	7	2.5	25	5.0
80	97	109	88	97	75	4	53	38	15	7	2.5	25	5.0
85	102	114	95	105	80	4	53	37.5	15.5	7	3.0	25	6.0
90	107	119	100	110	85	4	53	37.5	15.5	7	3.0	25	6.0
95	112	124	105	115	90	4	53	37.5	15.5	7	3.0	25	6.0
100	117	129	110	120	95	4	53	37.5	15.5	7	3.0	25	6.0
105	122	134	115	125	100	4	53	37.5	15.5	7	3.0	25	6.0
110	127	139	120	130	105	4	53	37.5	15.5	7	3.0	25	6.0

RELY ON EXCELLENCE

## M2N

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Advantages

- Economical seal solution
- No damage of the shaft by set screws
- Short installation length possible (G16)

### Operating range

Shaft diameter:  
d1 = 6 ... 38 mm (0.25" ... 1.5")  
Pressure: p1 = 10 bar (145 PSI)  
Temperature:  
t = -20 °C ... 140 °C  
(-4 °F ... 355 °F)  
Sliding velocity:  
vg = 15 m/s (50 ft/s)  
Axial movement: ±1.0 mm

### Features

- For plain shafts
- Single seal
- Unbalanced
- Conical spring rotating
- Dependent on direction of rotation

### Materials

Seal face: Carbon graphite resin impregnated (B)  
Seat G9: Silicon carbide (Q1, Q2),  
Special cast CrMo steel (S), Aluminium oxide (V)

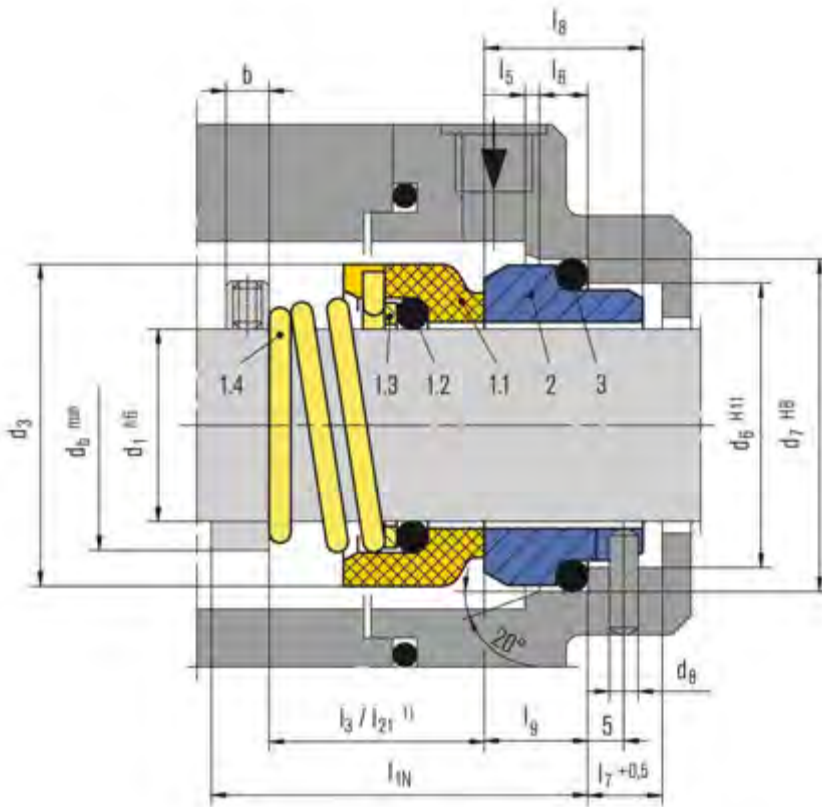
### Standards and approvals

- EN 12756

### Recommended applications

- Pulp and paper industry
- Water and waste water technology
- Building services industry
- Water pumps
- Heating circulation pumps

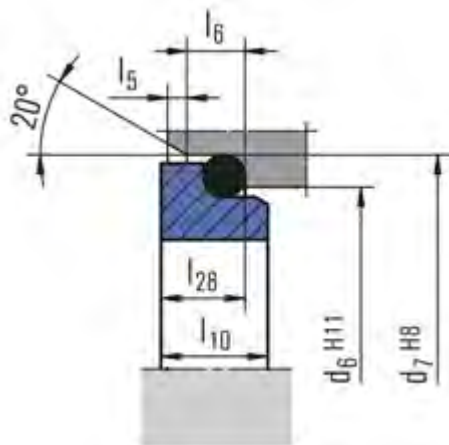
## RELY ON EXCELLENCE



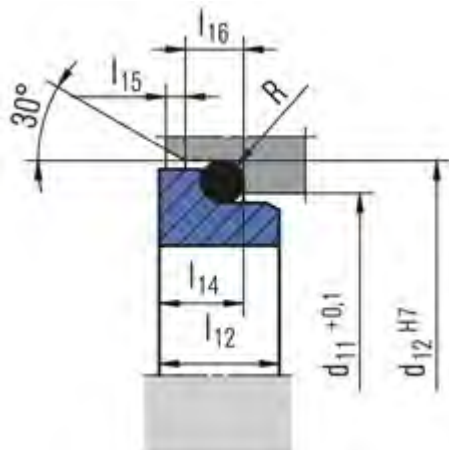
Item	Part no. to DIN 24250	Description
1.1	472	Seal face
1.2	412.1	O-Ring
1.3	474	Thrust ring
1.4	478	Righthand spring
1.4	479	Lefthand spring
2	475	Seat (G9)
3	412.2	O-Ring

RELY ON EXCELLENCE

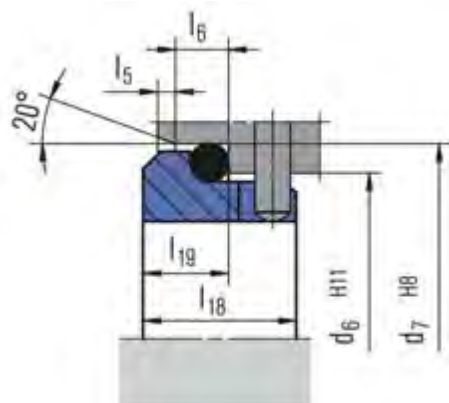
## Seat alternatives



G6 (EN 12756)



G4



G16 (EN 12756)



## RELY ON EXCELLENCE

### Product variants

#### M2

Rotating unit M2 with seat G4 or G16 (shorter installation length).

Seal face:

Carbon graphite resin impregnated (B)

Seat G4:

Silicon carbide (Q1), Special cast CrMo steel (S)

Seat G16:

Silicon carbide (Q1, Q2), Special cast CrMo steel (S), Aluminium oxide (V)

#### M2N4

Rotating unit M2 with seat G6.

Seal face:

Carbon graphite resin impregnated (B)

Seat G6:

Silicon carbide (Q1), Special cast CrMo steel (S)

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>b</sub>	d <sub>b</sub>	l <sub>3</sub> <sup>1)</sup>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>10</sub>	l <sub>12</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>18</sub>	l <sub>19</sub>	l <sub>21</sub> <sup>1)</sup>	l <sub>28</sub>	b	R
6	15	-	-	-	11.8	16.0	8	-	-	-	-	-	-	-	6.5	5.6	1.2	3.8	-	-	10.9	-	-	1.2
8	18	-	-	-	15.5	19.2	11	-	-	-	-	-	-	-	8.0	7.0	1.2	3.8	-	-	15.5	-	-	1.2
10	20	17	21	3	15.5	19.2	13	40	17.5	1.5	4	8.5	17.5	7.5	7.5	6.6	1.2	3.8	-	-	15.9	6.6	8	1.2
12	22	19	23	3	17.5	21.6	16	40	17.5	1.5	4	8.5	17.5	7.5	8.0	7.0	1.2	3.8	-	-	16.0	6.6	8	1.2
14	25	21	25	3	20.5	24.6	18	40	17.5	1.5	4	8.5	17.5	7.5	8.0	7.0	1.2	3.8	-	-	16.0	6.6	8	1.2
15	27	-	-	-	20.5	24.6	19	-	-	-	-	-	-	-	7.5	6.6	1.2	3.8	-	-	17.4	-	-	1.2
16	27	23	27	3	22.0	28.0	21	40	19.5	1.5	4	8.5	17.5	7.5	8.5	7.5	1.5	5.0	-	-	19.0	6.6	8	1.5
18	30	27	33	3	24.0	30.0	23	45	20.5	2.0	5	9.0	19.5	8.5	9.0	8.0	1.5	5.0	15	7	20.5	7.5	8	1.5
20	32	29	35	3	29.5	35.0	26	45	22.0	2.0	5	9.0	19.5	8.5	8.5	7.5	1.5	5.0	15	7	22.0	7.5	8	1.5
22	35	31	37	3	29.5	35.0	28	45	23.5	2.0	5	9.0	19.5	8.5	8.5	7.5	1.5	5.0	15	7	23.5	7.5	8	1.5
24	38	33	39	3	32.0	38.0	30	50	25.0	2.0	5	9.0	19.5	8.5	8.5	7.5	1.5	5.0	15	7	25.0	7.5	8	1.5
25	40	34	40	3	32.0	38.0	31	50	26.5	2.0	5	9.0	19.5	8.5	8.5	7.5	1.5	5.0	15	7	26.5	7.5	8	1.5
26	41	-	-	-	34.0	40.0	32	-	-	-	-	-	-	-	9.0	8.0	1.5	5.0	-	-	26.5	-	-	1.5
28	43	37	43	3	36.0	42.0	35	50	26.5	2.0	5	9.0	19.5	8.5	10.0	9.0	1.5	5.0	15	7	26.5	7.5	8	1.5
30	47	-	-	-	39.2	45.0	37	-	-	-	-	-	-	-	11.5	10.5	1.5	5.0	15	7	25.0	-	-	1.5
32	48	-	-	-	42.2	48.0	39	-	-	-	-	-	-	-	13.0	10.5	1.5	5.0	15	7	28.5	-	-	1.5
35	53	-	-	-	46.2	52.0	43	-	-	-	-	-	-	-	13.5	11.0	1.5	5.0	15	7	28.5	-	-	1.5
38	56	-	-	-	49.2	55.0	47	-	-	-	-	-	-	-	13.0	10.3	1.5	5.0	16	8	32.0	-	-	1.5

Dimensions in Millimeter

1) l<sub>3</sub> valid for M2N, l<sub>21</sub> valid for M2

RELY ON EXCELLENCE

## M3N

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- For plain shafts
- Single seal
- Unbalanced
- Rotating conical spring
- Dependent on direction of rotation

### Advantages

- Universal application opportunities
- Insensitive to low solids content
- No damage of the shaft by set screws
- Large choice of materials
- Short installation lengths possible (G16)
- Variants with shrink-fitted seal face available

### Operating range

Shaft diameter:  
 $d_1 = 6 \dots 80 \text{ mm}$  (0,24" ... 3,15")  
Pressure:  $p_1 = 10 \text{ bar}$  (145 PSI)  
Temperature:  
 $t = -20 \text{ °C} \dots +140 \text{ °C}$  (-4 °F ... +355 °F)  
Sliding velocity:  $v_g = 15 \text{ m/s}$  (50 ft/s)  
Axial movement:  $\pm 1.0 \text{ mm}$

### Materials

Seal face: Special cast CrMo steel (S)  
Seat G9: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)

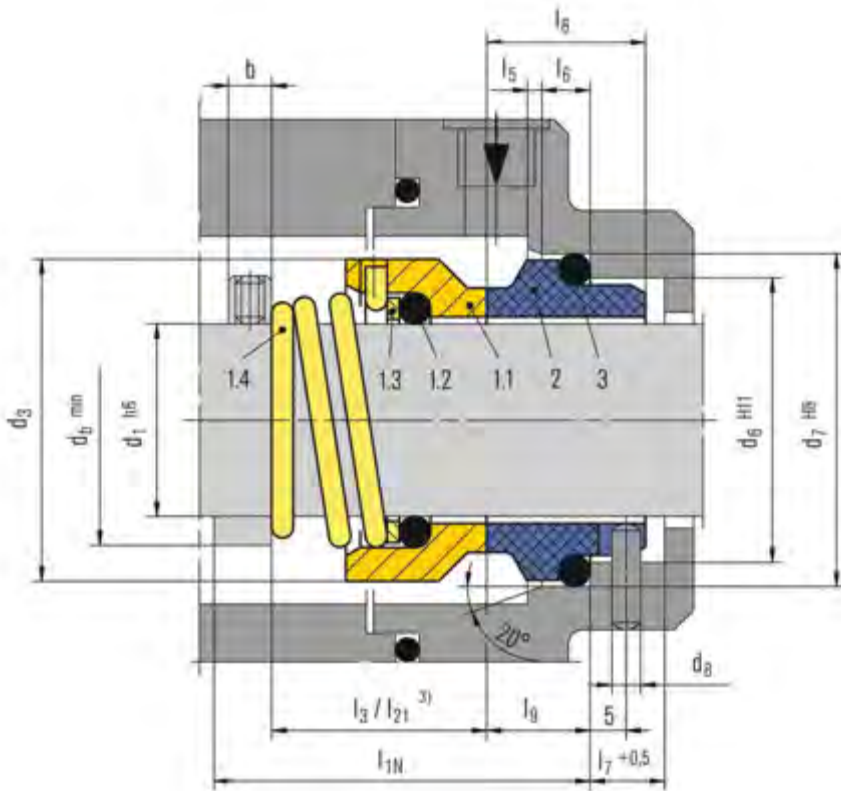
### Standards and approvals

- EN 12756

### Recommended applications

- Chemical industry
- Pulp and paper industry
- Water and waste water technology
- Building services industry
- Food and beverage industry
- Sugar industry
- Low solids content media
- Water and sewage water pumps
- Submersible pumps
- Chemical standard pumps
- Eccentric screw pumps
- Cooling water pumps
- Basic sterile applications

## RELY ON EXCELLENCE

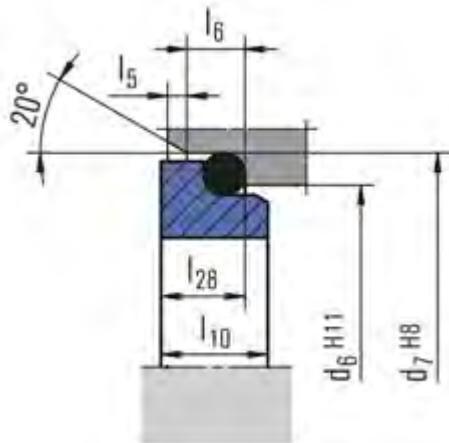


### Item Part no. to Description DIN 24250

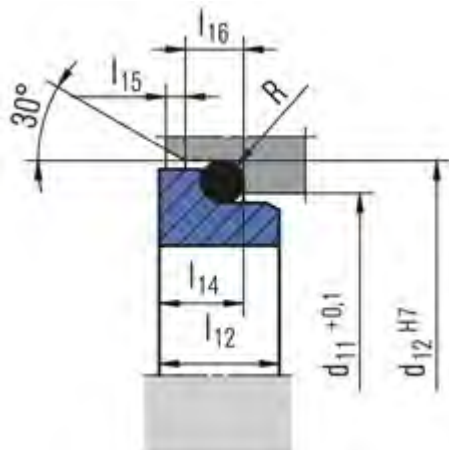
Item	Part no. to	Description
1.1	472	Seal face
1.2	412.1	O-Ring
1.3	474	Thrust ring
1.4	478	Righthand spring
1.4	479	Lefthand spring
2	475	Seat (G9)
3	412.2	O-Ring

RELY ON EXCELLENCE

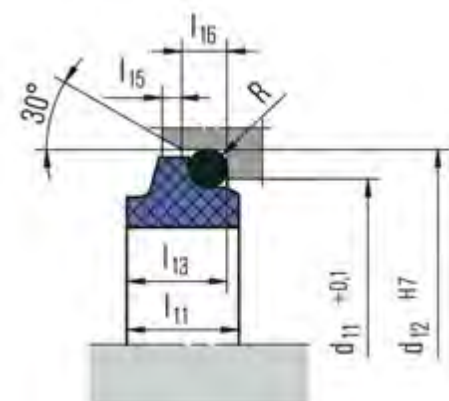
## Seat alternatives



G6 (EN 12756)

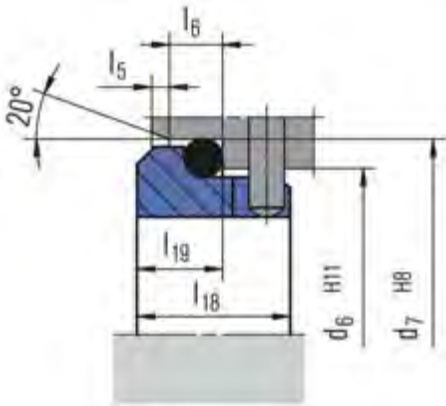


G4

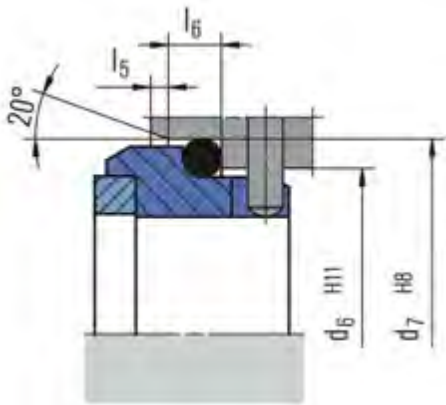


G13

## RELY ON EXCELLENCE



G16 (EN 12756)



G9 (EN 12756)

RELY ON EXCELLENCE

## Product variants



### M32

Items and descriptions as for type M3N, but with carbon graphite seal face shrink-fitted to the seal face carrier (Item no. 1.1).

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)

Seat G4: special cast CrMo steel (S), Silicon carbide (Q1, Q2)

Seat G6 (M32N4): Special cast CrMo steel (S), Silicon carbide (Q1, Q2)

Seat G9 (M32N): Silicon carbide (Q1, Q2)

Seat G6 also available in A, B = G30 (longer installation length than G6)



### M37G

Items and descriptions as for type M3N, but with shrink fitted silicon carbide seal face to the seal face carrier (Item no. 1.1).

Shaft diameter:

$d_1 = 16 \dots 80 \text{ mm} (0.63" \dots 3.15")$

Temperature:

$t = -20 \text{ °C} \dots +180 \text{ °C} (-4 \text{ °F} \dots +355 \text{ °F})$

Sliding velocity:  $v_g = 10 \text{ m/s} (33 \text{ ft/s})$

Seal face: Silicon carbide (Q12, Q22), Tungsten carbide (U22)

Seat G4: Silicon carbide (Q1, Q2)

Seat G13: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)

Seat G6 (M37GN4): Silicon carbide (Q1, Q2)

Seat G9 (M37GN): Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (Q1, Q2)

Seat G6 also available in A, B = G30 (longer installation length than G6)

### M3

Items and description as M3N.

Seal face: Special cast CrMo steel (S)

Seat G13: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>11</sub> <sup>1)</sup>	d <sub>12</sub> <sup>1)</sup>	d <sub>13</sub>	d <sub>b</sub>	l <sub>1N</sub>	l <sub>3</sub> <sup>3)</sup>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	l <sub>10</sub>	l <sub>11</sub>	l <sub>12</sub>	l <sub>13</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>18</sub>	l <sub>19</sub>	l <sub>21</sub> <sup>3)</sup>	l <sub>22</sub>	l <sub>23</sub>	l <sub>28</sub>	b <sup>2)</sup>	R
6	14	-	-	-	11.5	16.0	16	8	-	-	-	-	-	-	-	9.0	6.5	7.1	5.6	1.2	3.8	-	-	10.5	11.9	-	-	-	-	1.2
8	18	-	-	-	15.5	19.2	18	11	-	-	-	-	-	-	-	9.0	8.0	7.1	7.0	1.2	3.8	-	-	15.5	16.9	-	-	-	-	1.2
10*	19	17	21	3	15.5	19.2	20	13	40	15.5	1.5	4	8.5	17.5	10.0	7.5	9.0	7.5	7.1	6.6	1.2	3.8	-	-	15.5	16.9	-	6.6	(8)	1.2
12*	21	19	23	3	17.5	21.6	22	16	40	16.0	1.5	4	8.5	17.5	10.0	7.5	10.0	6.5	7.6	5.6	1.2	3.8	-	-	15.5	17.4	-	6.6	(8)	1.2
14*	23	21	25	3	20.5	24.6	24	18	40	16.5	1.5	4	8.5	17.5	10.0	7.5	10.0	6.5	7.6	5.6	1.2	3.8	-	-	15.5	17.4	16.5	6.6	(8)	1.2
15	24	-	-	-	20.5	24.6	25	19	-	-	-	-	-	-	-	11.0	7.5	8.6	6.6	1.2	3.8	-	-	15.5	17.4	-	-	-	-	1.2
16*	26	23	27	3	22.0	28.0	26	21	40	18.0	1.5	4	8.5	17.5	10.0	7.5	11.5	8.5	9.0	7.5	1.5	5.0	-	-	17.5	19.5	16.5	6.6	(8)	1.5
18*	29	27	33	3	24.0	30.0	31	23	45	19.5	2.0	5	9.0	19.5	11.5	8.5	12.5	9.0	10.0	8.0	1.5	5.0	15	7.0	18.5	20.5	18.0	7.5	(8)	1.5
20*	31	29	35	3	29.5	35.0	34	26	45	22.0	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	15	7.0	20.0	22.0	19.0	7.5	(8)	1.5
22*	33	31	37	3	29.5	35.0	36	28	45	21.5	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	15	7.0	21.5	23.5	20.5	7.5	(8)	1.5
24*	35	33	39	3	32.0	38.0	38	30	50	23.5	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	15	7.0	23.0	25.0	22.0	7.5	(8)	1.5
25*	36	34	40	3	32.0	38.0	39	31	50	26.5	2.0	5	9.0	19.5	11.5	8.5	12.5	8.5	9.5	7.5	1.5	5.0	15	7.0	24.5	26.5	23.5	7.5	(8)	1.5
26	37	-	-	-	34.0	40.0	40	32	-	-	-	-	9.0	-	-	-	13.0	9.0	10.0	8.0	1.5	5.0	-	-	24.5	26.5	23.5	-	-	1.5
28*	40	37	43	3	36.0	42.0	42	35	50	26.5	2.0	5	9.0	19.5	11.5	8.5	14.0	10.0	11.0	9.0	1.5	5.0	15	7.0	24.5	26.5	24.5	7.5	(8)	1.5
30*	43	39	45	3	39.2	45.0	44	37	50	26.5	2.0	5	9.0	19.5	11.5	8.5	14.0	11.5	11.0	10.5	1.5	5.0	15	7.0	24.5	25.0	24.5	7.5	(8)	1.5
32*	46	42	48	3	42.2	48.0	46	39	55	28.5	2.0	5	9.0	19.5	11.5	8.5	14.0	11.5	11.0	10.5	1.5	5.0	15	7.0	28.0	28.5	28.0	7.5	(8)	1.5
33*	47	42	48	3	-	-	47	40	55	28.5	2.0	5	9.0	19.5	11.5	8.5	-	12.0	-	-	-	-	15	7.0	-	-	-	7.5	(8)	1.5
35*	49	44	50	3	46.2	52.0	49	43	55	28.5	2.0	5	9.0	19.5	11.5	8.5	14.5	12.0	11.5	11.0	1.5	5.0	15	7.0	28.0	28.5	28.0	7.5	(8)	1.5
38*	53	49	56	4	49.2	55.0	54	45	55	33.5	2.0	6	9.0	22.0	14.0	10.0	14.5	11.3	11.5	10.3	1.5	5.0	16	8.0	31.0	32.2	31.0	9.0	7.5	1.5
40*	56	51	58	4	52.2	58.0	56	49	55	36.0	2.0	6	9.0	22.0	14.0	10.0	14.5	11.8	11.5	10.8	1.5	5.0	16	8.0	34.0	34.7	34.0	9.0	(8)	1.5
42	59	-	-	-	53.3	62.0	58	52	-	-	-	-	9.0	-	-	-	17.0	13.2	14.3	12.0	2.0	6.0	-	-	35.0	37.3	35.0	-	-	2.5
43*	59	54	61	4	-	-	59	52	60	38.5	2.0	6	9.0	22.0	14.0	10.0	-	13.2	-	-	2.0	-	16	8.0	-	-	-	9.0	7.5	2.5
45*	61	56	63	4	55.3	64.0	61	55	60	39.5	2.0	6	9.0	22.0	14.0	10.0	17.0	12.8	14.3	11.6	2.0	6.0	16	8.0	36.5	39.2	36.5	9.0	(8)	2.5
48*	64	59	66	4	59.7	68.4	64	58	60	46.0	2.0	6	9.0	22.0	14.0	10.0	17.0	12.8	14.3	11.6	2.0	6.0	16	8.0	42.0	44.7	42.0	9.0	(8)	2.5
50*	66	62	70	4	60.8	69.3	66	61	60	45.0	2.5	6	9.0	23.0	15.0	10.5	17.0	12.8	14.3	11.6	2.0	6.0	17	9.5	43.0	45.7	43.0	9.5	(8)	2.5
53*	69	65	73	4	-	-	69	64	70	47.0	2.5	6	9.0	23.0	15.0	12.0	-	13.5	-	-	-	-	17	9.5	-	-	-	11.0	8.0	2.5
55*	71	67	75	4	66.5	75.4	71	66	70	49.0	2.5	6	9.0	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6.0	17	9.5	47.0	49.0	47.0	11.0	(8)	2.5
58*	76	70	78	4	69.5	78.4	78	69	70	55.0	2.5	6	9.0	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6.0	18	10.5	50.0	52.0	50.0	11.0	(8)	2.5
60*	78	72	80	4	71.5	80.4	79	71	70	55.0	2.5	6	9.0	23.0	15.0	12.0	18.0	14.5	15.3	13.3	2.0	6.0	18	10.5	51.0	53.0	51.0	11.0	(8)	2.5
63*	83	75	83	4	-	-	83	74	70	55.0	2.5	6	9.0	23.0	15.0	12.0	-	14.2	-	-	-	-	18	10.5	-	-	-	11.0	(8)	2.5
65*	84	77	85	4	76.5	85.4	85	77	80	55.0	2.5	6	9.0	23.0	15.0	12.0	18.0	14.2	15.3	13.0	2.0	6.0	18	10.5	52.0	54.3	52.0	11.0	(8)	2.5
68*	88	81	90	4	82.7	91.5	88	80	80	55.0	2.5	7	9.0	26.0	18.0	12.5	19.0	14.9	16.0	13.7	2.0	6.0	18,5	11.0	53.0	55.3	52.7	11.3	(8)	2.5
70*	90	83	92	4	83.0	92.0	90	83	80	57.0	2.5	7	9.0	26.0	18.0	12.5	18.0	14.2	15.3	13.0	2.0	6.0	19	11.5	54.0	56.3	54.0	11.3	(10)	2.5
75*	98	88	97	4	90.2	99.0	98	88	80	62.0	2.5	7	9.0	26.0	18.0	12.5	18.0	15.2	15.3	14.0	2.0	6.0	19	11.5	55.0	56.3	54.0	11.3	(10)	2.5
80*	100	95	105	4	95.2	104.0	103	93	90	61.8	3.0	7	9.0	26.2	18.2	13.0	19.0	16.2	16.3	15.0	2.0	6.0	19	11.5	58.0	59.3	58.0	12.0	10.0	2.5

Dimensions in millimeter

1) Fitting dimensions d<sub>11</sub> and d<sub>12</sub> only apply to type M37G with d<sub>1</sub> > 16 mm

2) Dimensions in brackets lie either above or below l<sub>1N</sub>

3) l<sub>3</sub> valid for M3...N, l<sub>21</sub> valid for M3

\*) According to EN 12756

RELY ON EXCELLENCE

## M7N

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- For plain shafts
- Single seal
- Unbalanced
- Super-Sinus-spring
- Independent of direction of rotation

### Advantages

- Universal application opportunities
- Efficient stock keeping due to easily interchangeable faces
- Extended selection of materials
- Insensitive to low solids contents
- Flexibility in torque transmissions
- Self cleaning effect
- Short installation length possible (G16)
- Pumping screw for media with higher viscosity (M7..F)

### Operating range

Shaft diameter:  
 $d_1 = 14 \dots 100 \text{ mm} (0.55 \dots 3.94 \text{ ")}$   
 Pressure:  
 $p_1 = 25 \text{ bar} (363 \text{ PSI})$   
 Temperature:  
 $t = -50 \text{ °C} \dots +220 \text{ °C}$   
 $(-58 \text{ °F} \dots +428 \text{ °F})$   
 Sliding velocity:  
 $vg = 20 \text{ m/s} (66 \text{ ft/s})$   
 Axial movement:  
 $d_1 = \text{up to } 25 \text{ mm: } \pm 1.0 \text{ mm}$   
 $d_1 = 28 \text{ up to } 63 \text{ mm: } \pm 1.5 \text{ mm}$   
 $d_1 = \text{from } 65 \text{ mm: } \pm 2.0 \text{ mm}$

### Materials

Seal face: Silicon carbide (Q1)  
 Seat G9: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (Q1)  
 Seat G4, G6 (Q1), Seat G13 (A, B)

Secondary seals: EPDM (E), FKM (V), FFKM (K)  
 Springs: CrNiMo steel (G)  
 Metal parts: CrNiMo steel (G), Duplex (G1)

### Standards and approvals

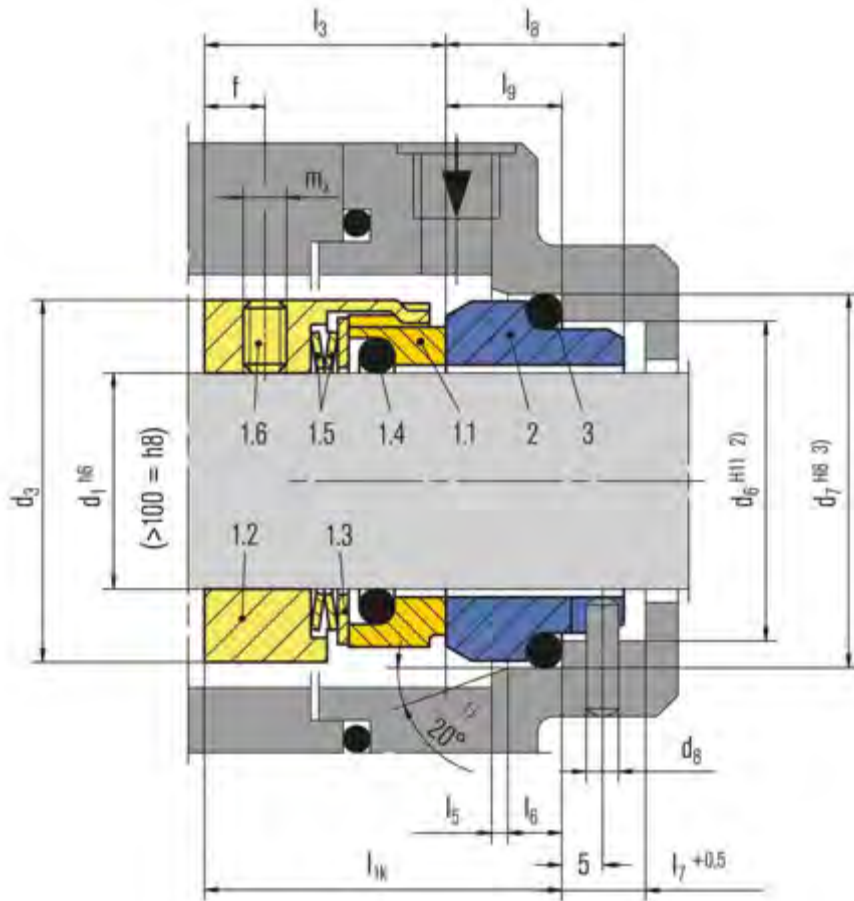
- EN 12756

### Recommended applications

- Process industry
- Chemical industry
- Pulp and paper industry
- Water and waste water technology
- Shipbuilding
- Lube oils
- Low solids content media
- Water / sewage water pumps
- Chemical standard pumps
- Vertical screw pumps
- Gear wheel feed pumps
- Multistage pumps (drive side)
- Circulation of printing colors with viscosity  $500 \dots 15,000 \text{ mm}^2/\text{s}$ .



## RELY ON EXCELLENCE



### Item Part no. to Description DIN 24250

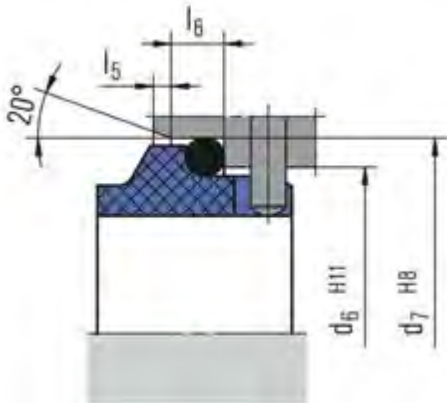
1.1	472	Seal face
1.2	485	Drive collar
1.3	474	Thrust ring
1.4	412.1	O-Ring
1.5	477	Spring
1.6	904	Set screw
2	475	Seat (G9)
3	412.2	O-Ring

- 1)  $d1 > 100$  mm:  $30^\circ$   
 2)  $d1 > 100$  mm:  $+0.1$   
 3)  $d1 > 100$  mm: H7

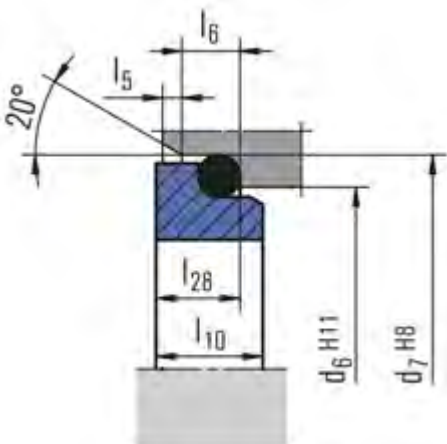
RELY ON EXCELLENCE

## Seat alternatives

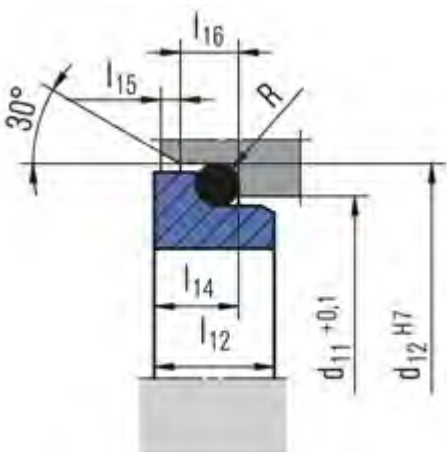
G9 (EN 12756)



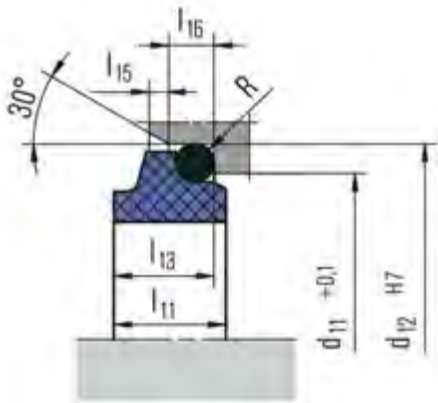
G6 (EN 12756)



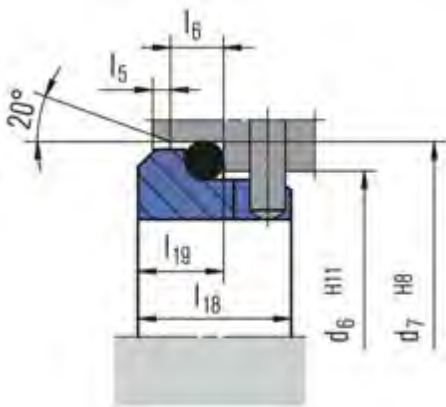
G4



## RELY ON EXCELLENCE



**G13**



**G16**

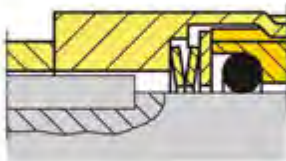
(EN 12756, but  $l_{1k}$  is shorter than specified)

## RELY ON EXCELLENCE

### Torque transmissions



$d_1 > 100 \text{ mm (3.94")}$   
Torque transmission by 4 set screws with cone points. Offset:  $90^\circ$



**Drive key**  
(M7S2 / M74S2)

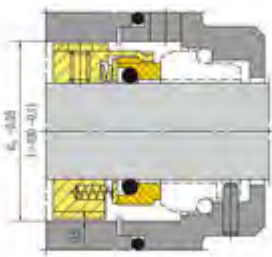
RELY ON EXCELLENCE

## Product variants



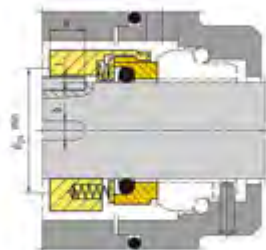
### M74

Dimensions, items and descriptions as for M7N, but with multiple springs (Item no. 1.5). Preferably for  $d_1 > 100$  mm (3.94").



### M7F

Shaft diameter  $d_1 = \text{max. } 100$  mm (3.94"). Dimensions, items and descriptions as for type M7N, but with pumping screw, dependent on direction of rotation. (Viscosity  $\leq$  ISO VG10).



### M7S2

Shaft diameter:  $d_1 = \text{max. } 100$  mm (3.94"). Dimensions, items and descriptions as for type M7N, but with drive key. (without item no. 1.6)

## RELY ON EXCELLENCE

### M74F

Shaft diameter:

d1 = 14 ... 200 mm (0.55" ... 7.87")

Dimensions, items and descriptions as for type M7N, but with multiple springs and pumping screw, dependent on direction of rotation.

(Viscosity  $\leq$  ISO VG10).

### M74S2

Shaft diameter:

d1 = 28 ... 200 mm (1.10" ... 7.87")

Dimensions, items and descriptions as for type M7N, but with multiple springs and drive key.

(without item no. 1.6)

### M78N

Shaft diameter:

d1 = 18 ... 100 mm (0.71" ... 3.94")

Temperature: t = max. 180 °C (356 °F)

Dimensions, items and description as for M7N. Design of the seal face especially for secondary sealing element made of PTFE (T).

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (Q1)\*

Seat G9: Special cast CrMo steel (S)\*, Silicon carbide (Q1)

\* Cannot be combined with seal face made of silicon carbide (Q1)



## RELY ON EXCELLENCE

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>24</sub>	d <sub>s</sub>	l <sub>1k</sub>	l <sub>3</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	l <sub>10</sub>	l <sub>11</sub>	l <sub>12</sub>	l <sub>13</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>28</sub>	b	f	m <sub>x</sub>	u <sub>max.</sub>	t	R	
185	221	212.5	224.3	5	-	-	188	226	84.0	56.0	2.0	12	12.0	38.0	28.0	-	-	-	-	-	-	-	-	-	12	12	M8	24	2.1	-
190	226	217.5	229.3	5	-	-	193	231	84.0	56.0	2.0	12	12.0	38.0	28.0	-	-	-	-	-	-	-	-	-	12	12	M8	24	2.1	-
195	231	222.5	234.3	5	-	-	198	236	84.0	56.0	2.0	12	12.0	38.0	28.0	-	-	-	-	-	-	-	-	-	12	12	M8	24	2.1	-
200	236	227.5	239.3	5	-	-	203	241	84.0	56.0	2.0	12	12.0	38.0	28.0	-	-	-	-	-	-	-	-	-	12	12	M8	24	2.1	-

Dimensions in millimeter

d<sub>1</sub> > 200 on request

\* EN 12756



RELY ON EXCELLENCE

## M74-D

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- For plain shafts
- Dual seal
- Unbalanced
- Rotating multiple springs
- Independent of direction of rotation
- Seal concept based on the M7 range
- Variant with pumping screw available (M74F-D)

### Advantages

- Efficient stock keeping due to easily interchangeable faces
- Extended selection of materials
- Flexibility in torque transmissions
- EN 12756 (For connection dimensions  $d_1$  up to 100 mm (3.94"))

### Operating range

Shaft diameter:  
 $d_1 = 18 \dots 200 \text{ mm (0.71" ... 7.87")}$   
 Pressure:  
 $p_1 = 25 \text{ bar (363 PSI)}$   
 Temperature:  
 $t = -50 \text{ °C ... 220 °C}$   
 $(-58 \text{ °F ... 428 °F})$   
 Sliding velocity:  
 $vg = 20 \text{ m/s (66 ft/s)}$   
 Axial movement:  
 $d_1 \text{ up to } 100 \text{ mm: } \pm 0.5 \text{ mm}$   
 $d_1 \text{ from } 100 \text{ mm: } \pm 2.0 \text{ mm}$

### Materials

Seal face: Silicon carbide (Q1)  
 Seat G9: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (Q1)  
 Seat G4, G6 (Q1, Q2), Seat G13 (A, B)

Secondary seals: EPDM (E), FKM (V), FFKM (K)  
 Springs: CrNiMo steel (G)  
 Metal parts: CrNiMo steel (G), Duplex (G1)

### Standards and approvals

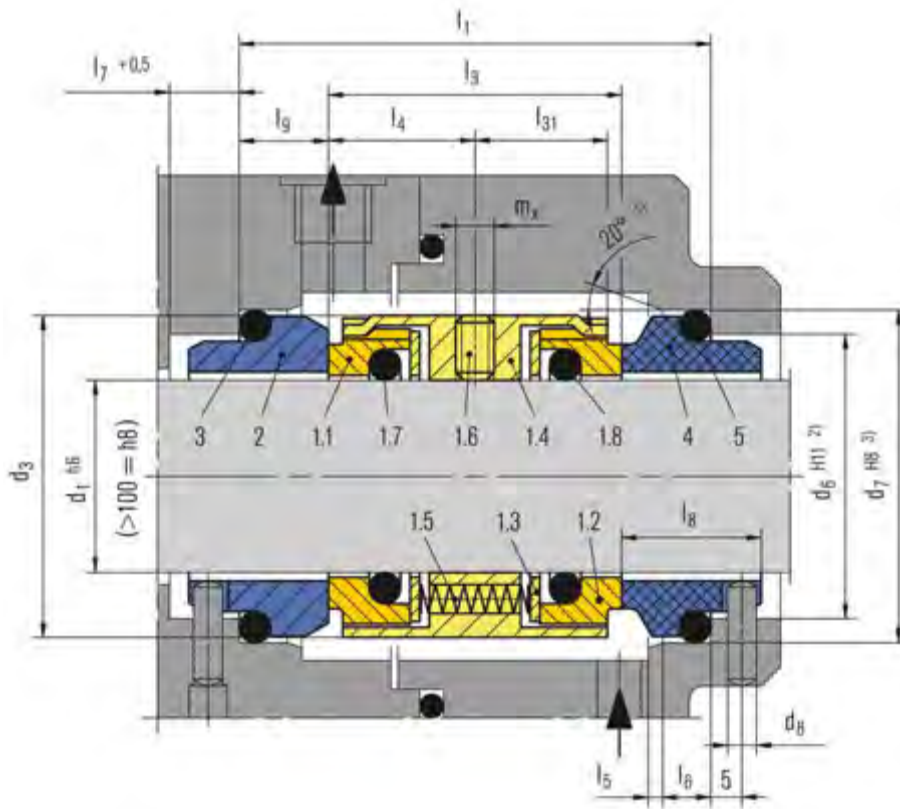
- EN 12756

### Recommended applications

- Chemical industry
- Process industry
- Pulp and paper industry
- Low solids content and low abrasive media
- Toxic and hazardous media
- Media with poor lubrication properties
- Adhesives

Chemical standard pumps

## RELY ON EXCELLENCE



### Item Part no. to Description DIN 24250

1.1	472.1	Seal face
1.2	472.2	Seal face
1.3	474	Thrust ring
1.4	485	Drive collar
1.5	477	Spring
1.6	904	Set screw
1.7	412.1	O-Ring
1.8	412.2	O-Ring
2	475.1	Seat (G9)
3	412.3	O-Ring
4	475.2	Seat (G9)
5	412.4	O-Ring

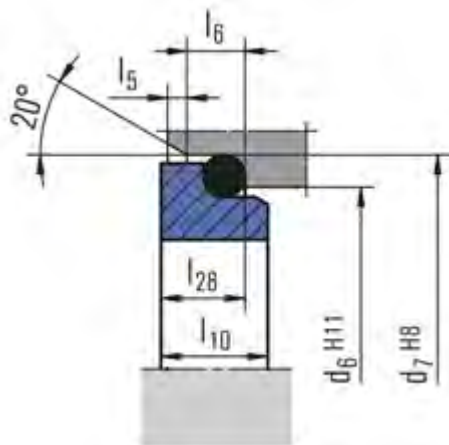
1) d1 > 100 mm: 30°

2) d1 > 100 mm: +0.1

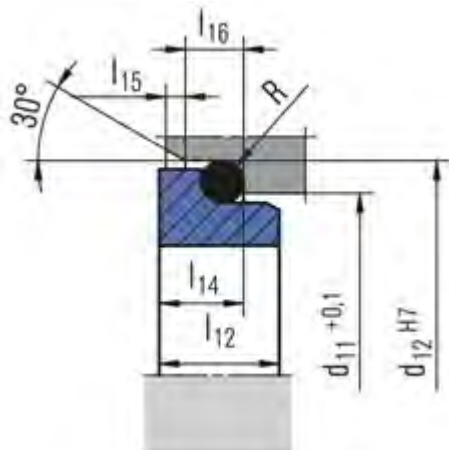
3) d1 > 100 mm: H7

RELY ON EXCELLENCE

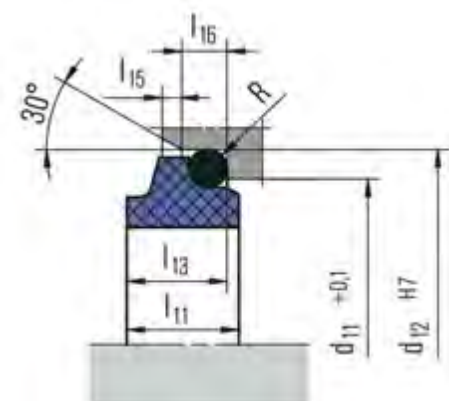
## Seat alternatives



G6 (EN 12756)



G4



G13

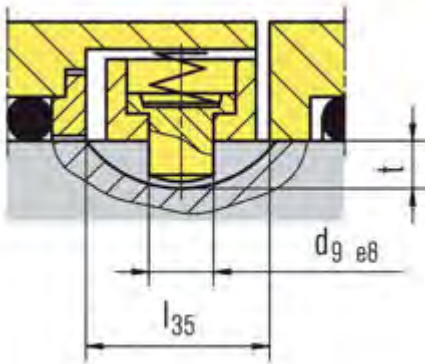
## RELY ON EXCELLENCE

### Torque transmissions

$d_1 > 100 \text{ mm (3.94")}$  Torque transmission by 4 set screws with cone point. Offset:  $90^\circ$

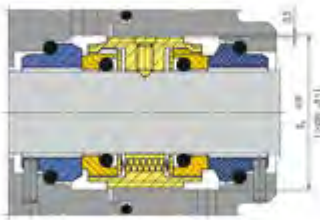


Spring loaded drive pin  
(M74-D22)



RELY ON EXCELLENCE

## Product variants



### M74F-D

Dimensions, items and descriptions as for M74-D, but with pumping screw.

Dependent on direction of rotation. Viscosity  $\leq$  ISO VG10).



## RELY ON EXCELLENCE

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>9</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>s</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	l <sub>10</sub>	l <sub>11</sub>	l <sub>12</sub>	l <sub>13</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>20</sub>	l <sub>31</sub>	l <sub>35</sub>	m <sub>x</sub>	t	R	
195	231	222.5	234.3	5	7	-	-	236	135.0	79	39.5	2.0	12	-	38.0	28.0	-	-	-	-	-	-	-	-	-	35.5	22	M8	3.5	-
200	236	227.5	239.3	5	7	-	-	241	135.0	79	39.5	2.0	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dimensions in millimeter

RELY ON EXCELLENCE

## Pulace

Mechanical seals | Mechanical seals for pumps | Pusher seals



### Features

- Single seal
- Balanced
- Independent of direction of rotation
- Stationary multiple springs
- Springs and pins not in contact with the medium

### Advantages

- Stationary seat and/or seal face replaceable
- Can be adopted under positive pressure or under back pressure
- Operation in vacuum without additional seat locking possible

### Operating range

Pressure:  $p = 10$  bar (145 PSI)

Temperature:

$t = -20$  °C ...  $+200$  °C ( $-4$  °F ...  $392$  °F)

Sliding velocity:  $v_g = 20$  m/s (66 ft/s)

Viscosity: ... 100 Pa·s

Solids content: ... 20 %

### Materials

Seal face and seat: Silicon carbide (Q1), Tungsten carbide (U7)

Secondary seals: EPDM (E)

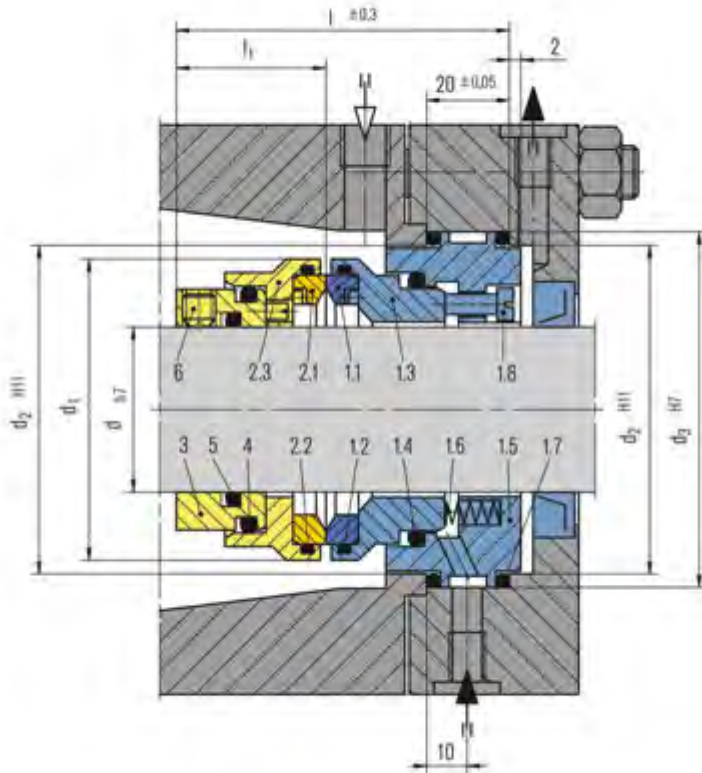
Metal parts: CrNiMo steel (G)

### Recommended applications

- Sugar industry
- Pulp and paper industry
- Highly concentrated black water
- Green water
- White water
- Pulp suspensions
- Chemical solutions
- Alkaline solutions
- Slurries
- Highly viscous liquids
- Raw sludge pumps
- Thick juice pumps
- Conveying and bottling of dairy products



## RELY ON EXCELLENCE



### Item Description

- 1.1 Seal face
- 1.2 O-Ring
- 1.3 Retainer
- 1.4 O-Ring
- 1.5 Adapter
- 1.6 Spring
- 1.7 O-Ring
- 1.8 Drive screw
- 2.1 Seat
- 2.2 O-Ring
- 2.3 Retainer
- 3 Drive collar
- 4 O-Ring
- 5 O-Ring
- 6 Set screw

## RELY ON EXCELLENCE

### Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l	l <sub>1</sub>
20	46	51	57	71	34
25	51	58	64	71	34
30	56	63	69	71	34
35	62	68	74	75	37
40	69	76	82	80	38
45	78	83	89	80	38
50	78	86	92	80	38
55	86	92	98	80	38
60	91	98	104	78	37
65	97	102	108	81	38
70	102	109	115	80	38
75	107	114	120	82	39
80	112	119	125	82	40
85	118	124	130	85	40
90	128	137	143	85	42
95	128	137	143	85	42
100	135	144	150	85	42

Dimensions in millimeter

RELY ON EXCELLENCE

## Cartex Dual seals

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Dual seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Double pressure balanced
- Integrated pumping device
- Variants available: for eccentric screw pumps (-Vario) and gas-lubricated version (-GSDN)

### Advantages

- Ideal seal for standardizations
- Universal applicable for packings conversions, retrofits or OEM
- No dimensional modification of the seal chamber (centrifugal pumps) necessary, small radial installation height
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- No damage caused by dirt entered during assembly
- Straightforward and easy installation due to pre-assembled unit
- 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 BQ1

Pressure: p1 = 25 bar (363 PSI)

Sliding velocity: v<sub>g</sub> = 16 m/s (52 ft/s)

Sliding face material combination Q1Q1 or U2Q1

Pressure: p1 = 20 bar (290 PSI)

Sliding velocity: v<sub>g</sub> = 10 m/s (33 ft/s)

Barrier fluid circulation system:

p<sub>3max</sub> = 25 bar (363 PSI)

Δp (p<sub>3</sub> - p<sub>1</sub>)<sub>ideal</sub> = 2 ... 3 bar (29 ... 44 PSI),

7 bar (102 PSI) for barrier media with poor lubricating properties.

Pump startup:

### Materials

Seal face: Silicon carbide (Q1), Carbon graphite resin impregnated (B), Tungsten carbide (U2)

Seat: Silicon carbide (Q1)

Secondary seals: FKM (V), EPDM (E), FFKM (K), Perfluorocarbon rubber/PTFE (U1)

Springs: Hastelloy® C-4 (M)

Metal parts: CrNiMo steel (G), CrNiMo cast steel (G)

### Recommended applications

- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Mining industry
- Food and beverage industry
- Sugar industry
- Universally applicable
- Centrifugal pumps
- Eccentric screw pumps

### Recommended piping plans

The EagleBurgmann QFT1000 buffer system and QFT2000 vessels are suitable for Cartex-DN in back-to-back arrangement. The EagleBurgmann TS1016 and TS2000 thermosiphon systems support double and back-to-back seal configurations.

Product links:

[EagleBurgmann QFT1000](#)

[EagleBurgmann QFT2000](#)

[EagleBurgmann TS1000](#)

[EagleBurgmann TS2000](#)

[EagleBurgmann MultiFlow Unit \(MFU\)](#)

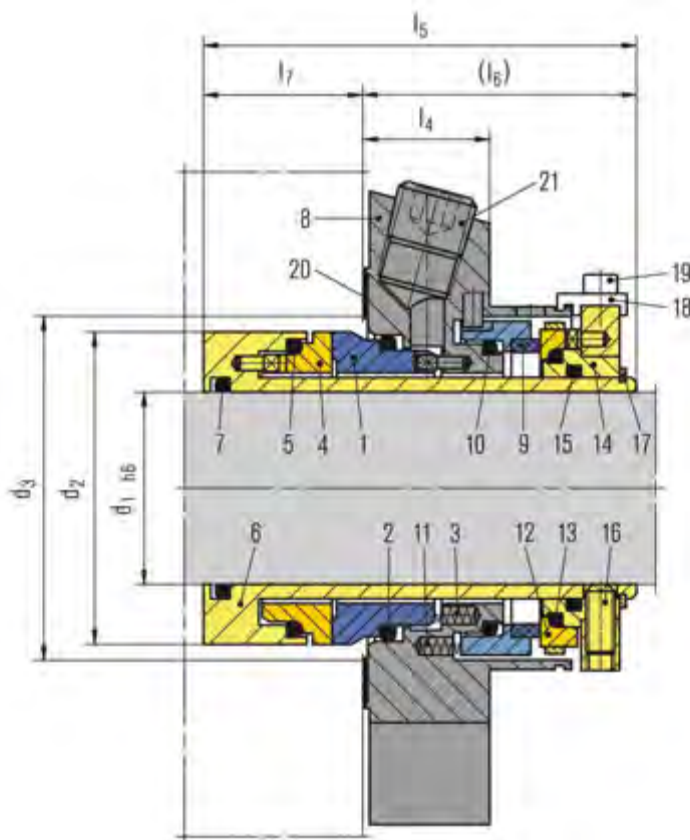
[EagleBurgmann BestFlow](#)

## RELY ON EXCELLENCE

$\Delta p (p_3 - p_1)_{\max} = 25 \text{ bar (363 PSI)}$  allowed

Recommended supply medium:  
max. ISO VG 5

Axial movement:  $\pm 1.0 \text{ mm}$ ,  $d_1 \geq 75 \text{ mm} \pm 1.5 \text{ mm}$



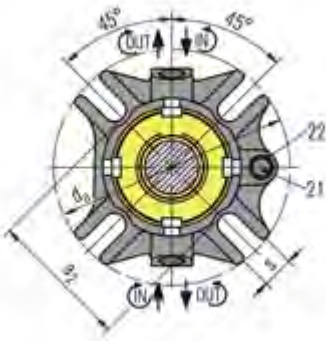
Item	Description
1	Seal face
2, 5, 7, 10, 13, 15	O-Ring
3	Spring
4	Seat
6	Shaft sleeve
8	Cover
9	Seal face
11	Spring
12	Seat
14	Drive collar
16	Set screw
17	Snap ring
18	Assembly fixture
19	Hex socket head screw
20	Gasket
21	Screw plug
22	Gasket

RELY ON EXCELLENCE

## Installation, details, options

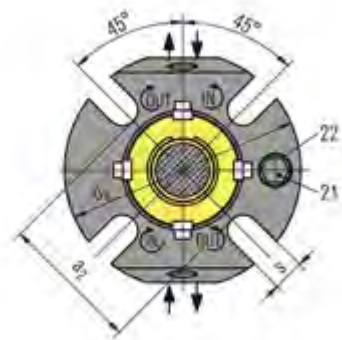
### Seal cover

Cast version



### Seal cover

Machined version



## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> min.	d <sub>3</sub> max.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	a <sub>2</sub>	d <sub>a</sub>	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	7.480	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

Dimensions in inch

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> min.	d <sub>3</sub> max.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	a <sub>2</sub>	d <sub>a</sub>	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	108	13.2
33	49.8	51.0	57.0	25.4	86.5	53.4	33.1	70	108	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	92	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 millimeter

RELY ON EXCELLENCE

## Cartex Single seals

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Single seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Single seals without connections (-SNO), with flush (-SN) and with quench combined with lip seal (-QN) or throttle ring (-TN)
- Additional variants available for ANSI pumps (e.g. -ABPN) and eccentric screw pumps (-Vario)

### Advantages

- Ideal seal for standardizations
- Universal applicable for packings conversions, retrofits or original equipment
- No dimensional modification of the seal chamber (centrifugal pumps) necessary, small radial installation height
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- Straightforward and easy installation due to pre-assembled unit
- Individual adaptation to pump design possible
- Customer specific versions available

### Operating range

Cartex-SN, -SNO, -QN, -TN, -Vario

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 BQ1

Pressure: p1 = 25 bar (363 PSI)

Sliding velocity: vg = 16 m/s (52 ft/s)

Sliding face material combination

Q1Q1 or U2Q1

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

Seal face: Silicon carbide (Q1), Carbon graphite resin impregnated (B), Tungsten carbide (U2)

Seat: Silicon carbide (Q1)

Secondary seals: FKM (V), EPDM (E), FFKM (K), Perfluorocarbon rubber/PTFE (U1)

Springs: Hastelloy® C-4 (M)

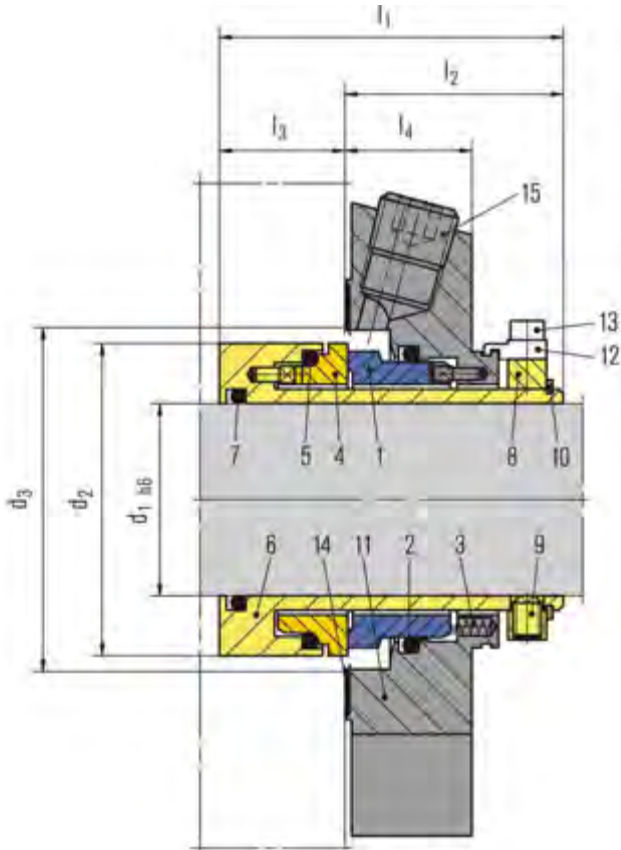
Metal parts: CrNiMo steel (G), CrNiMo cast steel (G)

### Recommended applications

- Process industry
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Food and beverage industry
- Sugar industry
- Universally applicable
- Centrifugal pumps
- Eccentric screw pumps
- Process pumps



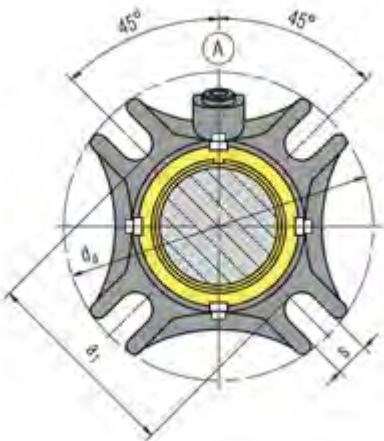
RELY ON EXCELLENCE



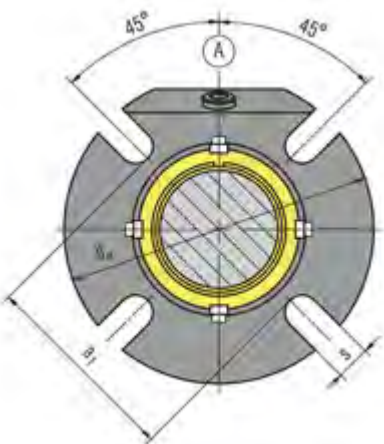
Item	Description
1	Seal face
2, 5, 7	O-Ring
3	Spring
4	Seat
6	Shaft sleeve
8	Drive collar
9	Set screw
10	Snap ring
11	Cover
12	Assembly fixture
13	Screw
14	Gasket
15	Screw plug
16	Lip seal (-QN), throttle ring (-TN)

RELY ON EXCELLENCE

## Installation, details, options



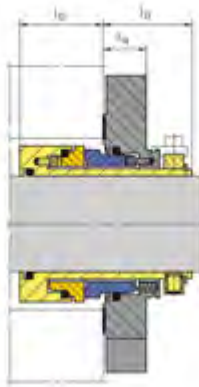
**Seal cover**  
Cast version



**Seal cover**  
Machined version

RELY ON EXCELLENCE

## Product variants



### Cartex-SNO

Single seal without connections, for dead-end operation.



### Cartex-TN

Single seal, same as Cartex-SN but with throttle ring (item 16). The cover has auxiliary connections for flushing and quench.

Throttle ring: PTFE carbon-graphite reinforced (T12).



### Cartex-QN

Single seal for operation with unpressurized quench. Same as '-SN' version but with outboard lip seal (item 16). The cover has auxiliary connections for flushing and quench.

Lip seal: NBR (P), PTFE carbon reinforced (T3).

## RELY ON EXCELLENCE



### Cartex-Vario

Cartridge seals with modified cover for eccentric screw pumps.

For e.g. Seepex BN,  
Netzsch NM...S, NM...B, NE (P),  
Allweiler AE, AEB, AED,  
Robbins & Myers / Moyno 2000 CC,  
and Mono E-Range.  
Please inquire.

## Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3min.</sub>	d <sub>3max.</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	h <sub>12</sub>	h <sub>13</sub>	h <sub>14</sub>	h <sub>15</sub>	h <sub>16</sub>	h <sub>17</sub>	a <sub>1</sub>	d <sub>a</sub>	s
1.000	1.693	1.750	2.000	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	2.440	4.134	0.520
1.125	1.811	1.875	2.050	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	2.440	4.134	0.520
1.250	1.960	2.000	2.250	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	2.640	4.330	0.520
1.375	2.086	2.125	2.420	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	2.750	4.449	0.520
1.500	2.200	2.250	2.625	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	2.950	4.842	0.520
1.625	2.340	2.375	2.700	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.030	4.842	0.599
1.750	2.460	2.500	2.812	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.190	5.433	0.599
1.875	2.582	2.625	2.940	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.190	5.433	0.599
2.000	2.677	2.750	3.190	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.430	5.827	0.599
2.125	2.834	2.875	3.437	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.820	5.827	0.709
2.250	2.960	3.000	3.560	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.940	6.181	0.709
2.375	3.070	3.125	3.590	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	4.020	6.181	0.709
2.500	3.212	3.250	3.800	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	4.170	6.417	0.709
2.625	3.338	3.375	3.937	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	4.290	6.417	0.709
2.750	3.660	3.750	4.250	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	4.650	7.008	0.709
2.875	3.937	4.000	4.646	3.307	2.260	1.047	1.000	1.815	1.492	0.866	-	-	-	5.079	7.480	0.709
3.000	3.937	4.000	4.646	3.307	2.260	1.047	1.102	1.815	1.492	0.866	3.858	2.516	1.343	5.079	7.480	0.709
3.125	4.190	4.125	4.764	3.307	2.260	1.047	1.102	1.815	1.492	0.866	3.858	2.516	1.343	5.315	7.677	0.709
3.250	4.189	4.250	4.882	3.307	2.260	1.047	1.102	1.815	1.492	0.866	3.858	2.516	1.343	5.315	7.677	0.709
3.375	4.311	4.375	5.039	3.307	2.260	1.047	1.102	1.815	1.492	0.866	-	-	-	5.472	7.795	0.866
3.500	4.437	4.500	5.157	3.307	2.260	1.047	1.102	1.815	1.492	0.866	-	-	-	5.591	7.795	0.866
3.625	4.563	4.625	5.315	3.307	2.260	1.047	1.102	1.815	1.492	0.866	-	-	-	5.709	8.071	0.866
3.750	4.689	4.750	5.433	3.307	2.260	1.047	1.102	1.815	1.492	0.866	3.858	2.516	1.343	5.827	8.189	0.866
4.000	4.937	5.000	5.669	3.307	2.260	1.047	1.102	1.815	1.492	0.866	-	-	-	6.063	8.583	0.866

Dimensions in inch

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3min.</sub>	d <sub>3max.</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>12</sub>	l <sub>13</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>17</sub>	a <sub>1</sub>	d <sub>a</sub>	s
25	43.0	44.0	51.5	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	62	105	13.2
28	46.0	47.0	52.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	62	105	13.2
30	48.0	49.0	56.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	65	105	13.2
32	49.8	51.0	57.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	67	108	13.2
33	49.8	51.0	57.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	67	108	13.2
35	53.0	54.0	61.5	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	70	113	13.2
38	56.0	57.0	66.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	75	123	13.2
40	58.0	59.0	68.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	75	123	14.2
42	60.5	61.5	69.5	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	80	133	14.2
43	60.5	61.5	70.5	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	80	133	14.2
45	62.5	64.0	73.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	81	138	14.2
48	65.6	67.0	75.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	84	138	14.2
50	68.0	69.0	78.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	87	148	14.2
53	72.0	73.0	87.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	97	148	18.0
55	73.0	74.0	83.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	90	148	18.0
60	78.0	79.0	91.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	102	157	18.0
65	84.8	85.7	98.5	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	109	163	18.0
70	93.0	95.0	108.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	118	178	18.0
75	100.0	101.6	118.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	129	190	18.0
80	106.4	108.0	124.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	135	195	18.0
85	109.5	111.1	128.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	139	198	22.0
90	115.9	117.5	135.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	145	205	22.0
95	119.1	120.7	138.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	148	208	22.0
100	125.4	127.0	144.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	154	218	22.0

Dimensions in Millimeter

RELY ON EXCELLENCE

## Cartex ANSI Single seals

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Single seal
- Available for standard (Cartex-ASPN) and big bore (Cartex-ABPN) seal chambers
- Cartridge
- Balanced
- Independent of direction of rotation
- Single seals with flush (-ASPN, -ABPN) and with quench combined with lip seal (-ASQN, -ABQN) or throttle ring (-ASTN, -ABTN)

### Advantages

- Ideal for use in ANSI process pumps
- Universal applicable for packings conversions, retrofits or original equipment
- Seal for standardizations
- No dimensional modification of the seal chamber necessary, small radial installation height
- 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)

### Operating range

Cartex-ASPN, -ABPN, -ASTN, -ABTN, -ASQN, -ABQN

Shaft diameter:  $d_1 = 1.000'' \dots 3.750''$

Other sizes on request

Temperature:

$t = -40\text{ °C} \dots 220\text{ °C} (-40\text{ °F} \dots 428\text{ °F})$

(Check O-Ring resistance)

Sliding face material combination BQ1

Pressure:  $p_1 = 25\text{ bar} (363\text{ PSI})$

Sliding velocity:  $v_g = 16\text{ m/s} (52\text{ ft/s})$

Sliding face material combination Q1Q1 or

U2Q1

Pressure:  $p_1 = 12\text{ bar} (174\text{ PSI})$

Sliding velocity:  $v_g = 10\text{ m/s} (33\text{ ft/s})$

Axial movement:

$\pm 1.0\text{ mm}, d_1 \geq 75\text{ mm} \pm 1.5\text{ mm}$

### Materials

Seal face: Silicon carbide (Q1), Carbon graphite resin impregnated (B), Tungsten carbide (U2)

Seat: Silicon carbide (Q1)

Secondary seals: FKM (V), EPDM (E), FFKM (K), Perfluorocarbon rubber/PTFE (U1)

Springs: Hastelloy® C-4 (M)

Metal parts: CrNiMo steel (G)

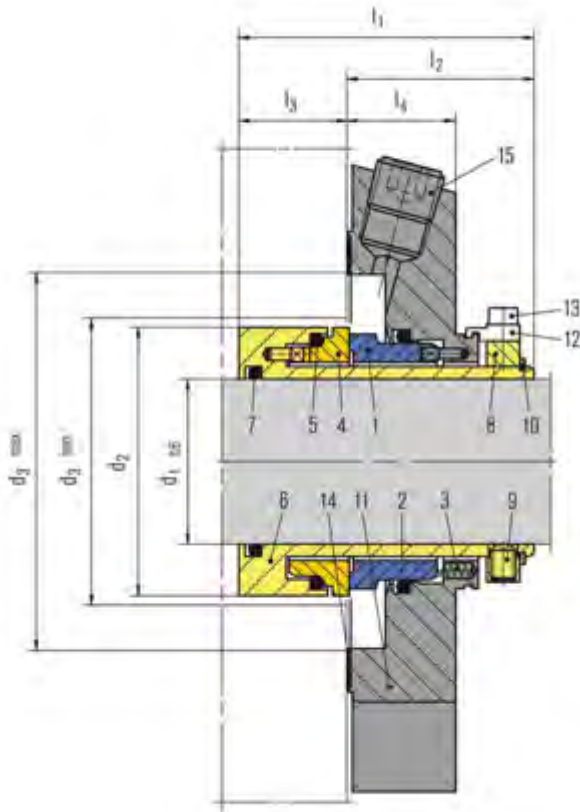
### Standards and approvals

- ANSI

### Recommended applications

- Process industry
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Food and beverage industry
- Universally applicable
- ANSI process pumps

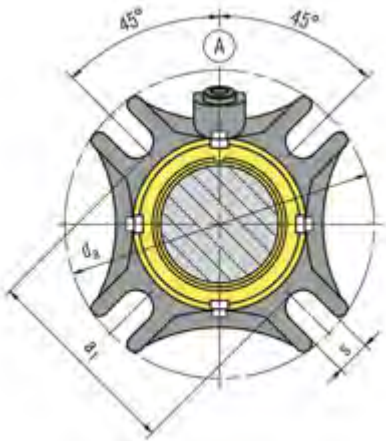
RELY ON EXCELLENCE



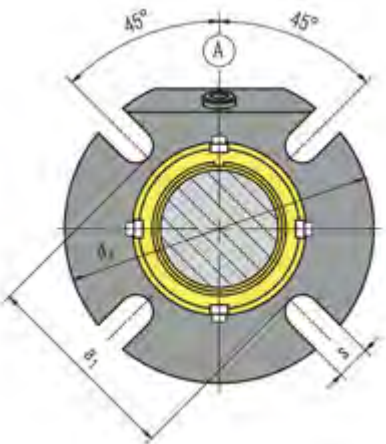
Item	Description
1	Seal face
2, 5, 7	O-Ring
3	Spring
4	Seat
6	Shaft sleeve
8	Drive collar
9	Set screw
10	Snap ring
11	Cover
12	Assembly fixture (remove after intallation)
13	Screw
14	Gasket
15	Screw plug
16	Lip seal (-QN), throttle ring (-TN)

RELY ON EXCELLENCE

## Installation, details, options



**Seal cover**  
Cast version

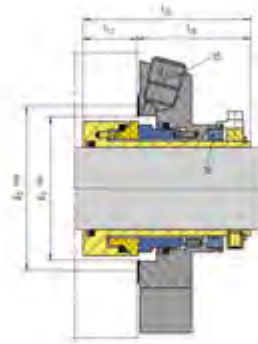


**Seal cover**  
Machined version



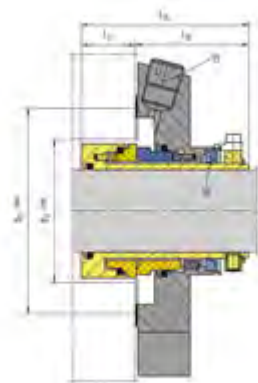
RELY ON EXCELLENCE

## Product variants



### Cartex-ASTN and -ABTN

Single seal for standard (S) and big bore (B) seal chambers. Same as Cartex-ASPN and -ABPN but with throttle ring (item 16) The cover has auxiliary connections for flushing and quench. Throttle ring: PTFE carbon-graphite reinforced (T12).



### Cartex-ASQN and -ABQN

Single seal for operation with unpressurized quench for standard (S) and big bore (B) seal chambers. Same as Cartex-ASPN and -ABPN version but with lip seal (item 16) at the atmospheric side. The cover has auxiliary connections for flushing and quench. Lip seal: NBR (P), PTFE carbon reinforced (T3)

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3 min</sub>	d <sub>3 max</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>17</sub>	a <sub>1</sub>	d <sub>a</sub>	s	Connection
1.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1125	1713	1752	2795	2638	1669	0.969	1000	2937	1909	1028	3311	4500	0.437	1/4 NPT
1250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1375	1960	2000	3189	2638	1669	0.969	1000	2947	1919	1028	3543	5118	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	3.093	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**BIG BORE** - Dimensions in inch

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3 min</sub>	d <sub>3 max</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>17</sub>	a <sub>1</sub>	d <sub>a</sub>	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	3.937	0.433	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	4.134	0.437	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	4.252	0.433	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	4.213	0.437	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	4.488	0.551	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	4.921	0.551	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	5.118	0.559	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	5.118	0.551	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	5.472	0.630	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	5.512	0.650	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	5.866	0.650	3/8 NPT
2.375	3.070	3.125	3.590	2.638	1.669	0.969	1.000	-	-	-	4.020	6.181	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	6.693	0.709	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	6.378	0.630	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	7.441	0.709	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	7.835	0.709	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	7.830	0.709	3/8 NPT
3.750	4.689	4.750	5.433	3.307	2.260	1.047	1.000	-	-	-	5.827	8.189	0.866	3/8 NPT

**STANDARD BORE** - Dimensions in inch

RELY ON EXCELLENCE

## Cartex ANSI Dual seals

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Dual seal
- Available for standard (Cartex-ASDN) and big bore (Cartex-ABDN) seal chambers
- Cartridge
- Balanced
- Independent of direction of rotation
- Double pressure balanced
- Integrated pumping device

### Advantages

- Ideal for use in ANSI process pumps
- Universal applicable for packings conversions, retrofits or OEM
- Ideal seal for standardizations
- No dimensional modification of the seal chamber necessary, small radial installation height
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life
- No damage caused by dirt entered during assembly
- Straightforward and easy installation due to pre-assembled unit

### 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 BQ1  
Pressure: p1 = 25 bar (363 PSI)  
Sliding velocity: vg = 16 m/s (52 ft/s)

Sliding face material combination Q1Q1 or U2Q1  
Pressure: p1 = 20 bar (290 PSI)  
Sliding velocity: vg = 10 m/s (33 ft/s)

Barrier fluid circulation system:  
p3max = 25 bar (363 PSI)  
 $\Delta p (p3 - p1)_{ideal} = 2 \dots 3 \text{ bar (29 ... 44 PSI)}$ ,  
7 bar (102 PSI) for barrier media with poor lubricating properties)

Pump startup:  
 $\Delta p (p3 - p1)_{max} = 25 \text{ bar (363 PSI)}$  allowed

### Materials

Seal face: Silicon carbide (Q1), Carbon graphite resin impregnated (B), Tungsten carbide (U2)  
Seat: Silicon carbide (Q1)  
Secondary seals: FKM (V), EPDM (E), FFKM (K), Perfluorocarbon rubber/PTFE (U1)  
Springs: Hastelloy® C-4 (M)  
Metal parts: CrNiMo steel (G), CrNiMo cast steel (G)

### Standards and approvals

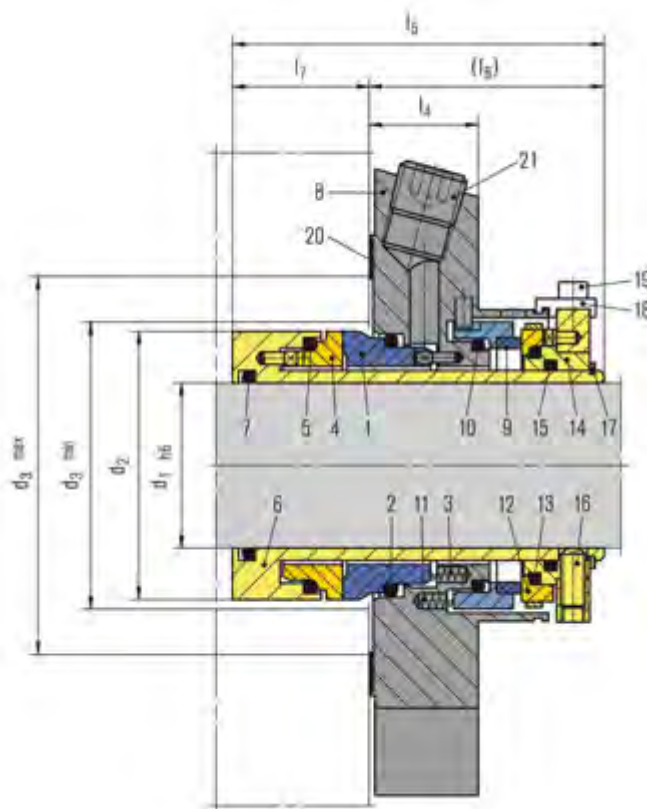
- ANSI

### Recommended applications

- Process industry
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Food and beverage industry
- Universally applicable
- ANSI process pumps

## RELY ON EXCELLENCE

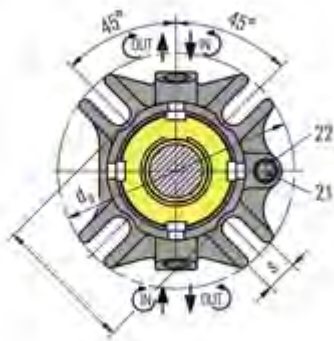
Recommended supply medium:  
max. ISO VG 5  
Axial movement:  
 $\pm 1.0$  mm,  $d1 \geq 75$  mm  $\pm 1.5$  mm



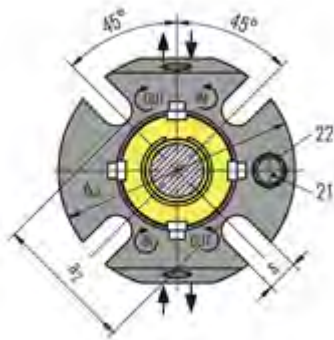
Item	Description
1	Seal face
2, 5, 7, 10, 13, 15	O-Ring
3	Spring
4	Seat
6	Shaft sleeve
8	Cover
9	Seal face
11	Spring
12	Seat
14	Drive collar
16	Set screw
17	Snap ring
18	Assembly fixture
19	Hex socket head screw
20	Gasket
21	Screw plug
22	Gasket

## RELY ON EXCELLENCE

### Installation, details, options



**Seal cover**  
Cast version



**Seal cover**  
Machined version

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3 min</sub>	d <sub>3 max</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	a <sub>2</sub>	d <sub>a</sub>	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	4.750	5.433	1.000	-	-	-	-	8.189	0.866	3/8 NPT

STANDARD BORE - Dimensions in inch

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3 min</sub>	d <sub>3 max</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	a <sub>2</sub>	d <sub>a</sub>	s	Connection
1.000	-	-	-	-	-	-	-	-	-	-	-
1125	1713	1752	2795	1000	3228	1886	1343	3311	4500	0.437	1/4 NPT
1250	-	-	-	-	-	-	-	-	-	-	-
1375	1960	2000	3189	1000	3406	2083	1323	3543	5118	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	-	-	-	-	-	-	-	-	-	-	-

BIG BORE - Dimensions in inch

RELY ON EXCELLENCE

## eCartex ANSI Single seals

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Single seal
- Available for standard (eCartex-ASPN) and big bore (eCartex-ABPN) seal chambers
- Cartridge
- Balanced
- Independent of direction of rotation
- Single seals with flush (-ASPN, -ABPN) and with quench combined with lip seal (-ASQN, -ABQN) or throttle ring (-ASTN, -ABTN)

### Advantages

- **The series has sliding surfaces that are equipped with EagleBurgmann DiamondFace technology as standard**
- Up to 80 % less energy consumption and minimized heat generation of seal due to friction-reducing DiamondFace layer
- Up to 100 % extended operating period, prolongation of MTBF and MTBR intervals
- Significantly improved dry-run capability for inadequately lubricated sealing surfaces, thus vastly improved process safety
- Universally applicable, even with high solids content in the medium

### Operating range

Shaft diameter:  $d_1 = 1.000'' \dots 3.750''$   
Other sizes on request  
Temperature:  
 $t = -40\text{ °C} \dots 220\text{ °C} (-40\text{ °F} \dots 428\text{ °F})$   
(Check O-Ring resistance)

Sliding face material combination BQ1  
Pressure:  $p_1 = 25\text{ bar} (363\text{ PSI})$   
Sliding velocity:  $v_g = 16\text{ m/s} (52\text{ ft/s})$

Sliding face material combination Q1Q1 or U2Q1  
Pressure:  $p_1 = 12\text{ bar} (174\text{ PSI})$   
Sliding velocity:  $v_g = 10\text{ m/s} (33\text{ ft/s})$

Axial movement:  
 $\pm 1.0\text{ mm}, d_1 \geq 75\text{ mm} \pm 1.5\text{ mm}$

### Materials

Seal face: Silicon carbide DiamondFace (Q15)  
Seat: Silicon carbide DiamondFace (Q15)  
Secondary seals: FKM (V), EPDM (E), FFKM (K), Perfluorcarbon rubber/PTFE (U1)  
Springs: Hastelloy® C-4 (M)  
Metal parts: CrNiMo steel (G), CrNiMo cast steel (G)

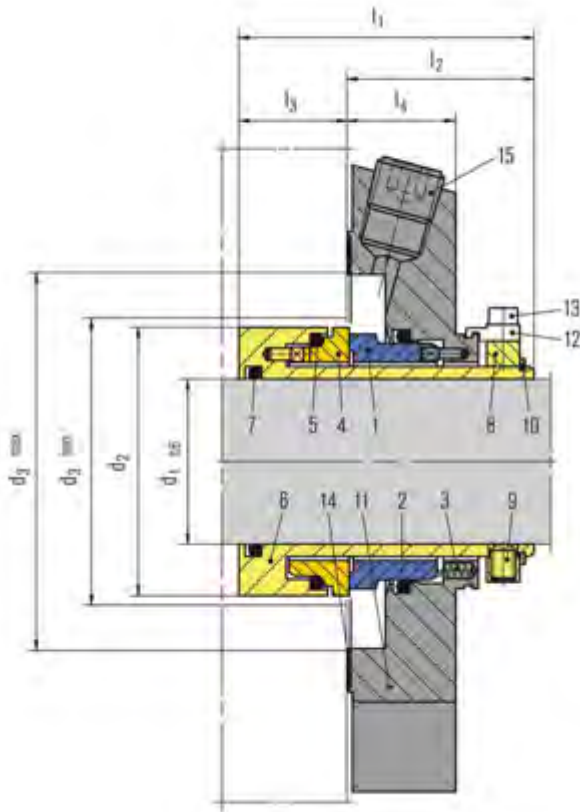
### Standards and approvals

- ANSI

### Recommended applications

- Process industry
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Food and beverage industry
- Universally applicable
- ANSI process pumps

RELY ON EXCELLENCE

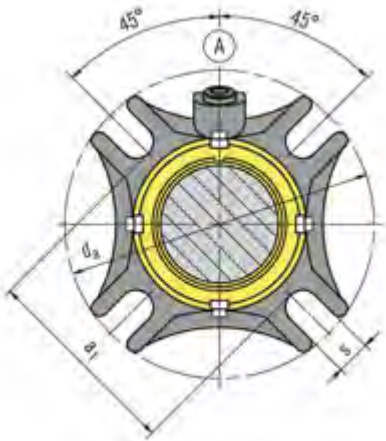


Item	Description
1	Seal face
2, 5, 7	O-Ring
3	Spring
4	Seat
6	Shaft sleeve
8	Drive collar
9	Set screw
10	Snap ring
11	Cover
12	Assembly fixture (remove after intallation)
13	Screw
14	Gasket
15	Screw plug
16	Lip seal (-QN), throttle ring (-TN)

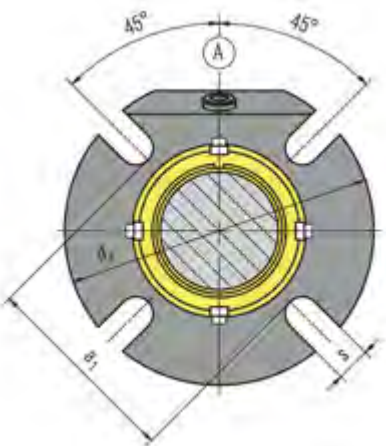


RELY ON EXCELLENCE

## Installation, details, options

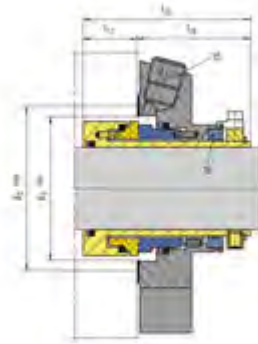


**Seal cover**  
Cast version



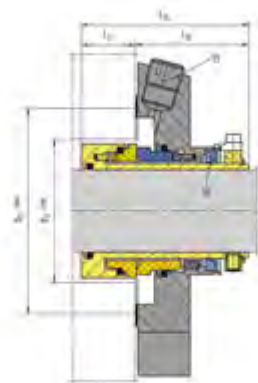
**Seal cover**  
Machined version

## Product variants



### eCartex-ASTN and -ABTN

Single seal for operation with unpressurized quench for standard (S) and big bore (B) seal chambers. Same as eCartex-ASP and -ABP but with throttle ring (item 16) The cover has auxiliary connections for flushing and quench. Throttle ring: PTFE carbon-graphite reinforced (T12).



### eCartex-ASON and -ABQN

Single seal for operation with unpressurized quench for standard (S) and big bore (B) seal chambers. Same as eCartex-ASP and -ABP version but with lip seal (item 16) at the atmospheric side. The cover has auxiliary connections for flushing and quench. Lip seal: NBR (P), PTFE carbon reinforced (T3)

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3 min</sub>	d <sub>3 max</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	a <sub>2</sub>	d <sub>a</sub>	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	4.750	5.433	1.000	-	-	-	-	8.189	0.866	3/8 NPT

STANDARD BORE - Dimensions in inch

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3 min</sub>	d <sub>3 max</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	a <sub>2</sub>	d <sub>a</sub>	s	Connection
1.000	-	-	-	-	-	-	-	-	-	-	-
1125	1713	1752	2795	1000	3228	1886	1343	3311	4500	0.437	1/4 NPT
1250	-	-	-	-	-	-	-	-	-	-	-
1375	1960	2000	3189	1000	3406	2083	1323	3543	5118	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	-	-	-	-	-	-	-	-	-	-	-

BIG BORE - Dimensions in inch

RELY ON EXCELLENCE

## eCartex Dual seals

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Dual seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Double pressure balanced
- Integrated pumping device
- Variants available: for eccentric screw pumps (-Vario) and gas-lubricated version (-GSDN)

### Advantages

- **The series has sliding surfaces that are equipped with EagleBurgmann DiamondFace technology as standard**
- Up to 80 % less energy consumption and minimized heat generation of seal due to friction-reducing DiamondFace layer
- Up to 100 % extended operating period, prolongation of MTBF and MTBR intervals
- Significantly improved dry-run capability for inadequately lubricated sealing surfaces, thus vastly improved process safety
- Universally applicable, even with high solids content in the medium

### 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 BQ1  
Pressure: p1 = 25 bar (363 PSI)  
Sliding velocity: vg = 16 m/s (52 ft/s)  
Sliding face material combination Q1Q1 or U2Q1  
Pressure: p1 = 20 bar (290 PSI)  
Sliding velocity: vg = 10 m/s (33 ft/s)  
Barrier fluid circulation system:  
p3max = 25 bar (363 PSI)  
 $\Delta p (p3 - p1)_{ideal} = 2 \dots 3 \text{ bar (29 ... 44 PSI),}$   
7 bar (102 PSI) for barrier media with poor lubricating properties)  
Pump startup:  
 $\Delta p (p3 - p1)_{max} = 25 \text{ bar (363 PSI)}$  allowed  
Recommended supply medium: max. ISO VG 5  
Axial movement:  $\pm 1.0 \text{ mm}$ , d1 from 75 mm  
 $\pm 1.5 \text{ mm}$

### Materials

Seal face product side: Silicon carbide DiamondFace® (Q15)  
Seat product side: Silicon carbide DiamondFace® (Q15)  
Seal face atmospheric side: Carbon graphite resin impregnated (B)  
Seat atmospheric side: Silicon carbide (Q1)  
Secondary seals: FKM (V), EPDM (E), FFKM (K), Perfluorcarbon rubber/PTFE (U1)  
Springs: Hastelloy® C-4 (M)  
Metal parts: CrNiMo steel (G), CrNiMo cast steel (G)

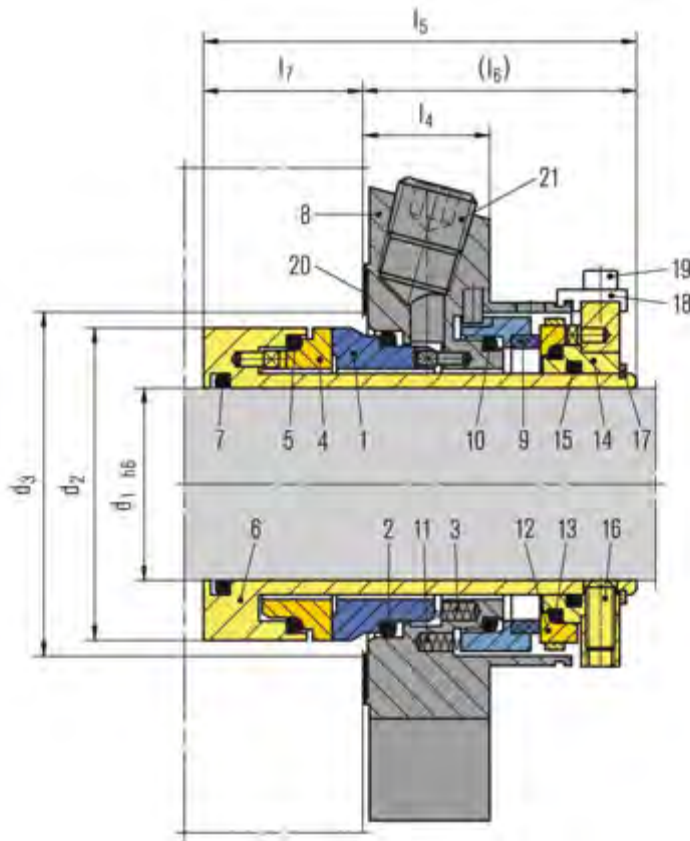
### Recommended applications

- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Mining industry
- Food and beverage industry
- Sugar industry
- Universally applicable
- Centrifugal pumps
- Eccentric screw pumps

### Recommended piping plans

The EagleBurgmann QFT1000 buffer system and QFT2000 vessels are suitable for eCartex-DN in back-to-back arrangement. The EagleBurgmann TS1016 and TS2000 thermosiphon systems support double and back-to-back seal configurations.

## RELY ON EXCELLENCE



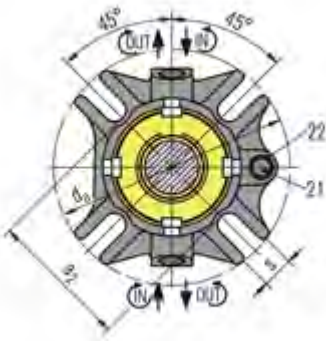
Item	Description
1	Seal face
2, 5, 7, 10, 13, 15	O-Ring
3	Spring
4	Seat
6	Shaft sleeve
8	Cover
9	Seal face
11	Spring
12	Seat
14	Drive collar
16	Set screw
17	Snap ring
18	Assembly fixture
19	Hex socket head screw
20	Gasket
21	Screw plug
22	Gasket

## RELY ON EXCELLENCE

### Installation, details, options

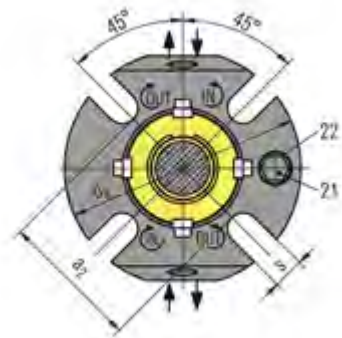
#### Seal cover

Cast version



#### Seal cover

Machined version



## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> min.	d <sub>3</sub> max.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	a <sub>2</sub>	d <sub>a</sub>	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	7.480	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

Dimensions in inch

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> min.	d <sub>3</sub> max.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	a <sub>2</sub>	d <sub>a</sub>	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	92	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 millimeter



RELY ON EXCELLENCE

## eCartex Single seals

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Single seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Single seals without connections (-SNO), with flush (-SN) and with quench combined with lip seal (-QN) or throttle ring (-TN)
- Additional variants available for ANSI pumps (e.g. -ABPN) and eccentric screw pumps (-Vario)

### Advantages

- **The series has sliding surfaces that are equipped with EagleBurgmann DiamondFace technology as standard**
- Up to 80 % less energy consumption and minimized heat generation of seal due to friction-reducing DiamondFace layer
- Up to 100 % extended operating period, prolongation of MTBF and MTBR intervals
- Significantly improved dry-run capability for inadequately lubricated sealing surfaces, thus vastly improved process safety
- Universally applicable, even with high solids content in the medium

### Operating range

Shaft diameter:

$d_1 = 25 \dots 100 \text{ mm} (1.000" \dots 4.000")$

Other sizes on request

Temperature:

$t = -40 \text{ °C} \dots 220 \text{ °C} (-40 \text{ °F} \dots 428 \text{ °F})$

(Check O-Ring resistance)

Sliding face material combination BQ1

Pressure:  $p_1 = 25 \text{ bar} (363 \text{ PSI})$

Sliding velocity:  $v_g = 16 \text{ m/s} (52 \text{ ft/s})$

Sliding face material combination

Q1Q1 or U2Q1:

Pressure:  $p_1 = 12 \text{ bar} (174 \text{ PSI})$

Sliding velocity:  $v_g = 10 \text{ m/s} (33 \text{ ft/s})$

Axial movement:  $\pm 1.0 \text{ mm}$ ,  $d_1 \geq 75 \text{ mm} \pm 1.5$

mm

### Materials

Seal face: Silicon carbide DiamondFace (Q15)

Seat: Silicon carbide DiamondFace (Q15)

Secondary seals: FKM (V), EPDM (E), FFKM (K), Perfluorcarbon rubber/PTFE (U1)

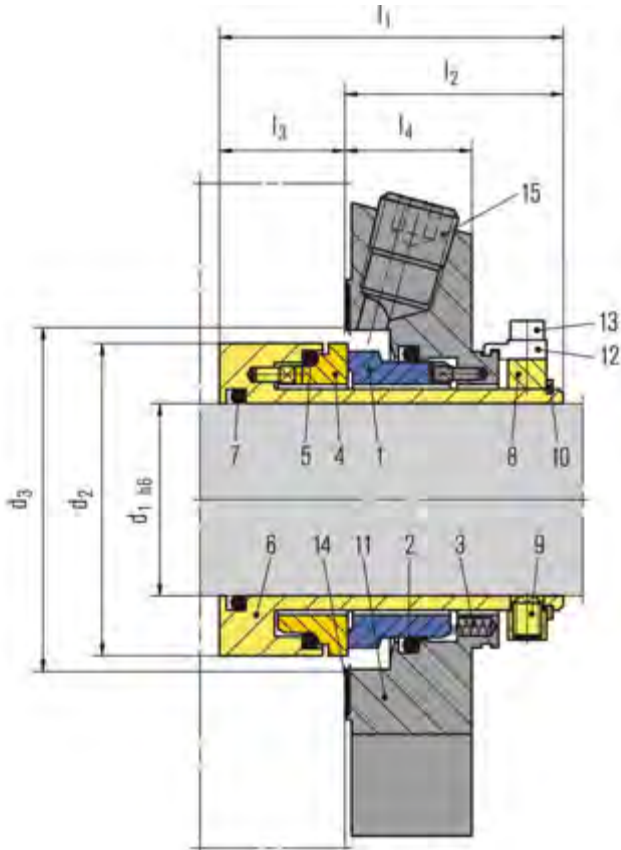
Springs: Hastelloy® C-4 (M)

Metal parts: CrNiMo steel (G), CrNiMo cast steel (G)

### Recommended applications

- Process industry
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Food and beverage industry
- Sugar industry
- Universally applicable
- Centrifugal pumps
- Eccentric screw pumps
- Process pumps

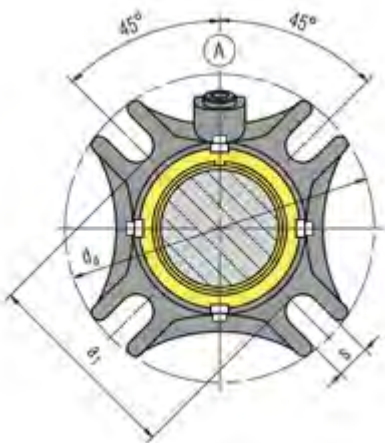
RELY ON EXCELLENCE



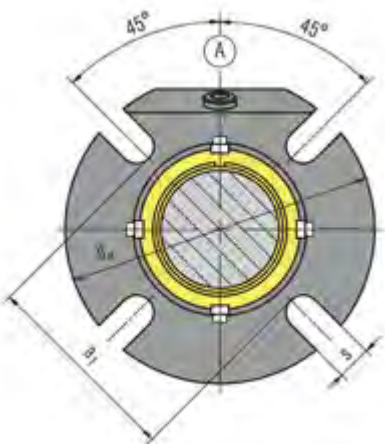
Item	Description
1	Seal face
2, 5, 7	O-Ring
3	Spring
4	Seat
6	Shaft sleeve
8	Drive collar
9	Set screw
10	Snap ring
11	Cover
12	Assembly fixture
13	Screw
14	Gasket
15	Screw plug
16	Lip seal (-QN), throttle ring (-TN)

RELY ON EXCELLENCE

## Installation, details, options



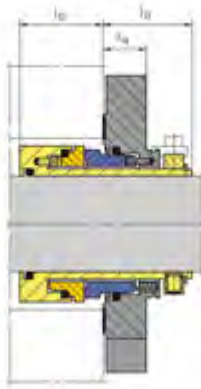
**Seal cover**  
Cast version



**Seal cover**  
Machined version

RELY ON EXCELLENCE

## Product variants



### eCartex-SNO

Single seal without connections, for dead-end operation.



### eCartex-TN

Single seal for operation with unpressurized quench. Same as eCartex-SN but with throttle ring (item 16). The cover has auxiliary connections for flushing and quench.

Throttle ring: PTFE carbon-graphite reinforced (T12).



### eCartex-QN

Single seal for operation with unpressurized quench. Same as '-SN' version but with outboard lip seal (item 16). The cover has auxiliary connections for flushing and quench.

Lip seal: NBR (P), PTFE carbon reinforced (T3).

## RELY ON EXCELLENCE



### eCartex-Vario

Cartridge seals with modified cover for eccentric screw pumps.

For e.g. Seepex BN,  
Netzsch NM...S, NM...B, NE (P),  
Allweiler AE, AEB, AED,  
Robbins & Myers / Moyno 2000 CC,  
and Mono E-Range.  
Please inquire.

## Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3min.</sub>	d <sub>3max.</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	h <sub>12</sub>	h <sub>13</sub>	h <sub>14</sub>	h <sub>15</sub>	h <sub>16</sub>	h <sub>17</sub>	a <sub>1</sub>	d <sub>a</sub>	s
1.000	1.693	1.750	2.000	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	2.440	4.134	0.520
1.125	1.811	1.875	2.050	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	2.440	4.134	0.520
1.250	1.960	2.000	2.250	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	2.640	4.330	0.520
1.375	2.086	2.125	2.420	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	2.750	4.449	0.520
1.500	2.200	2.250	2.625	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	2.950	4.842	0.520
1.625	2.340	2.375	2.700	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.030	4.842	0.599
1.750	2.460	2.500	2.812	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.190	5.433	0.599
1.875	2.582	2.625	2.940	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.190	5.433	0.599
2.000	2.677	2.750	3.190	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.430	5.827	0.599
2.125	2.834	2.875	3.437	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.820	5.827	0.709
2.250	2.960	3.000	3.560	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	3.940	6.181	0.709
2.375	3.070	3.125	3.590	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	4.020	6.181	0.709
2.500	3.212	3.250	3.800	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	4.170	6.417	0.709
2.625	3.338	3.375	3.937	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	4.290	6.417	0.709
2.750	3.660	3.750	4.250	2.640	1.669	0.969	1.000	1.378	1.260	0.689	3.130	2.102	1.028	4.650	7.008	0.709
2.875	3.937	4.000	4.646	3.307	2.260	1.047	1.000	1.815	1.492	0.866	-	-	-	5.079	7.480	0.709
3.000	3.937	4.000	4.646	3.307	2.260	1.047	1.102	1.815	1.492	0.866	3.858	2.516	1.343	5.079	7.480	0.709
3.125	4.190	4.125	4.764	3.307	2.260	1.047	1.102	1.815	1.492	0.866	3.858	2.516	1.343	5.315	7.677	0.709
3.250	4.189	4.250	4.882	3.307	2.260	1.047	1.102	1.815	1.492	0.866	-	-	-	5.315	7.677	0.709
3.375	4.311	4.375	5.039	3.307	2.260	1.047	1.102	1.815	1.492	0.866	-	-	-	5.472	7.795	0.866
3.500	4.437	4.500	5.157	3.307	2.260	1.047	1.102	1.815	1.492	0.866	-	-	-	5.591	7.795	0.866
3.625	4.563	4.625	5.315	3.307	2.260	1.047	1.102	1.815	1.492	0.866	-	-	-	5.709	8.071	0.866
3.750	4.689	4.750	5.433	3.307	2.260	1.047	1.102	1.815	1.492	0.866	3.858	2.516	1.343	5.827	8.189	0.866
4.000	4.937	5.000	5.669	3.307	2.260	1.047	1.102	1.815	1.492	0.866	-	-	-	6.063	8.583	0.866

Dimensions in inch

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3min.</sub>	d <sub>3max.</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>12</sub>	l <sub>13</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>17</sub>	a <sub>1</sub>	d <sub>a</sub>	s
25	43.0	44.0	51.5	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	62	105	13.2
28	46.0	47.0	52.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	62	105	13.2
30	48.0	49.0	56.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	65	105	13.2
32	49.8	51.0	57.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	67	110	13.2
33	49.8	51.0	57.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	67	110	13.2
35	53.0	54.0	61.5	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	70	113	13.2
38	56.0	57.0	66.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	75	123	13.2
40	58.0	59.0	68.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	75	123	14.2
42	60.5	61.5	69.5	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	80	133	14.2
43	60.5	61.5	70.5	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	80	133	14.2
45	62.5	64.0	73.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	81	138	14.2
48	65.6	67.0	75.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	84	138	14.2
50	68.0	69.0	78.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	87	148	14.2
53	72.0	73.0	87.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	97	148	18.0
55	73.0	74.0	83.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	90	148	18.0
60	78.0	79.0	91.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	102	157	18.0
65	84.8	85.7	98.5	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	109	163	18.0
70	93.0	95.0	108.0	67	42.4	24.6	25.4	35.0	32.0	17.5	79.5	53.4	26.1	118	178	18.0
75	100.0	101.6	118.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	129	190	18.0
80	106.4	108.0	124.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	135	195	18.0
85	109.5	111.1	128.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	139	198	22.0
90	115.9	117.5	135.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	145	205	22.0
95	119.1	120.7	138.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	148	208	22.0
100	125.4	127.0	144.0	84	57.4	26.6	28.0	46.1	37.9	22.0	98.0	63.9	34.1	154	218	22.0

Dimensions in Millimeter

RELY ON EXCELLENCE

## eCartex ANSI Dual seals

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Dual seal
- Available for standard (eCartex-ASDN) and big bore (eCartex-ABDN) seal chambers
- Cartridge
- Balanced
- Independent of direction of rotation
- Double pressure balanced
- Integrated pumping device

### Advantages

- **The series has sliding surfaces that are equipped with EagleBurgmann DiamondFace technology as standard**
- Up to 80 % less energy consumption and minimized heat generation of seal due to friction-reducing DiamondFace layer
- Up to 100 % extended operating period, prolongation of MTBF and MTBR intervals
- Significantly improved dry-run capability for inadequately lubricated sealing surfaces, thus vastly improved process safety
- Universally applicable, even with high solids content in the medium

### 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 BQ1  
Pressure: p1 = 25 bar (363 PSI)  
Sliding velocity: vg = 16 m/s (52 ft/s)  
Sliding face material combination Q1Q1 or U2Q1  
Pressure: p1 = 20 bar (290 PSI)  
Sliding velocity: vg = 10 m/s (33 ft/s)  
Barrier fluid circulation system:  
p3max = 25 bar (363 PSI)  
 $\Delta p (p3 - p1)_{ideal} = 2 \dots 3 \text{ bar (29 ... 44 PSI)}$ ,  
7 bar (102 PSI) for barrier media with poor lubricating properties)  
Pump startup:  
 $\Delta p (p3 - p1)_{max} = 25 \text{ bar (363 PSI)}$  allowed  
Recommended supply medium: max. ISO VG 5  
Axial movement:  $\pm 1.0 \text{ mm}$ , d1  $\geq 75 \text{ mm} \pm 1.5 \text{ mm}$

### Materials

Seal face product side: Silicon carbide DiamondFace® (Q15)  
Seat product side: Silicon carbide DiamondFace® (Q15)  
Seal face atmospheric side: Carbon graphite resin impregnated (B)  
Seat atmospheric side: Silicon carbide (Q1)  
Secondary seals: FKM (V), EPDM (E), FFKM (K), Perfluorcarbon rubber/PTFE (U1)  
Springs: Hastelloy® C-4 (M)  
Metal parts: CrNiMo steel (G), CrNiMo cast steel (G)

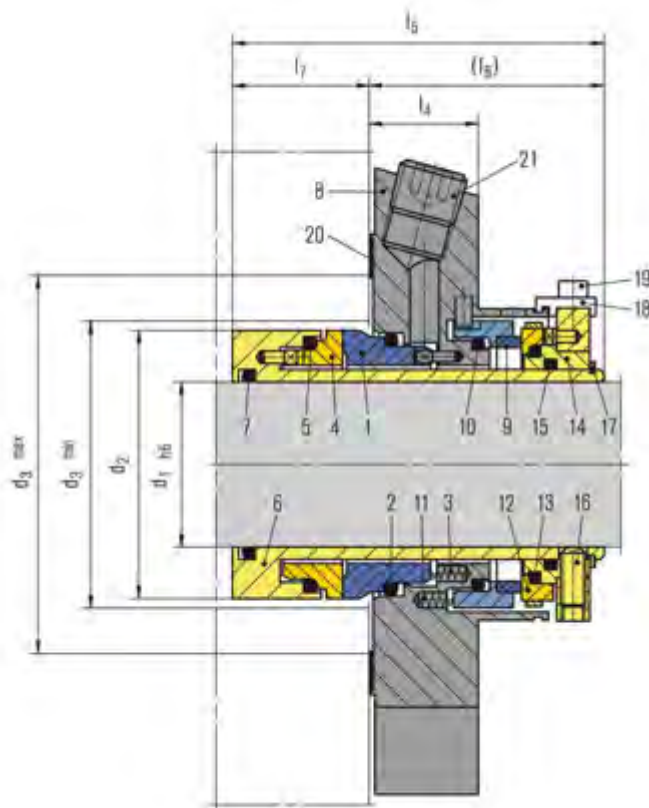
### Standards and approvals

- ANSI

### Recommended applications

- Process industry
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Food and beverage industry
- Universally applicable
- ANSI process pumps

## RELY ON EXCELLENCE

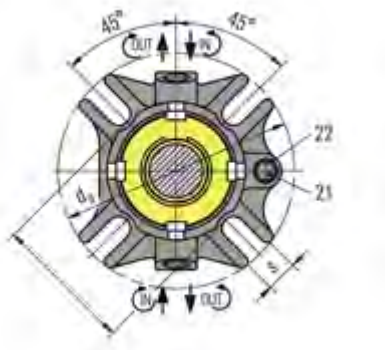


Item	Description
1	Seal face
2, 5, 7, 10, 13, 15	O-Ring
3	Spring
4	Seat
6	Shaft sleeve
8	Cover
9	Seal face
11	Spring
12	Seat
14	Drive collar
16	Set screw
17	Snap ring
18	Assembly fixture
19	Hex socket head screw
20	Gasket
21	Screw plug
22	Gasket

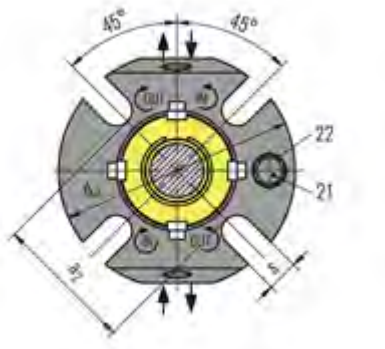


## RELY ON EXCELLENCE

### Installation, details, options



**Seal cover**  
Cast version



**Seal cover**  
Machined version

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> min.	d <sub>3</sub> max.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	a <sub>2</sub>	d <sub>a</sub>	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	7.480	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

Dimensions in inch

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> min.	d <sub>3</sub> max.	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	a <sub>2</sub>	d <sub>a</sub>	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	92	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 millimeter

RELY ON EXCELLENCE

## MA290 / MA291

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Cartridge
- Balanced
- Independent of direction of rotation
- Stationary multiple springs
- Springs and pin located on the atmospheric side

### Advantages

- Extremely short length design - the total length including the seal cover is less than 50 mm
- Easy installing on the pumps without modifying the stuffing box
- Excellent followability due to no influence from run-out, squareness or vibration of the shaft
- Mounted outside the stuffing box for providing excellent air cooling performance
- Un-wetted springs and knock pins for protecting from lockout by liquid

### Operating range

#### MA290:

Pressure:  $p = \dots 20 \text{ bar (290 PSI)}$

Temperature:

$t = -20 \text{ }^\circ\text{C} \dots 160 \text{ }^\circ\text{C} (-4 \text{ }^\circ\text{F} \dots 320 \text{ }^\circ\text{F})$ (oil),

$0 \text{ }^\circ\text{C} \dots 60 \text{ }^\circ\text{C} (32 \text{ }^\circ\text{F} \dots 140 \text{ }^\circ\text{F})$ (water)

Sliding velocity:

$vg = \text{max. } 20 \text{ m/s (66 ft/s)}$

Viscosity:  $0.5 \text{ Pa}\cdot\text{s}$

Solids content:  $0.3 \%$

#### MA291:

Pressure:  $p = \dots 16 \text{ bar (232 PSI)}$

Temperature:

$t = -20 \text{ }^\circ\text{C} \dots 160 \text{ }^\circ\text{C} (-4 \text{ }^\circ\text{F} \dots 320 \text{ }^\circ\text{F})$ (oil),

$0 \text{ }^\circ\text{C} \dots 60 \text{ }^\circ\text{C} (32 \text{ }^\circ\text{F} \dots 140 \text{ }^\circ\text{F})$ (water)

Sliding velocity:  $vg = \text{max. } 20 \text{ m/s (66 ft/s)}$

Viscosity:  $3 \text{ Pa}\cdot\text{s}$

Solids content:  $10 \%$

### Materials

Seal face (MA290): High density carbon graphite

Seal face (MA291): Silicon carbide (Q1)

Seat (MA290/291): Silicon carbide (Q1)

Metal parts: CrNiMo steel (G)

Secondary seals: FKM (V)

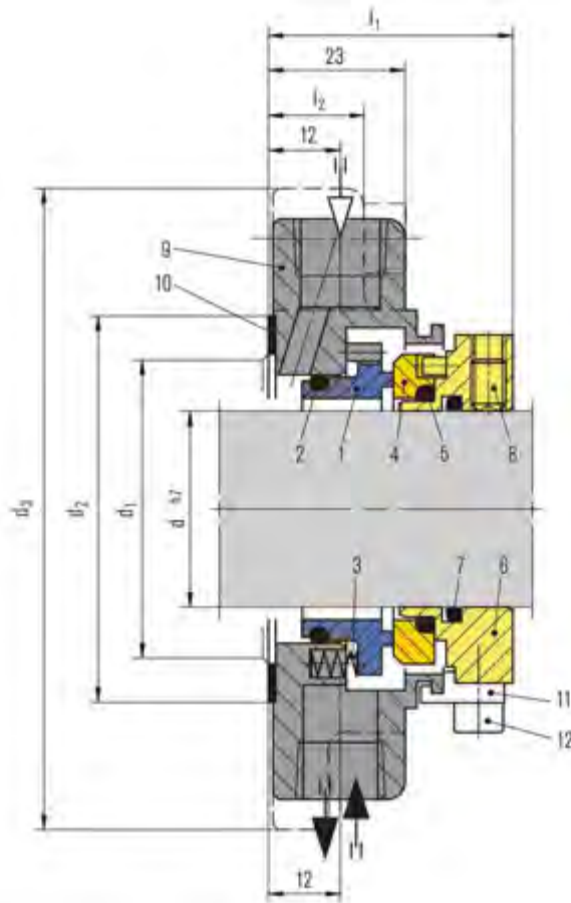
### Standards and approvals

- EN 12756
- ISO 3096

### Recommended applications

- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Pulp and paper industry
- Water and waste water technology
- Food and beverage industry
- Universally applicable
- Centrifugal pumps
- Eccentric screw pumps
- Process pumps

## RELY ON EXCELLENCE

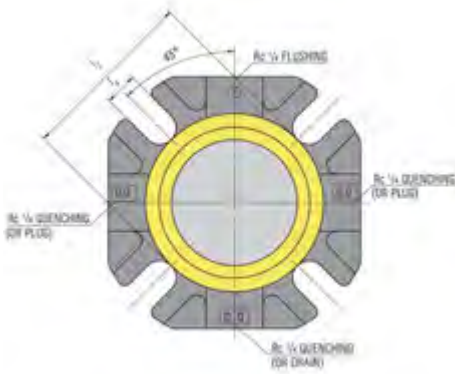


Item	Description
1	Seal face
2, 5, 7	O-Ring
3	Spring
4	Seat
6	Drive collar
8	Set screw
9	Seal cover
10	Gasket
11	Assembly fixture
12	HSH cap screw

## RELY ON EXCELLENCE

### Installation, details, options

#### Seal cover



### Dimensions

d	d <sub>1</sub> min.	d <sub>1</sub> max.	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
20	30	51	58	104	42	18	60	12
25	35	51	58	104	42	18	60	12
30	40	56	63	108	42	18	65	12
35	45	66	73	118	42	16	75	14
40	50	66	73	118	42	16	75	14
45	55	71	78	128	42	16	80	14
50	60	81	88	138	44	16	90	14
55	65	81	88	138	44	16	90	14
60	70	96	103	164	46	14	105	18
65	75	96	103	164	46	14	105	18
70	80	102	109	178	46	14	111	18
75	85	114	121	193	49	14	123	18
80	90	114	121	193	49	14	123	18
85	95	124	131	208	49	13	133	20
90	100	124	131	208	49	13	133	20
95	105	134	141	218	49	13	143	20
100	110	134	141	218	49	13	143	20

Dimensions in millimeter

RELY ON EXCELLENCE

## MA390 / MA391

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Cartridge
- Balanced
- Independent of direction of rotation
- Stationary multiple springs
- Springs and pin located on the atmospheric side

### Advantages

- Ultra-thin compact design - the total length including the seal cover is only 33 mm
- Easy installing on the pumps without modifying the stuffing box
- Excellent followability due to no influence from run-out, squareness or vibration of the shaft
- Mounted outside the stuffing box for providing excellent air cooling performance
- Un-wetted springs and knock pins for protecting from lockout by liquid

### Operating range

#### MA390:

Pressure:  $p = \dots 20 \text{ bar (290 PSI)}$

Temperature:

$t = -20 \text{ }^\circ\text{C} \dots 160 \text{ }^\circ\text{C} (-4 \text{ }^\circ\text{F} \dots 320 \text{ }^\circ\text{F})$ (oil),

$0 \text{ }^\circ\text{C} \dots 60 \text{ }^\circ\text{C} (32 \text{ }^\circ\text{F} \dots 140 \text{ }^\circ\text{F})$ (water)

Sliding velocity:

$vg = \text{max. } 20 \text{ m/s (66 ft/s)}$

Viscosity:  $0.5 \text{ Pa}\cdot\text{s}$

Solids content:  $0.3 \%$

#### MA391:

Pressure:  $p = \dots 16 \text{ bar (232 PSI)}$

Temperature:

$t = -20 \text{ }^\circ\text{C} \dots 160 \text{ }^\circ\text{C} (-4 \text{ }^\circ\text{F} \dots 320 \text{ }^\circ\text{F})$ (oil),

$0 \text{ }^\circ\text{C} \dots 60 \text{ }^\circ\text{C} (32 \text{ }^\circ\text{F} \dots 140 \text{ }^\circ\text{F})$ (water)

Sliding velocity:  $vg = \text{max. } 20 \text{ m/s (66 ft/s)}$

Viscosity:  $3 \text{ Pa}\cdot\text{s}$

Solids content:  $10 \%$

### Materials

Seal face (MA390): High density carbon graphite

Seal face (MA391): Silicon carbide (Q1)

Seat (MA390/391): Silicon carbide (Q1)

Metal parts: CrNiMo steel (G)

Secondary seals: FKM (V)

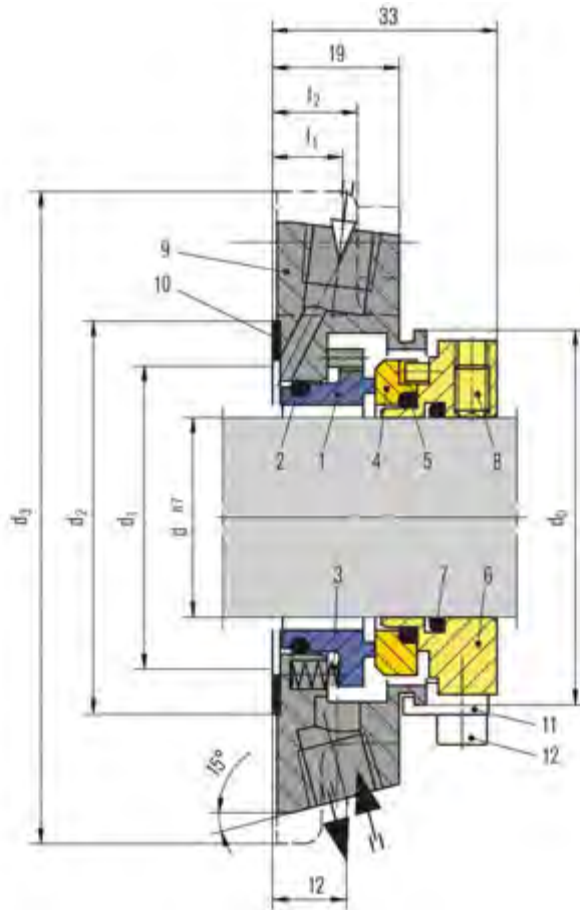
### Standards and approvals

- EN 12756
- ISO 3096

### Recommended applications

- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Pulp and paper industry
- Water and waste water technology
- Food and beverage industry
- Universally applicable
- Centrifugal pumps
- Eccentric screw pumps
- Process pumps

RELY ON EXCELLENCE



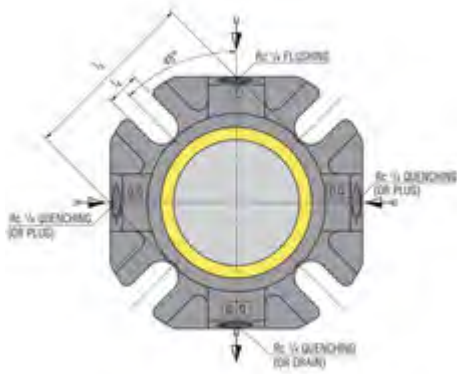
Item	Description
1	Seal face
2, 5, 7	O-Ring
3	Spring
4	Seat
6	Drive collar
8	Set screw
9	Seal cover
10	Gasket
11	Assembly fixture
12	HSH cap screw



## RELY ON EXCELLENCE

### Installation, details, options

#### Seal cover



### Dimensions

d	$d_0$	$d_1$ min.	$d_1$ max.	$d_2$	$d_3$	$l_1$	$l_2$	$l_3$	$l_4$
20	50	35	46	53	104	12	14	53	12
24	55	40	51	58	104	12	14	58	12
25	55	40	51	58	104	12	14	58	12
29	60	45	56	63	108	12	14	63	12
30	60	45	56	63	108	12	14	63	12
35	65	50	61	68	118	12	12	68	14
39	70	55	66	73	118	10	12	73	14
40	70	55	66	73	118	10	12	73	14
45	75	60	71	78	128	10	12	78	14

Dimensions in millimeter

RELY ON EXCELLENCE

## Mtex Dual seals

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Double seal
- Mtex-DN: API Plan 52 (53/54)
- Mtex9-DN: API Plan 53/54
- Cartridge
- Balanced
- Independent of direction of rotation
- Metal bellows
- Stationary Springs
- Pumping device independent of direction of rotation

### Advantages

- Ideal seal for standardizations
- Universal applicable for packings conversions, retrofits or OEM
- No dimensional modification of the seal chamber (centrifugal pumps) necessary, small radial installation height
- Trouble-free running due to bellows unit with vibration dampers (essential in case of dry-running)
- No damage of the shaft by dynamically loaded O-Ring
- Self cleaning effect of the bellows
- Straightforward and easy installation due to pre-assembled unit

### Operating range

Shaft diameter:  
 $d_1 = 25 \dots 80 \text{ mm (1" ... 3.15")}$   
 Temperature:  
 $t^* = -40 \text{ °C ... } +220 \text{ °C (-40 °F ... } +428 \text{ °F)}$   
 Pressure:  $p_1 = 25 \text{ bar (232 PSI)}$   
 Sliding velocity:  $v_g = 20 \text{ m/s (66 ft/s)}$

Barrier fluid circulation system:  
 $p_{3\text{max}} = 16 \text{ bar (232 PSI)}$   
 $\Delta p (p_3 - p_1) \text{ ideal} = 2 \dots 3 \text{ bar (29 ... 44 PSI)}$   
 $\Delta p (p_3 - p_1) \text{ max.}$   
 $= 10 \text{ bar (145 PSI) at } <120 \text{ °C (<248 °F)}$   
 $= 5 \text{ bar (73 PSI) at } \leq 220 \text{ °C (}\leq 232 \text{ °F)}$

API Plan 52 (53/54)

Pump startup:  
 $\Delta p (p_3 - p_1) \text{ max. } 16 \text{ bar (232 PSI) allowed}$

\* Operating limits of O-Rings to be observed

### Materials

Seal face:  
 Carbon graphite (A), Silicon carbide (Q1)  
 Seat:  
 Silicon carbide (Q1), Tungsten carbide (U2)  
 Secondary seals:  
 FPM (V), EPDM (E), FFKM (K)  
 Bellows: Inconel® 718 (M6)  
 Springs: Hastelloy® C-4 (M)  
 Metal parts: CrNiMo steel (G), Duplex (G1)

### Recommended applications

- Process industry
- Chemical industry
- Hot media
- Cold media
- Highly viscous media
- Pumps
- Special rotating equipment

### Recommended piping plans

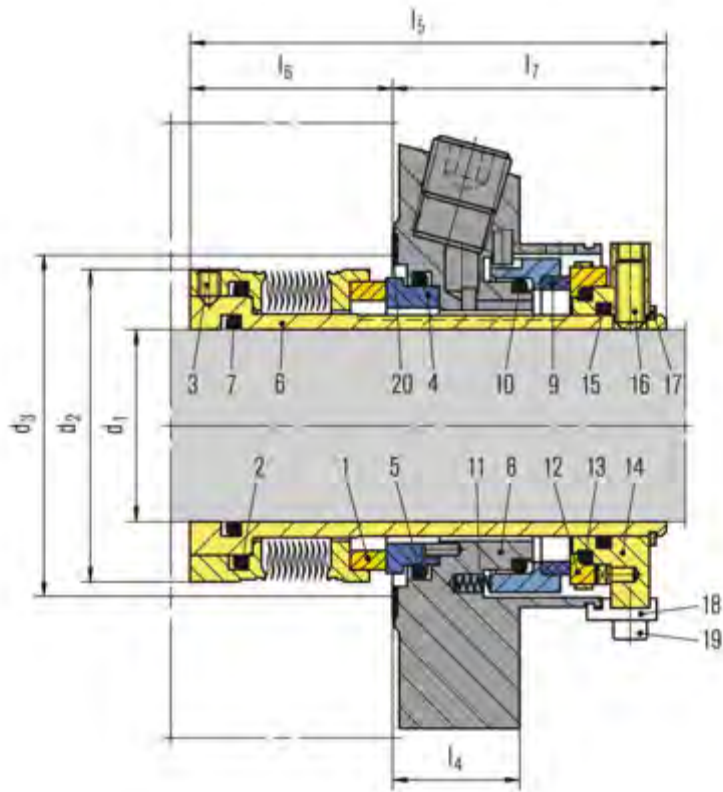
EagleBurgmann TS 2000 Thermosiphon system

Product link:  
[EagleBurgmann TS2000](#)

Detailed information on these API 682 4th edition plans:

[API Plan 52](#)  
[API Plan 53A](#)  
[API Plan 53B](#)  
[API Plan 53C](#)  
[API Plan 54](#)

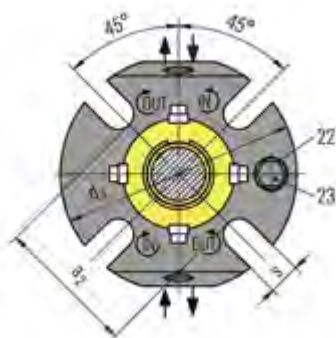
RELY ON EXCELLENCE



Item	Description
1	Bellows unit
2	O-Ring
3	Set screw
4	Seat
5	O-Ring
6	Shaft sleeve
7	O-Ring
8	Cover
9	Seal face
10	O-Ring
11	Spring
12	Seat
13	O-Ring
14	Drive collar
15	O-Ring
16	Set screw
17	Retaining ring
18	Assembly fixture
19	Hex socket head screw
20, 22	Gasket
23	Screw plug

## Installation, details, options

### Seal cover



## RELY ON EXCELLENCE

### Product variants

#### Mtex9-DN

Dimensions, items and descriptions as for Mtex-DN, but with optimized seal face geometry for pressurized operation according to API Plan 53/54. A barrier fluid system (e.g. EagleBurgmann TS2000) is necessary.

Pressure:  $p_1 = 10 \text{ bar (145 PSI)}$

Sliding velocity:  $v_g = 20 \text{ m/s (66 ft/s)}$

Barrier fluid circulation system:

$p_{3\text{max}} = 16 \text{ bar (232 PSI)}$

$\Delta p (p_3 - p_1)_{\text{ideal}} = 2 \dots 3 \text{ bar (29 \dots 44 PSI)}$

$\Delta p (p_3 - p_1)_{\text{max}} = 16 \text{ bar (232 PSI)}$

API Plan 53/54

Pump startup:

$\Delta p (p_3 - p_1)_{\text{max}} = 16 \text{ bar (232 PSI)}$  allowed

### Dimensions

$d_1$	$d_2$	$d_3 \text{ min.}$	$d_3 \text{ max.}$	$l_4$	$l_5$	$l_6$	$l_7$	$d_a$	$a_2$	$s$
25	45.0	47.0	51.0	25.4	87.0	33.6	53.4	105.0	62.0	13.2
30	49.4	52.0	56.0	25.4	86.5	33.1	53.4	105.0	67.0	13.2
32	52.3	54.5	57.0	25.4	86.5	33.1	53.4	108.0	70.0	13.2
33	52.3	54.5	57.0	25.4	86.5	33.1	53.4	108.0	70.0	13.2
35	54.8	58.0	61.5	25.4	86.5	33.1	53.4	113.0	72.0	13.2
38	57.5	60.0	66.0	25.4	86.5	33.1	53.4	123.0	75.0	14.0
40	58.8	62.0	68.0	25.4	86.3	32.9	53.4	123.0	77.0	14.2
43	61.9	64.5	70.5	25.4	86.5	33.1	53.4	133.0	80.0	14.2
45	65.0	68.5	73.0	25.4	86.5	33.1	53.4	138.0	82.0	14.2
48	68.4	71.0	75.0	25.4	86.8	33.4	53.4	138.0	85.0	14.2
50	70.0	73.0	78.0	25.4	87.2	33.8	53.4	148.0	87.0	14.2
53	71.9	75.0	87.0	25.4	87.4	34.0	53.4	148.0	97.0	18.0
55	74.6	77.0	83.0	25.4	87.0	33.6	53.4	148.0	92.0	18.0
60	83.9	87.0	91.0	25.4	88.2	34.8	53.4	157.0	102.0	18.0
65	87.5	90.0	98.5	25.4	88.1	34.7	53.4	163.0	109.3	18.0
70	93.0	98.0	108.0	25.4	89.6	36.2	53.4	178.0	118.3	18.0
75	96.8	101.6	118.0	28.0	107.4	43.5	63.9	190.0	129.0	18.0
80	104.7	108.0	124.0	28.0	106.8	42.9	63.9	195.0	135.0	18.0

Dimensions in millimeter

RELY ON EXCELLENCE

## Mtex Single seals

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Single seal
- Cartridge
- Balanced
- Independent of direction of rotation
- Metal bellows
- Single seal with quench and lip seal (-QN) or throttle ring (-TN)
- Version available with multipoint injection ring (-QNM, -TNM)
- Supply connections for flush (A) and quench (B)

### Advantages

- Ideal seal for standardizations
- Universal applicable for packings conversions, retrofits or OEM
- No dimensional modification of the seal chamber necessary, small radial installation height
- Trouble-free running due to bellows unit with vibration dampers (essential in case of dry-running)
- No dynamically loaded O-Ring
- Self cleaning effect of the bellows
- Straightforward and easy installation due to pre-assembled unit (reduced down-times)

### Operating range

Shaft diameter:  
 $d_1 = 25 \dots 80 \text{ mm (1" ... 3.15")}$   
 Temperature:  
 $t^* = -40 \text{ °C ... } +220 \text{ °C (-40 °F ... } +428 \text{ °F)}$   
 Pressure:  $p = 25 \text{ bar (363 PSI)}$   
 Sliding velocity:  $vg = 20 \text{ m/s (66 ft/s)}$

\* Operating limits of O-Rings to be observed

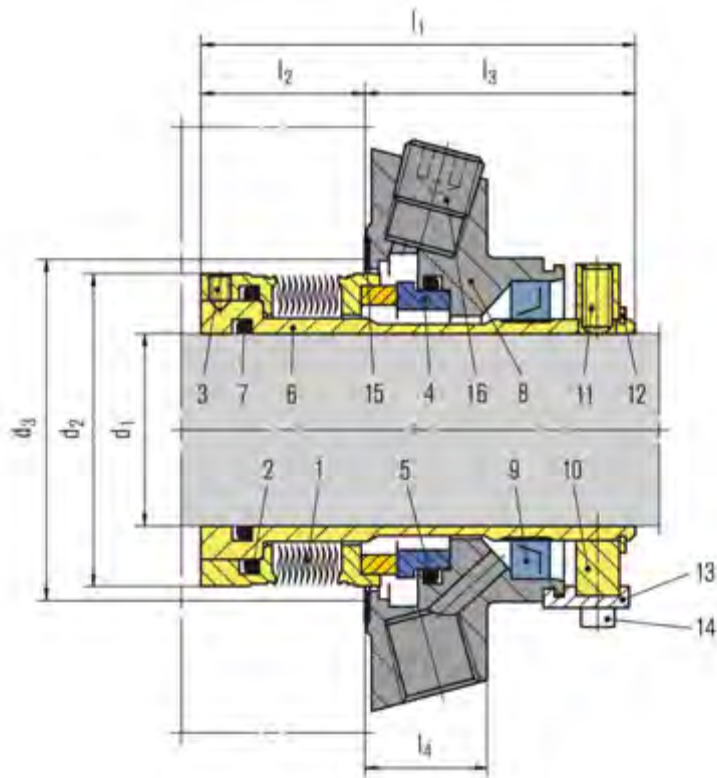
### Materials

Seal face: Carbon graphite antimony impregnated (A), Silicon carbide (Q1)  
 Seat: Silicon carbide (Q1)  
 Secondary seals:  
 FKM (V), EPDM (E), FFKM (K)  
 Bellows: Inconel® 718 (M6)  
 Metal parts: CrNiMo steel (G), Duplex (G1)  
 Throttle ring:  
 PTFE carbon graphite reinforced (T12)  
 Lip seal: NBR (P), PTFE carbon reinforced (T3)

### Recommended applications

- Process industry
- Chemical industry
- Hot media
- Cold media
- Highly viscous media
- Pumps
- Special rotating equipment

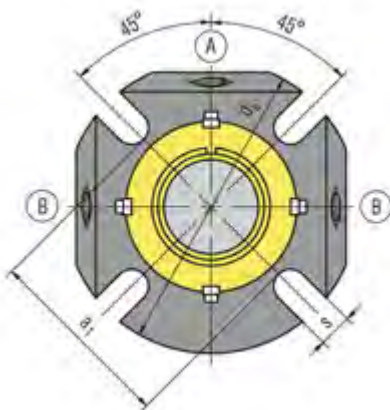
RELY ON EXCELLENCE



Item	Description
1	Bellows unit
2, 5, 7	O-Ring
3, 11	Set screw
4	Seat
6	Shaft sleeve
8	Cover
9	Lip seal (-QN) or throttle ring (-TN)
10	Drive collar
12	Retaining ring
13	Assembly fixture
14	Hex socket head screw
15	Gasket
16	Screw plug

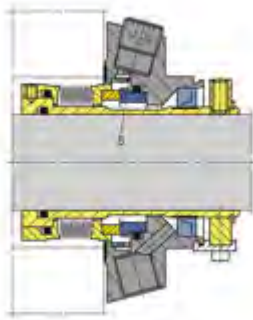
## Installation, details, options

Seal cover



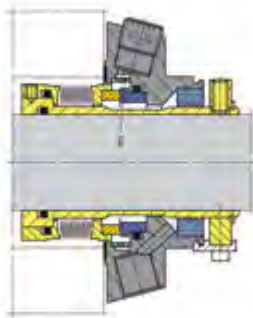
## RELY ON EXCELLENCE

### Product variants



#### **Mtex-QNM**

Single seal, as Mtex-QN with additional multipoint injection ring (item B).



#### **Mtex-TNM**

Single seal, as Mtex-TN with additional multipoint injection ring (item B).

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> min.	d <sub>3</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	d <sub>a</sub>	a <sub>1</sub>	s
25	45.0	47.0	51.0	79.5	26.1	53.4	25.4	105.0	62.0	13.2
30	49.4	52.0	56.0	78.4	25.0	53.4	25.4	105.0	67.0	13.2
32	52.3	54.5	57.0	78.4	25.0	53.4	25.4	108.0	70.0	13.2
33	52.3	54.5	57.0	78.4	25.0	53.4	25.4	108.0	70.0	13.2
35	54.8	58.0	61.5	78.4	25.0	53.4	25.4	113.0	72.0	13.2
38	57.5	60.0	66.0	78.4	25.0	53.4	25.4	123.0	75.0	13.2
40	58.8	62.0	68.0	78.2	24.8	53.4	25.4	123.0	77.0	14.2
43	61.9	64.5	70.5	78.4	25.0	53.4	25.4	133.0	80.0	14.2
45	65.0	68.5	73.0	78.4	25.0	53.4	25.4	138.0	82.0	14.2
48	68.4	71.0	75.0	78.7	25.3	53.4	25.4	138.0	85.0	14.2
50	70.0	73.0	78.0	79.1	25.7	53.4	25.4	148.0	87.0	14.2
53	71.9	75.0	87.0	77.8	24.4	53.4	25.4	148.0	97.0	18.0
55	74.6	77.0	83.0	78.9	25.5	53.4	25.4	148.0	92.0	18.0
60	83.9	87.0	91.0	80.1	26.7	53.4	25.4	157.0	102.0	18.0
65	87.5	90.0	98.5	80.0	26.6	53.4	25.4	163.0	109.3	18.0
70	93.0	98.0	108.0	81.5	28.1	53.4	25.4	178.0	118.3	18.0
75	96.8	101.6	118.0	94.4	30.5	63.9	28.0	190.0	129.0	18.0
80	104.7	108.0	124.0	94.4	30.4	64.0	28.0	195.0	135.0	18.0

Dimensions in millimeter



RELY ON EXCELLENCE

## Unitex

Mechanical seals | Mechanical seals for pumps | Standard cartridge seals



### Features

- Single cartridge seal
- Elastomer bellows
- Unbalanced
- Independent of direction of rotation
- Rotating spring
- Bellows and spring free from torsion
- Metric and inch sizes available

### Advantages

- Straightforward and easy installation
- Fits into any installation space due to smallest outer diameter
- Important material certifications available
- Universal application opportunities (standardization)
- No modifications of the pump's installation chamber necessary
- Economical cartridge solution
- Comes with flush connection acc. to API 682, [Plan 11](#) for seal chamber cleaning and cooling

### Operating range

Shaft diameter:  
dN = 25 ... 75 mm (1" ... 2.625")  
Pressure: p1 = 12 bar (174 PSI)  
Temperature:  
t = -20 °C ... 140 °C (-4 °F ... 284 °F)  
Sliding velocity: vg = 10 m/s (33 ft/s)  
Axial movement: ±0,5 mm

### Materials

Seal face: Carbon graphite resin impregnated (B), Silicon carbide (Q1)  
Seat: Silicon carbide (Q1)  
Secondary seals: FKM (V), EPDM (E)  
Metal parts: CrNiMo steel (G), CrNiMo cast steel (G)

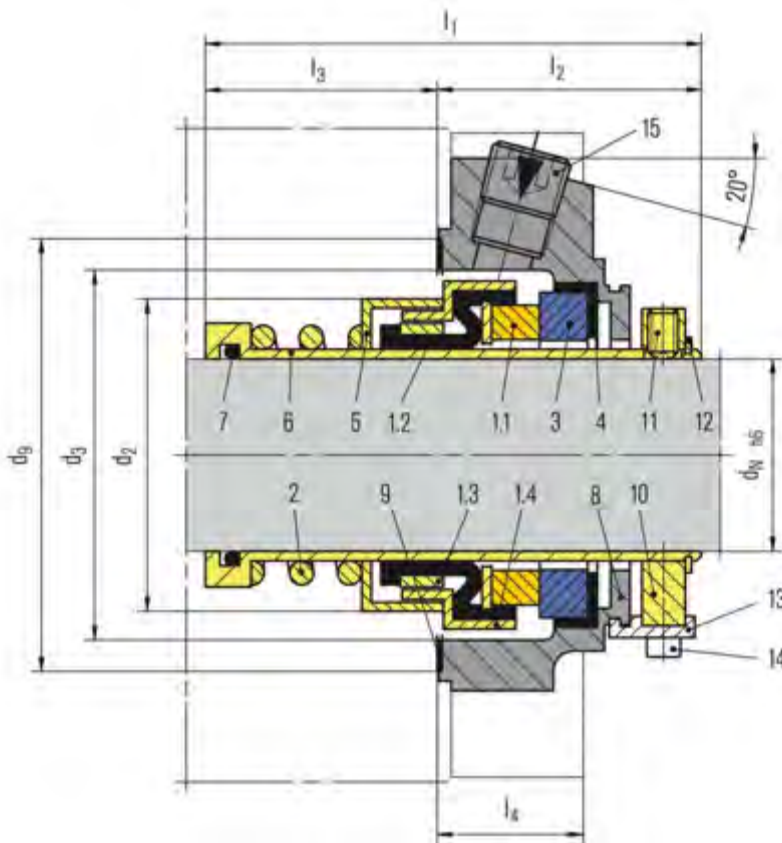
### Standards and approvals

- FDA
- KTW
- WRAS
- W270
- NSF
- ACS

### Recommended applications

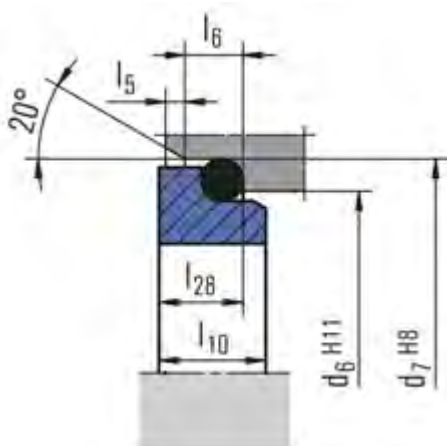
- Chemical industry
- Pulp and paper industry
- Water and waste water technology
- Sewage water
- Cold and hot water
- Cooling fluids
- Beverages
- Diluted lyes and acids
- Suspensions with low solids content
- Circulating pumps
- Water and waste water pumps
- Production of pressure oils for bio diesel fuels

## RELY ON EXCELLENCE



Item	Description
1	Bellows unit
1.1	Seal face
1.2	Bellows
1.3	Drive collar
1.4	L-ring (spring collar)
2	Spring
3	Seat (G60)
4	O-Ring or corner sleeve
5	Spacer ring
6	Shaft sleeve
7	O-ring
8	Cover
9	Gasket
10	Drive collar
11	Set screw
12	Snap ring
13	Assembly fixture
14	Socket head screw
15	Screw plug

## Seat alternatives

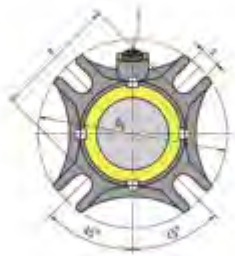


G6 (EN 12756)

## RELY ON EXCELLENCE

### Installation, details, options

#### Seal cover



### Dimensions

$d_N$	$d_2$	$d_3 \text{ min}$	$d_3 \text{ max}$	$d_9$	$d_a$	$a$	$s$	$l_1$	$l_2$	$l_3$	$l_4$	$t$
1.000	1.512	1.634	2.000	2.362	4.134	2.440	0.520	2.579	1.614	0.965	0.906	1/4 NPT
1.125	1.669	1.750	2.050	2.362	4.134	2.441	0.520	2.677	1.634	1.043	0.906	1/4 NPT
1.250	1.772	1.890	2.250	2.559	4.331	2.638	0.520	2.736	1.654	1.083	0.906	1/4 NPT
1.375	1.933	2.000	2.420	2.677	4.213	2.756	0.520	2.854	1.732	1.122	1.024	1/4 NPT
1.500	2.020	2.146	2.625	2.874	4.843	2.950	0.579	2.854	1.732	1.122	1.024	1/4 NPT
1.750	2.354	2.480	2.812	3.110	5.118	3.230	0.559	3.012	1.752	1.260	1.024	1/4 NPT
1.875	2.433	2.559	2.940	3.228	5.118	3.307	0.559	3.071	1.772	1.299	1.024	1/4 NPT
2.000	2.551	2.677	3.190	3.346	5.827	3.430	0.579	3.169	1.850	1.319	1.102	3/8 NPT
2.125	2.795	2.875	3.437	3.740	5.512	3.820	0.689	3.287	1.850	1.437	1.102	3/8 NPT
2.250	2.874	2.992	3.560	3.780	6.181	3.858	0.689	3.287	1.850	1.437	1.102	3/8 NPT
2.375	3.012	3.110	3.590	3.937	6.181	4.020	0.689	3.366	1.850	1.516	1.102	3/8 NPT
2.500	3.209	3.287	3.800	4.173	6.693	4.252	0.689	3.465	1.909	1.555	1.102	3/8 NPT
2.625	3.268	3.374	3.937	4.252	6.378	4.331	0.689	3.465	1.909	1.555	1.102	3/8 NPT

Dimensions in inch

## RELY ON EXCELLENCE

### Dimensions

d <sub>N</sub>	d <sub>2</sub>	d <sub>3</sub> min	d <sub>3</sub> max	d <sub>9</sub>	d <sub>a</sub>	a	s	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	t
25	38.4	41.5	51.0	60	105	62	13.2	65.5	41.0	24.5	23	1/4 NPT
28	42.4	44.5	52.0	60	105	62	13.2	68.0	41.5	26.5	23	1/4 NPT
30	42.4	45.5	56.0	63	105	67	13.2	68.0	41.5	26.5	23	1/4 NPT
33	45.0	48.0	57.0	65	110	67	13.2	69.5	42.0	27.5	23	1/4 NPT
35	49.1	50.8	61.5	68	107	70	13.2	72.5	44.0	28.5	26	1/4 NPT
38	51.3	54.5	66.0	73	123	75	14.7	72.5	44.0	28.5	26	1/4 NPT
40	54.3	57.5	68.0	75	123	77	14.7	75.5	44.5	31.0	26	1/4 NPT
43	56.3	59.5	70.5	78	133	80	14.7	76.5	44.5	32.0	26	1/4 NPT
45	59.8	63.0	73.0	79	130	82	14.2	76.5	44.5	32.0	26	1/4 NPT
48	61.8	65.0	75.0	82	130	84	14.2	78.0	45.0	33.0	26	1/4 NPT
50	64.8	68.0	78.0	85	148	87	14.7	80.5	47.0	33.5	28	3/8 NPT
53	66.8	70.0	87.0	95	148	97	17.5	81.5	47.0	34.5	28	3/8 NPT
55	71.0	73.0	83.0	90	148	92	17.5	83.5	47.0	36.5	28	3/8 NPT
60	76.5	79.0	91.0	100	157	102	17.5	85.5	47.0	38.5	28	3/8 NPT
65	83.0	85.7	98.5	108	162	110	17.5	88.0	48.5	39.5	28	3/8 NPT
70	88.0	94.0	108.0	116	178	118	17.5	92.0	48.5	43.5	28	3/8 NPT
75	93.4	98.4	118.0	125	190	127	17.5	93.5	49.0	44.5	28	3/8 NPT

Dimensions in millimeter

RELY ON EXCELLENCE

## AX05

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- Unbalanced
- Independent on direction of rotation

### Advantages

- Stationary springs
- Low space requirements
- Frictionally torque transmission
- Springs protected from the product
- Simple mounting

### Operating range

Shaft diameter:  $d_1 = \dots 65 \text{ mm (2.56")}$

Pressure:  $p_1 = 0.3 \text{ bar (4.35 PSI)}$

Temperature:

$t = -20 \text{ }^\circ\text{C} \dots 100 \text{ }^\circ\text{C} (-4 \text{ }^\circ\text{F} \dots 212 \text{ }^\circ\text{F})$

Sliding velocity:  $v_g = 10 \text{ m/s (33 ft/s)}$

### Materials

Seal face: Carbon graphite resin impregnated (B)

Secondary seals: NBR (P)

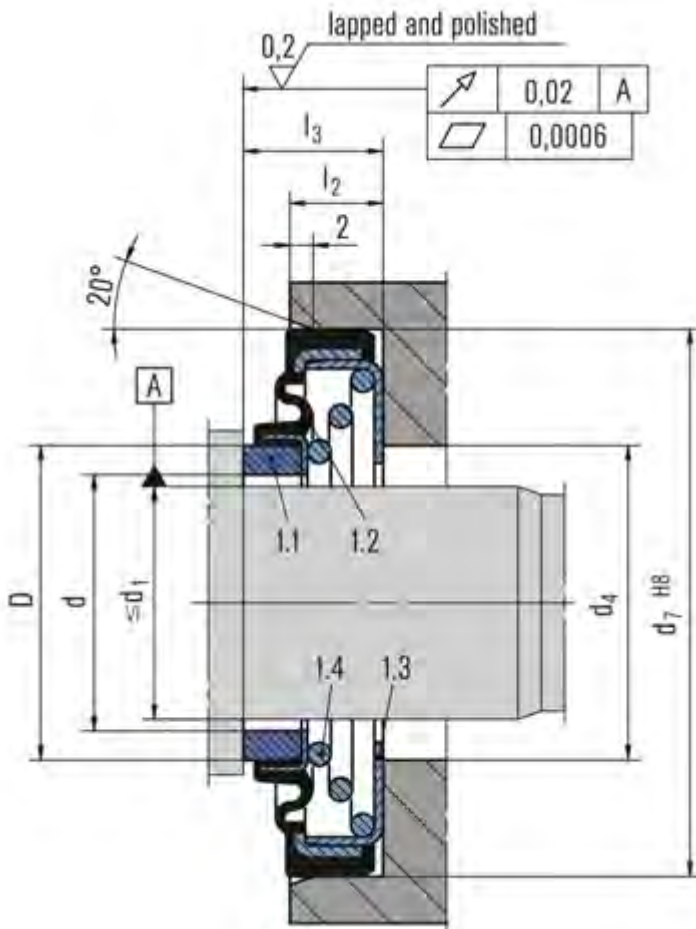
Springs: CrNi steel (F)

Metal parts: CrNi steel (F)

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Building services industry
- Food and beverage industry
- Shipbuilding
- Sugar industry
- Metal production and processing

RELY ON EXCELLENCE

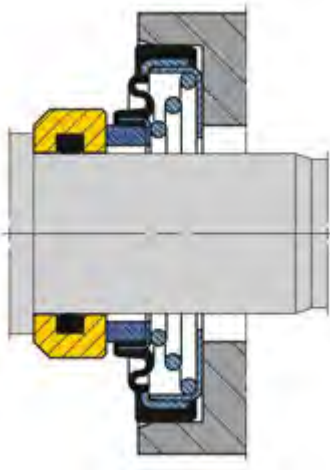


#### Item Description

- 1 Seal unit
- 1.1 Seal ring
- 1.2 Bellows
- 1.3 Profiled sheet
- 1.4 Spring

## RELY ON EXCELLENCE

### Installation, details, options



Mating ring variant with O-Ring.

### Dimensions

d1	Type	d	D	L3	d7	d4	L2
20	AX05-022	22	27	18	42	28	12
25	AX05-027	27	32	12	52	32	8
30	AX05-032	32	37	12	57	37	8
35	AX05-037	37	42	12	62	42	8
40	AX05-042	42	47.5	12	68	47	10
45	AX05-047	47	53	13	75	52	10
50	AX05-052	52	58	13	80	57	10
55	AX05-057	57	65	14	90	62	12
65	AX05-067	67	75	16	100	72	10

Dimensions in millimeter

RELY ON EXCELLENCE

## BT-A2

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Advantages

- Stationary mechanical seal in inch dimensions
- Compact design
- Rotating mating ring
- No torsion on bellows
- High volume seal for use in low pressure, small diameter rotary shaft applications

### Operating range

Shaft diameter: d1 = 0.500", 0.625", 0.750"

Pressure: p1\* = 4 bar (58 PSI)

Temperature:

t\* = -20 °C ... +90 °C (-4 °F ... +194 °F)

Sliding velocity: vg = 10 m/s (33 ft/s)

\* Dependent on medium, size and materials

### Materials

Seal face: Carbon graphite resin

impregnated (B), Full carbon grade (B3)

Seat: Al-Oxide (V1), Silicon carbide (Q1)

Elastomers: NBR (P), EPDM (E), FKM (V)

Metal parts: CrNi steel (F), CrNiMo steel (G)

### Recommended applications

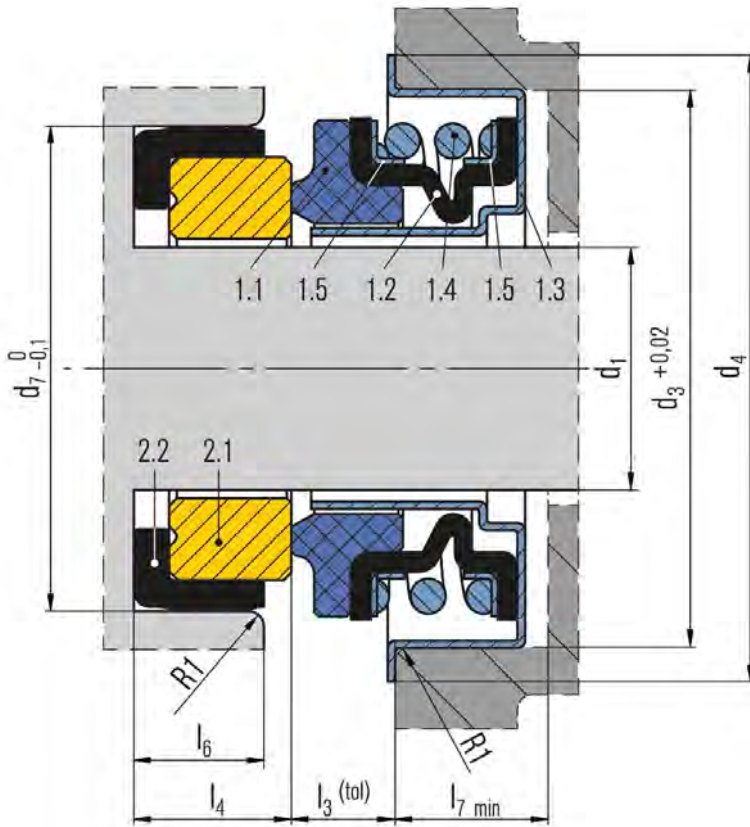
- Water and wastewater technology
- Swimming pool pumps
- Whirlpool pumps
- Small centrifugal water pumps
- Domestic appliances

### Features

- Unbalanced
- Single spring
- Independent of direction of rotation
- Stationary spring-loaded unit



RELY ON EXCELLENCE



### Item Description

- 1.1 Seal face
- 1.2 Bellows
- 1.3 Collar
- 1.4 Spring
- 1.5 L-Ring
- 2.1 Seat
- 2.2 Gasket

## Dimensions

d <sub>1</sub>	d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>7</sub>	l <sub>3</sub>	tol	l <sub>4</sub>	l <sub>6</sub>	l <sub>7</sub>
0.500"	12.70	28.55	35	25.40	5.20	+0.5	8.00	6.50	9.50
0.625"	15.88	36.45	41	31.75	6.80	+0.5	10.30	9.00	10.00
0.750"	19.05	40.00	44	34.93	6.80	+0.5	10.30	8.50	10.50

BT-A2 - Dimensions in inch / millimeter

RELY ON EXCELLENCE

## BT-AR

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- Rubber bellows mechanical seal
- Unbalanced
- Single spring
- Independent of direction of rotation
- Short axial installation length

### Advantages

Mechanical seal for large-series cold water pumps, produced in millions of units per year. The BT-AR owes its success to the wide range of application, the short axial length (this allows for more economic pump construction and saves material), and the best quality/price ratio. The elasticity of the bellows design enables a more robust operation.

The BT-AR can also be used as a multiple seal in tandem or back-to-back arrangement when the product media cannot ensure lubrication, or when sealing media with a higher solids content. Installation proposals can be provided upon request.

### Operating range

Shaft diameter:  $d_1 = 6 \dots 70 \text{ mm}$  (0.24" ... 2.76")

Pressure:  $p_1^* = 6 \text{ bar}$  (87 PSI), vacuum ... 0.5 bar (7.45 PSI) up to 1 bar (14.5 PSI) with seat locking

Temperature:

$t^* = -20 \text{ °C} \dots +120 \text{ °C}$  (-4 °F ... +248 °F)

Sliding velocity:  $v_g = 10 \text{ m/s}$  (33 ft/s)

\* Dependent on medium, size and material

### Materials

Seal face:

Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Carbon graphite, full carbon (B3), Silicon carbide (Q1, Q6), Tungsten carbide (U), PTFE glass fiber reinforced (Y)

Seat:

Steatite (X), Aluminium oxide (V, V1), Silicon carbide (Q1, Q6, Q7), Tungsten carbide (U), Cr steel (E), CrNi steel (F), CrNiMo steel (G)

Elastomers:

NBR (P), EPDM (E), FKM (V), HNBR (X4)

Metal parts:

CrNi steel 1.4301 (F), CrNiMo steel 1.4401 (G), CrNi steel 1.4057 (F1)

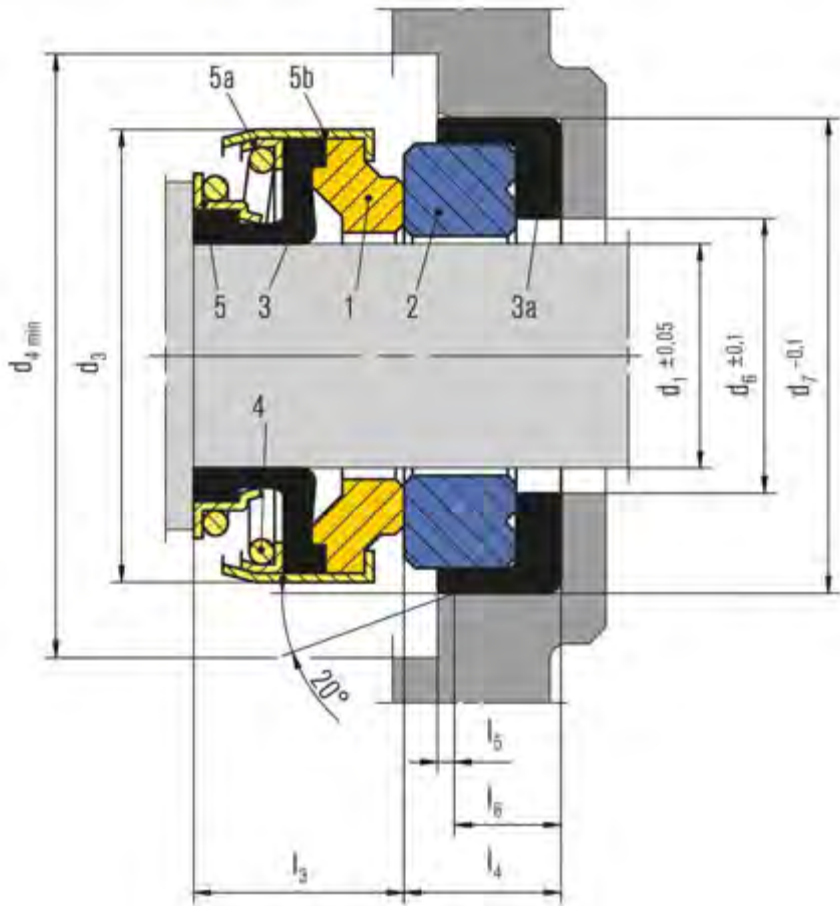
### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- DM 174/04
- FDA

### Recommended applications

- Water and waste water technology
- Pool and spa applications
- Household appliances
- Domestic and garden pumps
- Whirlpool and swimming pool pumps
- Dishwasher pumps
- Submersible motors / pumps
- Water pumps / waste water pumps

## RELY ON EXCELLENCE

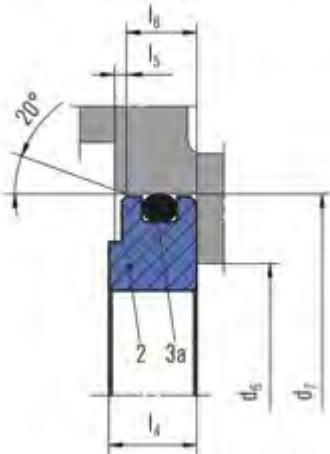


### Item Description

- 1 Seal face
- 2 Stationary seat
- 3 Bellows
- 3a Gasket
- 4 Spring
- 5 Ring
- 5a Locking ring
- 5b Collar

RELY ON EXCELLENCE

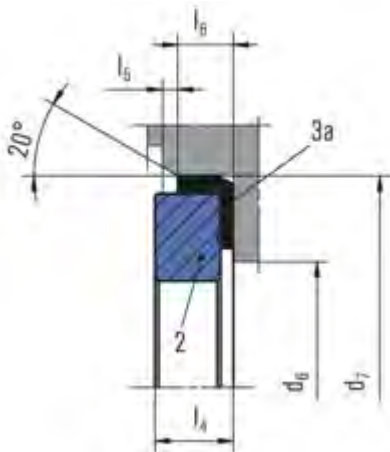
## Seat alternatives



**PF A**

**Item Description**

- 2 Stationary seat
- 3a O-Ring



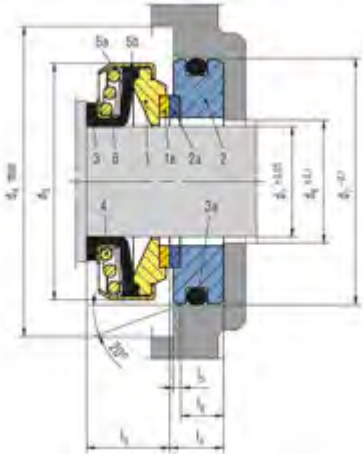
**PF C**

**Item Description**

- 2 Stationary seat
- 3a Gasket

RELY ON EXCELLENCE

## Product variants



### BT-AR3

Seal faces with brazed tungsten carbide (U) for abrasive media. Elastomers and diameter range the same as BT-AR. The BT-AR3 is the right choice of seal for use in high duty applications or when abrasives (e.g. waste water) could damage the seal faces.

#### Item Description

- 1 Seal face housing
- 1a Brazed seal face
- 2 Stationary seat housing
- 2a Brazed stationary seat
- 3 Bellows
- 3a O-Ring
- 4 Spring
- 5 Ring
- 5a Locking ring
- 5b Collar

## RELY ON EXCELLENCE

### Dimensions

Type	d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>3</sub>	tol	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	Note
6	6	18	23	8	22.0	8.0	+0.5/0	4.0	0.5	3.5	
					18.0	8.0	+0.5/0	4.8	0.5	3.5	*
8S	8	20	23	10	22.0	11.0	+0.5/0	4.8	0.5	3.5	
8	8	24	27	10	26.0	11.0	+0.5/0	8.0	1.0	6.0	
					26.0	11.0	+0.5/0	5.5	0.5	4.5	*
10	10	24	27	12	26.0	11.0	+0.5/0	8.0	1.0	6.0	
					26.0	11.0	+0.5/0	5.5	0.5	4.5	*
11	11	24	27	13	26.0	11.0	+0.5/0	8.0	1.0	6.0	
					26.0	11.0	+0.5/0	5.5	0.5	4.5	*
12C	12	24	27	14	26.0	11.0	+0.5/0	8.0	1.0	6.0	
					26.0	11.0	+0.5/0	5.5	0.5	4.5	*
12	12	24	27	14	26.0	12.8	+0.7/0	8.0	1.0	6.0	
					26.0	12.8	+0.7/0	5.0	0.5	4.5	*
					25.0	12.8	+0.7/0	5.0	0.5	4.0	*
13	13	24	27	15	26.0	12.8	+0.7/0	8.0	1.0	6.0	
					26.0	12.8	+0.7/0	5.5	0.5	4.5	*
14S	14	28	30	18	28.5	12.8	+0.7/0	7.5	1.0	5.5	
					29.5	12.8	+0.7/0	8.0	1.0	6.0	*
14L	14	28	30	18	28.5	15.3	±0.8	7.5	1.0	5.5	
14	14	32	35	16	29.5	12.8	+0.7/0	8.0	1.0	6.0	
15	15	32	35	17	29.5	12.8	+0.7/0	8.0	1.0	6.0	
					30.0	12.8	+0.7/0	6.0	1.0	4.0	*
16R	16	32	35	18	29.5	12.8	+0.7/0	8.0	1.0	6.0	
					30.0	12.8	+0.7/0	6.0	1.0	4.0	*
					38.0	12.8	+0.7/0	8.0	1.0	6.0	*
16	16	39	43	18	42.0	12.8	+0.7/0	8.0	1.0	6.0	
17	17	39	43	19	42.0	12.8	+0.7/0	8.0	1.0	6.0	
18	18	39	43	20	42.0	12.8	+0.7/0	8.0	1.0	6.0	
19	19	39	43	21	42.0	12.8	+0.7/0	8.0	1.0	6.0	
20R	20	35	39	22	35.0	17.8	±0.7	7.5	1.0	5.5	
20	20	39	43	22	42.0	12.8	+0.7/0	8.0	1.0	6.0	
20S	20	42	47	22	45.0	12.8	+0.7/0	10.0	1.0	8.0	
22	22	42	47	24	45.0	12.8	+0.7/0	10.0	1.0	8.0	
23	23	47	52	25	50.0	13.5	+1/0	10.0	1.0	8.0	
24	24	47	52	26	50.0	13.5	+1/0	10.0	1.0	8.0	
25R	25	42	52	27	50.0	13.5	+1/0	10.0	1.0	8.0	
					45.0	13.5	+1/0	10.0	1.0	8.0	*
25	25	47	52	27	50.0	13.5	+1/0	10.0	1.0	8.0	
26	26	47	52	29	50.0	13.5	+1/0	10.0	1.0	8.0	
27	27	47	52	30	50.0	13.5	+1/0	10.0	1.0	8.0	
28	28	54	60	31	57.0	15.0	+1/0	10.0	1.0	8.0	
30	30	54	60	33	57.0	15.0	+1/0	10.0	1.0	8.0	
32	32	54	60	35	57.0	15.0	+1/0	10.0	1.0	8.0	
35	35	60	70	38	63.0	16.0	+1/0	10.0	1.0	8.0	
38	38	65	75	41	68.0	18.0	+1/0	12.0	2.0	9.0	
40	40	65	75	43	68.0	18.0	+1/0	12.0	2.0	9.0	
45	45	70	80	48	73.0	20.0	+1/0	12.0	2.0	9.0	
50	50	85	95	53	88.0	23.0	+1/0	15.0	2.0	12.0	

## RELY ON EXCELLENCE

Type	d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>3</sub>	tol	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	Note
60	60	105	115	63	110.0	30.0	+1/0	15.0	2.0	12.0	
70	70	105	115	73	110.0	32.0	+1/0	15.0	2.0	12.0	

\* Alternative seat dimensions

BT-AR - Dimensions in millimeter

## Dimensions

d <sub>1</sub>	d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>3</sub>	tol	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	Note
0.375"	9.53	24	27	12	25.40	11.0	+0.5/0	5.5	0.5	4.5	
					25.40	11.0	+0.5/0	7.5	1.0	5.5	*
0.500"	12.70	24	27	15	25.40	12.8	+0.7/0	7.5	1.0	5.5	
0.625"	15.88	32	36	18	31.75	12.8	+0.7/0	10.3	1.0	8.0	

\* Alternative seat dimensions

BT-AR - Dimensions in inch / millimeter

RELY ON EXCELLENCE

## BT-ARP

### EagleBurgmann BT Mechanical seals



#### Features

- Rubber bellows mechanical seal
- Independent of direction of rotation
- Single spring, product-protected
- Unbalanced

#### Advantages

BT-ARP mechanical seals are the ideal solution for media which contain solids or are highly viscous. The spring is product-protected, thus preventing sticking or clogging. Reliable for rugged operation in all kind of applications such as waste water treatment. The dimensions can be adapted and additional seats are available. The bellows provides protection across the entire seal length.

#### Operating range

Shaft diameter:  
 $d1^{**} = 20 \dots 40 \text{ mm (0.79" ... 1.57")}$   
 Pressure:  $p1^* = 6 \text{ bar (87 PSI)}$   
 Temperature:  
 $t^* = -20 \text{ °C ... } +90 \text{ °C (-4 °F ... } +194 \text{ °F)}$   
 Sliding velocity:  $v_g = 10 \text{ m/s (33 ft/s)}$

\* Dependent on medium, size and materials

\*\* Other diameters upon request

#### Materials

Seal face\*: Silicon carbide (Q1, Q6),  
 Tungsten carbide (U)  
 Seat: Silicon carbide (Q1, Q6, Q7),  
 Tungsten carbide (U)  
 Elastomers:  
 NBR (P), FKM (V), HNBR (X4)  
 Metal parts:  
 CrNi steel 1.4301 (F), CrNiMo steel 1.4401 (G)

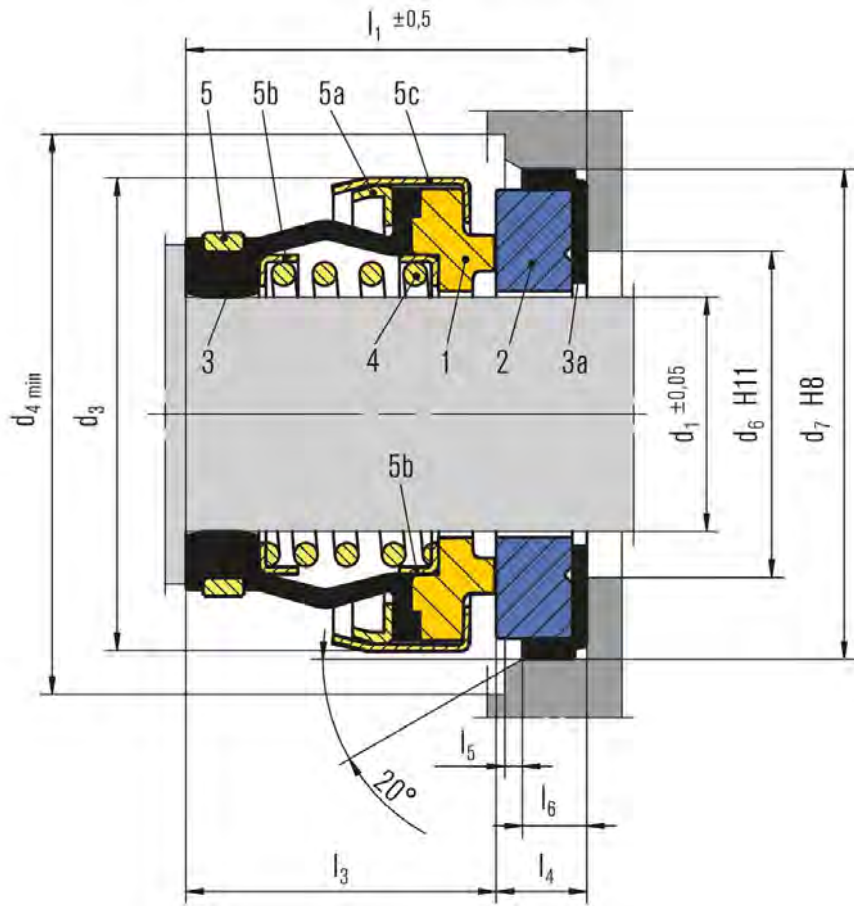
\* Seal face available in solid or shrink fit/  
 brazed version

#### Recommended applications

- Water and waste water technology
- Slurry applications
- Submersible pumps



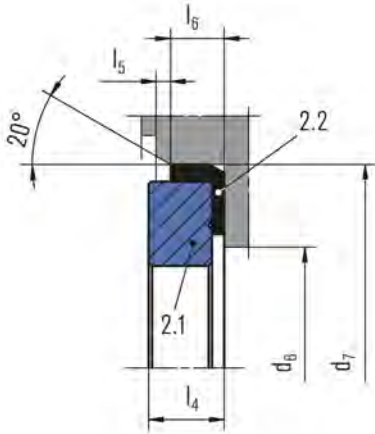
RELY ON EXCELLENCE



Item	Description
1	Seal face housing
2	Stationary seat
3	Bellows
3a	Gasket
4	Spring
5	Drive ring
5a	Locking ring
5b	L-ring
5c	Collar

RELY ON EXCELLENCE

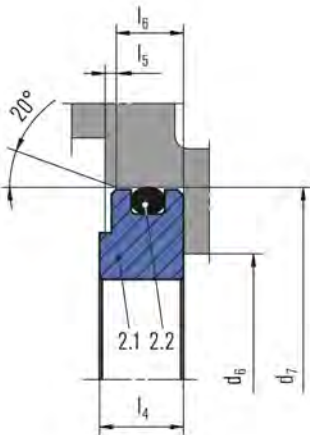
## Seat alternatives



PF C

### Item Description

- 2.1 Stationary seat
- 2.2 Gasket



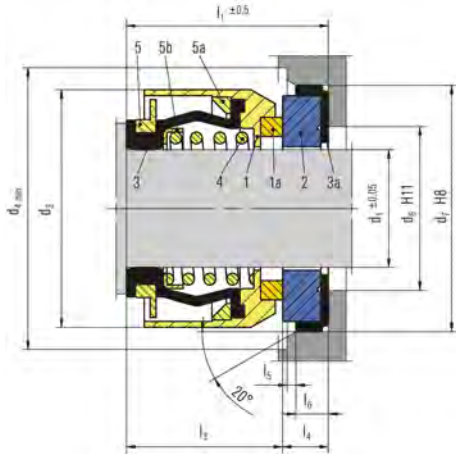
PF A

### Item Description

- 2.1 Stationary seat
- 2.2 O-Ring

RELY ON EXCELLENCE

## Product variants



### BT-ARPs

Special design - super protected  
(upon request)

#### Item Description

- 1 Seal face
- 1a Shrink fitted seal face
- 2 Stationary seat
- 3 Bellows
- 3a Gasket
- 4 Spring
- 5 Drive ring
- 5a Locking ring
- 5b L-ring

## Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>
20	39	43	29	35	29.0	21.5	7.5	2	5
22	42	47	31	37	29.0	21.5	7.5	2	5
25	45	50	34	40	30.5	23.0	7.5	2	5
30	50	56	39	45	34.0	26.5	7.5	2	5
35	56	62	44	50	36.0	28.5	7.5	2	5
40	60	70	51	58	39.0	30.0	9.0	2	6

BT-ARP - Dimensions in millimeter

RELY ON EXCELLENCE

## BT-PN

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- Rubber bellows mechanical seals
- Unbalanced
- Single spring
- Independent of direction of rotation

### Advantages

The BT-PN is a large series mechanical seal with a simple yet effective design that is easy to assemble. The special spring arrangement allows a short axial installation length. This advantage is combined with an increased working pressure capability of up to 12 bar (174 PSI). The spring is free from torque transmission.

### Operating range

Shaft diameter:  
 $d1^* = 8 \dots 40 \text{ mm} (0.31" \dots 1.57")$   
 Pressure:  $p1^{**} = 12 \text{ bar} (174 \text{ PSI})$ ,  
 vacuum ... 0.5 bar (7.45 PSI)  
 Temperature:  
 $t^{**} = -20 \text{ °C} \dots +120 \text{ °C} (-4 \text{ °F} \dots +248 \text{ °F})$   
 Sliding velocity:  $v_g = 10 \text{ m/s} (33 \text{ ft/s})$

Operating limits depend on p·v<sub>g</sub> factor

\* Other diameters upon request

\*\* Dependent on medium, size and material

### Materials

Seal face:

Carbon graphite antimony impregnated (A),  
 Carbon graphite resin impregnated (B),  
 Silicon carbide (Q1, Q6)

Seat:

Aluminium oxide (V), Steatite (X), Silicon carbide (Q1, Q6, Q7)

Elastomers:

NBR (P), FKM (V), EPDM (E)

Metal parts: CrNi steel 1.4301 (F), CrNiMo steel 1.4401 (G)

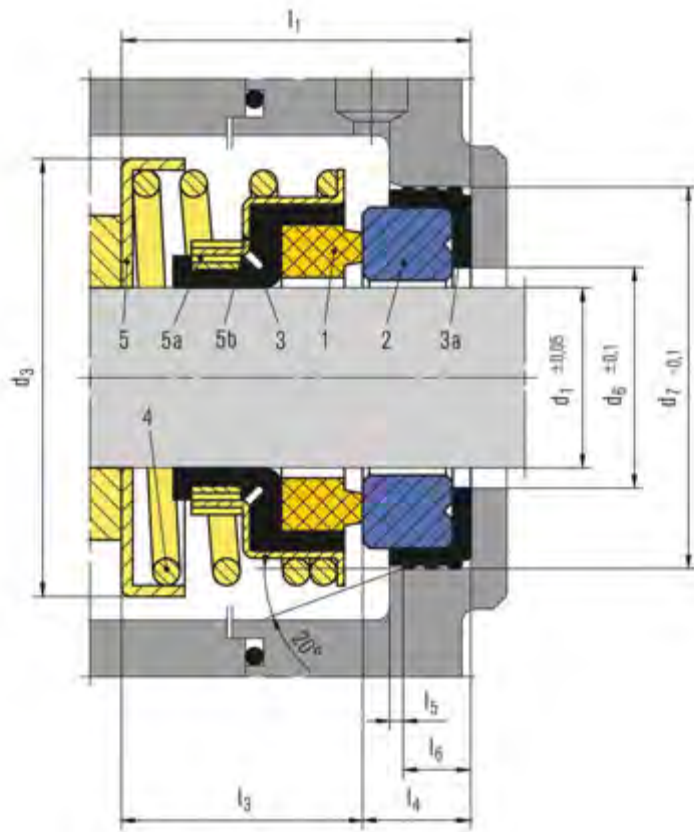
### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

### Recommended applications

- Food and beverage industry
- Water and waste water technology
- Pool and spa applications
- Household appliances
- Submersible oil filled motors (4" / 6")
- Submersible pumps, back-to-back installation
- Peripheral pumps for industrial applications
- Domestic and garden pumps
- Coffee machines
- Shower pumps

## RELY ON EXCELLENCE

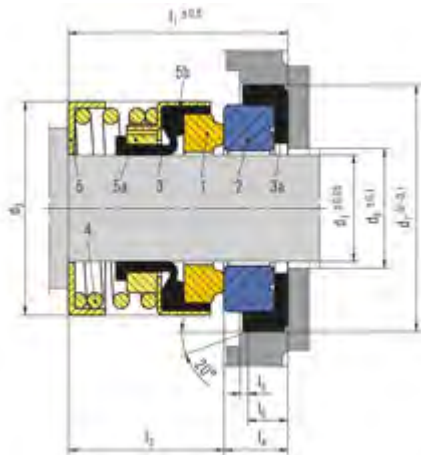


### Item Description

- 1 Seal face
- 2 Stationary seat
- 3 Bellows
- 3a Gasket
- 4 Spring
- 5 Ring
- 5a Drive ring
- 5b Collar

## RELY ON EXCELLENCE

### Product variants



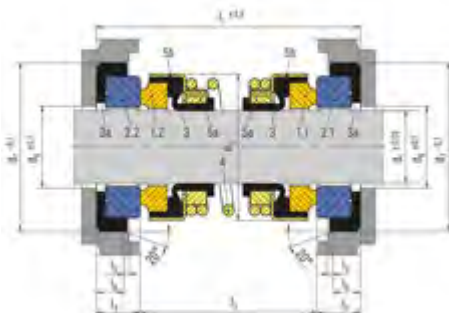
#### BT-PNL

The small outer diameter of the BT-PNL allows installation in small seal chambers. Easy to assemble, the BT-PNL guarantees a long service life due to good product turbulence and the torque transmitted by the rubber bellows.

#### Item Description

- 1 Seal face
- 2 Stationary seat
- 3 Bellows
- 3a Gasket
- 4 Spring
- 5 Ring
- 5a Drive ring
- 5b Collar

#### BT-PN and PNL double seal (back-to-back arrangement)



Both types of seal can also be used as a multiple seal in back-to-back arrangement. This is advisable when the product media cannot ensure lubrication or the solids content is too high (oil chamber). Installation proposals can be supplied upon request. In this configuration, the operating pressure (product side seal) must be limited to max. 2 bar (29 PSI).

#### Item Description

- 1.1 Seal face (product side)
- 1.2 Seal face (motor side)
- 2.1 Stationary seat (product side)
- 2.2 Stationary seat (motor side)
- 3 Bellows
- 3a Gasket
- 4 Spring
- 5a Drive ring
- 5b Collar

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>1</sub>	l <sub>3</sub>	tol	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>
8.00	23	10	22.0	17.5	13.5	±1.0	4.0	0.5	3.5
8.00	23	10	25.4	19.0	13.5	±1.0	5.5	0.5	4.5
9.53	23	12	25.4	19.0	13.5	±1.0	5.5	0.5	4.5
10.00	23	12	25.4	19.0	13.5	±1.0	5.5	0.5	4.5
13.00	32	17	29.5	20.8	12.8	+0.7/0	8.0	1.0	6.0
13.00	32	17	29.5	20.8	12.8	+0.7/0	8.0	1.0	6.0
14.00	32	17	29.5	20.8	12.8	+0.7/0	8.0	1.0	6.0
15.00	32	17	29.5	20.8	12.8	+0.7/0	8.0	1.0	6.0
16.00	32	17	29.5	20.8	12.8	+0.7/0	8.0	1.0	6.0
16.00*	32	17	29.5	24.3	16.3	+0.7/0	8.0	1.0	6.0
16.00*	32	17	29.5	24.3	16.3	+0.7/0	8.0	1.0	6.0
20.00	44	22	42.0	22.0	14.0	±1.0	8.0	1.0	6.0
20.00	44	22	42.0	22.0	14.0	±1.0	8.0	1.0	6.0
25.00	50	27	45.0	27.0	17.0	±1.0	10.0	1.0	8.0
30.00	60	33	52.0	32.0	22.0	±1.0	10.0	1.0	6.0
30.00	60	33	52.0	34.0	22.0	±1.0	12.0	1.5	8.5

\* 4" submersible motor

BT-PN - Dimensions in millimeter

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>
10.00	22	14	26.0	21	15.5	5.5	0.5	4.5
11.00	22	14	26.0	21	15.5	5.5	0.5	4.5
12.00	22	14	26.0	21	15.5	5.5	0.5	4.5
13.00	28	17	29.5	26	18.0	8.0	1.0	6.0
14.00	28	17	29.5	26.0	18.0	8.0	1.0	6.0
15.00	28	17	29.5	26.0	18.0	8.0	1.0	6.0
16.00	28	17	29.5	26.0	18.0	8.0	1.0	6.0
19.05	32	22	34.95	32.3	22.0	10.3	1.2	7.8
20.00	32	22	42.0	30.0	22.0	8.0	1.0	6.0
25.00	42	27	45.0	37.0	27.0	10.0	1.0	8.0
25.40*	42	29	41.25	38.2	27.0	11.0	1.5	8.5
30.00	52	33	52.0	40.0	28.0	12.0	1.5	8.5
31.75	52	34	47.6	60.2	49.2	11.0	1.5	8.5
40.00	63	45	68.0	47.0	35.0	12.0	1.5	8.5

\* 6" submersible motor

BT-PNL - Dimensions in millimeter

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>
12	22	14	26	39	28	5.5	0.5	4.5
14	24	16	26	34	24	5.0	0.5	4.0
15	28	17	28	38	26	6.0	1.0	4.5
16	28	18	28	38	26	6.0	1.0	4.5
18	32	20	33	45	30	7.5	2.0	5.0
20	32	22	35	45	30	7.5	2.0	5.0
22	39	24	37	46	31	7.5	2.0	5.0
25	42	27	40	47	32	7.5	2.0	5.0

**BT-PNL Double seal** - Dimensions in millimeter



RELY ON EXCELLENCE

## BT-PNT

### EagleBurgmann BT Mechanical seals



#### Features

- Rubber bellows mechanical seal
- Unbalanced
- Single spring
- Independent of direction of rotation

#### Advantages

The main design features of the BT-PNT are the metal joint torque transmission together with the rubber bellows. This prevents torsional effects on the bellows. The shaft is protected across the entire seal length. Easy to assemble, the BT-PNT guarantees a long service life due to good product turbulence.

#### Operating range

Shaft diameter:  $d_1 = 15 \text{ mm}$ , 5/8", 3/4", 1"

Pressure:  $p_1^* = 12 \text{ bar}$  (174 PSI)

Temperature:

$t^* = -20 \text{ °C} \dots +120 \text{ °C}$  (-4 °F ... +248 °F)

Sliding velocity:  $v_g = 10 \text{ m/s}$  (33 ft/s)

\* Dependent on medium, size and material

#### Materials

Seal face:

Carbon graphite resin impregnated (B), Carbon graphite, full carbon (B3), Silicon carbide (Q1)

Seat:

Aluminium oxide (V), Silicon carbide (Q1)

Elastomers: NBR (P), EPDM (E), FKM (V)

Metal parts: CrNi steel 1.4301 (F), CrNiMo steel 1.4401 (G)

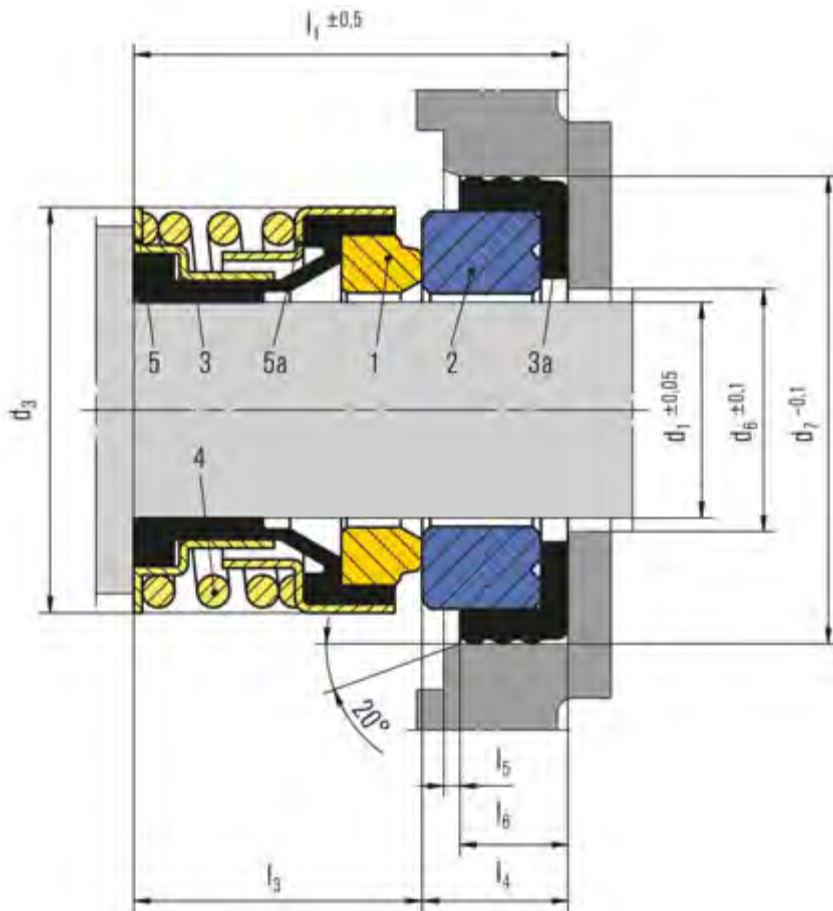
#### Standards and approvals

- KTW
- W270
- ACS
- WRAS
- NSF
- FDA
- DM 174/04

#### Recommended applications

- Water and waste water technology
- Pool and spa applications
- Household appliances
- Swimming pool pumps
- Cold water pumps
- Pumps for home and garden

## RELY ON EXCELLENCE



### Item Description

- 1 Seal face
- 2 Stationary seat
- 3 Bellows
- 3a Gasket
- 4 Spring
- 5 Driver
- 5a Drive collar

## Dimensions

$d_1$	$d_1$	$d_3$	$d_6$	$d_7$	$l_1$	$l_3$	$l_4$	$l_5$	$l_6$
	15.00	27.0	17	29.50	25.0	17.0	8.0	1.0	6.0
0.625"	15.88	29.8	18	31.75	28.6	18.3	10.3	1.0	8.0
0.750"	19.05	32.0	21	35.00	29.3	19.0	10.3	1.0	8.0
1.000"	25.40	42.0	29	41.25	38.2	27.0	11.0	1.5	8.5

BT-PNT - Dimensions in millimeter

RELY ON EXCELLENCE

## EA100

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- Single seal
- In-house manufactured carbon seal faces
- Three different impeller connections available

### Advantages

The EA100 is the specialist for low duty applications and one of our historic and bestselling seals in this sector. The seal is easy to handle and quick to install. An incorporated garter spring assures a good grip of the bellows on the shaft and enhances satisfactory sealing performance. With the ability of the bellows to stretch and tighten, the EA100 is insensitive to shaft movements.

The seal design is available in 3 types, each with a different impeller connection: o EA102 is with a collar. EA103 is without a collar. EA104 provides a different coil spring installation. More information on EA103 and EA104 is available on request.

### Operating range

Shaft diameter:

$d_1 = 8 \dots 20 \text{ mm (0.32" \dots 0.78")}$

Pressure:

$p_1 = 5 \text{ bar (73 PSI)}$ , vacuum up to 0.1 bar (1.45 PSI)

Temperature:

$t = -20 \text{ °C} \dots +100 \text{ °C (-4 °F} \dots +212 \text{ °F)}$

Sliding velocity:  $v_g = 5 \text{ m/s (16 ft/s)}$

Axial movement:  $\pm 2.0 \text{ mm}$

### Materials

Seal face: Carbon graphite resin impregnated (B)

Seat: Aluminium oxide (V)

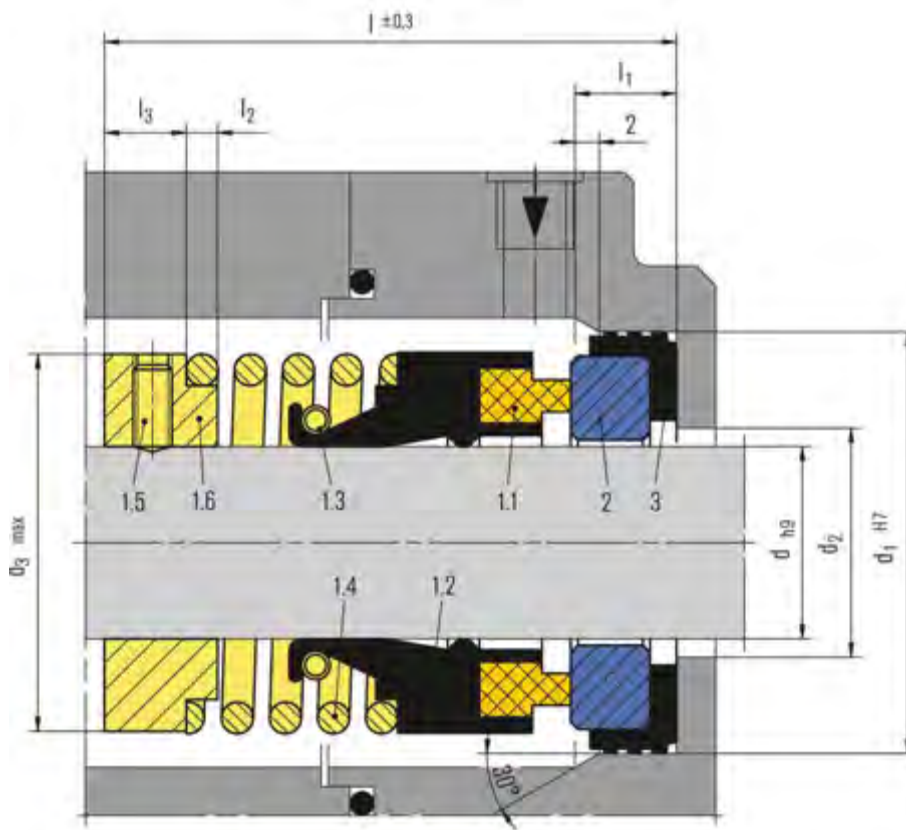
Elastomer: NBR (P)

Metal parts: CrNi steel (F)

### Recommended applications

- Water and waste water technology
- Drinking water
- Hot water circulation pumps
- Industrial pumps/equipment
- Domestic pumps
- Low duty water pumps
- Pumps for water & under floor
- Heating systems
- Pumps for solar systems

## RELY ON EXCELLENCE



### Item Description

- 1.1 Seal face
- 1.2 Bellows
- 1.3 Garter spring
- 1.4 Spring
- 1.5 Set screw
- 1.6 Collar
- 2 Seat
- 3 Corner sleeve

## Product variants

- EA102**  
As EA100 but with a collar.
- EA103**  
As EA100 but without a collar. Please inquire.
- EA104**  
As EA100 but with different coil spring installations. Please inquire.

## RELY ON EXCELLENCE

### Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
8	21	13	18.5	26	7	2	8
9	24	16	22.5	31	7	2	8
10	24	16	22.5	31	7	2	8
11	24	16	22.5	31	7	2	8
12	26	17	24.5	32	7	2	8
13	26	17	24.5	32	7	2	9
14	28	21	28.5	34	7	3	9
15	28	21	28.5	34	7	3	9
16	32	22	30.5	26	8	3	9
17	32	22	30.5	36	8	3	9
18	35	25	33.5	39	8	3	10
19	35	25	33.5	39	8	3	10
20	38	27	35.5	41	8	3	10

Dimensions in Millimeter

RELY ON EXCELLENCE

## EA560

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- Single seal
- Loosely inserted seal face provides self-adjusting capability
- In-house manufactured sliding parts

### Advantages

The EA560 is self-adjusting to shaft misalignments and deflections because of the loosely inserted seal face as well as the ability of the bellows to stretch and tighten. The length of the contact area of the bellows with the shaft is an optimum compromise between ease of assembly (less friction) and sufficient adhesive force for torque transmission. Additionally the seal fulfills very specific leakage requirements. Because the sliding parts are made in-house, a wide variety of special needs can be accommodated.

### Operating range

Shaft diameter:  
 $d_1 = 8 \dots 50 \text{ mm} (0.375" \dots 2")$   
 Pressure:  
 $p_1 = 7 \text{ bar} (102 \text{ PSI})$ ,  
 vacuum ... 0.1 bar (1.45 PSI)  
 Temperature:  
 $t = -20 \text{ °C} \dots +100 \text{ °C} (-4 \text{ °F} \dots +212 \text{ °F})$   
 Sliding velocity:  $v_g = 5 \text{ m/s} (16 \text{ ft/s})$   
 Axial movement:  $\pm 1.0 \text{ mm}$

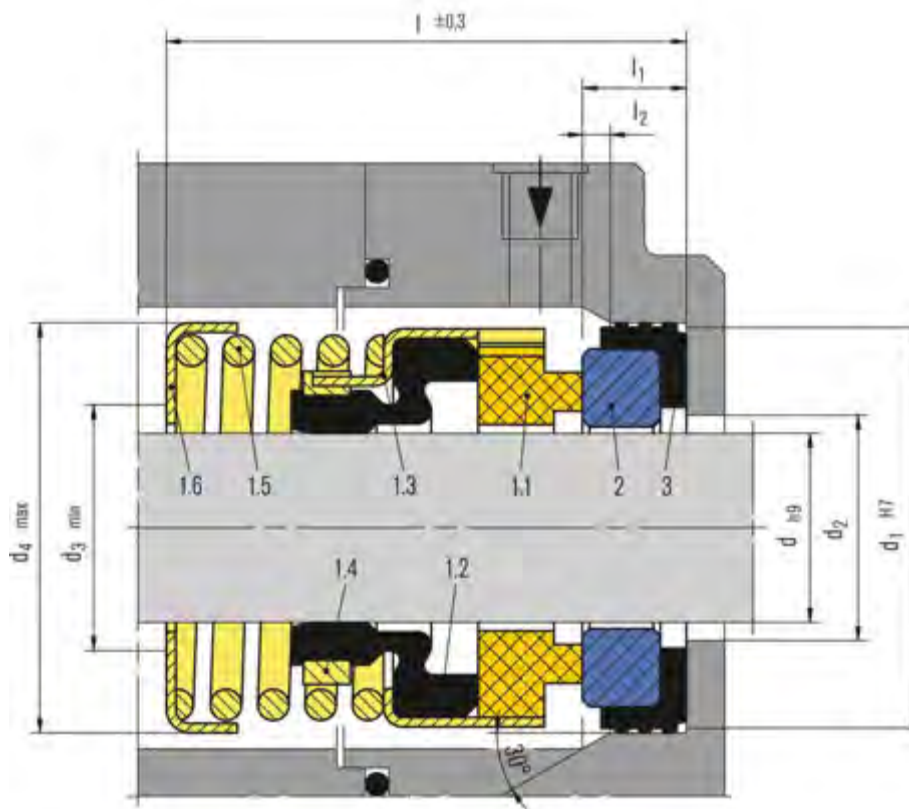
### Materials

Seal face: Carbon graphite resin impregnated (B), Silicon carbide (Q1, Q2)  
 Seat:  
 Aluminium oxide (V), Silicon carbide (Q1, Q2)  
 Elastomer: NBR (P), FKM (V)  
 Metal parts: CrNi steel (F)

### Recommended applications

- Water and waste water technology
- Chemical industry
- Process industry
- Water and waste water
- Glycols
- Oils
- Industrial pumps/equipment
- Submersible pumps
- Engine pumps
- Circulating pumps

## RELY ON EXCELLENCE



### Item Description

- 1.1 Seal face
- 1.2 Bellows
- 1.3 Spring collar
- 1.4 Drive collar
- 1.5 Spring
- 1.6 Spring holder
- 2 Seat
- 3 Corner sleeve

## Dimensions

d	d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	l	l <sub>1</sub>	l <sub>2</sub>
0.375	9.525	22.225	14.3	12.7	23.5	28.6	6.4	1
0.500	12.700	25.400	17.5	15.9	26.0	28.6	6.4	1
0.625	15.875	31.750	20.6	19.1	30.0	32.5	8.7	1
0.750	19.050	34.925	23.8	22.2	32.5	32.5	8.7	1
0.875	22.225	38.100	27.0	25.4	37.5	34.1	8.7	1
1.000	25.400	41.275	30.2	28.6	44.0	36.5	9.5	1
1.125	28.575	44.450	33.3	31.8	48.0	38.1	9.5	1
1.250	31.750	47.625	36.5	34.9	50.0	38.1	9.5	1
1.375	34.925	50.800	39.7	38.1	54.5	39.7	9.5	1
1.500	38.100	53.975	42.9	41.3	58.5	39.7	9.5	1
1.625	41.275	60.325	46.0	44.5	64.0	47.6	11.1	1
1.750	44.450	63.500	49.2	47.6	67.0	47.6	11.1	1
1.875	47.625	66.675	52.4	50.8	71.0	50.8	11.1	1
2.000	50.800	69.850	55.6	54.0	73.5	50.8	11.1	1

Dimensions in inch

## RELY ON EXCELLENCE

### Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	l	l <sub>1</sub>	l <sub>2</sub>
8	21	13	12	20.0	18	7	2
9	24	16	13	21.0	23	7	2
10	24	16	14	23.5	23	7	2
11	24	16	15	23.5	23	7	2
12	26	17	16	26.0	24	7	2
13	26	17	17	26.0	24	7	2
14	28	21	18	28.0	25	7	2
15	28	21	19	28.0	25	7	2
16	32	22	20	30.0	27	8	2
17	32	22	21	32.5	27	8	2
18	35	25	22	32.5	26	8	2
19	35	25	23	32.5	26	8	2
20	38	27	24	35.5	28	8	2
22	40	29	26	37.5	28	8	2
25	44	32	29	42.0	29	9	2
28	46	34	32	45.5	30	9	2
30	50	38	35	48.0	31	9	2
32	54	40	37	50.0	33	9	2
35	58	44	40	54.5	36	10	2
38	60	46	43	58.5	37	10	2
40	64	48	45	62.5	38	10	2
45	66	52	50	66.5	40	10	2
50	72	58	55	72.5	42	10	2

Dimensions in millimeter



RELY ON EXCELLENCE

## ED560

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- Dual seal
- Good chemical resistance and ability to handle solids
- In-house manufactured sliding parts

### Advantages

The ED560 is a dual seal in a back-to-back arrangement with an EA560 base. Therefore, the seal combines the advantages of the EA560 with the advantages of a dual seal.

### Operating range

Shaft diameter:  
 $d_1 = 13 \dots 50 \text{ mm}$  (0.51" ... 1.96")  
Pressure:  
 $p_1 = d \leq 19 \text{ mm}$ : 2 bar (29 PSI),  
 $d \geq 20 \text{ mm}$ : 3 bar (44 PSI),  
vacuum ... 0.1 bar (1.45 PSI)  
Temperature:  
 $t = -20 \text{ °C} \dots +70 \text{ °C}$  (-4 °F ... 158 °F)  
Sliding velocity:  $v_g = 5 \text{ m/s}$  (16 ft/s)  
Axial movement:  $\pm 1.0 \text{ mm}$

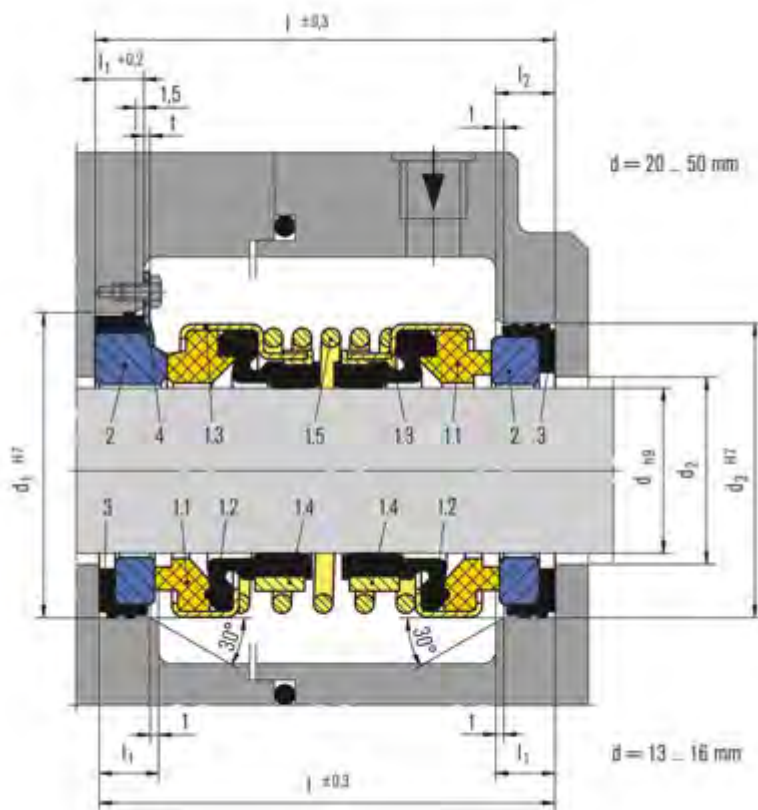
### Materials

Seal face: Carbon graphite resin impregnated (B), Silicon carbide (Q1, Q2)  
Seat: Aluminium oxide (V), Silicon carbide (Q1, Q2)  
Elastomer: NBR(P)  
Metal parts: CrNi steel (F)

### Recommended applications

- Water and waste water technology
- Chemical industry
- Process industry
- Water and waste water
- Glycols
- Oils
- Industrial pumps/equipment
- Submersible pumps
- Engine pumps
- Circulating pumps

## RELY ON EXCELLENCE



### Item Description

- 1.1 Seal face
- 1.2 Bellows
- 1.3 Spring collar
- 1.4 Drive collar
- 1.5 Spring
- 2 Seat
- 3 Corner sleeve
- 4 Washer

## Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
13	25	17	25	-	-	36	5	-	-
14	30	20	30	-	-	36	5	-	-
15	30	20	30	-	-	36	5	-	-
16	30	20	30	-	-	36	5	-	-
20	44	23	38	60	72	49	7	7	1.0
25	50	28	44	60	72	51	9	7	1.0
30	57	33	50	70	82	59	9	8	1.0
35	65	38	58	80	94	61	9	9	1.2
40	70	43	64	85	100	64.5	11	9	1.2
45	70	48	66	90	105	65	10	9	1.0
50	80	53	72	95	109	69.5	10	9	1.2

Dimensions in Millimeter

RELY ON EXCELLENCE

## EH700

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- Single seal
- Stationary spring-loaded unit enables operation in high-range loads area
- Balanced
- In-house manufactured carbon seal faces

### Advantages

The seal for stationary applications. The EH700 is based on a unique stationary spring loaded unit that enables the seal to operate under high speed and high pressure. An additional advantage of the seal is the balanced design, which ensures good sealing performance in high-load conditions.

### Operating range

Shaft diameter:  $d_1 = 15 \dots 35 \text{ mm}$   
Pressure:  $p_1 = 15 \text{ bar (218 PSI)}$ , vacuum up to 0.1 bar  
Temperature:  
 $t = -20 \text{ °C} \dots +100 \text{ °C} (-4 \text{ °F} \dots +212 \text{ °F})$   
Sliding velocity:  $v_g = 10 \text{ m/s (33 ft/s)}$   
Axial movement:  $\pm 1.0 \text{ mm}$

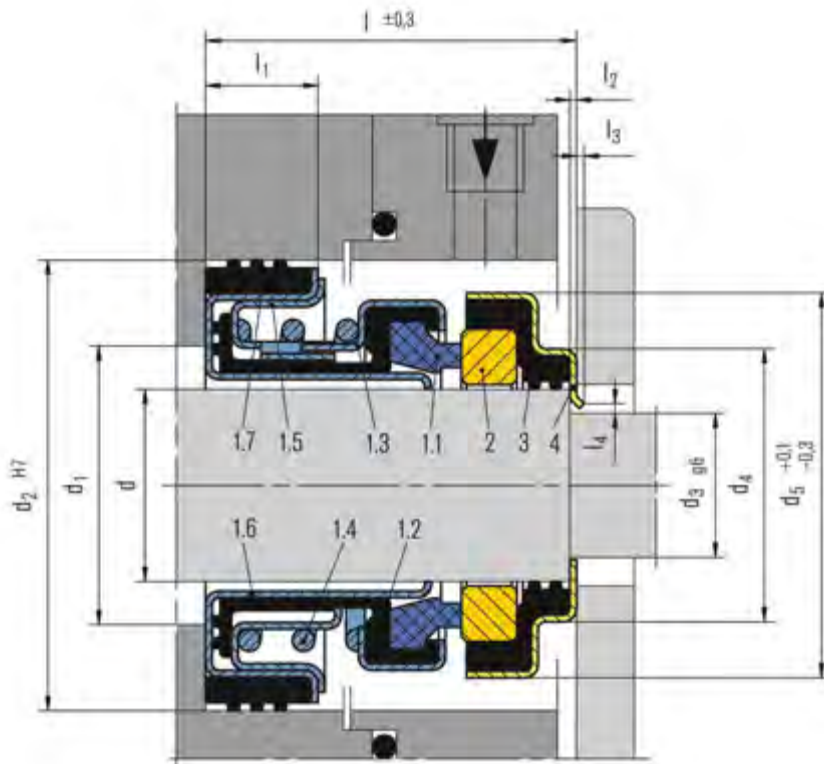
### Materials

Seal face: Carbon graphite resin impregnated (B)  
Seat: Aluminium oxide (V, V1), Silicon carbide (Q1, Q2)  
Secondary seals: NBR (P), FKM (V)  
Metal parts: CrNi steel (F)

### Recommended applications

- Water and waste water technology
- Food and beverage industry
- Water and waste water
- Glycols
- Industrial pumps
- Engine pumps
- Skyscraper water supply pumps

RELY ON EXCELLENCE



## Item Description

- 1.1 Seal face
- 1.2 Bellows
- 1.3 Spring collar
- 1.4 Spring
- 1.5 Spring holder
- 1.6 Cartridge
- 1.7 Seat ring
- 2 Seat
- 3 Corner sleeve
- 4 Case

## Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>
15	22	41	12	22	34	29.5	9.5	0.6	-	-	-
20	30	45	12	27.2	45	31	11	0.6	2	1	3.4
25	35	52	22	33.6	52	37	11.5	0.8	2.5	1	4.2
35	45	66	32	43.6	66	41.6	12.5	0.8	4	1	5.2

Dimensions in Millimeter

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>a</sub>	d <sub>b</sub> *)	d <sub>ST</sub>	l <sub>S</sub>	l	l <sub>1</sub>	l <sub>1k</sub>	l <sub>2</sub>	l <sub>1N</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>10</sub>	l <sub>12</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>28</sub>	l <sub>29</sub>	R	
14	19,7	21	25	20,5	24,6	27	17,5	28,5	15	17	28,4	35	-	-	1,5	4	7,5	6,5	5,6	1,2	3,8	6,6	10,5	1,2	
15	20,8	-	-	20,5	24,6	28,5	18,5	30	15	17	-	-	-	-	-	-	-	7,5	6,6	1,2	3,8	-	10,5	1,2	
16	21	23	27	22	28	28,5	19,5	30	15	17	28,4	35	33,4	40	1,5	4	7,5	8,5	7,5	1,5	5	6,6	10,5	1,5	
18	23,7	27	33	24	30	32	21,5	33	17	19,5	30	37,5	-	-	2	5	8,5	9	8	1,5	5	7,5	10,5	1,5	
20	26,7	29	35	29,5	35	37	24	38	19	21,5	30	37,5	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5	
22	27,7	31	37	29,5	35	37	26	38	19	21,5	30	37,5	37,5	45	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5	
24	31,2	33	39	32	38	42,5	28	44	19	22,5	32,5	40	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5	
25	31,2	34	40	32	38	42,5	29	44	23	23	32,5	40	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5	
28	35	37	43	36	42	49	32	50	23	26,5	35	42,5	42,5	50	2	5	8,5	10	9	1,5	5	7,5	12	1,5	
30	37	39	45	39,2	45	49	34	50	23,5	26,5	35	42,5	-	-	2	5	8,5	11,5	10,5	1,5	5	7,5	12	1,5	
32	40,2	42	48	42,2	48	53,5	36	55	23,5	27,5	35	42,5	-	-	2	5	8,5	11,5	10,5	1,5	5	7,5	12	1,5	
33	40,2	42	48	44,2	50	53,5	37	55	24,5	27,5	35	42,5	-	-	2	5	8,5	12	11	1,5	5	7,5	12	1,5	
35	43,2	44	50	46,2	52	57	40	59	25	28,5	35	42,5	-	-	2	5	8,5	12	11	1,5	5	7,5	12	1,5	
38	46,2	49	56	49,2	55	59	43	61	25,5	30	36	45	46	55	2	6	10	11,3	10,3	1,5	5	9	12	1,5	
40	48,8	51	58	52,2	58	62	45	64	25,5	30	36	45	-	-	2	6	10	11,8	10,8	1,5	5	9	12	1,5	
43	51,8	54	61	53,3	62	65,5	48	67	25,5	30	36	45	-	-	2	6	10	13,2	12	2	6	9	12	2,5	
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50	58,8	62	70	60,8	69,3	74	55	77	30	30,5	38	47,5	-	-	2,5	6	10,5	12,8	11,6	2	6	9,5	13,5	2,5	
53	62,2	65	73	63,8	72,3	78,5	58	81	29	33	36,5	47,5	-	-	2,5	6	12	13,5	12,3	2	6	11	13,5	2,5	
55	64,2	67	75	66,5	75,4	81	60	83	30	35	36,5	47,5	59	70	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5	
58	67,2	70	78	69,5	78,4	85,5	64	88	31	37	-	-	-	-	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5	
60	70	72	80	71,5	80,4	88,5	66	91	34	38	41,5	52,5	59	70	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5	
65	75	77	85	76,5	85,4	93,5	71	96	34	40	41,5	52,5	-	-	2,5	6	12	14,2	13	2	6	11	16	2,5	
68	78	81	90	82,7	91,5	96,5	74	100	34	40	-	-	-	-	2,5	7	12,5	14,9	13,7	2	6	11,3	16	2,5	
70	80	83	92	83	92	99,5	76	103	34	40	48,7	60	-	-	2,5	7	12,5	14,2	13	2	6	11,3	16	2,5	
75	85,5	88	97	90,2	99	107	81	110	34	40	48,7	60	-	-	2,5	7	12,5	15,2	14	2	6	11,3	16	2,5	
80	90,5	95	105	95,2	104	112	86	116	34	40	48	60	-	-	3	7	13	16,2	15	2	6	12	20	2,5	
85	96	100	110	100,2	109	120	92	124	35	41	46	60	-	-	3	7	15	16	14,8	2	6	14	20	2,5	
90	102	105	115	105,2	114	127	97	131	38	45	51	65	-	-	3	7	15	16	14,8	2	6	14	20	2,5	
95	107	110	120	111,6	120,3	132	102	136	39	46	51	65	-	-	3	7	15	17	15,8	2	6	14	20	2,5	
100	112	115	125	114,5	123,3	137	107	140	40	47	51	65	-	-	3	7	15	17	15,8	2	6	14	20	2,5	
110	123	-	-	-	-	150	118	154	43	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dimensions in millimeter

Fitting length/axial movement tolerances: d<sub>1</sub> 15 ... 18 mm ±1.0; d<sub>1</sub> 20 ... 26 mm ±1.5; d<sub>1</sub> 28 ... 110 mm ±2.0

\* Minimum diameter of the mating collar

RELY ON EXCELLENCE

## eMG

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- For plain shafts
- Single and dual seal
- Elastomer bellows rotating
- Balanced
- Independent of direction of rotation

### Advantages

- **Identical with eMG1 but with approx. 20 % shorter installation length**
- Small outer diameter of bellows support ( $d_{bmin}$ ) enables direct retaining ring support, or smaller spacer rings
- Optimal alignment characteristic through self-cleaning of disk/shaft
- Improved centering across entire pressure operating range
- No torsion on bellows
- Shaft protection over entire seal length
- Protection of seal face during installation due to special bellows design
- Insensitive to shaft deflections due to large axial movement ability

### Operating range

Shaft diameter:

$d_1 = 14 \dots 110 \text{ mm} (0.55" \dots 4.33")$

Pressure:  $p_1 = 18 \text{ bar} (261 \text{ PSI})$ ,

vacuum ...  $0.5 \text{ bar} (7.25 \text{ PSI})$ ,

up to  $1 \text{ bar} (14.5 \text{ PSI})$  with seat locking

Temperature:

$t = -20 \text{ °C} \dots +140 \text{ °C}$

$(-4 \text{ °F} \dots +284 \text{ °F})$

Sliding velocity:  $v_g = 10 \text{ m/s} (33 \text{ ft/s})$

Admissible axial movement:  $\pm 2.0 \text{ mm} (\pm 0.08")$

### Materials

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (eSiC-Q7, Q1)  
 Seat: Silicon carbide (eSiC-Q7, Q1), Tungsten carbide (U3)  
 Elastomer: NBR (P), EPDM (E), FKM (V), HNBR (X4)  
 Metal parts: CrNiMo steel (G), Hastelloy® (M)

### Standards and approvals

Various material approvals available (depending on type and material combinations).

Please inquire!

- FDA
- WRAS
- UBA (KTW)
- ACS
- W270

### Notes

The eMG can also be used as a multiple seal in tandem or in a back-to-back arrangement, please inquire. Other materials and designs available on request.

### Recommended applications

- Fresh water supply
- Building services engineering
- Waste water technology
- Food technology
- Sugar production
- Pulp and paper industry
- Oil industry
- Petrochemical industry
- Chemical industry
- Water, waste water, slurries (up to 5 % by weight)
- Pulp (up to 4 % otro)

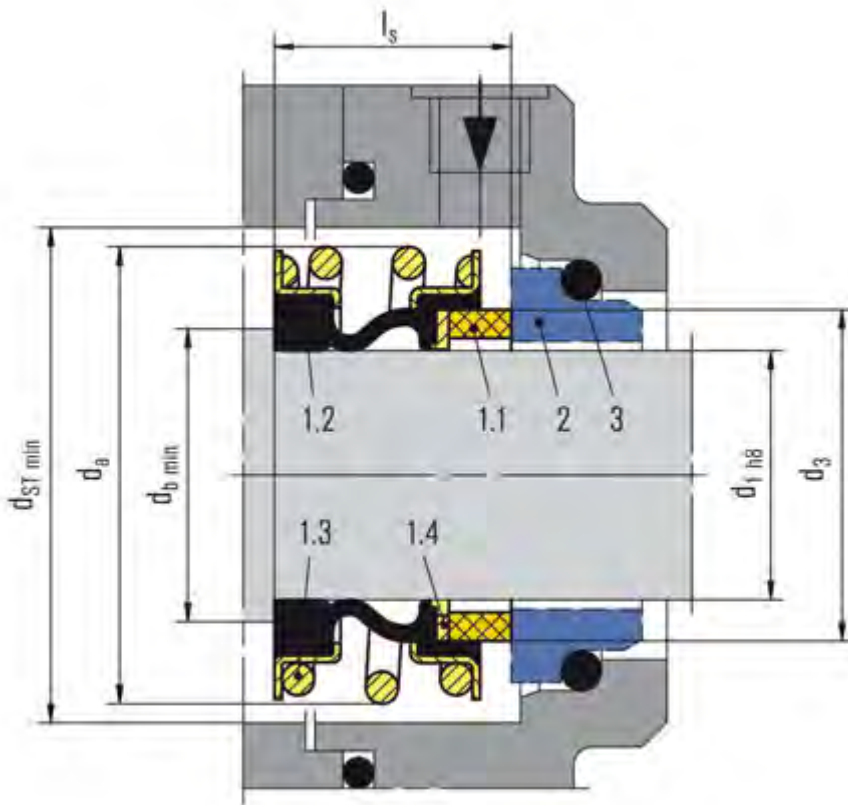
## RELY ON EXCELLENCE

- Latex
- Dairies, beverages
- Sulfide slurries
- Chemicals
- Oils
- Chemical standard pumps
- Helical screw pumps
- Stock pumps
- Circulating pumps
- Submersible pumps
- Water and waste water pumps

### eMG

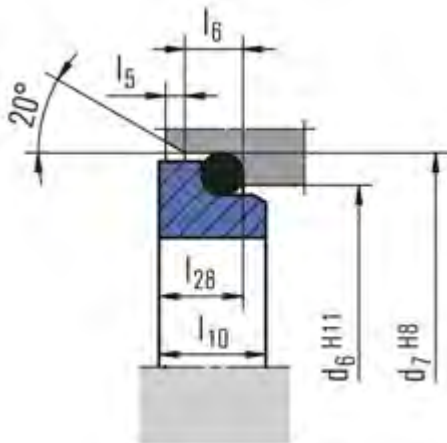
#### Item Description

- |     |                      |
|-----|----------------------|
| 1.1 | Seal face            |
| 1.2 | Bellows              |
| 1.3 | Set of springs       |
| 1.4 | PEEK-PTFE disk       |
| 2   | Seat (G6)            |
| 3   | O-Ring or cup rubber |

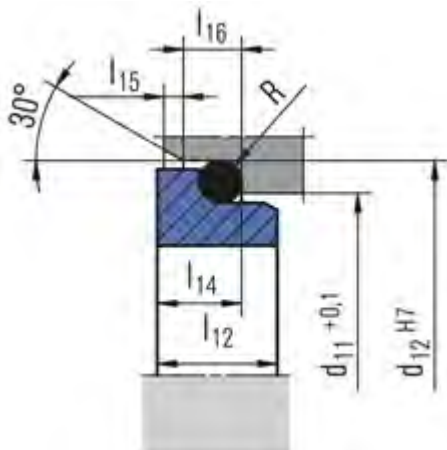


RELY ON EXCELLENCE

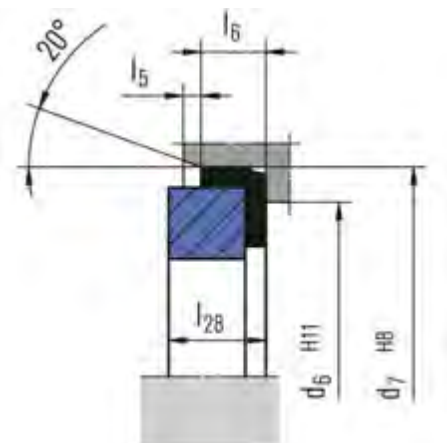
## Seat alternatives



**G6**  
EN 12756



**G4 (optional)**

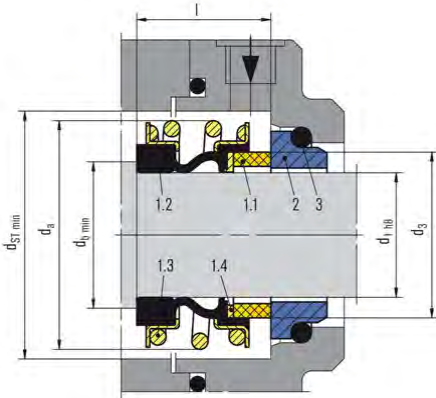


**G60 (optional)**  
EN 12756



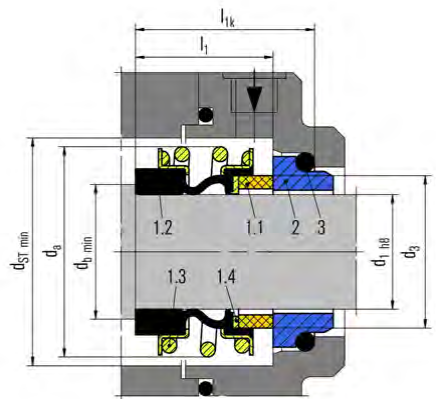
RELY ON EXCELLENCE

## Product variants



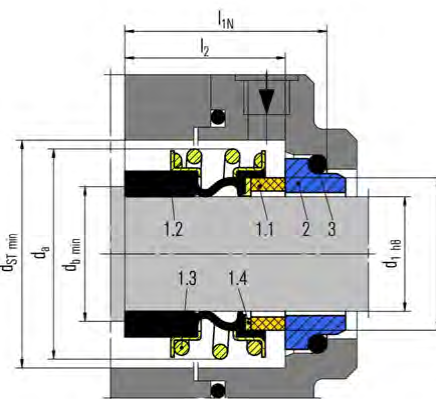
### eMG1

Dimensions, items and designations same as for eMG, but with an extended bellows tail to achieve the fitting length  $l$ .



### eMG12

Dimensions, items and designations same as for eMG, but with an extended bellows tail to achieve the fitting length  $l_{1k}$  according to EN 12756 in combination with seat G6 or G60 ( $d_a$  exceeds EN 12756).



### eMG13

Dimensions, items and designations same as for eMG, but with an extended bellows tail to achieve the fitting length  $l_{2N}$  according to EN 12756 in combination with seat G6 or G60 ( $d_a$  exceeds EN 12756).

## RELY ON EXCELLENCE

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### eRMG

Identical to eMG, but with a special bellows surface on the shaft side. For use in hot water pumps.

d1 = 14 ... 38 mm (0.55" ... 1.50")

Seat G6: Silicon carbide (eSiC-Q7)

A/eSiC-Q7:

120 °C (248 °F) and 25 bar (363 PSI) 140 °C (284 °F) and 16 bar (232 PSI)

B/eSiC-Q7:

120 °C (248 °F) and 18 bar (161 PSI)

eSiC-Q7/eSiC-Q7:

120 °C (248 °F) and 18 bar (161 PSI)

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>a</sub>	d <sub>b</sub> *)	d <sub>ST</sub>	l <sub>S</sub>	l	l <sub>1</sub>	l <sub>1k</sub>	l <sub>2</sub>	l <sub>1N</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>10</sub>	l <sub>12</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>28</sub>	l <sub>29</sub>	R
14	19,7	21	25	20,5	24,6	27	17,5	28,5	15	17	28,4	35	-	-	1,5	4	7,5	6,5	5,6	1,2	3,8	6,6	10,5	1,2
15	20,8	-	-	20,5	24,6	28,5	18,5	30	15	17	-	-	-	-	-	-	-	7,5	6,6	1,2	3,8	-	10,5	1,2
16	21	23	27	22	28	28,5	19,5	30	15	17	28,4	35	33,4	40	1,5	4	7,5	8,5	7,5	1,5	5	6,6	10,5	1,5
18	23,7	27	33	24	30	32	21,5	33	17	19,5	30	37,5	-	-	2	5	8,5	9	8	1,5	5	7,5	10,5	1,5
20	26,7	29	35	29,5	35	37	24	38	19	21,5	30	37,5	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
22	27,7	31	37	29,5	35	37	26	38	19	21,5	30	37,5	37,5	45	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
24	31,2	33	39	32	38	42,5	28	44	19	22,5	32,5	40	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
25	31,2	34	40	32	38	42,5	29	44	23	23	32,5	40	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
28	35	37	43	36	42	49	32	50	23	26,5	35	42,5	42,5	50	2	5	8,5	10	9	1,5	5	7,5	12	1,5
30	37	39	45	39,2	45	49	34	50	23,5	26,5	35	42,5	-	-	2	5	8,5	11,5	10,5	1,5	5	7,5	12	1,5
32	40,2	42	48	42,2	48	53,5	36	55	23,5	27,5	35	42,5	-	-	2	5	8,5	11,5	10,5	1,5	5	7,5	12	1,5
33	40,2	42	48	44,2	50	53,5	37	55	24,5	27,5	35	42,5	-	-	2	5	8,5	12	11	1,5	5	7,5	12	1,5
35	43,2	44	50	46,2	52	57	40	59	25	28,5	35	42,5	-	-	2	5	8,5	12	11	1,5	5	7,5	12	1,5
38	46,2	49	56	49,2	55	59	43	61	25,5	30	36	45	46	55	2	6	10	11,3	10,3	1,5	5	9	12	1,5
40	48,8	51	58	52,2	58	62	45	64	25,5	30	36	45	-	-	2	6	10	11,8	10,8	1,5	5	9	12	1,5
43	51,8	54	61	53,3	62	65,5	48	67	25,5	30	36	45	-	-	2	6	10	13,2	12	2	6	9	12	2,5
45	53,8	56	63	55,3	64	68	50	70	26	30	36	45	-	-	2	6	10	12,8	11,6	2	6	9	12	2,5
48	56,8	59	66	59,7	68,4	70,5	53	74	26	30,5	36	45	51	60	2	6	10	12,8	11,6	2	6	9	12	2,5
50	58,8	62	70	60,8	69,3	74	55	77	30	30,5	38	47,5	-	-	2,5	6	10,5	12,8	11,6	2	6	9,5	13,5	2,5
53	62,2	65	73	63,8	72,3	78,5	58	81	29	33	36,5	47,5	-	-	2,5	6	12	13,5	12,3	2	6	11	13,5	2,5
55	64,2	67	75	66,5	75,4	81	60	83	30	35	36,5	47,5	59	70	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5
58	67,2	70	78	69,5	78,4	85,5	64	88	31	37	-	-	-	-	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5
60	70	72	80	71,5	80,4	88,5	66	91	34	38	41,5	52,5	59	70	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5
65	75	77	85	76,5	85,4	93,5	71	96	34	40	41,5	52,5	-	-	2,5	6	12	14,2	13	2	6	11	16	2,5
68	78	81	90	82,7	91,5	96,5	74	100	34	40	-	-	-	-	2,5	7	12,5	14,9	13,7	2	6	11,3	16	2,5
70	80	83	92	83	92	99,5	76	103	34	40	48,7	60	-	-	2,5	7	12,5	14,2	13	2	6	11,3	16	2,5
75	85,5	88	97	90,2	99	107	81	110	34	40	48,7	60	-	-	2,5	7	12,5	15,2	14	2	6	11,3	16	2,5
80	90,5	95	105	95,2	104	112	86	116	34	40	48	60	-	-	3	7	13	16,2	15	2	6	12	20	2,5
85	96	100	110	100,2	109	120	92	124	35	41	46	60	-	-	3	7	15	16	14,8	2	6	14	20	2,5
90	102	105	115	105,2	114	127	97	131	38	45	51	65	-	-	3	7	15	16	14,8	2	6	14	20	2,5
95	107	110	120	111,6	120,3	132	102	136	39	46	51	65	-	-	3	7	15	17	15,8	2	6	14	20	2,5
100	112	115	125	114,5	123,3	137	107	140	40	47	51	65	-	-	3	7	15	17	15,8	2	6	14	20	2,5
110	123	-	-	-	-	150	118	154	43	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dimensions in millimeter

Fitting length/axial movement tolerances: d<sub>1</sub> 15 ... 18 mm ±1.0; d<sub>1</sub> 20 ... 26 mm ±1.5; d<sub>1</sub> 28 ... 110 mm ±2.0

\* Minimum diameter of the mating collar

RELY ON EXCELLENCE

## eMG1

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- For plain shafts
- Single and dual seal
- Elastomer bellows rotating
- Balanced
- Independent of direction of rotation

### Advantages

- **100 % compatible with MG1**
- Small outer diameter of bellows support ( $d_{bmin}$ ) enables direct retaining ring support, or smaller spacer rings
- Optimal alignment characteristic through self-cleaning of disk/shaft
- Improved centering across entire pressure operating range
- No torsion on bellows
- Shaft protection over entire seal length
- Protection of seal face during installation due to special bellows design
- Insensitive to shaft deflections due to large axial movement ability
- Suitable for low-end sterile applications

### Operating range

Shaft diameter:  
 $d_1 = 14 \dots 110 \text{ mm} (0.55" \dots 4.33")$   
 Pressure:  $p_1 = 18 \text{ bar} (261 \text{ PSI})$ ,  
 vacuum ...  $0.5 \text{ bar} (7.25 \text{ PSI})$ ,  
 up to  $1 \text{ bar} (14.5 \text{ PSI})$  with seat locking  
 Temperature:  $t = -20 \text{ °C} \dots +140 \text{ °C}$   
 $(-4 \text{ °F} \dots +284 \text{ °F})$   
 Sliding velocity:  $v_g = 10 \text{ m/s} (33 \text{ ft/s})$   
 Admissible axial movement:  $\pm 2.0 \text{ mm} (\pm 0.08")$

### Materials

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (eSiC-Q7)  
 Seat: Silicon carbide (eSiC-Q7, Q1)  
 Elastomer: NBR (P), EPDM (E), FKM (V), HNBR (X4)  
 Metal parts: CrNiMo steel (G), Hastelloy® (M)

### Standards and approvals

Various material approvals available (depending on type and material combinations).

Please inquire!

- FDA
- WRAS
- UBA (KTW)
- ACS
- W270

### Notes

The eMG1 can also be used as a multiple seal in tandem or in a back-to-back arrangement, please inquire. Other materials and designs available on request.

### Recommended applications

- Fresh water supply
- Building services engineering
- Waste water technology
- Food technology
- Sugar production
- Pulp and paper industry
- Oil industry
- Petrochemical industry
- Chemical industry
- Water, waste water, slurries (solids up to 5 % by weight)
- Pulp (up to 4 % otro)
- Latex

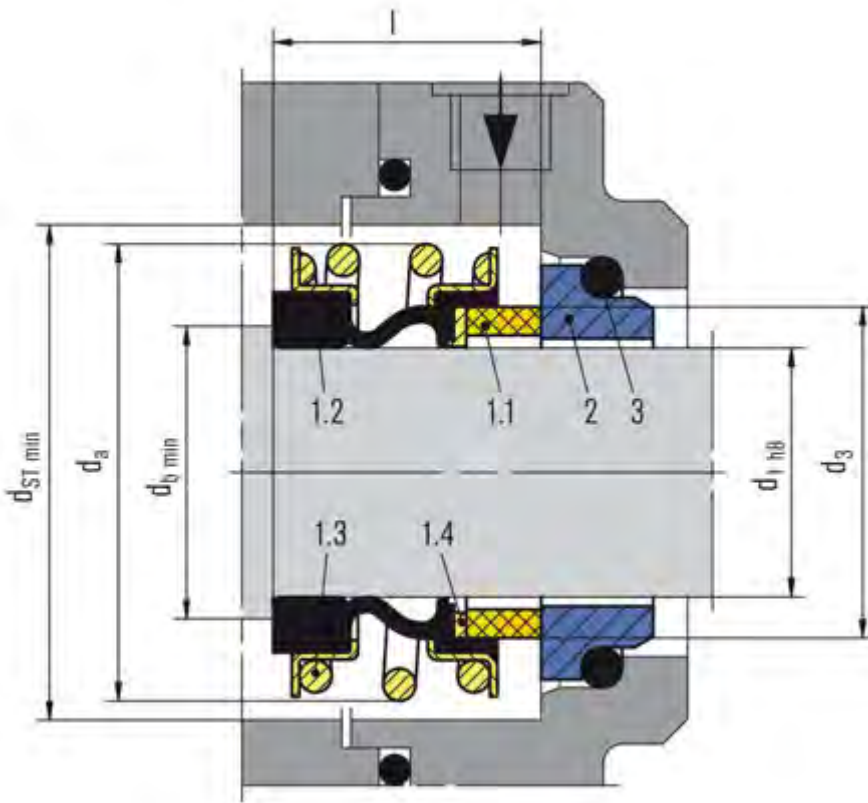
## RELY ON EXCELLENCE

- Dairies, beverages
- Sulfide slurries
- Chemicals
- Oils
- Chemical standard pumps
- Helical screw pumps
- Stock pumps
- Circulating pumps
- Submersible pumps
- Water and waste water pumps

### eMG1

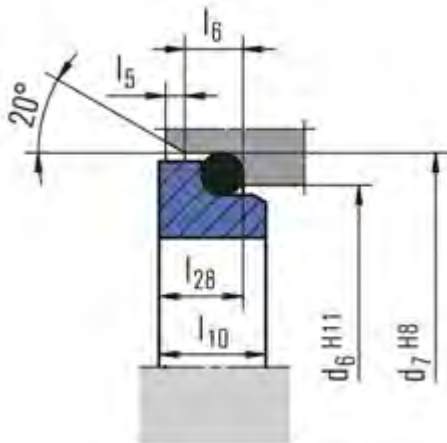
#### Item Description

- |     |                      |
|-----|----------------------|
| 1.1 | Seal face            |
| 1.2 | Bellows              |
| 1.3 | Set of springs       |
| 1.4 | PEEK-PTFE disk       |
| 2   | Seat (G6)            |
| 3   | O-Ring or cup rubber |

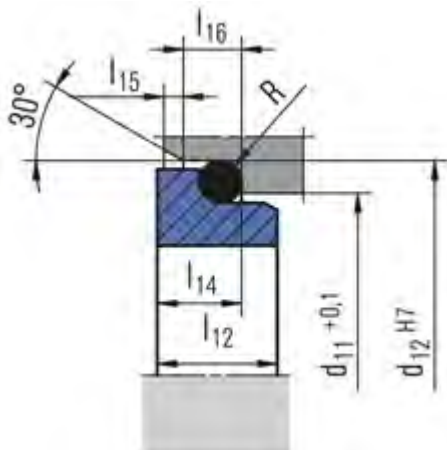


RELY ON EXCELLENCE

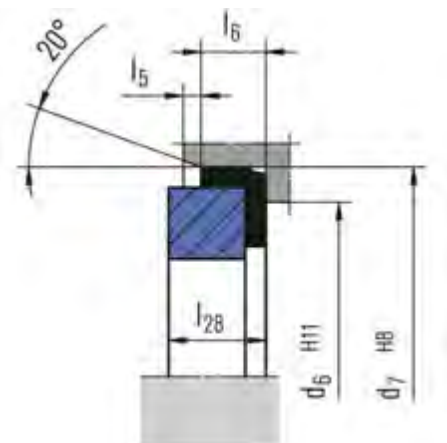
## Seat alternatives



**G6**  
EN 12756



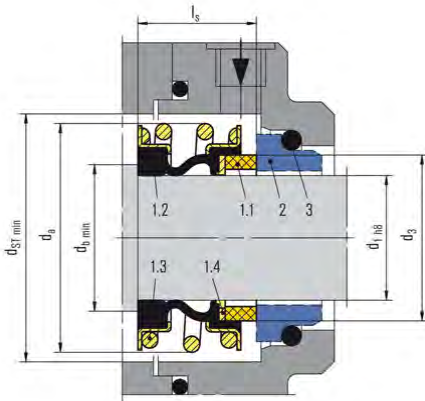
**G4 (optional)**



**G60 (optional)**  
EN 12756

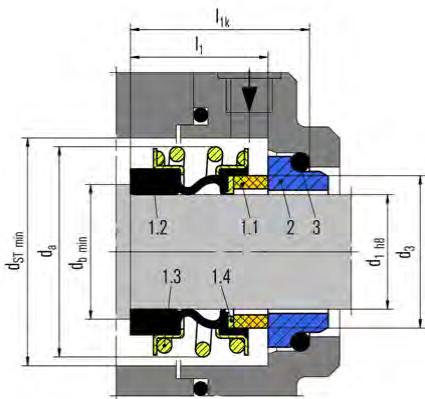
RELY ON EXCELLENCE

## Product variants



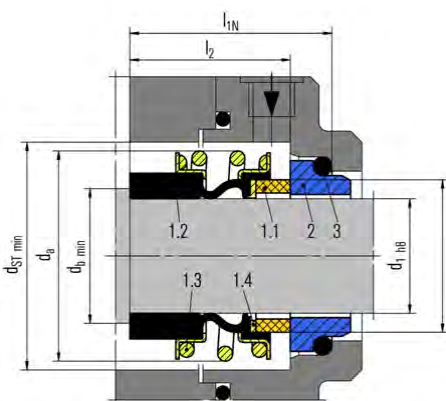
### eMG

Dimensions, items and designations same as for eMG1, but with an shortened bellows tail to achieve the fitting length  $l_S$ . Shortest fitting length.



### eMG12

Dimensions, items and designations same as for eMG1, but with an extended bellows tail to achieve the fitting length  $l_{1k}$  according to EN 12756 in combination with seat G6 or G60 ( $d_a$  exceeds EN 12756).



### eMG13

Dimensions, items and designations same as for eMG1, but with an extended bellows tail to achieve the fitting length  $l_{1N}$  according to EN 12756 in combination with seat G6 or G60 ( $d_a$  exceeds EN 12756).

## RELY ON EXCELLENCE

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### eRMG1

Identical to eMG1, but with a special bellows surface on the shaft side. For use in hot water pumps

d1 = 14 ... 38 mm (0.55" ... 1.50")

Seat G6: Silicon carbide (eSiC-Q7)

A/eSiC-Q7:

120 °C (248 °F) and 25 bar (363 PSI) 140 °C (284 °F) and 16 bar (232 PSI)

B/eSiC-Q7:

120 °C (248 °F) and 18 bar (161 PSI)

eSiC-Q7/eSiC-Q7:

120 °C (248 °F) and 18 bar (161 PSI)



## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>a</sub>	d <sub>b</sub> *)	d <sub>ST</sub>	l <sub>S</sub>	l	l <sub>1</sub>	l <sub>1k</sub>	l <sub>2</sub>	l <sub>1N</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>10</sub>	l <sub>12</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>28</sub>	l <sub>29</sub>	R
14	19,7	21	25	20,5	24,6	27	17,5	28,5	15	17	28,4	35	-	-	1,5	4	7,5	6,5	5,6	1,2	3,8	6,6	10,5	1,2
15	20,8	-	-	20,5	24,6	28,5	18,5	30	15	17	-	-	-	-	-	-	-	7,5	6,6	1,2	3,8	-	10,5	1,2
16	21	23	27	22	28	28,5	19,5	30	15	17	28,4	35	33,4	40	1,5	4	7,5	8,5	7,5	1,5	5	6,6	10,5	1,5
18	23,7	27	33	24	30	32	21,5	33	17	19,5	30	37,5	-	-	2	5	8,5	9	8	1,5	5	7,5	10,5	1,5
20	26,7	29	35	29,5	35	37	24	38	19	21,5	30	37,5	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
22	27,7	31	37	29,5	35	37	26	38	19	21,5	30	37,5	37,5	45	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
24	31,2	33	39	32	38	42,5	28	44	19	22,5	32,5	40	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
25	31,2	34	40	32	38	42,5	29	44	23	23	32,5	40	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
28	35	37	43	36	42	49	32	50	23	26,5	35	42,5	42,5	50	2	5	8,5	10	9	1,5	5	7,5	12	1,5
30	37	39	45	39,2	45	49	34	50	23,5	26,5	35	42,5	-	-	2	5	8,5	11,5	10,5	1,5	5	7,5	12	1,5
32	40,2	42	48	42,2	48	53,5	36	55	23,5	27,5	35	42,5	-	-	2	5	8,5	11,5	10,5	1,5	5	7,5	12	1,5
33	40,2	42	48	44,2	50	53,5	37	55	24,5	27,5	35	42,5	-	-	2	5	8,5	12	11	1,5	5	7,5	12	1,5
35	43,2	44	50	46,2	52	57	40	59	25	28,5	35	42,5	-	-	2	5	8,5	12	11	1,5	5	7,5	12	1,5
38	46,2	49	56	49,2	55	59	43	61	25,5	30	36	45	46	55	2	6	10	11,3	10,3	1,5	5	9	12	1,5
40	48,8	51	58	52,2	58	62	45	64	25,5	30	36	45	-	-	2	6	10	11,8	10,8	1,5	5	9	12	1,5
43	51,8	54	61	53,3	62	65,5	48	67	25,5	30	36	45	-	-	2	6	10	13,2	12	2	6	9	12	2,5
45	53,8	56	63	55,3	64	68	50	70	26	30	36	45	-	-	2	6	10	12,8	11,6	2	6	9	12	2,5
48	56,8	59	66	59,7	68,4	70,5	53	74	26	30,5	36	45	51	60	2	6	10	12,8	11,6	2	6	9	12	2,5
50	58,8	62	70	60,8	69,3	74	55	77	30	30,5	38	47,5	-	-	2,5	6	10,5	12,8	11,6	2	6	9,5	13,5	2,5
53	62,2	65	73	63,8	72,3	78,5	58	81	29	33	36,5	47,5	-	-	2,5	6	12	13,5	12,3	2	6	11	13,5	2,5
55	64,2	67	75	66,5	75,4	81	60	83	30	35	36,5	47,5	59	70	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5
58	67,2	70	78	69,5	78,4	85,5	64	88	31	37	-	-	-	-	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5
60	70	72	80	71,5	80,4	88,5	66	91	34	38	41,5	52,5	59	70	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5
65	75	77	85	76,5	85,4	93,5	71	96	34	40	41,5	52,5	-	-	2,5	6	12	14,2	13	2	6	11	16	2,5
68	78	81	90	82,7	91,5	96,5	74	100	34	40	-	-	-	-	2,5	7	12,5	14,9	13,7	2	6	11,3	16	2,5
70	80	83	92	83	92	99,5	76	103	34	40	48,7	60	-	-	2,5	7	12,5	14,2	13	2	6	11,3	16	2,5
75	85,5	88	97	90,2	99	107	81	110	34	40	48,7	60	-	-	2,5	7	12,5	15,2	14	2	6	11,3	16	2,5
80	90,5	95	105	95,2	104	112	86	116	34	40	48	60	-	-	3	7	13	16,2	15	2	6	12	20	2,5
85	96	100	110	100,2	109	120	92	124	35	41	46	60	-	-	3	7	15	16	14,8	2	6	14	20	2,5
90	102	105	115	105,2	114	127	97	131	38	45	51	65	-	-	3	7	15	16	14,8	2	6	14	20	2,5
95	107	110	120	111,6	120,3	132	102	136	39	46	51	65	-	-	3	7	15	17	15,8	2	6	14	20	2,5
100	112	115	125	114,5	123,3	137	107	140	40	47	51	65	-	-	3	7	15	17	15,8	2	6	14	20	2,5
110	123	-	-	-	-	150	118	154	43	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dimensions in millimeter

Fitting length/axial movement tolerances: d<sub>1</sub> 15 ... 18 mm ±1.0; d<sub>1</sub> 20 ... 26 mm ±1.5; d<sub>1</sub> 28 ... 110 mm ±2.0

\* Minimum diameter of the mating collar

RELY ON EXCELLENCE

## eMG12

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- For plain shafts
- Single and dual seal
- Elastomer bellows rotating
- Balanced
- Independent of direction of rotation

### Advantages

- **100 % compatible with MG12**
- Small outer diameter of bellows support ( $d_{bmin}$ ) enables direct retaining ring support, or smaller spacer rings
- Optimal alignment characteristic through self-cleaning of disk/shaft
- Improved centering across entire pressure operating range
- No torsion on bellows
- Shaft protection over entire seal length
- Protection of seal face during installation due to special bellows design
- Insensitive to shaft deflections due to large axial movement ability
- Suitable for low-end sterile applications

### Operating range

Shaft diameter:

$d_1 = 14 \dots 100 \text{ mm (0.55" \dots 3.94")}$

Pressure:  $p_1 = 18 \text{ bar (261 PSI)}$ , vacuum up to 0.5 bar (7.25 PSI), up to 1 bar (14.5 PSI) with seat locking

Temperature:  $t = -20 \text{ °C} \dots +140 \text{ °C}$   
( $-4 \text{ °F} \dots +284 \text{ °F}$ )

Sliding velocity:  $v_g = 10 \text{ m/s (33 ft/s)}$

Admissible axial movement:  $\pm 2.0 \text{ mm } (\pm 0.08")$

### Materials

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (eSiC-Q7, Q1)  
Seat: Silicon carbide (eSiC-Q7, Q1)  
Elastomer: NBR (P), EPDM (E), FKM (V), HNBR (X4)  
Metal parts: CrNiMo steel (G), Hastelloy® (M)

### Standards and approvals

Various material approvals available (depending on type and material combinations).

Please inquire!

- FDA
- WRAS
- UBA (KTW)
- ACS
- W270

### Notes

The eMG12 can also be used as a multiple seal in tandem or in a back-to-back arrangement, please inquire. Other materials and designs available on request.

### Recommended applications

- Fresh water supply
- Building services engineering
- Waste water technology
- Food technology
- Sugar production
- Pulp and paper industry
- Oil industry
- Petrochemical industry
- Chemical industry
- Water, waste water, slurries (solids up to 5 % by weight)
- Pulp (up to 4 % otro)
- Latex

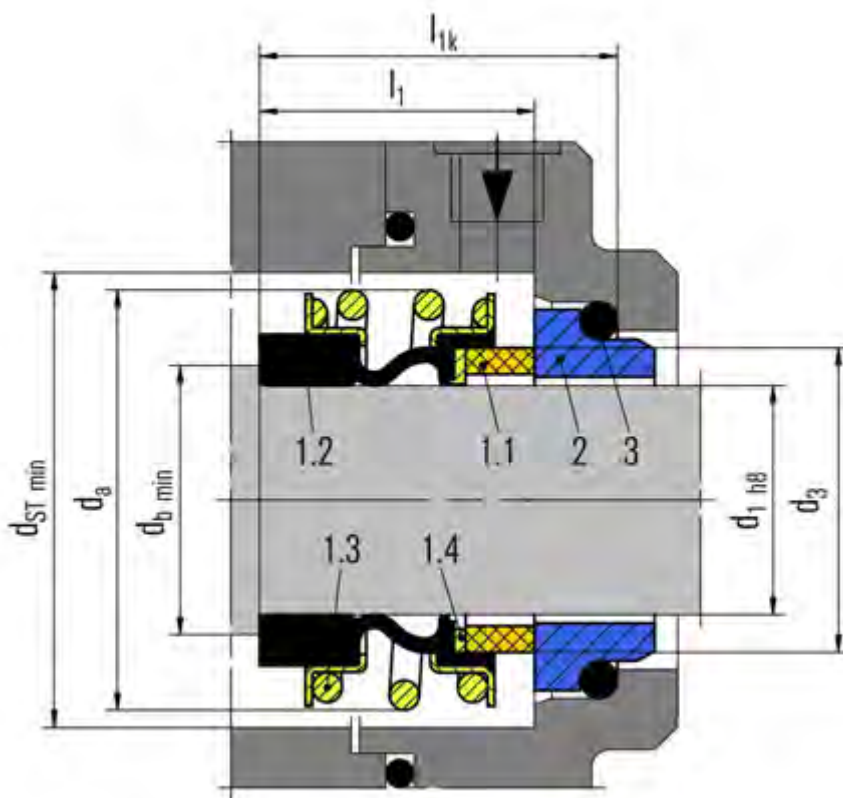
## RELY ON EXCELLENCE

- Dairies, beverages
- Sulfide slurries
- Chemicals
- Oils
- Chemical standard pumps
- Helical screw pumps
- Stock pumps
- Circulating pumps
- Submersible pumps
- Water and waste water pumps

### eMG12

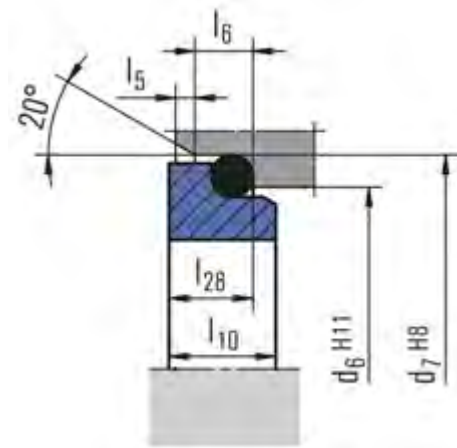
#### Item Description

- |     |                      |
|-----|----------------------|
| 1.1 | Seal face            |
| 1.2 | Bellows              |
| 1.3 | Set of springs       |
| 1.4 | PEEK-PTFE disk       |
| 2   | Seat (G6)            |
| 3   | O-Ring or cup rubber |

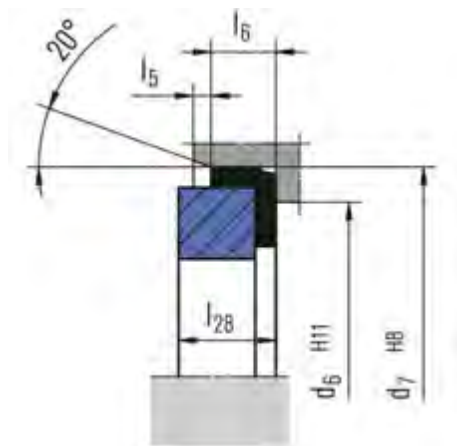


RELY ON EXCELLENCE

## Seat alternatives



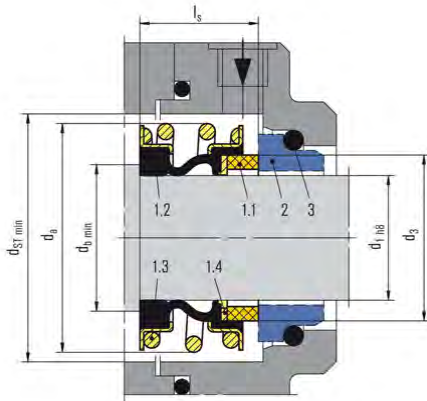
**G6**  
EN 12756



**G60 (optional)**  
EN 12756

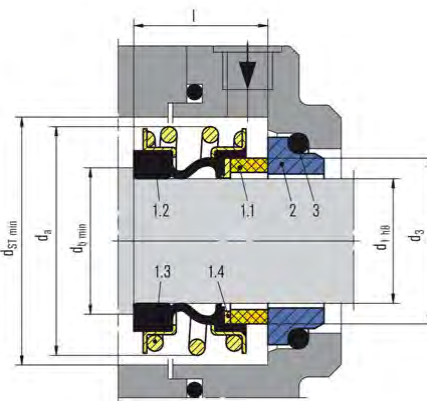
RELY ON EXCELLENCE

## Product variants



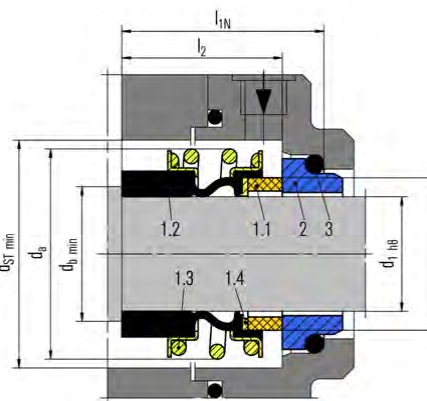
### eMG

Dimensions, items and designations same as for eMG12, but with a shortened bellows tail to achieve the fitting length  $l_s$ . Shortest fitting length.



### eMG1

Dimensions, items and designations same as for eMG12, but with a shortened bellows tail to achieve the fitting length  $l$ .



### eMG13

Dimensions, items and designations same as for eMG12, but with an extended bellows tail to achieve the fitting length  $l_{1N}$  according to EN 12756 in combination with seat G6 or G60 ( $d_a$  exceeds EN 12756).

## RELY ON EXCELLENCE

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### **eRMG12**

Identical to eMG12, but with a special bellows surface on the shaft side. For use in hot water pumps.

d1 = 14 ... 38 mm (0.55" ... 1.50")

Seat G6: Silicon carbide (eSiC-Q7)

A/eSiC-Q7:

120 °C (248 °F) and 25 bar (363 PSI)

140 °C (284 °F) and 16 bar (232 PSI)

B/eSiC-Q7:

120 °C (248 °F) and 18 bar (161 PSI)

eSiC-Q7/eSiC-Q7:

120 °C (248 °F) and 18 bar (161 PSI)

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>a</sub>	d <sub>b</sub> *)	d <sub>ST</sub>	l <sub>S</sub>	l	l <sub>1</sub>	l <sub>1k</sub>	l <sub>2</sub>	l <sub>1N</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>10</sub>	l <sub>12</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>28</sub>	l <sub>29</sub>	R	
14	19,7	21	25	20,5	24,6	27	17,5	28,5	15	17	28,4	35	-	-	1,5	4	7,5	6,5	5,6	1,2	3,8	6,6	10,5	1,2	
15	20,8	-	-	20,5	24,6	28,5	18,5	30	15	17	-	-	-	-	-	-	-	7,5	6,6	1,2	3,8	-	10,5	1,2	
16	21	23	27	22	28	28,5	19,5	30	15	17	28,4	35	33,4	40	1,5	4	7,5	8,5	7,5	1,5	5	6,6	10,5	1,5	
18	23,7	27	33	24	30	32	21,5	33	17	19,5	30	37,5	-	-	2	5	8,5	9	8	1,5	5	7,5	10,5	1,5	
20	26,7	29	35	29,5	35	37	24	38	19	21,5	30	37,5	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5	
22	27,7	31	37	29,5	35	37	26	38	19	21,5	30	37,5	37,5	45	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5	
24	31,2	33	39	32	38	42,5	28	44	19	22,5	32,5	40	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5	
25	31,2	34	40	32	38	42,5	29	44	23	23	32,5	40	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5	
28	35	37	43	36	42	49	32	50	23	26,5	35	42,5	42,5	50	2	5	8,5	10	9	1,5	5	7,5	12	1,5	
30	37	39	45	39,2	45	49	34	50	23,5	26,5	35	42,5	-	-	2	5	8,5	11,5	10,5	1,5	5	7,5	12	1,5	
32	40,2	42	48	42,2	48	53,5	36	55	23,5	27,5	35	42,5	-	-	2	5	8,5	11,5	10,5	1,5	5	7,5	12	1,5	
33	40,2	42	48	44,2	50	53,5	37	55	24,5	27,5	35	42,5	-	-	2	5	8,5	12	11	1,5	5	7,5	12	1,5	
35	43,2	44	50	46,2	52	57	40	59	25	28,5	35	42,5	-	-	2	5	8,5	12	11	1,5	5	7,5	12	1,5	
38	46,2	49	56	49,2	55	59	43	61	25,5	30	36	45	46	55	2	6	10	11,3	10,3	1,5	5	9	12	1,5	
40	48,8	51	58	52,2	58	62	45	64	25,5	30	36	45	-	-	2	6	10	11,8	10,8	1,5	5	9	12	1,5	
43	51,8	54	61	53,3	62	65,5	48	67	25,5	30	36	45	-	-	2	6	10	13,2	12	2	6	9	12	2,5	
45	53,8	56	63	55,3	64	68	50	70	26	30	36	45	-	-	2	6	10	12,8	11,6	2	6	9	12	2,5	
48	56,8	59	66	59,7	68,4	70,5	53	74	26	30,5	36	45	51	60	2	6	10	12,8	11,6	2	6	9	12	2,5	
50	58,8	62	70	60,8	69,3	74	55	77	30	30,5	38	47,5	-	-	2,5	6	10,5	12,8	11,6	2	6	9,5	13,5	2,5	
53	62,2	65	73	63,8	72,3	78,5	58	81	29	33	36,5	47,5	-	-	2,5	6	12	13,5	12,3	2	6	11	13,5	2,5	
55	64,2	67	75	66,5	75,4	81	60	83	30	35	36,5	47,5	59	70	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5	
58	67,2	70	78	69,5	78,4	85,5	64	88	31	37	-	-	-	-	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5	
60	70	72	80	71,5	80,4	88,5	66	91	34	38	41,5	52,5	59	70	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5	
65	75	77	85	76,5	85,4	93,5	71	96	34	40	41,5	52,5	-	-	2,5	6	12	14,2	13	2	6	11	16	2,5	
68	78	81	90	82,7	91,5	96,5	74	100	34	40	-	-	-	-	2,5	7	12,5	14,9	13,7	2	6	11,3	16	2,5	
70	80	83	92	83	92	99,5	76	103	34	40	48,7	60	-	-	2,5	7	12,5	14,2	13	2	6	11,3	16	2,5	
75	85,5	88	97	90,2	99	107	81	110	34	40	48,7	60	-	-	2,5	7	12,5	15,2	14	2	6	11,3	16	2,5	
80	90,5	95	105	95,2	104	112	86	116	34	40	48	60	-	-	3	7	13	16,2	15	2	6	12	20	2,5	
85	96	100	110	100,2	109	120	92	124	35	41	46	60	-	-	3	7	15	16	14,8	2	6	14	20	2,5	
90	102	105	115	105,2	114	127	97	131	38	45	51	65	-	-	3	7	15	16	14,8	2	6	14	20	2,5	
95	107	110	120	111,6	120,3	132	102	136	39	46	51	65	-	-	3	7	15	17	15,8	2	6	14	20	2,5	
100	112	115	125	114,5	123,3	137	107	140	40	47	51	65	-	-	3	7	15	17	15,8	2	6	14	20	2,5	
110	123	-	-	-	-	150	118	154	43	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dimensions in millimeter

Fitting length/axial movement tolerances: d<sub>1</sub> 15 ... 18 mm ±1.0; d<sub>1</sub> 20 ... 26 mm ±1.5; d<sub>1</sub> 28 ... 110 mm ±2.0

\* Minimum diameter of the mating collar

RELY ON EXCELLENCE

## eMG13

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- For plain shafts
- Single and dual seal
- Elastomer bellows rotating
- Balanced
- Independent of direction of rotation

### Advantages

- **100 % compatible with MG13**
- Small outer diameter of bellows support ( $d_{bmin}$ ) enables direct retaining ring support, or smaller spacer rings
- Optimal alignment characteristic through self-cleaning of disk/shaft
- Improved centering across entire pressure operating range
- No torsion on bellows
- Shaft protection over entire seal length
- Protection of seal face during installation due to special bellows design
- Insensitive to shaft deflections due to large axial movement ability
- Suitable for low-end sterile applications

### Operating range

Shaft diameter:  
 $d_1 = 16 \dots 60 \text{ mm (0.63" ... 2.36")}$   
 Pressure:  $p_1 = 18 \text{ bar (261 PSI)}$ ,  
 vacuum ...  $0.5 \text{ bar (7.25 PSI)}$ ,  
 up to  $1 \text{ bar (14.5 PSI)}$  with seat locking  
 Temperature:  $t = -20 \text{ °C ... +140 °C}$   
 $(-4 \text{ °F ... +284 °F})$   
 Sliding velocity:  $v_g = 10 \text{ m/s (33 ft/s)}$   
 Admissible axial movement:  $\pm 2.0 \text{ mm } (\pm 0.08")$

### Materials

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (eSiC-Q7, Q1)  
 Seat: Silicon carbide (eSiC-Q7, Q1)  
 Elastomer: NBR (P), EPDM (E), FKM (V), HNBR (X4)  
 Metal parts: CrNiMo steel (G), Hastelloy® (M)

### Standards and approvals

Various material approvals available (depending on type and material combinations).  
 Please inquire!

- FDA
- WRAS
- UBA (KTW)
- ACS
- W270

### Notes

The eMG13 can also be used as a multiple seal in tandem or in a back-to-back arrangement, please inquire. Other materials and designs available on request.

### Recommended applications

- Fresh water supply
- Building services engineering
- Waste water technology
- Food technology
- Sugar production
- Pulp and paper industry
- Oil industry
- Petrochemical industry
- Chemical industry
- Water, waste water, slurries (up to 5 % by weight)
- Pulp (up to 4 % otro)
- Latex



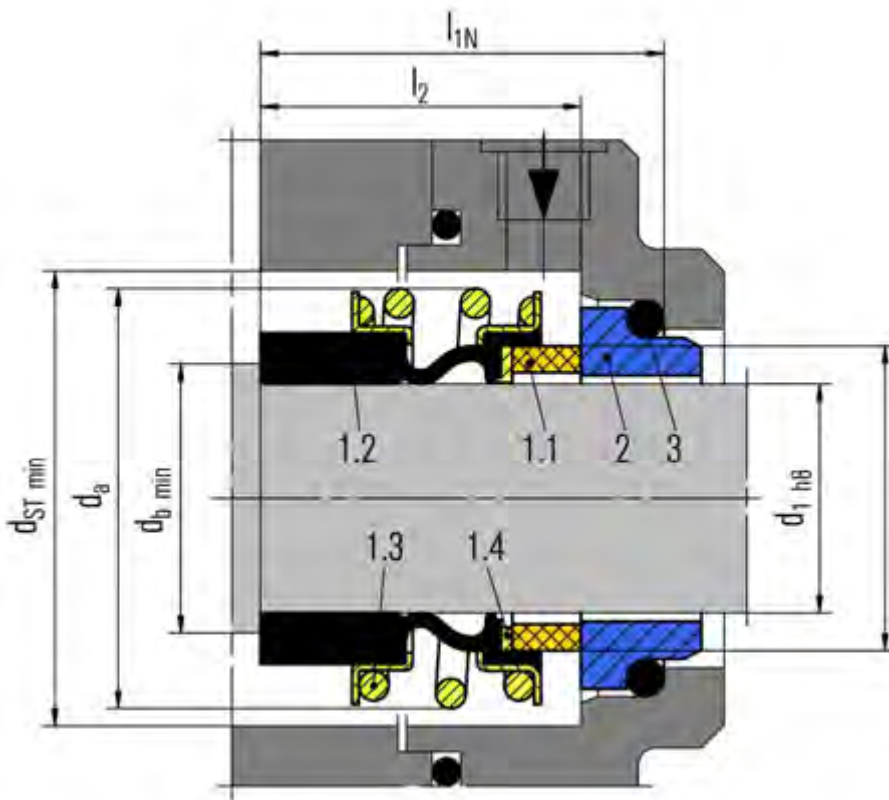
## RELY ON EXCELLENCE

- Dairies, beverages
- Sulfide slurries
- Chemicals
- Oils
- Chemical standard pumps
- Helical screw pumps
- Stock pumps
- Circulating pumps
- Submersible pumps
- Water and waste water pumps

### eMG13

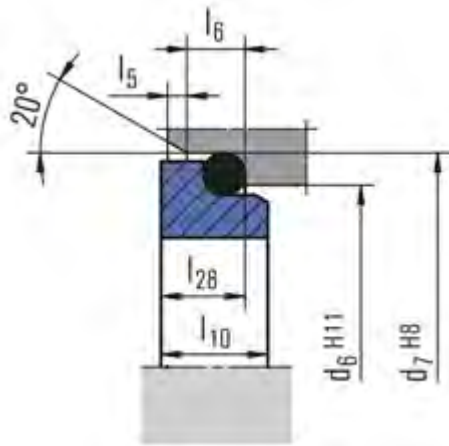
#### Item Description

- |     |                      |
|-----|----------------------|
| 1.1 | Seal face            |
| 1.2 | Bellows              |
| 1.3 | Set of springs       |
| 1.4 | PEEK-PTFE disk       |
| 2   | Seat (G6)            |
| 3   | O-Ring or cup rubber |

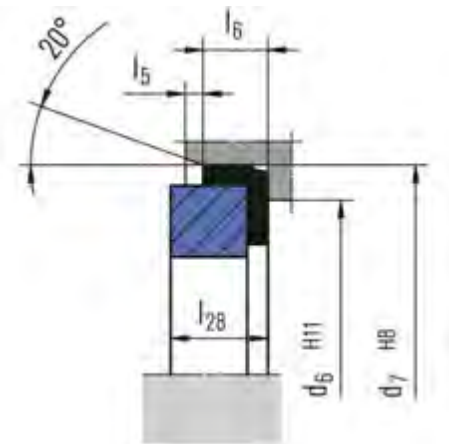


RELY ON EXCELLENCE

## Seat alternatives



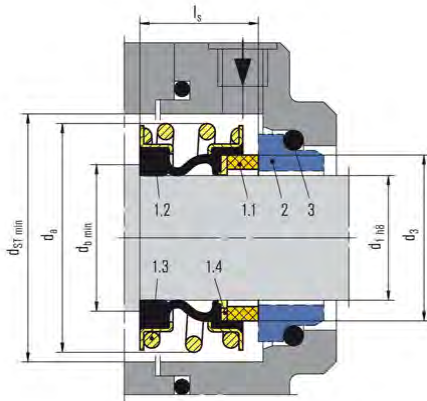
**G6**  
EN 12756



**G60 (optional)**  
EN 12756

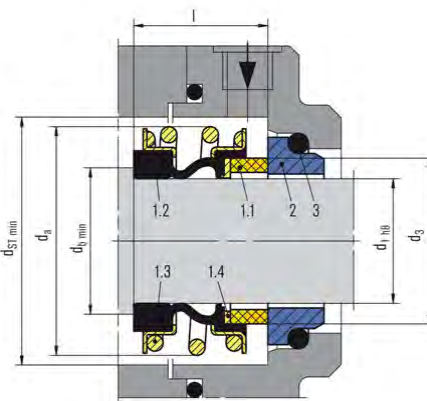
RELY ON EXCELLENCE

## Product variants



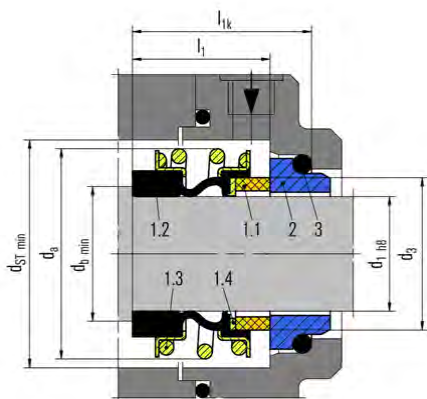
### eMG

Dimensions, items and designations same as for eMG13, but with a shortened bellows tail to achieve the fitting length  $l_s$ . Shortest fitting length.



### eMG1

Dimensions, items and designations same as for eMG, but with a shortened bellows tail to achieve the fitting length  $l$ .



### eMG12

Dimensions, items and designations same as for eMG13, but with a shortened bellows tail to achieve the fitting length  $l_{1k}$  according to EN 12756 in combination with seat G6 or G60 ( $d_a$  exceeds EN 12756).

## RELY ON EXCELLENCE

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### eRMG13

Identical to eMG13, but with a special bellows surface on the shaft side. For use in hot water pumps.

d1 = 14 ... 38 mm (0.55" ... 1.50")

Seat G6: Silicon carbide (eSiC-Q7)

A/eSiC-Q7:

120 °C (248 °F) and 25 bar (363 PSI) 140 °C (284 °F) and 16 bar (232 PSI)

B/eSiC-Q7:

120 °C (248 °F) and 18 bar (161 PSI)

eSiC-Q7/eSiC-Q7:

120 °C (248 °F) and 18 bar (161 PSI)

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>a</sub>	d <sub>b</sub> *)	d <sub>ST</sub>	l <sub>S</sub>	l	l <sub>1</sub>	l <sub>1k</sub>	l <sub>2</sub>	l <sub>1N</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>10</sub>	l <sub>12</sub>	l <sub>14</sub>	l <sub>15</sub>	l <sub>16</sub>	l <sub>28</sub>	l <sub>29</sub>	R
14	19,7	21	25	20,5	24,6	27	17,5	28,5	15	17	28,4	35	-	-	1,5	4	7,5	6,5	5,6	1,2	3,8	6,6	10,5	1,2
15	20,8	-	-	20,5	24,6	28,5	18,5	30	15	17	-	-	-	-	-	-	-	7,5	6,6	1,2	3,8	-	10,5	1,2
16	21	23	27	22	28	28,5	19,5	30	15	17	28,4	35	33,4	40	1,5	4	7,5	8,5	7,5	1,5	5	6,6	10,5	1,5
18	23,7	27	33	24	30	32	21,5	33	17	19,5	30	37,5	-	-	2	5	8,5	9	8	1,5	5	7,5	10,5	1,5
20	26,7	29	35	29,5	35	37	24	38	19	21,5	30	37,5	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
22	27,7	31	37	29,5	35	37	26	38	19	21,5	30	37,5	37,5	45	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
24	31,2	33	39	32	38	42,5	28	44	19	22,5	32,5	40	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
25	31,2	34	40	32	38	42,5	29	44	23	23	32,5	40	-	-	2	5	8,5	8,5	7,5	1,5	5	7,5	10,5	1,5
28	35	37	43	36	42	49	32	50	23	26,5	35	42,5	42,5	50	2	5	8,5	10	9	1,5	5	7,5	12	1,5
30	37	39	45	39,2	45	49	34	50	23,5	26,5	35	42,5	-	-	2	5	8,5	11,5	10,5	1,5	5	7,5	12	1,5
32	40,2	42	48	42,2	48	53,5	36	55	23,5	27,5	35	42,5	-	-	2	5	8,5	11,5	10,5	1,5	5	7,5	12	1,5
33	40,2	42	48	44,2	50	53,5	37	55	24,5	27,5	35	42,5	-	-	2	5	8,5	12	11	1,5	5	7,5	12	1,5
35	43,2	44	50	46,2	52	57	40	59	25	28,5	35	42,5	-	-	2	5	8,5	12	11	1,5	5	7,5	12	1,5
38	46,2	49	56	49,2	55	59	43	61	25,5	30	36	45	46	55	2	6	10	11,3	10,3	1,5	5	9	12	1,5
40	48,8	51	58	52,2	58	62	45	64	25,5	30	36	45	-	-	2	6	10	11,8	10,8	1,5	5	9	12	1,5
43	51,8	54	61	53,3	62	65,5	48	67	25,5	30	36	45	-	-	2	6	10	13,2	12	2	6	9	12	2,5
45	53,8	56	63	55,3	64	68	50	70	26	30	36	45	-	-	2	6	10	12,8	11,6	2	6	9	12	2,5
48	56,8	59	66	59,7	68,4	70,5	53	74	26	30,5	36	45	51	60	2	6	10	12,8	11,6	2	6	9	12	2,5
50	58,8	62	70	60,8	69,3	74	55	77	30	30,5	38	47,5	-	-	2,5	6	10,5	12,8	11,6	2	6	9,5	13,5	2,5
53	62,2	65	73	63,8	72,3	78,5	58	81	29	33	36,5	47,5	-	-	2,5	6	12	13,5	12,3	2	6	11	13,5	2,5
55	64,2	67	75	66,5	75,4	81	60	83	30	35	36,5	47,5	59	70	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5
58	67,2	70	78	69,5	78,4	85,5	64	88	31	37	-	-	-	-	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5
60	70	72	80	71,5	80,4	88,5	66	91	34	38	41,5	52,5	59	70	2,5	6	12	14,5	13,3	2	6	11	13,5	2,5
65	75	77	85	76,5	85,4	93,5	71	96	34	40	41,5	52,5	-	-	2,5	6	12	14,2	13	2	6	11	16	2,5
68	78	81	90	82,7	91,5	96,5	74	100	34	40	-	-	-	-	2,5	7	12,5	14,9	13,7	2	6	11,3	16	2,5
70	80	83	92	83	92	99,5	76	103	34	40	48,7	60	-	-	2,5	7	12,5	14,2	13	2	6	11,3	16	2,5
75	85,5	88	97	90,2	99	107	81	110	34	40	48,7	60	-	-	2,5	7	12,5	15,2	14	2	6	11,3	16	2,5
80	90,5	95	105	95,2	104	112	86	116	34	40	48	60	-	-	3	7	13	16,2	15	2	6	12	20	2,5
85	96	100	110	100,2	109	120	92	124	35	41	46	60	-	-	3	7	15	16	14,8	2	6	14	20	2,5
90	102	105	115	105,2	114	127	97	131	38	45	51	65	-	-	3	7	15	16	14,8	2	6	14	20	2,5
95	107	110	120	111,6	120,3	132	102	136	39	46	51	65	-	-	3	7	15	17	15,8	2	6	14	20	2,5
100	112	115	125	114,5	123,3	137	107	140	40	47	51	65	-	-	3	7	15	17	15,8	2	6	14	20	2,5
110	123	-	-	-	-	150	118	154	43	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dimensions in millimeter

Fitting length/axial movement tolerances: d<sub>1</sub> 15 ... 18 mm ±1.0; d<sub>1</sub> 20 ... 26 mm ±1.5; d<sub>1</sub> 28 ... 110 mm ±2.0

\* Minimum diameter of the mating collar

RELY ON EXCELLENCE

## MG9

Mechanical seals | Mechanical seals for pumps | Elastomer bellows seals



### Features

- For plain shafts
- Single and dual seal
- Elastomer bellows rotating
- Balanced
- Independent of direction of rotation
- No torsion on bellows and spring
- Conical or cylindrical spring
- Metric and inch sizes available
- Special seat dimensions available
- US Patent No. 6.220.601

### Advantages

- Fits into any installation space due to smallest outer seal diameter
- Important material approvals available
- Individual installation length can be achieved
- High flexibility due to extended selection of materials
- Universal application (standardization)

### Operating range

Shaft diameter:

$d_1 = 10 \dots 100 \text{ mm (0.375" ... 4")}$

Pressure:  $p_1 = 12 \text{ bar (174 PSI)}$ ,  
vacuum up to 0.5 bar (7.25 PSI),  
up to 1 bar (14.5 PSI) with seat locking

Temperature:

$t = -20 \text{ °C ... } +140 \text{ °C (-4 °F ... } +284 \text{ °F)}$

Sliding velocity:  $v_g = 10 \text{ m/s (33 ft/s)}$

Axial movement:  $\pm 0.5 \text{ mm}$

### Materials

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B), Silicon carbide (Q1)  
Seat: Silicon carbide (Q1, Q2), Aluminium oxide (V)  
Elastomer: NBR (P), EPDM (E), FKM (V), HNBR (X4)  
Metal parts: CrNiMo steel (G)

### Standards and approvals

- EN 12756

Various material approvals available (depending on type and material combinations).

Please inquire!

- FDA
- WRAS
- KTW
- ACS
- W270
- NSF

### Notes

A modular principle comprising a bellows unit for each shaft diameter and a correspondingly long spring (tapered or cylindrical spring) for individual length compensation regarding I1K, I1N and other installation lengths.

The MG9 can also be used as a multiple seal in tandem or in a back-to-back arrangement. Installation proposals can be supplied on request.

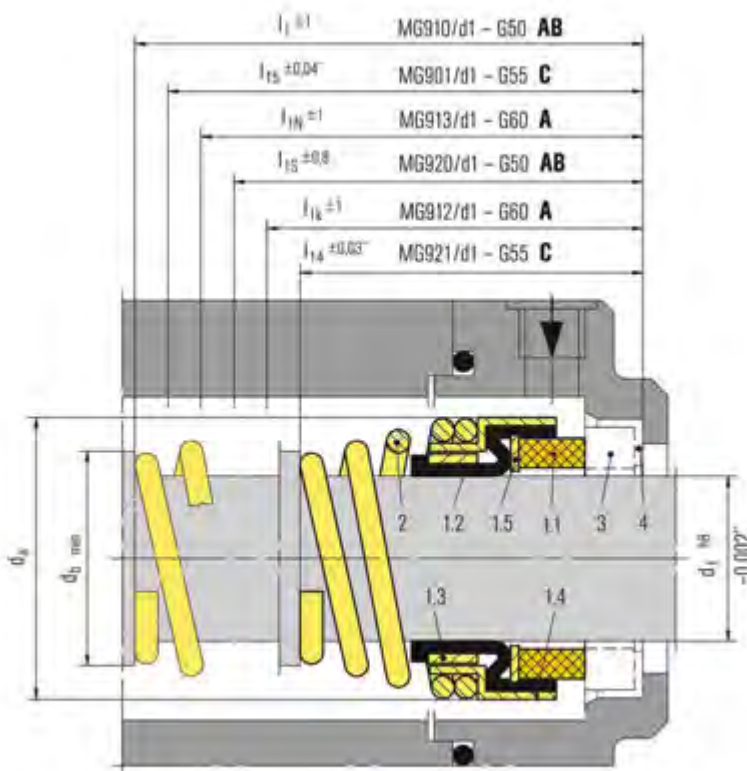
The entire MG9 series is available in metric and inch sizes.

### Recommended applications

- Water and waste water technology
- Pulp and paper industry

## RELY ON EXCELLENCE

- Chemical industry
- Cooling fluids
- Media with low solids content
- Pressure oils for bio diesel fuels
- Circulating pumps
- Submersible pumps
- Multi-stage pumps (non-drive side)
- Water and waste water pumps
- Oil applications

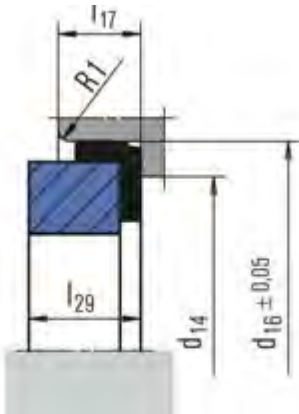


### Item Part no. to Description DIN 24250

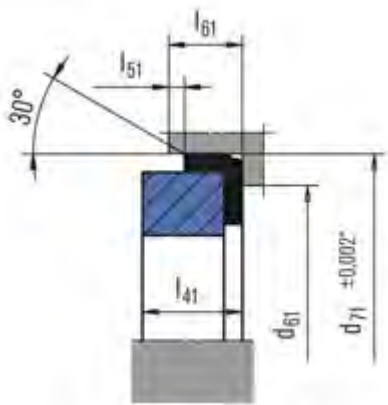
Item	Part no.	Description
1.1	472	Seal face
1.2	481	Bellows
1.3	485	Driver collar
1.4	484.1	"L" ring (spring collar)
1.5	474	Washer
2	477	Spring
3	475	Seat
4	412	Rubber cup

RELY ON EXCELLENCE

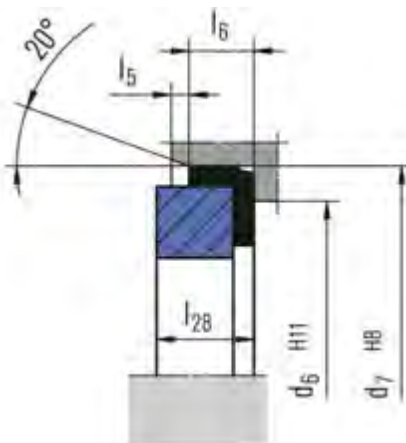
## Seat alternatives



**G50**  
Euro standard



**G55**  
US standard



**G60**  
EN 12756



## RELY ON EXCELLENCE

### Dimensions

EagleBurgmann*	Crane*	Sealol*	Dimensions	Table
MG910/d1-G50	1A	43 CE long	Inch/mm	B
	1A	43 CE long	mm	A
MG920/d1-G50	2	43 CE short	Inch/mm	B
	2	43 CE short	mm	A
MG901/d1-G55	1	43 CU long	Inch (USA only)	C
MG921/d1-G55	2	43 CU short	Inch (USA only)	C
	21	43 CU short	Inch (USA only)	C
MG912/d1-G60	502	43 DIN	mm	A
	521	43 DIN	mm	A
	2100-I <sub>IK</sub>	43 DIN	mm	A
MG913/d1-G60	2100-I <sub>IN</sub>		mm	A

MG9 ... the alternative \* Connection dimensions identical

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>14</sub>	d <sub>16</sub>	d <sub>a</sub>	d <sub>b</sub>	l <sub>1</sub>	l <sub>1k</sub>	l <sub>1N</sub>	l <sub>1S</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>17</sub>	l <sub>28</sub>	l <sub>29</sub>
10	17	21	11.0	24.60	19.6	13.0	53.0	32.5	40	34.0	1.5	4	7.5	6.6	9.0
12	19	23	13.5	27.80	21.6	15.0	53.0	32.5	40	34.0	1.5	4	7.5	6.6	9.0
14	21	25	17.0	30.95	24.0	18.0	54.5	35.0	40	35.5	1.5	4	9.0	6.6	10.5
15	-	-	17.0	30.95	25.0	19.0	54.5	-	-	35.5	-	-	9.0	-	10.5
16	23	27	17.0	30.95	26.5	20.0	54.5	35.0	40	35.5	1.5	4	9.0	6.6	10.5
18	27	33	20.0	34.15	29.0	22.0	54.5	37.5	45	35.5	2.0	5	9.0	7.5	10.5
20	29	35	21.5	35.70	31.5	24.5	54.5	37.5	45	35.5	2.0	5	9.0	7.5	10.5
22	31	37	23.0	37.30	33.0	27.0	54.5	37.5	45	35.5	2.0	5	9.0	7.5	10.5
24	33	39	26.5	40.50	37.0	29.0	54.5	40.0	50	35.5	2.0	5	9.0	7.5	10.5
25	34	40	26.5	40.50	38.0	30.0	54.5	40.0	50	35.5	2.0	5	9.0	7.5	10.5
28	37	43	29.5	47.65	41.0	34.0	72.0	42.5	50	45.0	2.0	5	10.5	7.5	12.0
30	39	45	32.5	50.80	43.0	36.0	72.0	42.5	50	45.0	2.0	5	10.5	7.5	12.0
32	42	48	32.5	50.80	45.0	38.0	72.0	42.5	55	45.0	2.0	5	10.5	7.5	12.0
33	42	48	36.5	54.00	46.0	39.0	72.0	42.5	55	45.0	2.0	5	10.5	7.5	12.0
35	44	50	36.5	54.00	48.0	41.0	72.0	42.5	55	45.0	2.0	5	10.5	7.5	12.0
38	49	56	39.5	57.15	52.5	44.5	72.0	45.0	55	45.0	2.0	6	10.5	9.0	12.0
40	51	58	42.5	60.35	55.5	47.5	72.0	45.0	55	45.0	2.0	6	10.5	9.0	12.0
43	54	61	46.0	63.50	58.5	50.5	83.0	45.0	60	53.0	2.0	6	10.5	9.0	12.0
45	56	63	46.0	63.50	60.5	52.5	83.0	45.0	60	53.0	2.0	6	10.5	9.0	12.0
48	59	66	49.0	66.70	64.0	56.0	83.0	45.0	60	53.0	2.0	6	10.5	9.0	12.0
50	62	70	52.0	69.85	66.0	58.0	84.5	47.5	60	54.5	2.5	6	12.0	9.5	13.5
53	65	73	55.5	73.05	69.0	61.0	84.5	47.5	70	54.5	2.5	6	12.0	11.0	13.5
55	67	75	58.5	76.20	71.0	63.0	84.5	47.5	70	54.5	2.5	6	12.0	11.0	13.5
58	70	78	61.5	79.40	76.0	66.0	84.5	52.5	70	54.5	2.5	6	12.0	11.0	13.5
60	72	80	61.5	79.40	78.0	68.0	84.5	52.5	70	54.5	2.5	6	12.0	11.0	13.5
63	75	83	65.0	82.55	82.0	71.5	84.5	52.5	70	54.5	2.5	6	12.0	11.0	13.5
65	77	85	68.0	92.10	84.0	73.5	86.0	52.5	80	65.0	2.5	6	14.5	11.0	16.0
68	81	90	71.0	95.25	87.0	76.5	86.0	52.5	80	65.0	2.5	7	14.5	11.3	16.0
70	83	92	71.0	95.25	89.0	79.0	86.0	60.0	80	65.0	2.5	7	14.5	11.3	16.0
75	88	97	77.5	101.60	95.0	85.0	89.0	60.0	80	68.0	2.5	7	14.5	11.3	16.0
80	95	105	84.0	114.30	101.5	91.5	99.0	60.0	90	76.0	3.0	7	18.5	12.0	20.0
85	100	110	87.0	117.50	107.0	97.0	99.0	60.0	90	76.0	3.0	7	18.5	14.0	20.0
90	105	115	93.5	123.85	111.5	103.0	103.0	65.0	90	79.0	3.0	7	18.5	14.0	20.0
95	110	120	96.5	127.00	117.5	108.0	103.0	65.0	90	79.0	3.0	7	18.5	14.0	20.0
100	115	125	103.0	133.35	122.5	114.0	106.0	65.0	90	82.0	3.0	7	18.5	14.0	20.0

Table A - Dimensions in Millimeter

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>1</sub>	d <sub>14</sub>	d <sub>16</sub>	d <sub>a</sub>	d <sub>b</sub>	l <sub>1</sub>	l <sub>1S</sub>	l <sub>17</sub>	l <sub>29</sub>
0.375"	9.53	11.0	24.60	18.8	12.5	53.0	34.0	7.5	9.0
0.500"	12.70	13.5	27.80	22.3	16.0	53.0	34.0	7.5	9.0
0.625"	15.88	17.0	30.95	26.5	20.0	54.5	35.5	9.0	10.5
0.750"	19.05	20.0	34.15	29.5	23.0	54.5	35.5	9.0	10.5
0.875"	22.23	23.0	37.30	33.0	27.0	54.5	35.5	9.0	10.5
1.000"	25.40	26.5	40.50	38.0	30.5	54.5	35.5	9.0	10.5
1.125"	28.58	29.5	47.65	41.5	34.5	72.0	45.0	10.5	12.0
1.250"	31.75	32.5	50.80	45.0	38.0	72.0	45.0	10.5	12.0
1.375"	34.93	36.5	54.00	48.0	41.0	72.0	45.0	10.5	12.0
1.500"	38.10	39.5	57.15	52.5	44.5	72.0	45.0	10.5	12.0
1.625"	41.28	42.5	60.35	57.0	48.5	72.0	45.0	10.5	12.0
1.750"	44.45	46.0	63.50	60.5	51.5	83.0	53.0	10.5	12.0
1.875"	47.63	49.0	66.70	64.0	55.0	83.0	53.0	10.5	12.0
2.000"	50.80	52.0	69.85	66.0	58.0	84.5	54.5	12.0	13.5
2.125"	53.98	55.5	73.05	71.0	61.5	84.5	54.5	12.0	13.5
2.250"	57.15	58.5	76.20	76.5	65.0	84.5	54.5	12.0	13.5
2.375"	60.33	61.5	79.40	78.5	68.5	84.5	54.5	12.0	13.5
2.500"	63.50	65.0	82.55	82.0	72.0	84.5	54.5	12.0	13.5
2.625"	66.68	68.0	92.10	84.0	75.0	86.0	65.0	14.5	16.0
2.750"	69.85	71.0	95.25	89.0	79.0	86.0	65.0	14.5	16.0
2.875"	73.03	74.5	98.45	92.5	82.0	89.0	68.0	14.5	16.0
3.000"	76.20	77.5	101.60	95.5	85.5	89.0	68.0	14.5	16.0
3.125"	79.38	80.5	111.15	101.5	91.0	99.0	76.0	18.5	20.0
3.250"	82.55	84.0	114.30	104.7	94.0	99.0	76.0	18.5	20.0
3.375"	85.73	87.0	117.50	107.0	98.0	99.0	76.0	18.5	20.0
3.500"	88.90	90.5	120.65	111.5	100.0	99.0	76.0	18.5	20.0
3.625"	92.08	93.5	123.85	114.5	104.0	103.0	79.0	18.5	20.0
3.750"	95.25	96.5	127.00	118.0	108.0	103.0	79.0	18.5	20.0
3.875"	98.43	100.0	130.20	121.0	112.0	106.0	82.0	18.5	20.0
4.000"	101.60	103.0	133.35	125.0	116.0	106.0	82.0	18.5	20.0

Table B - Dimensions in inch / millimeter

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>61</sub>	d <sub>71</sub>	d <sub>a</sub>	d <sub>b</sub>	h <sub>4</sub>	h <sub>5</sub>	l <sub>41</sub>	l <sub>51</sub>	l <sub>61</sub>
0.375	0.625	0.875	0.740	0.492	1.125	1.500	0.313	0.050	0.250
0.500	0.750	1.000	0.878	0.630	1.125	1.500	0.313	0.050	0.250
0.625	0.937	1.250	1.043	0.787	1.281	1.718	0.406	0.050	0.344
0.750	1.062	1.375	1.161	0.905	1.281	1.718	0.406	0.050	0.344
0.875	1.187	1.500	1.299	1.063	1.343	1.781	0.406	0.050	0.344
1.000	1.312	1.625	1.496	1.200	1.437	2.000	0.437	0.050	0.375
1.125	1.437	1.750	1.634	1.358	1.500	2.062	0.437	0.050	0.375
1.250	1.563	1.875	1.772	1.496	1.500	2.062	0.437	0.050	0.375
1.375	1.687	2.000	1.890	1.614	1.562	2.124	0.437	0.050	0.375
1.500	1.813	2.125	2.067	1.752	1.562	2.124	0.437	0.050	0.375
1.625	2.000	2.375	2.244	1.909	1.875	2.500	0.500	0.050	0.437
1.750	2.125	2.500	2.382	2.028	1.875	2.500	0.500	0.050	0.437
1.875	2.250	2.625	2.520	2.165	2.000	2.625	0.500	0.050	0.437
2.000	2.375	2.750	2.598	2.283	2.000	2.625	0.500	0.050	0.437
2.125	2.375	3.000	2.795	2.421	2.249	2.937	0.562	0.050	0.500
2.250	2.437	3.125	2.992	2.559	2.249	2.937	0.562	0.050	0.500
2.375	2.563	3.250	3.071	2.697	2.375	3.062	0.562	0.050	0.500
2.500	2.687	3.375	3.228	2.834	2.375	3.062	0.562	0.050	0.500
2.625	2.812	3.375	3.307	2.953	2.562	3.375	0.625	0.100	0.562
2.750	2.937	3.500	3.504	3.110	2.562	3.375	0.625	0.100	0.562
2.875	3.062	3.750	3.642	3.228	2.687	3.500	0.625	0.100	0.562
3.000	3.187	3.875	3.760	3.366	2.687	3.500	0.625	0.100	0.562
3.125	3.312	4.000	4.000	3.583	2.968	3.906	0.781	0.100	0.656
3.250	3.437	4.125	4.122	3.700	2.968	3.906	0.781	0.100	0.656
3.375	3.562	4.250	4.213	3.858	2.968	3.906	0.781	0.100	0.656
3.500	3.687	4.375	4.390	3.937	2.968	3.906	0.781	0.100	0.656
3.625	3.812	4.500	4.508	4.095	3.093	4.031	0.781	0.100	0.656
3.750	3.937	4.625	4.646	4.252	3.093	4.031	0.781	0.100	0.656
3.875	4.062	4.750	4.764	4.409	3.218	4.156	0.781	0.100	0.656
4.000	4.187	4.875	4.921	4.567	3.218	4.156	0.781	0.100	0.656

Table C - Dimensions in inch

RELY ON EXCELLENCE

## MF95N

Mechanical seals | Mechanical seals for pumps | Metal bellows seals



### Features

- For unstepped shafts
- Rotating bellows
- Single Seal
- Balanced
- Independent of direction of rotation
- Roller bellows

### Advantages

- For extreme temperature ranges
- No dynamically loaded O-Ring
- Very good self cleaning effect
- Suitable for low-end sterile applications

### Operating range

Shaft diameter:

d1 = 14 ... 100 mm (0.55" ... 3.94")

Temperature:

t = -40 °C ... +220 °C (-40 °F ... +428 °F)

Pressure: p = 16 bar (232 PSI)

Sliding velocity: v<sub>g</sub> = 20 m/s (66 ft/s)

Axial movement: ± 0.5 mm

### Materials

Seal face: Silicon carbide (Q12), Carbon graphite resin impregnated (B), Carbon graphite antimony impregnated (A)

Seat: Silicon carbide (Q1)

Bellows: Hastelloy® C-276 (M5)

Metal parts: CrNiMo steel (G1)

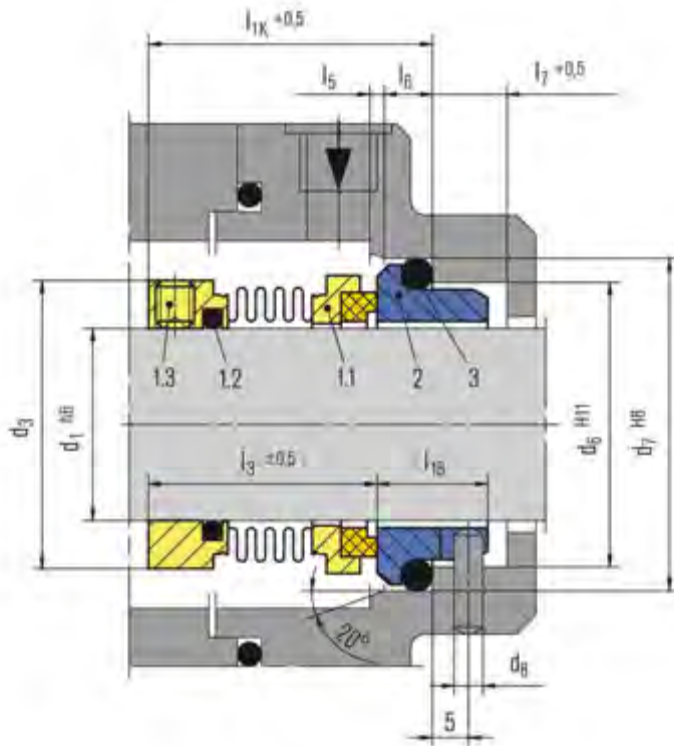
### Standards and approvals

- EN 12756

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Chemical industry
- Pharmaceutical industry
- Pulp and paper industry
- Food and beverage industry
- Hot media
- Cold media
- Highly viscous media
- Pumps
- Special rotating equipment

## RELY ON EXCELLENCE



Item	Part no.	Description
<b>DIN 24250</b>		
1.1	472/481	Seal face with bellows unit
1.2	412.1	O-Ring
1.3	904	Set screw
2	475	Seat (G16)
3	412.2	O-Ring

## Product variants

### MF90N

Shaft diameter:

$d_1 = 14 \dots 100 \text{ mm} (0.55" \dots 3.94")$

Temperature:

$t = -40 \text{ °C} \dots +220 \text{ °C} (-40 \text{ °F} \dots +428 \text{ °F})$

Internally pressurized:  $p = 10 \text{ bar} (145 \text{ PSI})$ ,

stationary seat lock necessary.

Sliding velocity:  $v_g = 20 \text{ m/s} (66 \text{ ft/s})$

Axial movement:  $\pm 0.5 \text{ mm}$

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1K</sub>	l <sub>3</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>18</sub>
14	24	21	25	3	35.0	30.5	1.5	4	8.5	15.0
16	26	23	27	3	35.0	29.5	1.5	4	8.5	15.0
18	32	27	33	3	37.5	30.5	2.0	5	9.0	15.0
20	34	29	35	3	37.5	30.5	2.0	5	9.0	15.0
22	36	31	37	3	37.5	30.5	2.0	5	9.0	15.0
24	39	33	39	3	40.0	33.0	2.0	5	9.0	15.0
25	39	34	40	3	40.0	33.0	2.0	5	9.0	15.0
28	42	37	43	3	42.5	35.5	2.0	5	9.0	15.0
30	44	39	45	3	42.5	35.5	2.0	5	9.0	15.0
32	46	42	48	3	42.5	35.5	2.0	5	9.0	15.0
33	47	42	48	3	42.5	35.5	2.0	5	9.0	15.0
35	49	44	50	3	42.5	35.5	2.0	5	9.0	15.0
38	54	49	56	4	45.0	37.0	2.0	6	9.0	16.0
40	56	51	58	4	45.0	37.0	2.0	6	9.0	16.0
43	58	54	61	4	45.0	37.0	2.0	6	9.0	16.0
45	61	56	63	4	45.0	37.0	2.0	6	9.0	16.0
48	64	59	66	4	45.0	37.0	2.0	6	9.0	16.0
50	66	62	70	4	47.5	38.0	2.5	6	9.0	17.0
53	69	65	73	4	47.5	38.0	2.5	6	9.0	17.0
55	71	67	75	4	47.5	38.0	2.5	6	9.0	17.0
58	78	70	78	4	52.5	42.0	2.5	6	9.0	18.0
60	80	72	80	4	52.5	42.0	2.5	6	9.0	18.0
63	83	75	83	4	52.5	42.0	2.5	6	9.0	18.0
65	85	77	85	4	52.5	42.0	2.5	6	9.0	18.0
68	87	81	90	4	52.5	41.5	2.5	7	9.0	18.5
70	90	83	92	4	60.0	48.5	2.5	7	9.0	19.0
75	99	88	97	4	60.0	48.5	2.5	7	9.0	19.0
80	104	95	105	4	60.0	48.5	3.0	7	9.0	19.0
85	109	100	110	4	60.0	48.5	3.0	7	9.0	19.0
90	114	105	115	4	65.0	52.0	3.0	7	9.0	20.5
95	119	110	120	4	65.0	52.0	3.0	7	9.0	20.5
100	124	115	125	4	65.0	52.0	3.0	7	9.0	20.5

Dimensions in millimeter

RELY ON EXCELLENCE

## MFL85N

Mechanical seals | Mechanical seals for pumps | Metal bellows seals



### Features

- For unstepped shafts
- Single seal
- Balanced
- Independent of direction of rotation
- Metal bellows rotating

### Advantages

- For extreme temperature ranges
- No dynamically loaded O-Ring
- Self cleaning effect
- Short installation length possible
- Pumping screw for highly viscous media available (dependent on direction of rotation).

### Operating range

Shaft diameter:  
 $d_1 = 16 \dots 100 \text{ mm (0.63" ... 4")}$   
 Externally pressurized:  
 $p_1 = \dots 25 \text{ bar (363 PSI)}$   
 Internally pressurized:  
 $p_1 < 120 \text{ °C (248 °F) } 10 \text{ bar (145 PSI)}$   
 $p_1 < 220 \text{ °C (428 °F) } 5 \text{ bar (72 PSI)}$   
 Temperature:  $t = -40 \text{ °C ... } +220 \text{ °C}$   
 $(-40 \text{ °F ... } 428) \text{ °F}$ ,  
 Stationary seat lock necessary.  
 Sliding velocity:  $v_g = 20 \text{ m/s (66 ft/s)}$

### Materials

Seal face: Carbon graphite antimony impregnated (A), Silicon carbide (Q12)  
 Seat: Silicon carbide (Q1)  
 Bellows: Inconel® 718 hardened (M6), Hastelloy® C-276 (M5)  
 Metal parts: CrNiMo steel (G), Duplex (G1), Hastelloy® C-4 (M)

### Standards and approvals

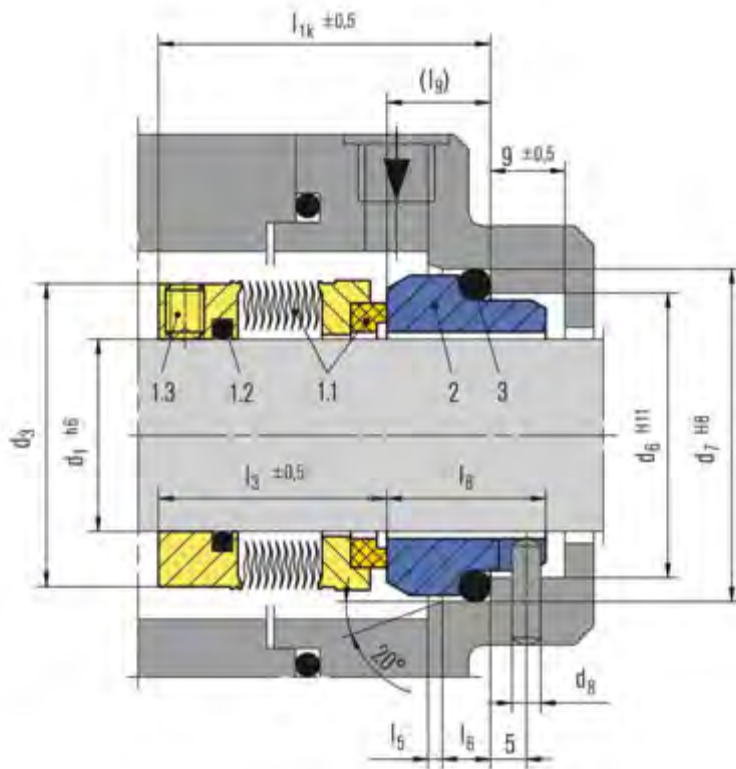
- EN 12756

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Hot media
- Cold media
- Highly viscous media
- Pumps
- Special rotating equipment

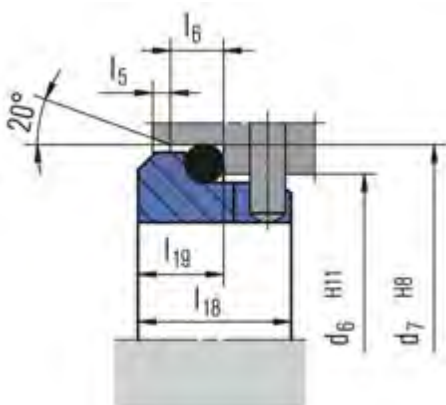


## RELY ON EXCELLENCE



Item	Part no.	Description
<b>DIN 24250</b>		
1.1	472/481	Seal face with bellows unit
1.2	412.1	O-Ring
1.3	904	Set screw
2	475	Seat (G9)
3	412.2	O-Ring

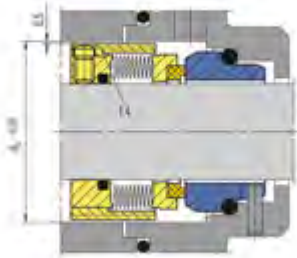
## Seat alternatives



**G16**  
( $l_{1k}$  shorter than specified by EN 12756)

## RELY ON EXCELLENCE

### Product variants



#### MFL85F

Dimensions, items and description as for MFL85N, but with pumping screw (item no. 1.4). Dependent on direction of rotation. The pumping screw can be retrofitted.

#### MFL90N

Shaft diameter:

$d_1 = 20 \dots 100 \text{ mm} (0.79" \dots 4")$

Internally pressurized:

$p_1 = \dots 16 \text{ bar} (232 \text{ PSI})$ ,  
stationary seat lock necessary.

Externally pressurized:

$p_1 = 10 \text{ bar} (145 \text{ PSI})$

Temperature:

$t = -40 \text{ °C} \dots +220 \text{ °C} (-40 \text{ °F} \dots +428 \text{ °F})$

Sliding velocity:  $v_g = 20 \text{ m/s} (66 \text{ ft/s})$

#### MFL85P / MFL90P

Version with pumping ring. Dependent on direction of rotation. Can be retrofitted.

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	d <sub>s</sub>	l <sub>1K</sub>	l <sub>3</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>8</sub>	l <sub>9</sub>	l <sub>18</sub>	l <sub>19</sub>	b	s
16	30.0	23	27	3	38	42.5*)	32.5	1.5	4	17.5	10.0	-	-	1.6	9.0
18	32.0	27	33	3	39	42.0	30.5	2.0	5	14.0	11.5	15.0	7.0	1.6	10.0
20	33.5	29	35	3	41	42.0	30.5	2.0	5	14.0	11.5	15.0	7.0	1.6	10.0
22	36.5	31	37	3	44	37.5	30.5	2.0	5	14.0	11.5	15.0	7.0	1.6	10.0
24	39.0	33	39	3	47	40.0	28.5	2.0	5	19.5	11.5	15.0	7.0	1.6	8.2
25	39.6	34	40	3	48	40.0	28.5	2.0	5	19.5	11.5	15.0	7.0	1.6	8.5
28	42.8	37	43	3	51	42.5	31.0	2.0	5	19.5	11.5	15.0	7.0	1.6	9.0
30	45.0	39	45	3	53	42.5	31.0	2.0	5	19.5	11.5	15.0	7.0	1.6	8.5
32	46.0	42	48	3	55	42.5	31.0	2.0	5	19.5	11.5	15.0	7.0	1.6	9.2
33	48.0	42	48	3	56	42.5	31.0	2.0	5	19.5	11.5	15.0	7.0	1.6	9.2
35	49.2	44	50	3	58	42.5	31.0	2.0	5	19.5	11.5	15.0	7.0	1.6	9.5
38	52.3	49	56	4	61	45.0	31.0	2.0	6	22.0	14.0	16.0	8.0	1.6	9.2
40	55.5	51	58	4	64	45.0	31.0	2.0	6	22.0	14.0	16.0	8.0	1.6	9.2
43	57.5	54	61	4	67	45.0	31.0	2.0	6	22.0	14.0	16.0	8.0	1.6	9.2
45	58.7	56	63	4	69	45.0	31.0	2.0	6	22.0	14.0	16.0	8.0	1.6	9.5
48	61.9	59	66	4	72	45.0	31.0	2.0	6	22.0	14.0	16.0	8.0	1.6	9.2
50	65.0	62	70	4	74	47.5	32.5	2.5	6	23.0	15.0	17.0	9.5	1.6	10.5
53	68.2	65	73	4	77	47.5	32.5	2.5	6	23.0	15.0	17.0	9.5	1.6	10.5
55	70.0	67	75	4	80	47.5	32.5	2.5	6	23.0	15.0	17.0	9.5	1.6	10.0
58	71.7	70	78	4	83	52.5	37.5	2.5	6	23.0	15.0	18.0	10.5	3.0	14.0
60	74.6	72	80	4	85	52.5	37.5	2.5	6	23.0	15.0	18.0	10.5	3.0	14.0
63	79.0	75	83	4	88	52.5	37.5	2.5	6	23.0	15.0	18.0	10.5	3.0	14.0
65	84.1	77	85	4	95	52.5	37.5	2.5	6	23.0	15.0	18.0	10.5	3.0	14.0
68	87.3	81	90	4	96	52.5	34.5	2.5	7	26.0	18.0	18.5	11.0	1.6	10.0
70	87.3	83	92	4	96	60.0	42.0	2.5	7	26.0	18.0	19.0	11.5	3.0	17.0
75	95.0	88	97	4	104	60.0	42.0	2.5	7	26.0	18.0	19.0	11.5	3.0	16.0
80	98.4	95	105	4	109	60.0	41.8	3.0	7	26.2	18.2	19.0	11.5	3.0	16.0
85	104.7	100	110	4	114	60.0	41.8	3.0	7	26.2	18.2	19.0	11.5	3.0	16.0
90	111.0	105	115	4	119	65.0	46.8	3.0	7	26.2	18.2	20.5	13.0	3.0	21.0
95	114.0	110	120	4	124	65.0	47.8	3.0	7	25.2	17.2	20.5	13.0	3.0	21.0
100	117.4	115	125	4	129	65.0	47.8	3.0	7	25.2	17.2	20.5	13.0	3.0	20.0

Dimensions in millimeter

\* Installation length is longer than l<sub>1K</sub> specified by EN 12756

RELY ON EXCELLENCE

## MFLCT8

Mechanical seals | Mechanical seals for pumps | Metal bellows seals



### Features

- For unstepped shafts
- Single seal
- Balanced
- Independent of direction of rotation
- Metal bellows rotating

### Advantages

- For extreme cold temperature ranges
- No dynamically loaded O-Ring
- Self cleaning effect
- Short installation length possible
- Pumping screw for highly viscous media available (dependant on direction of rotation).

### Operating range

Shaft diameter:  
 $d_1 = 24 \dots 150 \text{ mm (0.94" } \dots 6\text{")}$   
 Externally pressurized:  
 $p_1 = \dots 25 \text{ bar (363 PSI)}$   
 Internally pressurized:  
 $p_1 = 10 \text{ bar (145 PSI)}$ ,  
 stationary seat lock necessary.  
 Temperature:  
 $t = -100 \text{ }^\circ\text{C } \dots +100 \text{ }^\circ\text{C (-148 }^\circ\text{F } \dots 212)^\circ\text{F}$   
 Sliding velocity:  $v_g = 20 \text{ m/s (66 ft/s)}$

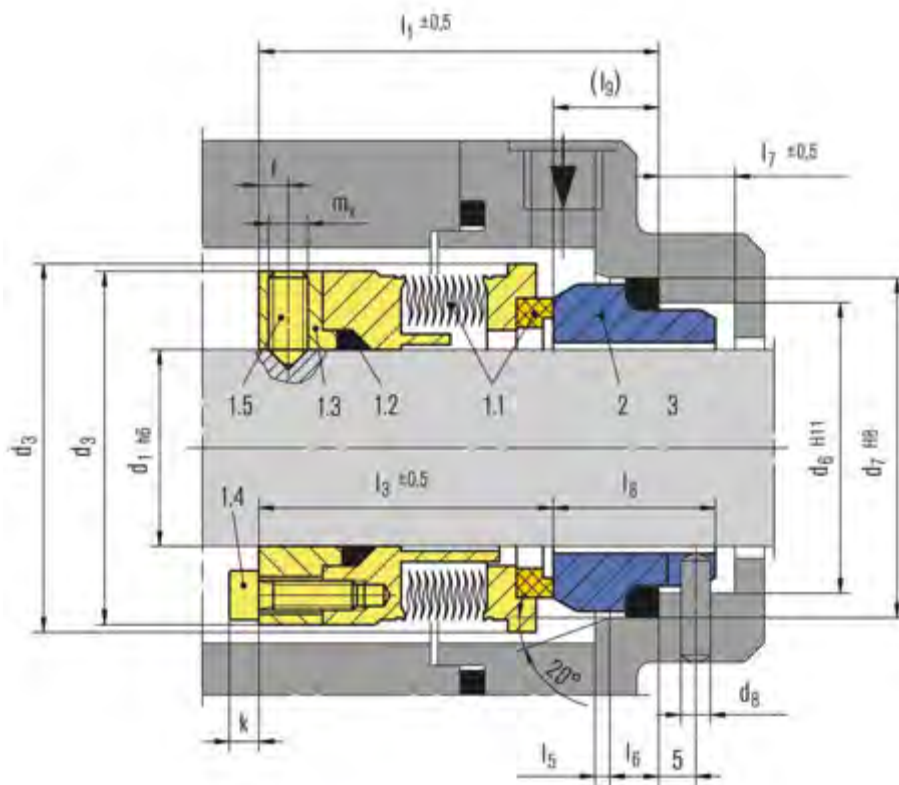
### Materials

Seal face: Carbon graphite antimony impregnated (A), Silicon carbide (Q12)  
 Seat: Silicon carbide (Q1)  
 Bellows: Inconel® 718 hardened (M6), Hastelloy® C-276 (M5)  
 Metal parts: CrNiMo steel (G), Hastelloy® C-4 (M)

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Cold media
- Highly viscous media
- Pumps
- Special rotating equipment

RELY ON EXCELLENCE



Item	Part no.	Description
<b>DIN 24250</b>		
1.1	472/481	Seal face with bellows unit
1.2	410	Sealing ring
1.3	474	Drive collar
1.4		Socket head screw
1.5	904	Set screw
2	475	Seat
3	412	Sealing ring

## Product variants

### MFLCT9

Shaft diameter:

$d_1 = 20 \dots 150 \text{ mm (0.64" ... 6")}$

Intenally pressurized:

$p_1 = \dots 16 \text{ bar (232 PSI)}$ ,

stationary seat lock necessary.

Externally pressurized:

$p_1 = 10 \text{ bar (145 PSI)}$

Temperature:

$t = -100 \text{ }^\circ\text{C} \dots +100 \text{ }^\circ\text{C}$

$(-148 \text{ }^\circ\text{F} \dots +212 \text{ }^\circ\text{F})$

Sliding velocity:  $v_g = 20 \text{ m/s (66 ft/s)}$

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>3</sub> <sup>2)</sup>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	f	k	m <sub>x</sub>
16	38	-	29.0	35.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
18	40	-	31.0	37.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
20	42	-	34.0	40.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
22	44	-	37.0	43.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
24	46	49.8	37.0	43.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
25	47	51.7	39.0	45.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
28	50	54.5	42.0	48.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M6
30	52	56.6	44.0	50.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M6
32	54	59.5	49.0	56.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
33	55	59.5	49.0	56.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
35	57	62.5	51.0	58.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
38	60	65.7	54.0	61.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
40	66	65.7	56.0	63.0	4	61.5	47.5	2.0	6	9	22.0	14.0	5	6	M6
43	69	68.6	59.0	66.0	4	61.5	47.5	2.0	6	9	22.0	14.0	5	6	M6
45	71	71.5	62.0	70.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
48	74	75.1	65.0	73.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
50	76	76.1	67.0	75.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
53	79	80.8	70.0	78.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
55	81	80.8	72.0	80.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
58	85	84.0	75.0	83.0	4	68.0	53.0	2.5	6	9	23.0	15.0	5	6	M6
60	87	92.3	77.0	85.0	4	68.0	53.0	2.5	6	9	23.0	15.0	6	6	M8
63	90	95.5	81.0	90.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
65	92	95.5	83.0	92.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
68	95	101.3	88.0	97.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
70	97	101.3	88.0	97.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
75	102	105.0	95.0	105.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
80	107	110.6	100.0	110.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
85	112	117.0	105.0	115.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
90	117	120.2	110.0	120.0	4	71.0	53.8	3.0	7	9	25.2	17.2	6	6	M8
95	122	125.2	115.0	125.0	4	71.0	53.8	3.0	7	9	25.2	17.2	6	6	M8
100	127	130.2	122.2	134.3	5	74.0	54.0	3.0	9	11	30.0	20.0	6	6	M8

Dimensions in millimeter  
2) d<sub>3</sub> executed in Hastelloy®

RELY ON EXCELLENCE

## MFLWT8

Mechanical seals | Mechanical seals for pumps | Metal bellows seals



### Features

- For unstepped shafts
- Single Seal
- Balanced
- Independent of direction of rotation
- Metal bellows rotating

### Advantages

- For extreme high temperature ranges
- No dynamically loaded O-Ring
- Self cleaning effect
- Short installation length possible
- Pumping screw for highly viscous media available (dependent on direction of rotation).

### Operating range

Shaft diameter:  
 $d_1 = 16 \dots 150 \text{ mm (0.63" ... 6")}$   
 Externally pressurized:  
 $p_1 = \dots 25 \text{ bar (363 PSI)}$   
 Internally pressurized:  
 $p_1 < 120 \text{ °C (248 °F) } 10 \text{ bar (145 PSI)}$   
 $p_1 < 220 \text{ °C (428 °F) } 5 \text{ bar (73 PSI)}$   
 $p_1 < 400 \text{ °C (752 °F) } 3 \text{ bar (44 PSI)}$   
 Stationary seat lock necessary  
 Temperature:  
 $t = -40 \text{ °C ... } +400 \text{ °C}$   
 $(-148 \text{ °F ... } +752 \text{ °F})$   
 Sliding velocity:  $v_g = 20 \text{ m/s (66 ft/s)}$

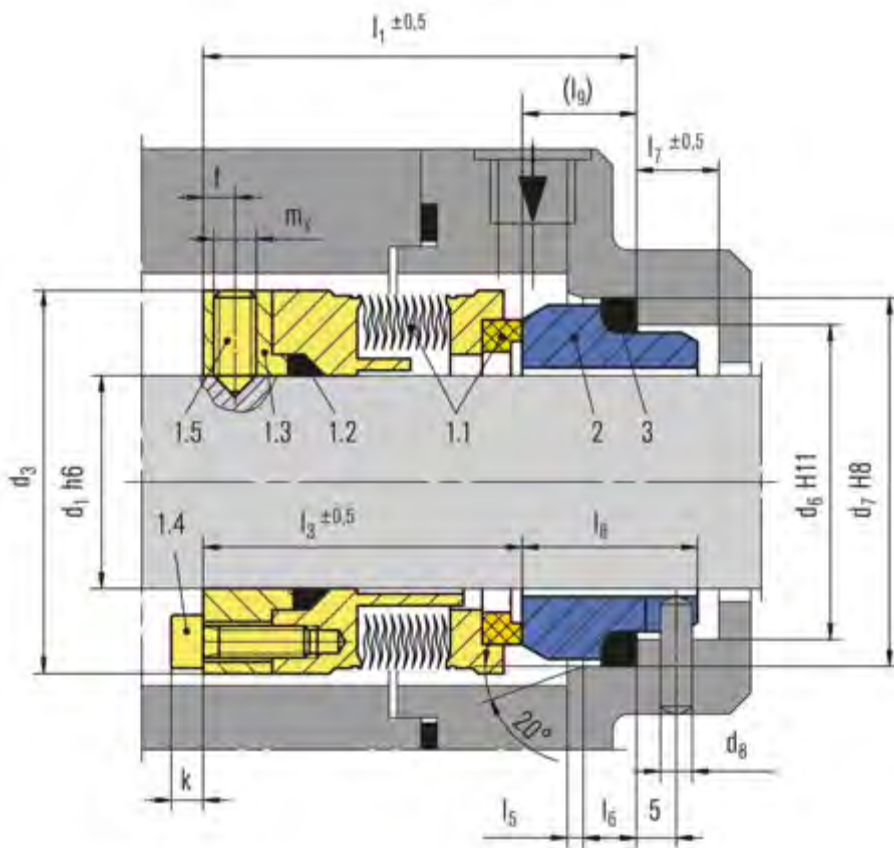
### Materials

Seal face: Carbon graphite antimony impregnated (A), Silicon carbide (Q12)  
 Seat: Silicon carbide (Q1)  
 Bellows: Inconel® 718 hardened (M6), Hastelloy® C-276 (M5)  
 Metal parts: CrNiMo steel (G), Duplex (G1), Carpenter® 42 (T4), Hastelloy® C-4 (M)

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Pulp and paper industry
- Hot media
- Highly viscous media
- Pumps
- Special rotating equipment

RELY ON EXCELLENCE



Item	Part no. to DIN 24250	Description
1.1	472/481	Seal face with bellows unit
1.2	410	Sealing ring
1.3	474	Drive collar
1.4		Socket head screw
1.5	904	Set screw
2	475	Seat
3	412	Sealing ring

## Product variants

### MFLWT9

Shaft diameter:

d1 = 16 ... 150 mm (0.64" ... 6")

Internally pressurized:

p1 = ... 16 bar (232 PSI)

Externally pressurized:

p1 = 10 bar (145 PSI)

Temperature:

t = -20 °C ... +400 °C

(-4 °F ... +752 °F),

stationary seat lock necessary.

Sliding velocity: vg = 20 m/s (66 ft/s)



## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	d <sub>8</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	f	k	m <sub>x</sub>
16	38	29.0	35.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
18	40	31.0	37.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
20	42	34.0	40.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
22	44	37.0	43.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
24	46	37.0	43.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
25	47	39.0	45.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M5
28	50	42.0	48.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M6
30	52	44.0	50.0	3	58.0	46.5	2.0	5	9	19.5	11.5	5	5	M6
32	54	49.0	56.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
33	55	49.0	56.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
35	57	51.0	58.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
38	60	54.0	61.0	4	60.5	46.5	2.0	6	9	22.0	14.0	5	5	M6
40	66	56.0	63.0	4	61.5	47.5	2.0	6	9	22.0	14.0	5	6	M6
43	69	59.0	66.0	4	61.5	47.5	2.0	6	9	22.0	14.0	5	6	M6
45	71	62.0	70.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
48	74	65.0	73.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
50	76	67.0	75.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
53	79	70.0	78.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
55	81	72.0	80.0	4	62.5	47.5	2.5	6	9	23.0	15.0	5	6	M6
58	85	75.0	83.0	4	68.0	53.0	2.5	6	9	23.0	15.0	5	6	M6
60	87	77.0	85.0	4	68.0	53.0	2.5	6	9	23.0	15.0	6	6	M8
63	90	81.0	90.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
65	92	83.0	92.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
68	95	88.0	97.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
70	97	88.0	97.0	4	71.0	53.0	2.5	7	9	26.0	18.0	6	6	M8
75	102	95.0	105.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
80	107	100.0	110.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
85	112	105.0	115.0	4	71.0	52.8	3.0	7	9	26.2	18.2	6	6	M8
90	117	110.0	120.0	4	71.0	53.8	3.0	7	9	25.2	17.2	6	6	M8
95	122	115.0	125.0	4	71.0	53.8	3.0	7	9	25.2	17.2	6	6	M8
100	127	122.2	134.3	5	74.0	54.0	3.0	9	11	30.0	20.0	6	6	M8

Dimensions in millimeter

RELY ON EXCELLENCE

## YE400

Mechanical seals | Mechanical seals for pumps | Metal bellows seals



### Features

- Single seal
- Balanced
- Independent of direction of rotation
- Stationary metal bellows

### Advantages

- For high or low temperature applications

### Operating range

Pressure (single ply bellows):

$p = \text{vacuum} \dots 20 \text{ bar} \text{ (} \dots 290 \text{ PSI)}$

Pressure (two ply bellows):

$p = \text{vacuum} \dots 35 \text{ bar} \text{ (} \dots 508 \text{ PSI)}$

Temperature:

$t = -240 \text{ }^\circ\text{C} \dots +425 \text{ }^\circ\text{C}$

$(-400 \text{ }^\circ\text{F} \dots +797 \text{ }^\circ\text{F})$

Sliding velocity:  $v_g = \dots 50 \text{ m/s} \text{ (} 164 \text{ ft/s)}$

Viscosity:  $\dots 1 \text{ Pa}\cdot\text{s}$

### Materials

Seal face: High density carbon graphite

Seat: Silicon carbide (Q2)

Bellows: Inconel® 718 (M6)

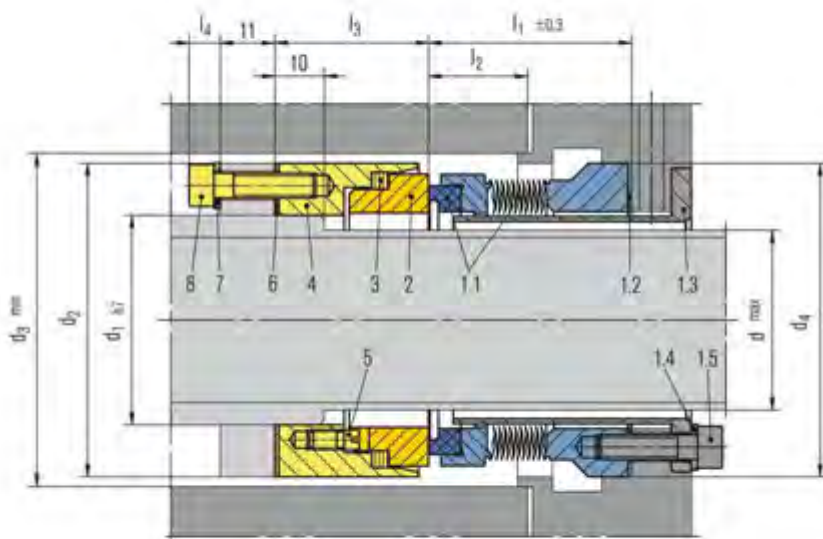
Secondary seals: Graphite

Metal parts: 1.4404, Carpenter® 42 (T4)

### Recommended applications

- Refining technology
- Power plant technology
- Chemical industry
- High and low temperature hydrocarbon services
- Residual oil
- Gas oil
- Low temperature ethylene
- Pumps
- Special rotating equipment

## RELY ON EXCELLENCE



### Item Description

- |     |                 |
|-----|-----------------|
| 1   | Stationary unit |
| 1.1 | Bellows unit    |
| 1.2 | Gasket          |
| 1.3 | Clamp sleeve    |
| 1.4 | Spring washer   |
| 1.5 | HSH cap screw   |
| 2   | Seat            |
| 3   | Secondary seal  |
| 4   | Seat housing    |
| 5   | Drive pin       |
| 6   | Gasket          |
| 7   | Spring washer   |
| 8   | HSH cap screw   |

## RELY ON EXCELLENCE

### Dimensions

Size code	d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
X14	18	21	42	47	44	36	15	31	6.3
X16	21	26	47	50	47	38	17	31	6.3
X18	24	29	50	53	50	38	17	31	6.3
X20	27.5	32	53	56	53	38	17	31	6.3
X22	31	36	57	60	57	38	17	31	6.3
X24	33	39	60	64	60	41	20	31	6.3
X26	36	42	63	67	63	41	20	31	6.3
X28	39	45	66	70	66	41	20	31	6.3
X30	42	48	69	73	69	41	20	31	6.3
X32	45	51	72	76	72	41	20	31	6.3
X34	4.5	54	75	80	76	43	22	31	6.3
X36	50	58	79	83	79	43	22	31	6.3
X38	53	61	82	86	82	43	22	31	6.3
X40	55	64	85	89	85	51	30	31	6.3
X42	58.5	67	89	92	88	51	30	31	6.3
X44	62.5	71	92	96	92	51	30	31	6.3
X46	64	74	96	99	95	55	34	31	6.3
X48	67	77	99	102	98	55	34	31	6.3
X50	70	81	102	105	101	55	34	31	6.3
X52	73	84	105	108	104	55	34	31	6.3
X54	75.5	87	109	111	107	55	34	31	6.3
X56	78.5	90	113	116	111	58	37	31	6.3
X58	82	93	116	120	114	58	37	31	6.3
X60	85	96	119	122	117	58	37	31	6.3
X62	88	99	122	125	120	58	37	31	6.3
X64	91	103	125	128	123	58	37	31	6.3
X70	100	111	138	142	134	60	39	31	6.3
X78	110	116	147	152	145	60	39	41	7.5
X90	129	137	168	173	166	63	42	41	7.5

Dimensions in millimeter

RELY ON EXCELLENCE

## DF-(P)DGS6 DiamondFace

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- DiamondFace bonded primary seal faces
- Safe cupped retainer for rotating ring
- Bi-directional
- Ready-to-fit cartridge unit
- Single, double, tandem and tandem seal with intermediate labyrinth arrangement available
- An ideal solution for Ethane, CO<sub>2</sub> and many other low margin applications
- This Type of seals can handle both liquid and gaseous phases during the operation of the pump

### Advantages

- Significantly lower leakage rate compared to competition
- Longer life span
- Wear and contact free operation
- Self-cleaning 3-D gas grooves
- High gas film stiffness
- Proven, reliable and economical solution
- Can be adjusted even to extreme narrow installation space - retrofits are easy to implement

### Operating range

Shaft diameter:

D = 40 ... 280 mm (1.57" ... 11.02")

Pressure: p = 0 ... 120 bar (1,450 PSI)

with PTFE option: 0 ... 250 bar (3,625 PSI)

Temperature:

t = -20 °C ... +150 °C (-4 °F ... +302 °F)

with PTFE option: -100 °C ... +200 °C (-148 °F ... +392 °F)

Sliding velocity:

vg = 0.6 ... 140 m/s (2 ... 459 ft/s)

For applications outside the operating range mentioned, please inquire.

### Materials

Primary seat and seal face: Silicon carbide with DiamondFace bonding

Secondary seat and seal face: Silicon carbide with DLC coating. Optional also with DF-coating

Secondary seals: FKM, PTFE (DF-PDGS6) or other elastomers, depending on product gas composition

Metal parts: 1.4006 (410) and other stainless steels

### Standards and approvals

- NACE

### Notes

Dimensions on request.

### Recommended applications

- Oil and gas industry
- Refining technology
- Petrochemical industry
- Hydrocarbon applications
- CO<sub>2</sub> applications

### Recommended piping plans

[API Plan 76](#)

Optional:

[API Plan 02](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 72](#)

Not recommended: Plan 11 and plans with cooler e.g. 21, 22, 23

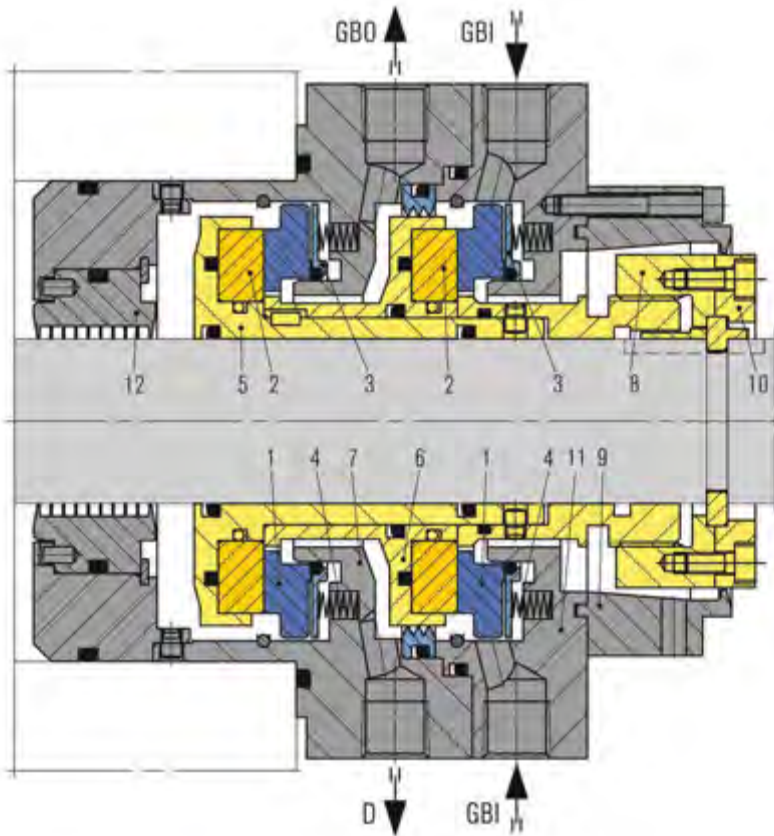
Product links:

[EagleBurgmann GSS6000A4 \(Plan 72\)](#)

[EagleBurgmann LSC6000A4 \(Plan 75\)](#)

[EagleBurgmann SPP6007A4 \(Plan 76\)](#)

RELY ON EXCELLENCE



### DF-DGS6 Tandem seal with intermedia labyrinth

- 1 Seal face with DF-coating\*, stationary
- 2 Seat with DF-coating\*, 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 "Adjustable" nut for axial misalignment
- 9 Split ring
- 10 Clamping ring
- 11 Cover
- 12 Process side labyrinth

GBI Gas Buffer Inlet

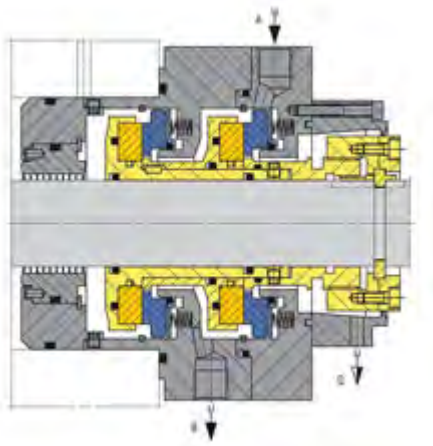
GBO Gas Buffer Outlet

D Drain

\* Optional: secondary seal face and seat also with DF-coating.

## RELY ON EXCELLENCE

### Product variants

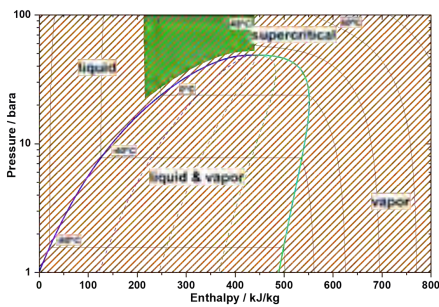


DF-DGS6 Tandem seal

#### DF-PDGS6

Version for high pressure and both low and high temperature applications. With U-cups and special dynamic sealing elements. Secondary seals made of PTFE.

### Charts



Operational sphere of EagleBurgmann DF-DGS6 in comparison to dry and wet seals. Medium: Ethane.

RELY ON EXCELLENCE

## DF-SA DiamondFace

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- Cartridge design
- Single seal
- Balanced
- Integrated pumping device
- Stationary spring loaded unit
- **Inserted seal ring**
- **Rotating mating ring (DiamondFace coated)**

### Advantages

- **Resistant to electrochemical corrosion.**
- **Extremely long service life (>40,000 h).**
- **No dosing system, no cooling circuit conditioning required.**
- **Diamond coating provides very low friction, thus reduced power consumption.**
- Deformation-optimized for high sliding velocities and medium pressures.
- Economical due to standardized components.
- High flexibility due to adaptation of the connection parts to the pump seal chamber.
- Optimum heat dissipation due to integrated pumping device and optimized seat / seal face design.

### Operating range

Shaft diameter:  
 $d1^* = 120 \dots 250 \text{ mm} (4.72" \dots 9.84")$   
 Pressure:  $p1 = 70 \text{ bar} (1,015 \text{ PSI})$   
 Temperature:  $t = 300 \text{ °C} (572 \text{ °F})$   
 Sliding velocity:  $v_g = 70 \text{ m/s} (330 \text{ ft/s})$   
 Axial movement:  $\pm 3 \text{ mm}$

\* Other sizes on request

### Materials

Seal face: Composite carbon  
 Seat: SiC DiamondFace coated  
 Secondary seals: EPDM (E), FFKM (K)  
 Springs: CrNiMo steel (G)  
 Metal parts: CrNiMo steel (G)

### Recommended applications

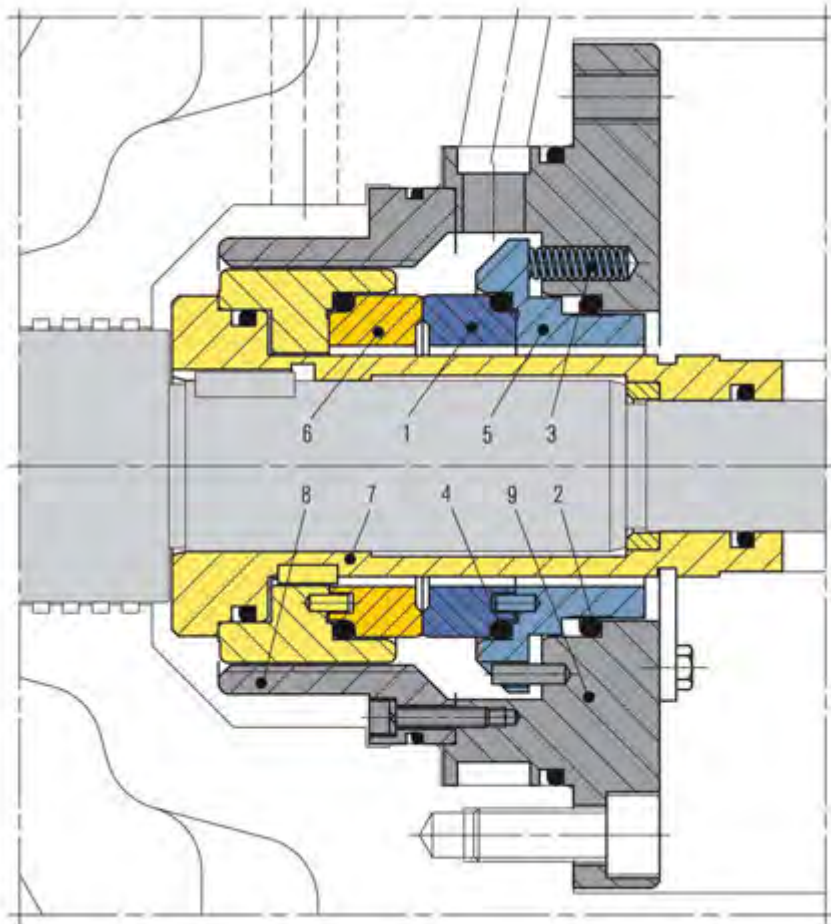
- Power plant technology
- Boiler feed pumps

### Recommended piping plans

API Plan 02 + 23 (with jacket cooling)



RELY ON EXCELLENCE



**Item Description**

- 1 Seal ring
- 2 O-Ring
- 3 Spring
- 4 O-Ring
- 5 Seat collar
- 6 Mating ring (DiamondFace coated)
- 7 Shaft sleeve
- 8 Pumping sleeve
- 9 Cover

**Dimensions**

Dimensions on request.

RELY ON EXCELLENCE

## HR

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- Single seal
- Balanced
- Independent of direction of rotation
- Multiple springs stationary
- Seat rotating
- Seat arranged directly behind the impeller
- Spring protection sleeve
- Variant with cylindrical spring and acc. EN 12756 (HRZ1) available
- Variant as cartridge with/without guide sleeve for application with/without quench (HR2, HR3)
- Dual seal as cartridge unit (HRKS-D) available

### Advantages

- Especially for application in solids containing media without external flush or internal product circulation. Solids content 40 % (single seal) and 60 % (double seal)
- Operation under vacuum without seat locking possible
- Pumping screw for increased circulation available
- Springs are protected from product and leakage

### Operating range

Shaft diameter:

dN = 36 ... 270 mm (1.4" ... 10.63")

Pressure: p1\* = 16 bar (230 PSI)

Temperature:

t = -20 °C ... +160 °C (-4 °F ... +320 °F)

Sliding velocity: vg = 10 m/s (33 ft/s)

\* For operation under vacuum it is necessary to arrange for quenching on the atmosphere side.

### Materials

Seal face: Silicon carbide (Q1, Q2)

Seat: Silicon carbide (Q1, Q2)

### Standards and approvals

- EN 12756

### Notes

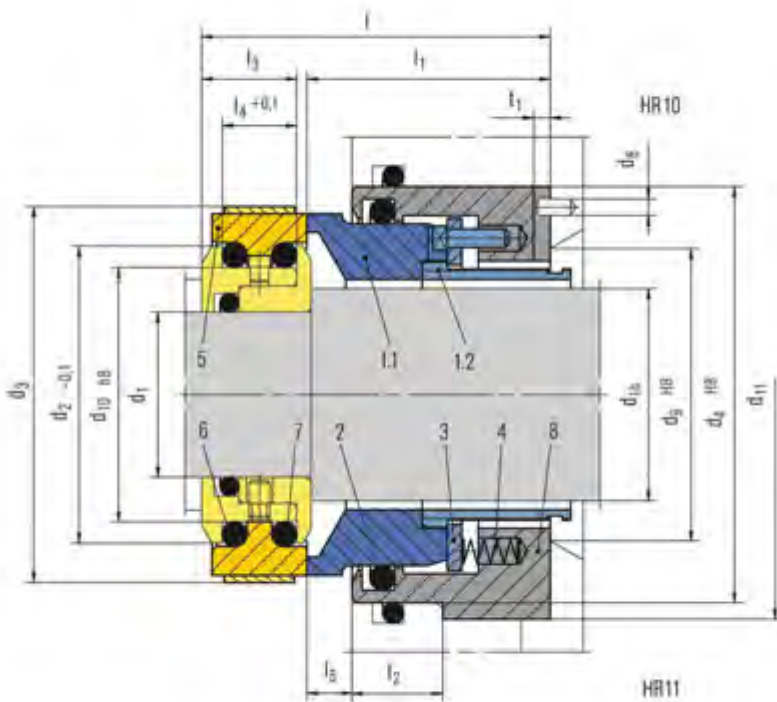
Direction of installation:

- From the impeller side: HR10
- From the bearing side: HR11

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Chemical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Sugar industry
- Cement industry
- Contaminated, abrasive and solids containing media
- Sewage water pumps
- Dredger pumps
- Oil sand extraction
- Suspension pumps of flue-gas desulphurization plants (FGD)

## RELY ON EXCELLENCE



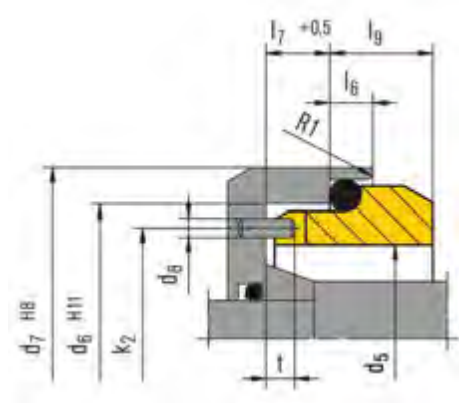
### Item Part no. Description DIN 24250

Item	Part no.	Description
1.1	472	Seal face
1.2	520	Sleeve
2	412.1	O-Ring
3	474	Thrust ring
4	477	Spring
5	475	Seat (G11)
6	412.2	O-Ring
7	412.3	O-Ring
8	441	Housing

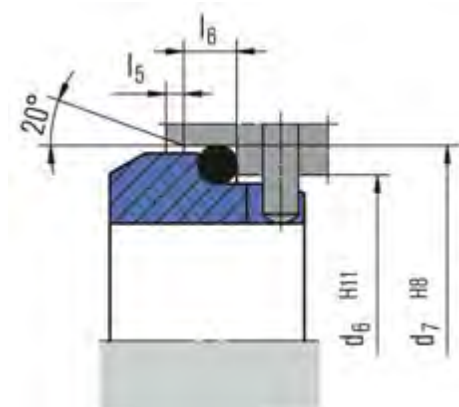
Direction of installation: - from the impeller side  
HR10 - from the bearing side HR11

## RELY ON EXCELLENCE

### Seat alternatives



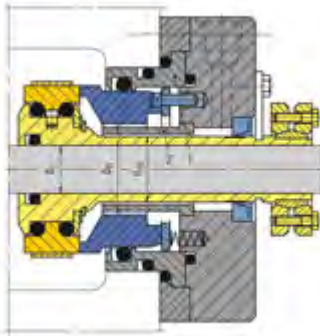
**G2**  
(dN 36 ... 90 mm)



**G9**  
(dN 95 ... 180 mm)

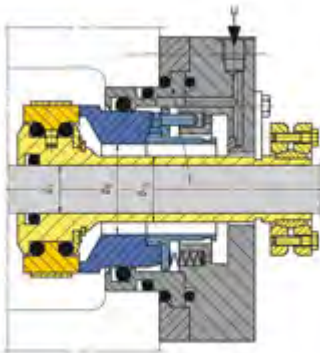
RELY ON EXCELLENCE

## Product variants



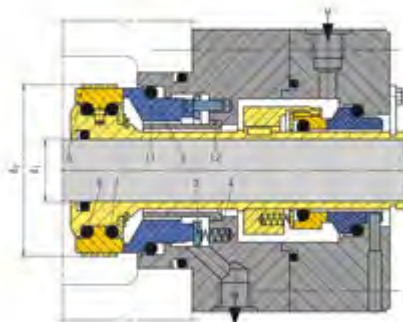
### HR2

Cartridge-type single seal with guide sleeve (Item no. 2) for use with quench. Insert (Item no. 1) either metal or silicon carbide.



### HR3

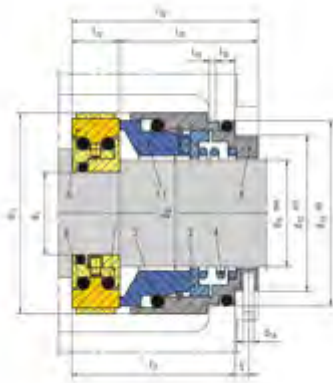
Cartridge-type single seal. Insert (Item no. 1) either metal or silicon carbide. Optional without maintenance rinsing.



### HRKS-D

Double seal in cartridge design for operation in barrier or buffer pressure (does not open if barrier pressure fails), available alternatively with a pumping screw for a higher rate of circulation. Torque transmission e.g. by shrink disk.

## RELY ON EXCELLENCE



### HR21

Single seal with cylindrical spring and type G76 seat. For installation in covers with installation dimensions according to EN 12756 B or U. Installation length  $l_{11}$  corresponds to max.  $l_{1k}$ . Intermediate sizes on request.

## Dimensions

$d_1$	$d_{1h}$	$d_N$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	$d_7$	$d_8$	$d_9$	$d_{10}$	$d_{11} + 0.2 \text{ min}$	$l$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$l_7$	$l_9$	$k_2$	$t$	$t_1$
20	28	36	47.1	65	70	46	56.0	63.0	4	40	38	75	75	53	20	19.5	17	10.5	6	9	8.0	51.0	4.5	3
25	33	41	52.1	70	75	51	62.0	70.0	4	45	43	80	75	53	20	19.5	17	10.5	6	9	9.5	56.5	4.5	3
28	38	46	57.1	75	80	56	67.0	75.0	4	50	48	85	75	53	20	19.5	17	10.5	6	9	9.5	61.5	4.5	3
33	43	51	62.1	80	85	61	72.0	80.0	4	55	53	90	75	53	20	19.5	17	10.5	6	9	10.5	66.5	4.5	3
38	48	56	67.1	85	90	66	77.0	85.0	4	60	58	95	75	53	20	19.5	17	10.5	6	9	10.5	71.5	4.5	3
43	53	61	72.1	90	95	69	81.0	90.0	4	65	63	100	75	53	20	19.5	17	10.5	7	9	11.0	75.0	4.5	3
48	58	66	77.1	95	100	76	88.0	97.0	4	70	68	105	75	53	20	19.5	17	10.5	7	9	11.5	82.0	4.5	3
53	63	71	82.1	101	105	81	95.0	105.0	4	75	73	110	75	53	20	19.5	17	10.5	7	9	11.5	88.0	4.5	3
55	65	75	87.1	106	110	86	100.0	110.0	4	79	78	115	75	53	20	19.5	17	10.5	7	9	11.5	93.0	4.5	3
60	70	80	92.1	111	115	91	105.0	115.0	4	84	83	120	75	53	20	19.5	17	10.5	7	9	13.0	98.0	4.5	3
65	75	85	97.1	116	120	96	110.0	120.0	4	89	88	125	75	53	20	19.5	17	10.5	7	9	13.0	103.0	4.5	3
70	80	90	102.1	121	125	101	115.0	125.0	4	94	93	130	75	53	20	19.5	17	10.5	7	9	13.0	108.0	4.5	3
75	85	95	107.1	126	130	107	122.2	134.3	5	99	98	135	75	53	20	19.5	17	10.5	10	12	20.0	114.5	7.0	3
80	90	100	112.1	131	135	107	122.2	134.3	5	104	103	140	75	53	20	19.5	17	10.5	10	12	20.0	114.5	7.0	3
90	100	110	126.1	147	155	117	136.2	148.3	5	116	117	163	98	73	30	22.0	19	16.0	10	12	20.0	126.5	7.0	4
100	110	120	136.1	157	165	132	146.2	158.3	5	126	127	173	98	73	30	22.0	19	16.0	10	12	20.0	139.0	7.0	4
110	120	130	145.1	167	175	142	156.2	168.3	5	136	136	183	98	73	30	22.0	19	16.0	10	12	20.0	149.0	7.0	4
120	130	140	154.1	177	185	152	168.2	180.3	5	146	145	193	98	73	30	22.0	19	16.0	10	12	22.0	160.0	7.0	4
130	140	150	163.9	188	195	162	178.2	190.3	5	156	155	203	98	73	30	22.0	19	16.0	12	12	24.0	170.0	7.0	4
140	150	160	174.9	189	205	172	188.2	200.3	5	166	166	213	98	73	30	22.0	19	16.0	12	12	24.0	180.0	7.0	4
160	170	180	193.9	220	230	187	212.5	224.3	5	186	185	238	98	73	30	22.0	19	16.0	12	12	28.0	199.5	7.0	4
180	190	200	213.9	240	255	-	-	-	-	206	205	265	98	73	30	22.0	19	16.0	-	-	-	-	-	4
190	200	210	231.9	255	270	-	-	-	-	218	220	280	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5
200	210	220	241.9	265	280	-	-	-	-	228	230	290	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5
210	220	230	251.9	275	290	-	-	-	-	238	240	300	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5
220	230	240	261.9	285	300	-	-	-	-	248	250	310	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5
230	240	250	271.9	295	310	-	-	-	-	258	260	320	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5
250	260	270	291.9	315	330	-	-	-	-	278	280	340	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5

Dimensions in Millimeter. Dimensions for shaft diameters up to 300 mm on request.

## RELY ON EXCELLENCE

### Dimensions

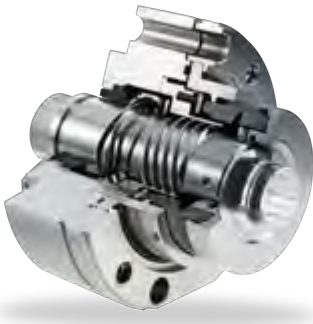
d <sub>N</sub>	d <sub>1h</sub>	d <sub>1</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>13</sub>	d <sub>14</sub>	l <sub>10</sub>	l <sub>11</sub>	l <sub>12</sub>	l <sub>13</sub>	l <sub>15</sub>	l <sub>16</sub>								
35	33	20	56	42	48	3	57.7	49.2	15.0	42.7	2.0	5								
43	39	27	67	54	61	4	57.7	49.2	15.0	42.7	2.0	6								
54	50	35	78	65	73	4	59.8	52.1	15.5	44.3	2.5	6								
66	60	47	91	77	85	4	66.0	58.0	16.5	49.5	2.5	6								
77	72	55	103	88	97	4	74.5	66.0	17.5	57.0	2.5	7								
100	90	70	125	110	120	4	82.0	73.0	21.0	61.0	3.0	7								

HRZ1 - Dimensions in millimeter

RELY ON EXCELLENCE

## HRC...N

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- Cartridge
- Balanced
- Independent of direction of rotation
- Stationary multiple springs
- Spring protection sleeve
- Variant for operation with pressureless quench available (HRC2000N)
- Dual seal with and without pumping screw (HRC3300NF, HRC3300N) available

### Advantages

- Insensitive to solids containing media. Solids content 40 % (single seal), 60 % (double seal)
- Springs protected from product and leakage
- Variant with short installation length to meet limited space conditions (HRC1100N)
- Dual seal remains closed in case of barrier pressure failure, self-closing at pressure reversal (HRC3300NF)
- Operation under vacuum without seat locking possible
- No damage of the shaft by dynamically loaded O-Ring
- Insensitive to shaft deflections due to stationary design

### Operating range

Shaft diameter:  
 $d_{10} = 30 \dots 60 \text{ mm (1.181" ... 2.362")}$   
 Pressure:  $p_1 = 23 \text{ bar (334 PSI)}$   
 Temperature:  
 $t = -20 \text{ }^\circ\text{C} \dots +160 \text{ (200*) }^\circ\text{C}$   
 $(-4 \text{ }^\circ\text{F} \dots +320 \text{ (382*) }^\circ\text{F})$   
 Sliding velocity:  $v_g = 20 \text{ m/s (66 ft)}$   
 Axial movement:  $\pm 1.0 \text{ mm}$

\* Due to shrinking

### Materials

Seal face: Silicon carbide (Q1, Q2)  
 Seat: Carbon graphite antimony impregnated (A), Silicon carbide (Q1, Q2)

### Standards and approvals

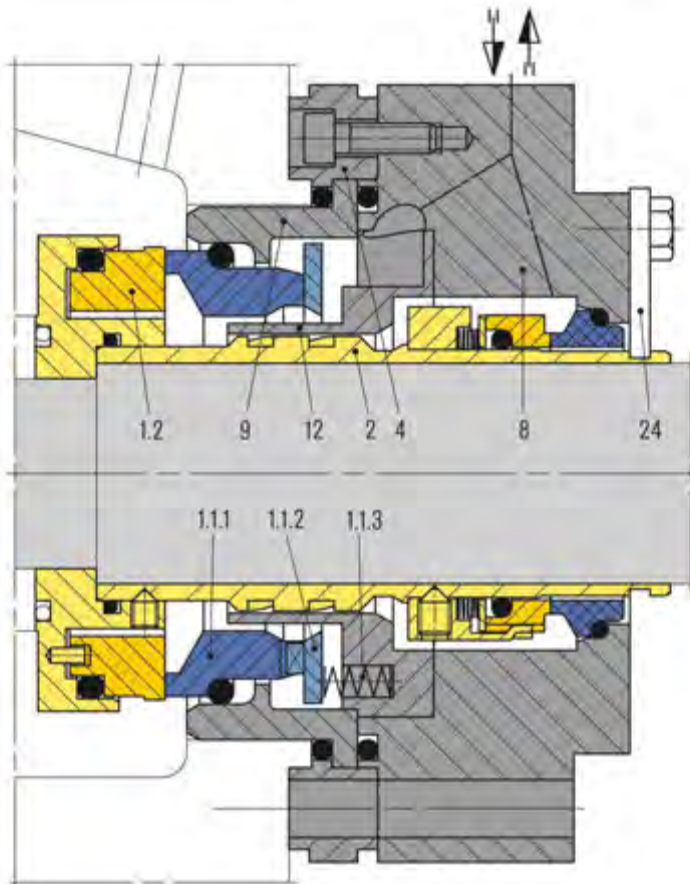
- DIN 24960 C

### Recommended applications

- Chemical industry
- Process industry
- Petrochemical industry
- Mining industry
- Sugar industry
- Dirty, abrasive and solids containing media
- Various chemical processes
- Chemical standard pumps



## RELY ON EXCELLENCE



### HRC3300NF

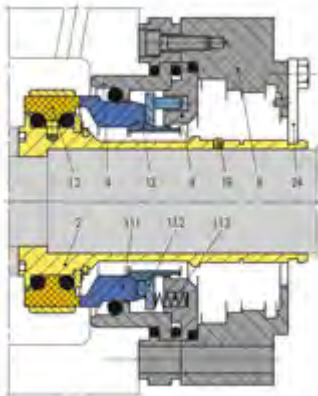
With uni-directional pumping screw. Dual seal remains closed in case of barrier pressure failure and closes in the event of pressure reversal. With guide sleeve (item no. 12). Operation as single seal with quench possible. Encapsulated stationary seat on the product side (bursting protection). Parted seal sleeve for application of highly resistant materials e.g. Hastelloy®.

#### Item Part no. to Description DIN 24250

1.1.1	472.1	Seal face
1.1.2	474	Thrust ring
1.1.3	477.1	Spring
1.2	475.1	Seat
2	523	Shaft sleeve
4	513	Insert
8	160	Cover plate
9	509	Spring carrier
12		Spring protection sleeve
19		Plug
24		Assembly fixture

RELY ON EXCELLENCE

## Product variants

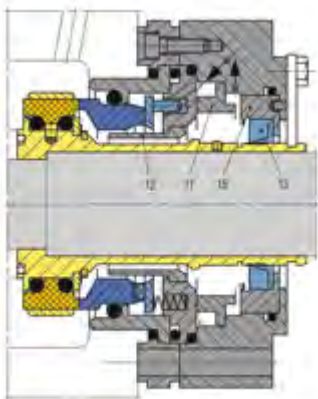


### HRC1000N

Single seal

### HRC1100N

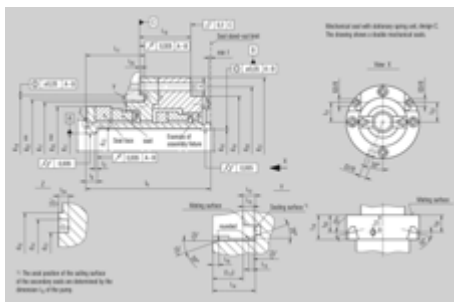
Same design as HRC1000N, but with a shorter cover plate featuring integral spring and drive pin pockets (Item no. 8). No adapter (Item no. 9). Shaft sleeve (Item no. 2) uncoated. Differs from modular system!



### HRC2000N

Single seal with pressureless quench for cooling, featuring guide sleeve (Item no. 12) baffle (Item no. 17), adapter (Item no. 15) and lip seal (Item no. 13) on the atmosphere side. Option: Throttle ring for sealing steam quench on the atmosphere side.

## Charts



Mechanical seal with stationary spring unit, design C. The drawing shows a double mechanical seal.

## RELY ON EXCELLENCE

### Dimensions

d <sub>10</sub> <sup>1)</sup>	d <sub>11</sub> <sup>1)</sup>	d <sub>12</sub> <sup>2)</sup>	d <sub>13</sub> <sup>3)</sup>	d <sub>14</sub> <sup>2)</sup>	d <sub>15</sub> <sup>4)</sup>	d <sub>16</sub>	d <sub>17</sub> <sup>5)</sup>	d <sub>18</sub> <sup>1)6)</sup>	d <sub>19</sub>	d <sub>20</sub>	d <sub>21</sub>	d <sub>22</sub>	l <sub>8</sub> <sup>7)</sup>	l <sub>9</sub>	l <sub>10</sub>	l <sub>11</sub> <sup>2)7)</sup>	l <sub>12</sub> <sup>2)7)</sup>	l <sub>13</sub> <sup>8)</sup>	l <sub>14</sub>	l <sub>15</sub> l <sub>16</sub>	l <sub>17</sub> l <sub>18</sub>	l <sub>19</sub> l <sub>20</sub>	l <sub>21</sub> l <sub>22</sub>	l <sub>23</sub> l <sub>24</sub> <sup>9)</sup>	l <sub>25</sub>	s				
30	24	31	35	41	44	82	85	95	d <sub>19</sub> 20	110	129	86	115	10	15	50	4	4	20	1	16	0.5	55	39	35	35	39	2	0.5	M10
40	32	41	45	51	54	92	95	110	d <sub>19</sub> 20	130	155	96	130	10	15	52	4	4	22	1	18	0.5	60	44	40	40	44	2	0.5	M12
50	42	51	55	61	66	105	110	125	d <sub>19</sub> 20	145	168	111	140	12	15	55	4	4	25	1	21	0.5	60	44	45	40	44	2	0.5	M12
60	50	61	61	67	76	120	125	140	d <sub>19</sub> 20	160	185	126	166	14	20	70	4	4	30	1	26	0.5	60	44	50	40	44	2	0.5	M12

Dimensions in Millimeter

1) H7 2) +0.2 3) -0.2 4) +0.5 5) h8 6) +7 7) +0.1 8) -0.1 9) ±0.05

RELY ON EXCELLENCE

## LP-D

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- Integrated seal for Sulzer A pumps
- Dual seal, balanced
- Semi cartridge unit
- Independent of direction of rotation
- Double pressure balanced
- Internal barrier fluid circulation
- Static springs on both sides
- No dynamic O-Ring on shaft
- Rugged design
- Shrink-fitted seal faces
- Seal faces have a large clearance to the shaft
- Wear part cost minimized
- Optimized design for Non-Flow use

### Advantages

- Individually integrated to equipment for the best sealing result
- Straightforward and easy installation
- Static springs on both face sides reduces influence of misalignment
- No damage of the shaft by dynamically loaded O-Rings
- Extended service life due to rugged design
- No brittle parts in contact with torque transmission pins
- Seal faces protected by strong steel parts and a large radial clearance

### Operating range

Temperature:

$t = -20\text{ °C} \dots +140\text{ °C} (-4\text{ °F} \dots +284\text{ °F})$   
( $180\text{ °C} (356\text{ °F})$  with Kalrez® elastomers)

Pressure:

$p_1 \dots 25\text{ bar} (363\text{ PSI})$ ,  $p_3 < 12\text{ bar} (174\text{ PSI})$

Sliding velocity:  $vg \dots 20\text{ m/s} (66\text{ ft/s})$

Stock content:  $< 8\%$

Non-flow operation:

Temperature:

$t = +5\text{ °C} \dots +100\text{ °C} (+41\text{ °F} \dots +212\text{ °F})$

Pressure:

$p_1 \text{ max. } 10\text{ bar} (145\text{ PSI})$ ,  $p_3 > p_1$

Sliding velocity:  $vg < 10\text{ m/s} (33\text{ ft/s})$

### Materials

Seal face: Silicon carbide (Q12), Carbon (A)

Secondary seals: FKM (V), EPDM (E), FFKM (K)

Metal parts: CrNiMo steel (G),

Grade 5A (4T), SMO 654 (4U)

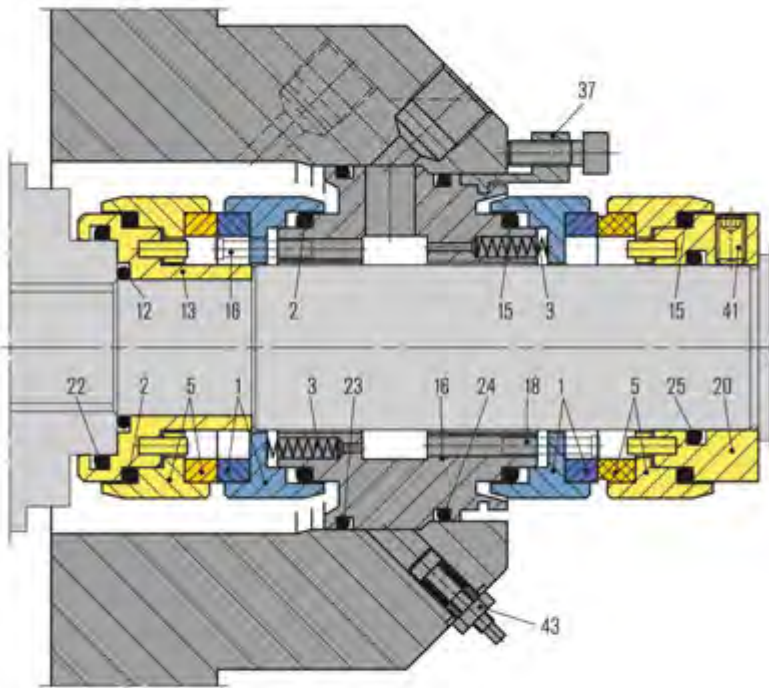
### Notes

- Double, quench and single seals have the same wear parts on the product side, reduces stock holding costs
- The dual seal can also be used as single seal by removing the atmospheric seal parts
- Can be used with pressurized buffer fluid or with quench

### Recommended applications

- Pulp and paper industry
- Chemical industry
- Clean, abrasive or corrosive liquids
- Stocks of various kind
- Applications where crystallization is a problem
- Sulzer Ahlstar A (MS11) centrifugal pumps

## RELY ON EXCELLENCE



Item	Designation
1	Seal face
5	Seat
13	Sleeve
16	Housing
18	Pin
37	Locking fixture
2, 12, 15, 22, 23, 24, 25	O-Ring
43	Plug

LP-D-UP Dual seal  
Ready-fitted for Ahlstar UP A MS21 range of pumps, bearing unit A1-A6

## Product variants

### LP-D-S32-D20

Dual seal, adapted for Sulzer APP/APT pumps.

### LP-D-SL

Dual, adapted for Sulzer SL Mixers.

### Further designs

available to fit in numerous other equipment from notable manufacturers for the Pulp- and Paper Industry e.g., Metso conical refiners, Andritz pressure screens and stock pumps.

RELY ON EXCELLENCE

## LP-S

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- Integrated seal for Sulzer A pumps
- Single + Plan 11 flush
- Semi cartridge unit
- Balanced
- Independent of direction of rotation
- Static springs
- No dynamic O-Ring on shaft
- Rugged design
- Shrink-fitted seal faces
- Seal faces have a large clearance to the shaft
- Wear part cost minimized

### Advantages

- Individually integrated to equipment for best sealing result
- Straightforward and easy installation
- Static springs reduces influence of misalignment
- No damage of the shaft by dynamically loaded O-Ring
- Extended service life due to rugged design
- No brittle parts in contact with torque transmission pins
- Seal faces protected by strong steel parts and a large radial clearance
- The double, quench and single seals have the same wear parts on product side
- Reduces stock holding costs

### Operating range

Temperature:  
t = -20 °C ... +140 °C (-4 °F ... +284 °F)  
Pressure: p1 ... 25 bar (363 PSI)  
Sliding velocity: vg ... 20 m/s (66 ft/s)  
Stock content: ... 4 %

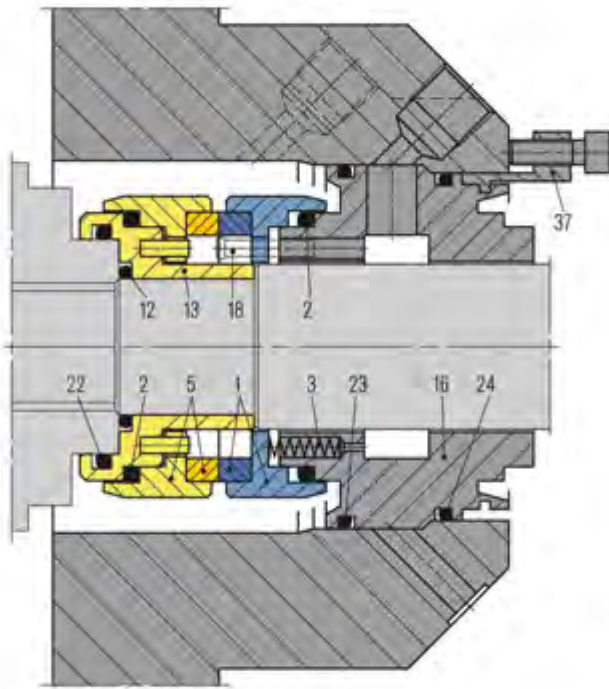
### Materials

Seal face: Silicon carbide (Q12), Carbon (A)  
Secondary seals:  
FKM (V), EPDM (E), FFKM (K)  
Metal parts: CrNiMo steel (G),  
Grade 5A (4T), SMO 654 (4U)

### Recommended applications

- Pulp and paper industry
- Chemical industry
- All clean none abrasive media
- Sulzer Ahlstar APP and APT centrifugal pumps

## RELY ON EXCELLENCE



Item	Description
1, 5	Seal face
2, 12, 22, 23, 24	O-Ring
3	Spring
13	Sleeve
16	Housing
18	Pin
37	Locking fixture

LP-S-UP Single seal  
 Ready-fitted for Ahlstar UP A MS21 range of pumps,  
 bearing unit A1-A6

## RELY ON EXCELLENCE

### Product variants

#### LP-S-UPF

Single seals for API Plan 11 with throttle acc. Sulzer design request, adapted for Sulzer A pump series.

#### LP-G-UP

Single seal for operation with unpressurised grease quench. Identically equal design to LP-S-UP however with quench housing at atmospheric side.

#### LP-S-S32-E10

Single seal adapted for Sulzer APP/APT Pumps.

#### LP-S-S32-F10

Single seal adapted for Sulzer APP/APT Pumps, for API Plan 11 with throttle acc. Sulzer design request.

#### LP-Q-S32-E20

Single seal for operation with unpressurised quench. Identical design with LP-S however with outboard lip seal at atmospheric side (installation length longer), adapted for Sulzer APP/APT Pumps.

#### LP-G-S32-E30

Single seal for operation with unpressurised grease quench. Identically equal design to LP-S-S32 however with quench housing at atmospheric side.

#### LP-S-SL

Single seal, adapted for Sulzer SL Mixers.

#### Further designs

available to fit in numerous other equipment from notable manufacturers for the Pulp- and Paper Industry e.g., Metso conical refiners, Andritz pressure screens and stock pumps.



RELY ON EXCELLENCE

## SAF(V) / SAP(V)

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- Cartridge design
- Single seal
- Balanced
- Dependent on direction of rotation
- Integrated pumping device
- Stationary spring loaded unit
- Inserted seal face
- Rotating carbon seat

### Advantages

- Deformation-optimized seal for high sliding velocities and medium pressures
- Economical due to standardized inner components
- High flexibility due to adaptation of the connection parts to the pump seal chamber
- Optimum heat dissipation due to integrated pumping device and optimized seat / seal face design
- Insensitive to shaft deflections due to stationary design
- Pre-assembled unit for quick and easy installation
- Only small number of components

### Operating range

Shaft diameter:  
 $d1^* = 120 \dots 250 \text{ mm} (4.72" \dots 9.84")$   
 Pressure:  $p1 = 50 \text{ bar} (725 \text{ PSI})$   
 Temperature:  $t = +300 \text{ }^\circ\text{C} (+572 \text{ }^\circ\text{F})$   
 Sliding velocity:  $vg = 65 \text{ m/s} (213 \text{ ft/s})$   
 Axial movement:  $\pm 3 \text{ mm}$

\* Other sizes on request

### Materials

Seal face: Silicon carbide (Q), SiC-C-Si  
 Silicon impregnated carbon (Q3)  
 Seat: Carbon graphite resin impregnated (B),  
 SiC-C-Si Silicon impregnated carbon (Q3)  
 Secondary seals: EPDM (E), FFKM (K)  
 Springs: CrNiMo steel (G)  
 Metal parts: CrNiMo steel (G)

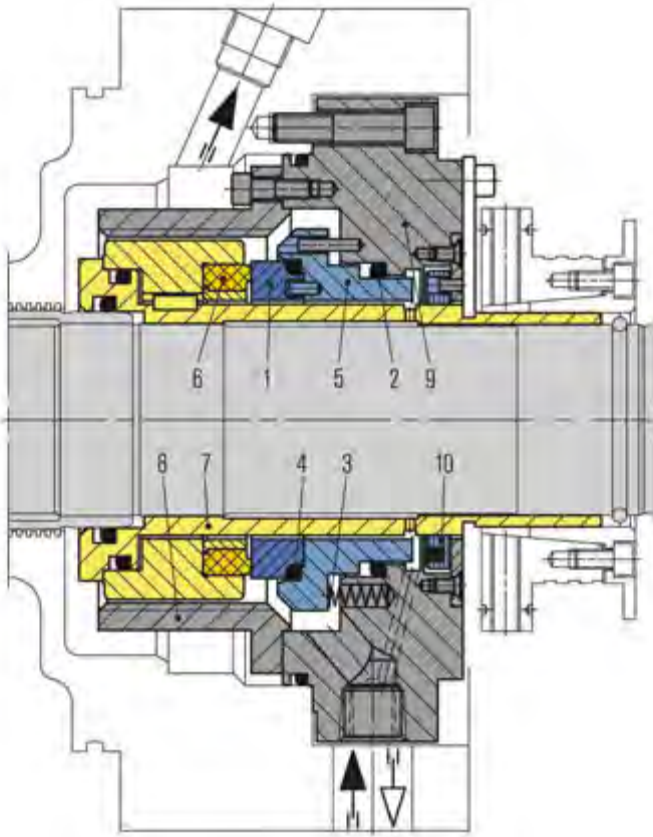
### Recommended applications

- Power plant technology
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Boiler feed water with low conductivity
- Boiler feed pumps

### Recommended piping plans

[API Plan 02](#) + [API Plan 23](#) (with jacket cooling)

## RELY ON EXCELLENCE



Item	Description
1	Seal face
2	O-Ring
3	Spring
4	O-Ring
5	Seat collar
6	Seat
7	Shaft sleeve
8	Pumping sleeve
9	Cover
10	Throttle ring

RELY ON EXCELLENCE

## SHI300

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- Robust seal design - suitable for demanding light hydrocarbon applications
- Compact cartridge seal for small seal chambers
- Single unpressurized seal with a high pressure-non contacting containment seal
- Stationary spring loaded unit
- Balanced primary seal faces in materials with high thermal conductivity and strength
- Multi-point injection of the flush fluid optional
- Seal faces can be equipped with lubrication enhancing grooves and/or DiamondFace technology

### Advantages

#### Operational Excellence

- High Performance seal for single and multi fluid type pipeline services with variable pressures and speeds
- Low amount of heat generation, hence minimal temperature rise in the seal faces
- Suitable for flashing and non-flashing light hydrocarbons, even with low vapor pressure margins
- Seal faces have soft torque transmission
- Seal faces are shrouded in steel collars so that they cannot break apart in pieces in an emergency case
- Resistant to alignment issues between the pump case and shaft because of stationary springs
- Containment seal is rated for full dynamic pressure of primary seal, i.e. high degree of safety and environmental protection
- Seal face materials are resistant to solids in the pumped fluid

#### Technical Excellence

- Simple installation due to pre-assembled cartridge
- Seal faces are designed with FEA & CFD and qualified & tested in the lab
- Can be fitted in older pumps with small seal chambers or stuffing boxes
- High degree of standardization ensures fast deliveries and smart part inventories

#### Sustainability Excellence

- Zero emission seal design for sustainable environmental protection in combination with plan 75 or plan 76

### Materials

#### Seal face:

Silicon impregnated carbon (Q3),  
DiamondFace

Stationary seat: Silicon carbide (Q2),  
DiamondFace

Secondary seals: FKM (V), FFKM (K)

Springs: Hastelloy® C-4 (M)

Metal parts: CrNiMo steel (G), Duplex (G1),  
Super Duplex (G4), Titan (T2), Hastelloy® C-4  
(M)

#### Recommended applications

- Pipeline systems
- Tank farms / storage tanks
- Petrochemical industry
- Refining technology
- Oil & gas production

#### Recommended piping plans

[API Plan 11](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 32](#)

[API Plan 72](#)

[API Plan 75](#)

[API Plan 76](#)

## RELY ON EXCELLENCE

- Minimized friction and energy consumption

### Operating range

Shaft diameter:

$d1^* = 50 \dots 150 \text{ mm} (1.97'' \dots 5.91'')$

Pressure:  $p1 = 100 \text{ bar} (1,450 \text{ PSI})$ ,

Static: up to 150 bar (2,175 PSI),

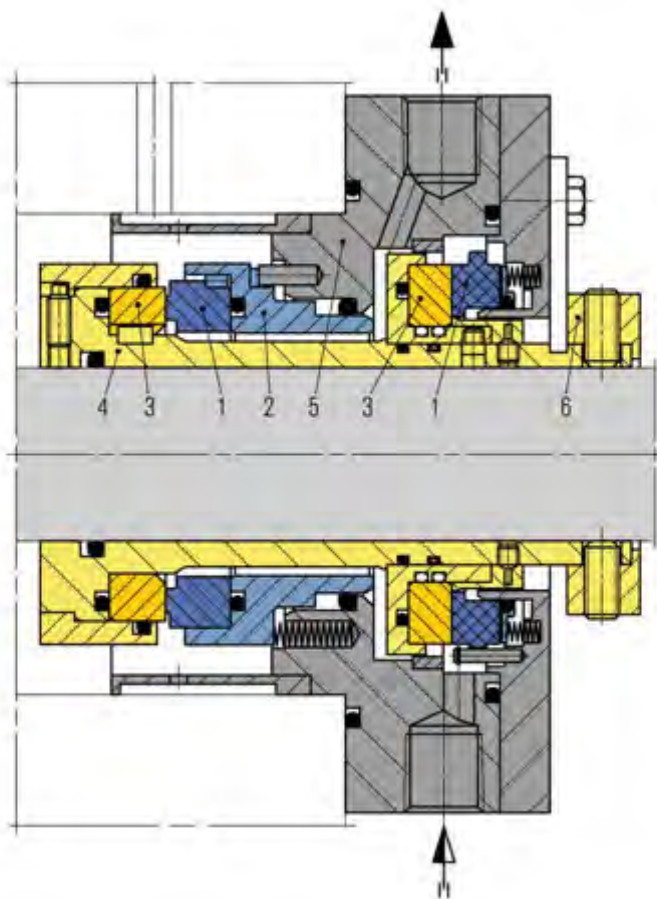
Dynamic: up to 100 bar (1,450 PSI)

Temperature:  $t = -20 \dots +100 \text{ }^\circ\text{C} (-4 \dots 212 \text{ }^\circ\text{F})$

Sliding velocity:  $v_g = 50 \text{ m/s} (164 \text{ ft/s})$

Axial movement:  $\pm 1 \text{ mm}$

\* Additional sizes upon request



### SHI300

Item	Description
1	Seal face
2	Face housing
3	Seat
4	Shaft sleeve
5	Housing
6	Set ring

## RELY ON EXCELLENCE

Fluid Groups				
Multiple Products	Ethane	Light Flashing Hydrocarbons	Flashing Hydrocarbons	Non-Flashing Hydrocarbons
Ethane, EP Mix, Flashing Hydrocarbons, Non-Flashing Hydrocarbons	Ethane	Ethane, Propane Mix	Propane, Butane, Propylene, Demethanized mixed NGL (y-grade)	Gasoline, Jet Fuel, Diesel Fuel, Kerosene, etc.

### Typical fluids in pipeline applications

RELY ON EXCELLENCE

## SHI366

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- Robust seal design – especially for demanding crude oil applications
- Compact cartridge seal for small seal chambers
- Single unpressurized seal with containment high-pressure throttle design
- Stationary spring loaded unit
- Balanced seal faces in materials with high thermal conductivity and strength
- Inserted seal face
- Multi-point injection of the flush fluid optional
- Seal faces can be equipped with lubrication enhancing hydropads and/or DiamondFace technology

### Advantages

#### Operational Excellence

- High performance seal design for alternating media properties and operating conditions with high pressures and sliding velocities
- Low amount of heat generation, hence minimal temperature rise in the seal faces
- Seal faces have soft torque transmission
- Seal faces are shrouded in steel colars so that they cannot break apart in pieces in an emergency case
- Resistant to alignment issues between the pump case and shaft because of stationary springs
- Atmosphere side high pressure double throttle design suitable for full product pressure
- Seal face materials are resistant to solids in the pumped fluid
- Optimized for operation also with sand or particles

#### Technical Excellence

- Simple installation due to pre-assembled cartridge
- Seal faces are designed with FEA & CFD and qualified & tested in the lab
- Can be fitted in older pumps with small seal chambers or stuffing boxes
- High degree of standardization ensures fast deliveries and smart part inventories

#### Sustainability Excellence

- Zero emission seal design for sustainable environmental protection
- Minimized friction and energy consumption

#### Operating range

### Materials

#### Seal face:

Silicon impregnated carbon (Q3),  
DiamondFace

Stationary seat: Silicon carbide (Q2),  
DiamondFace

Secondary seals: FKM (V), FFKM (K)

Springs: Hastelloy® C-4 (M)

Metal parts: CrNiMo steel (G), Duplex (G1),  
Super Duplex (G4), Titan (T2), Hastelloy® C-4  
(M)

#### Recommended applications

- Pipeline systems
- Tank farms / storage tanks
- Oil & gas production

#### Recommended piping plans

[API Plan 11](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 32](#)

[API Plan 65A](#)

[API Plan 65B](#)

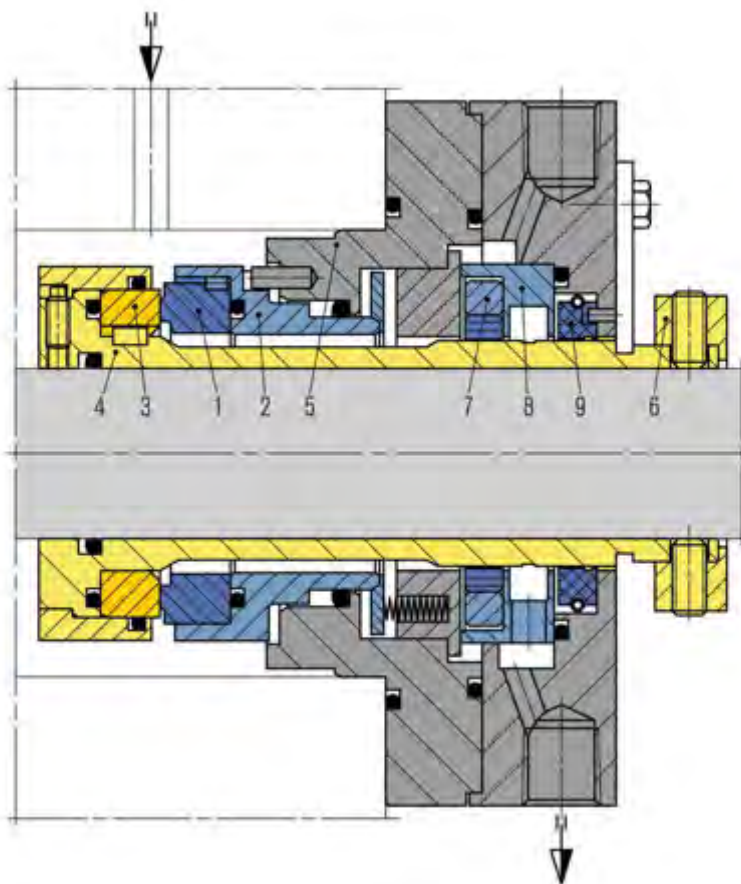
[API Plan 66A](#)

[API Plan 66B](#)

## RELY ON EXCELLENCE

Shaft diameter:  
 $d1^* = 50 \dots 150 \text{ mm} (1.97 \dots 5.91")$   
 Pressure:  $p1 = 100 \text{ bar} (1,450 \text{ PSI})$ ,  
 Static: up to 150 bar (2,175 PSI),  
 Dynamic: up to 100 bar (1,450 PSI)  
 Temperature:  $t = -20 \dots +100 \text{ °C} (-4 \dots 212 \text{ °F})$   
 Sliding velocity:  $v_g = 50 \text{ m/s} (164 \text{ ft/s})$   
 Axial movement:  $\pm 1 \text{ mm}$

\* Additional sizes upon request



### SHI366

Item	Description
1	Seal face
2	Face housing
3	Seat
4	Shaft sleeve
5	Housing
6	Set ring
7	High pressure throttle ring
8	Leakage collection
9	Throttle ring



## RELY ON EXCELLENCE

Fluid Groups	
Raw products	Non-Flashing Hydrocarbons
Crude oil, Bitumen, Diluent, etc.	Gasoline, Jet Fuel, Diesel Fuel, Kerosene, etc.

### Typical fluids in crude oil applications



RELY ON EXCELLENCE

## SHV

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- Single seal in cartridge design
- Balanced
- Multiple springs
- Stationary spring loaded unit
- Shrink-fitted seal face
- Rugged mating ring

### Advantages

- Deformation-optimized seal for high sliding velocities and high pressures
- Economical due to standardized inner components
- High flexibility due to adaptation of the connection parts to the pump seal chamber
- Insensitive to shaft deflections due to stationary design
- Pre-assembled unit for quick and easy installation
- Suitable for use in compliance with API 682, type ES
- Version with loose-fitted seal face available, for extreme applications
- Only small number of components

### Operating range

Shaft diameter:  
 $d1^* = 30 \dots 140 \text{ mm} (1.1811'' \dots 5.5118'')$   
 Other sizes on request  
 Temperature:  
 $t = -40 \text{ °C} \dots +380 \text{ °C} (-40 \text{ °F} \dots +716 \text{ °F})$   
 With adapted cooling devices for high temperature applications  
 Sliding velocity:  $v_g = 50 \text{ m/s} (164 \text{ ft/s})$   
 Axial movement:  $\pm 3 \text{ mm}$

Sliding material combination: A02  
 Dynamic pressure:  $p_1 = 100 \text{ bar} (1,450 \text{ PSI})$   
 Static pressure:  $p_1 = 240 \text{ bar} (3,481 \text{ PSI})$

Sliding material combination Q302:  
 Dynamic pressure:  $p_1 = 120 \text{ bar} (1,740 \text{ PSI})$   
 Static pressure:  $p_1 = 160 \text{ bar} (2,320 \text{ PSI})$

### Materials

Seal face:  
 Carbon graphite antimony impregnated (A),  
 silicon impregnated carbon (Q3)  
 Seat: Silicon carbide (Q2)  
 Secondary seals: FKM (V), FFKM (K), EPDM (E)  
 Springs: Hastelloy® C-4 (M)  
 Metal parts: CrNiMo steel (G), Duplex (G1),  
 Super Duplex (G4)

Other materials on request

### Standards and approvals

- Following the API 682 / ISO 21049

### Recommended applications

- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Desalination
- CCUS
- Hydrogen
- Alternative fuels production
- Power generation

### Recommended piping plans

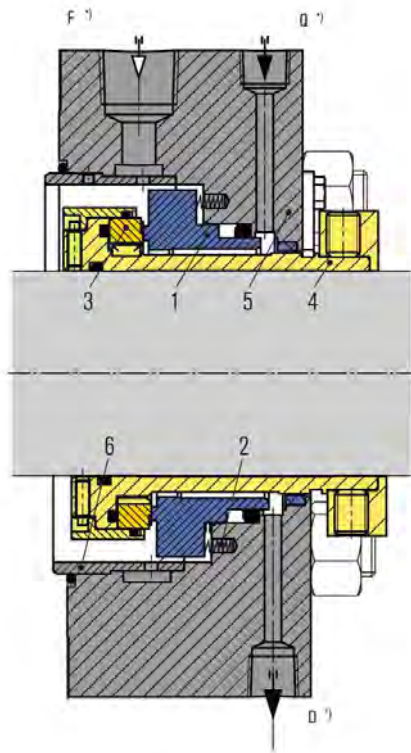
[API Plan 11](#)  
[API Plan 13](#)  
[API Plan 23](#)  
[API Plan 31](#)  
[API Plan 32](#)  
[API Plan 41](#)

Atmospheric side\*:

[API Plan 61](#)  
[API Plan 62](#)  
[API Plan 65A](#)  
[API Plan 65B](#)

\*Trottle on request

RELY ON EXCELLENCE



#### Item Description

- |   |                                 |
|---|---------------------------------|
| 1 | Seal face                       |
| 2 | Spring                          |
| 3 | Seat                            |
| 4 | Shaft sleeve                    |
| 5 | Cover                           |
| 6 | Multipoint injection (Optional) |

## Product variants

### SHVI

Same design as SHV but with loosely inserted seal face for extreme applications (high pressures, pressure variations, temperature variation).

Dynamic pressure:  $p_1 = 200 \text{ bar (2,900 PSI)}$

Static pressure:  $p_1 = 240 \text{ bar (3,481 PSI)}$

### SHFV / SHPV

SHV with integrated pumping device for optimal heat dissipation.

RELY ON EXCELLENCE

## SHV-D

Mechanical seals | Mechanical seals for pumps | Engineered seals



### Features

- Dual seal in face-to-face arrangement
- Cartridge design
- Balanced
- Multiple springs arrangement
- Stationary spring loaded unit
- Shrink-fitted seal rings
- Rugged mating rings

### Advantages

- Deformation-optimized seal for high pressures and high sliding velocities
- Economical due to standardized inner components
- High flexibility due to adaptation of the connection parts to the pump seal chamber
- Insensitive to shaft deflections due to stationary design
- Dual seal does not open even in the event of barrier fluid pressure failure
- Reliable operation due to one rugged seat with bandage
- Version with loose-fitted seal face available, for extreme applications
- Only small number of components

### Operating range

Shaft diameter:  
d1 = 40 ... 110 mm (1.57" ... 4.33")  
Other sizes on request

Temperature:  
t = -40 °C ... +380 °C (-40 °F ... +716 °F)  
With adapted cooling devices for high temperature applications  
Sliding velocity: v<sub>g</sub> = 50 m/s (164 ft/s)  
Axial movement: ±3,0 mm

Sliding material combination: A02  
Dynamic pressure: p1 = 100 bar (1,450 PSI)  
Static pressure: p1 = 240 bar (3,481 PSI)

Sliding material combination Q3Q2:  
Dynamic pressure: p1 = 120 bar (1,740 PSI)  
Static pressure: p1 = 160 bar (2,320 PSI)

### Materials

Seal faces: Carbon graphite antimony impregnated (A), silicon impregnated carbon (Q3)  
Seats: Silicon carbide (Q2)  
Secondary seals: FKM (V), FFKM (K), EPDM (E)  
Springs: Hastelloy® C-4 (M)  
Metal parts: CrNiMo steel (G), Duplex (G1), Super Duplex (G4)

Other materials on request.

### Standards and approvals

- Following the API 682 / ISO 21049
- Compliant to TA Luft (German Clean Air Act)

### Recommended applications

- Oil and gas industry
- Refining technology
- Chemical industry
- Hot water applications
- Nuclear safety pumps
- Sour water
- Caustic soda
- Amines
- Crystallizing media
- Crude oil
- Process water
- Injection pumps
- Multiphase pumps
- CCUS

### Recommended piping plans

Process side\*:

- [API Plan 01](#)
- [API Plan 02](#)
- [API Plan 03](#)
- [API Plan 11](#)
- [API Plan 12](#)
- [API Plan 13](#)
- [API Plan 14](#)

RELY ON EXCELLENCE

API Plan 21  
 API Plan 22  
 API Plan 31  
 API Plan 32  
 API Plan 41

Between seals:

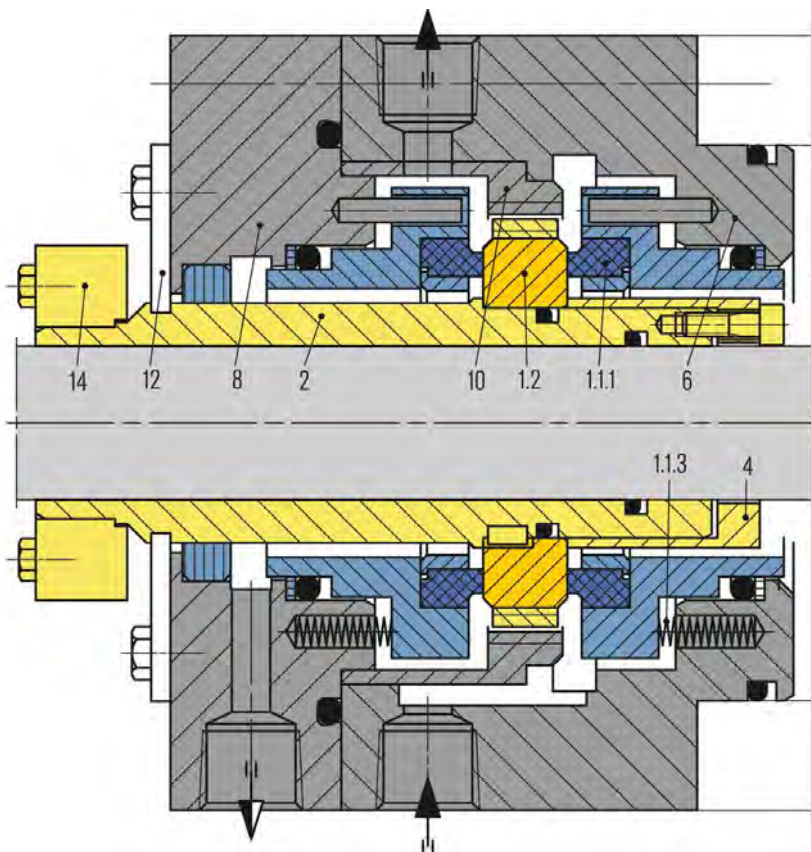
API Plan 53A  
 API Plan 53B  
 API Plan 53C  
 API Plan 54

Atmospheric side\*\*:

API Plan 61  
 API Plan 62  
 API Plan 65A  
 API Plan 65B

\* Piping plans 11 ... 41: Integration in seal to be dimensionally checked.

\*\* Throttle bushing on request.



**Item Description**

- 1.1.1 Seal face
- 1.1.3 Spring
- 1.2 Seat
- 2 Shaft sleeve
- 4 Clamping sleeve
- 6 Housing
- 8 Cover
- 10 Pumping sleeve
- 12 Assembly fixture
- 14 Shrink disk

## RELY ON EXCELLENCE

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### Product variants

**SHFV / SHPV double seal:**

SHV-D design with integrated pumping device for optimal heat dissipation.

**SHVI double seal:**

Same design as SHV-D but with loosely inserted seal face for extreme applications (high pressures, pressure variations, temperature variation).

Dynamic pressure:  $p_1 = 200 \text{ bar}$  (2,900 PSI)

Static pressure:  $p_1 = 240 \text{ bar}$  (3,481 PSI)

RELY ON EXCELLENCE

## HGH201

Mechanical seals | Mechanical seals for pumps | Split seals



### Features

- For plain shafts (HGH201)
- Semi split single seal
- Multiple springs rotating
- Balanced
- Independent of direction of rotation
- Unsplit as original equipment (HGH200)
- Cartridge available (based on HGH210)
- Variant for stepped shafts available (HGH211)
- Splitted seal parts:  
sliding faces and O-rings

### Advantages

- Economical: no complete dismantling of pump necessary
- Reduction of down-times and installation times
- Springs are protected from the product
- Rugged seal design
- Split seat can be used on both sides

### Operating range

Shaft diameter:  
d1 = 50 ... 310 mm (2" ... 12.20")  
(larger diameters on request)  
Pressure: p1 = 25 bar (363 PSI)  
Temperature: t1 = 150 °C (302 °F)  
Sliding velocity: vg = 20 m/s (66 ft/s)  
Axial movement: ±2.0 mm

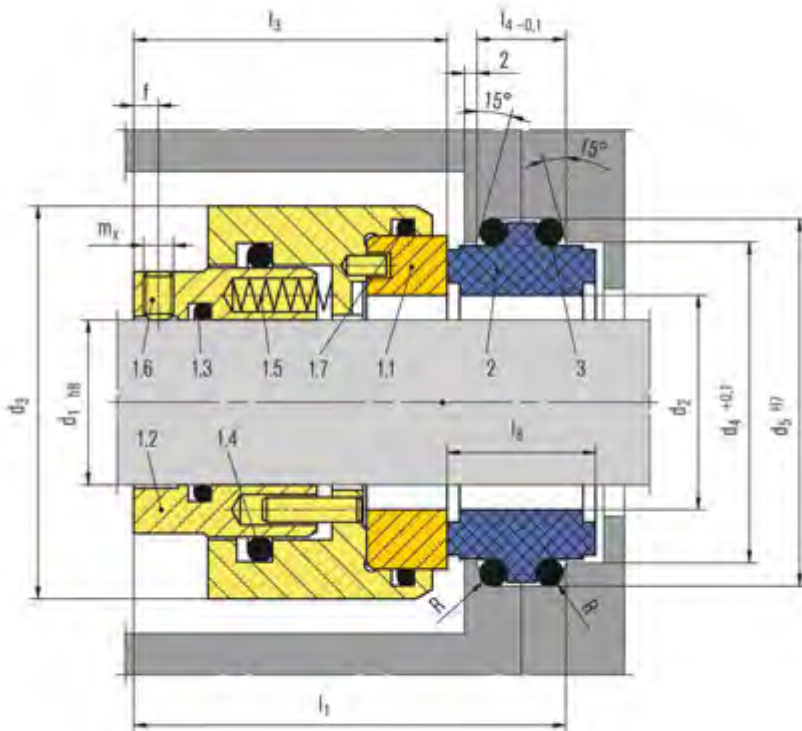
### Materials

Seal face: Silicon carbide (Q1, Q2)  
Seat: Silicon carbide (Q1, Q2), Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)  
Secondary seals:  
FKM (V), EPDM (E), NBR (P)  
Metal parts: CrNiMo steel (G)

### Recommended applications

- Water and waste water technology
- Power plant technology
- Shipbuilding
- Pulp and paper industry
- Sea water desalination
- Pulp with up to 5 % fiber content
- Water turbines
- Chest agitators
- Stern tubes
- Cooling water pumps
- Gears
- Defibrators
- Storage pumps

## RELY ON EXCELLENCE



### Item Description

- 1.1 Seal face<sup>1)</sup>
- 1.2 Driver collar
- 1.3 O-Ring<sup>1)</sup>
- 1.4 O-Ring<sup>1)</sup>
- 1.5 Spring
- 1.6 Set screw
- 1.7 O-Ring<sup>1)</sup>
- 2 Stationary seat<sup>1)</sup>
- 3 O-Ring<sup>1)</sup>

1) For disassembly of unsplit seal faces, seats and O-Ring these should be broken or cut.

RELY ON EXCELLENCE

## Torque transmissions



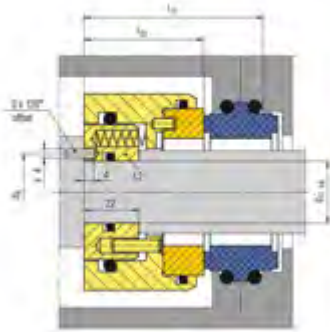
$d_1 \geq 105 \text{ mm}$

Set screws with **cone points** 4 x offset by  $90^\circ$



RELY ON EXCELLENCE

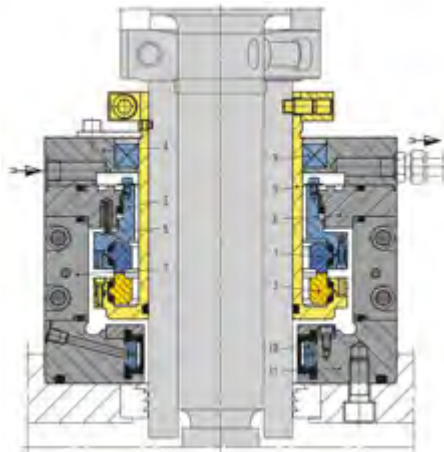
## Product variants



### HGH211

Dimensions, items and descriptions as HGH201. Item 1.2 driver collar is modified for securing on stepped shafts.

For first fit the seal comes unsplit: Designation HGH210.



### HGH300S1

Stationary design.

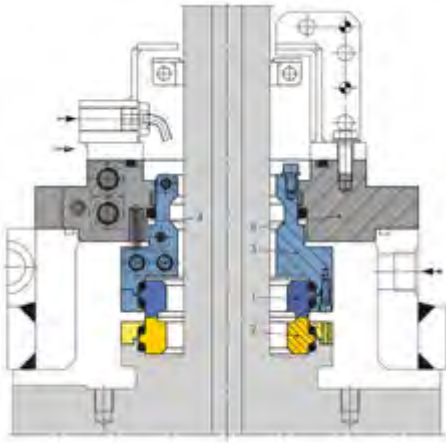
For first fit the seals come with unsplit sliding faces and O-rings. Seal face also available in carbon graphite resin impregnated (B).

Dimensions on request.

#### Item Description

- 1 Seal face
- 2 Seat
- 3, 4 Adapter
- 5 Spring
- 6 Cover
- 7 Housing
- 8 Packing
- 9 Shaft sleeve
- 10 Pneumostop
- 11 Flange

## RELY ON EXCELLENCE



### VGH300S1

Fully split seal based on HGH. Stationary design with rotating seat. To make a straightforward installation possible, all parts of the seal are split.

#### Item Description

- 1 Seal face
- 2 Seat
- 3 Adapter
- 4 Spring
- 5 Cover

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>11</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>11</sub>	l <sub>3</sub>	l <sub>33</sub>	l <sub>4</sub>	l <sub>8</sub>	R	f	m <sub>x</sub>
50	40	60	95	80.5	89.6	55	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
55	45	65	100	85.5	94.6	60	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
60	50	70	105	90.5	99.6	65	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
65	55	75	110	95.5	104.6	70	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
70	60	80	115	100.5	109.6	75	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
75	65	85	120	105.5	114.6	80	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
80	70	90	125	110.5	119.6	85	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
85	75	95	130	115.5	124.6	90	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
90	80	100	135	120.5	129.6	95	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
95	85	105	140	125.5	134.6	100	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
100	90	110	145	130.5	139.6	105	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
105	95	115	150	135.5	144.6	110	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
110	100	120	155	140.5	149.6	115	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
115	105	125	160	145.5	154.6	120	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
120	110	130	165	150.5	159.6	125	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
125	115	135	170	155.5	164.6	130	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
130	120	140	175	160.5	169.6	135	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
135	125	145	180	165.5	174.6	140	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
140	130	150	185	170.5	179.6	145	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
145	135	155	190	175.5	184.6	150	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
150	140	160	195	180.5	189.6	155	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
155	145	165	200	185.5	194.6	160	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
160	150	170	205	190.5	199.6	165	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
165	155	175	210	195.5	204.6	170	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
170	160	180	215	200.5	209.6	175	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
175	165	185	220	205.5	214.6	180	95.3	75.3	70	50	18.8	31.8	2.5	6	M8
180	170	192	225	212.5	224.6	185	104.2	84.2	72	52	26.4	38.0	3.5	6	M8
185	175	197	230	217.5	229.6	190	104.2	84.2	72	52	26.4	38.0	3.5	6	M8
190	180	202	235	222.5	234.6	195	104.2	84.2	72	52	26.4	38.0	3.5	6	M8
195	185	207	240	227.5	239.6	200	104.2	84.2	72	52	26.4	38.0	3.5	6	M8
200	190	212	245	232.5	244.6	205	109.2	84.2	77	52	26.4	38.0	3.5	6	M10
205	195	217	255	237.5	249.6	210	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
210	200	222	260	242.5	254.6	215	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
220	210	232	270	252.5	264.6	225	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
230	220	242	280	262.5	274.6	235	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
240	230	252	290	272.5	284.6	245	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
250	240	262	300	282.5	294.6	255	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
260	250	272	310	292.5	304.6	265	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
270	260	282	320	302.5	314.6	275	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
280	270	292	330	312.5	324.6	285	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
290	280	302	340	322.5	334.6	295	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
300	290	312	350	332.5	344.6	305	109.2	84.2	77	52	26.4	38.0	3.5	8	M10
310	300	322	360	342.5	354.6	315	109.2	84.2	77	52	26.4	38.0	3.5	8	M10

Dimensions in Millimeter

RELY ON EXCELLENCE

## Splitex

Mechanical seals | Mechanical seals for pumps | Split seals



### Features

- Fully split single seal, 2 x 2 segments, pre-assembled
- Semi-cartridge
- Balanced
- Stationary springs
- Bi-directional
- External pressurization
- Built-in flushing connections
- Installation and wear control

### Advantages

- Reduced repair and downtime: 2 x 2 pre-assembled design speeds up and simplifies installation because pump does not have to be disassembled.
- Long service life: precise pre-alignment because of pre-assembled segments. Stationary springs which are protected from the product prevent clogging.
- Greater flexibility during installation: no modification necessary because the seal is located outside of the stuffing box.
- Shaft protection: uniform torque transmission via clamping ring prevents damage caused by set screws.
- Dependable operation: mechanical decoupling of clamping ring (torque transmission) avoids distortion of the seat.
- Simple monitoring of the seal during operation because of mechanical wear indicator on the seal face.
- Low leakage: elimination of secondary seals eliminates leakage paths between split components.
- High tolerance to shaft deflections ensured by stationary design and elastic seat mounting (gasket).

### Operating range

Shaft diameter:

$d_1 = 50 \dots 150 \text{ mm} (1.940" \dots 6.000")$

Pressure:  $p_1 = 10 \text{ bar} (145 \text{ PSI})$

Temperature:

$t = -40 \dots +150 \text{ }^\circ\text{C} (-40 \dots +300 \text{ }^\circ\text{F})$ ,

above  $80 \text{ }^\circ\text{C} (175 \text{ }^\circ\text{F})$  flush is recommended

Sliding velocity:  $v_g = 10 \text{ m/s} (33 \text{ ft/s})$

Axial movement:  $\pm 1.5 \text{ mm} (1/16")$

Radial movement:  $\pm 0.8 \text{ mm} (1/32")$

### Materials

Seal face: Carbon graphite antimony impregnated (A), Silicon carbide (Q6)

Seat: Silicon carbide (Q6)

Secondary seals: FKM (V), EPDM (E), NBR (P)

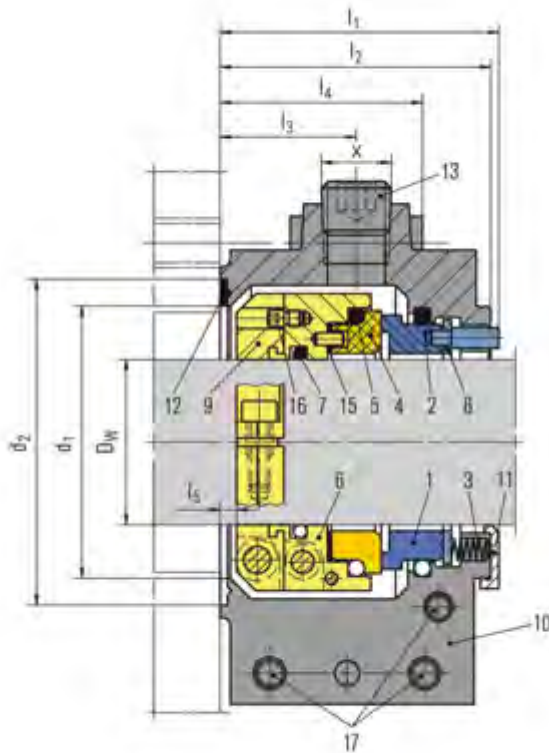
Springs: CrNiMo steel (G)

Metal parts: CrNiMo steel (G)

### Recommended applications

- Process industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- Pulp and paper industry
- Centrifugal pumps
- Agitators
- Displacement pumps
- Conveying pulp with stock pumps
- Conveying timber to refiners with pumping screws
- Circulation of pulp-and-water mixtures in storage vessels
- Pump stations for waste water treatment
- Cooling water pumps for energy generation

RELY ON EXCELLENCE

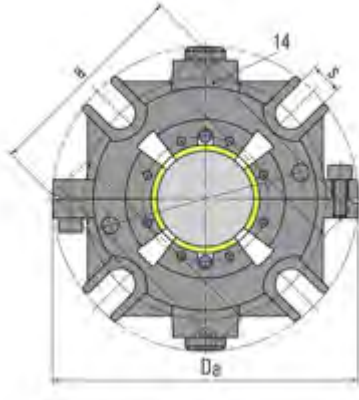


Item	Description
1	Seal face
2, 5, 7	O-Ring
3	Spring
4	Seat
6	Driver
8	Thrust ring
9	Clamp collar
10	Housing
11	Assembly fixture
12, 15	Gasket
13	Head screw plug
14	Mounting plate
16	Set screw
17	Socket head screw

## RELY ON EXCELLENCE

### Installation, details, options

Seal cover



### Dimensions

$d_w$	$d_w$	$d_1$	$d_2$	$d_a$	A	s	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	X
1.940	49.276	2.953	3.307	5.433	3.456	0.591	2.480	2.402	1.181	1.772	0.118	3/8 NPT
2.000	50.800	2.953	3.307	5.433	3.456	0.591	2.480	2.402	1.181	1.772	0.118	3/8 NPT
2.125	53.975	3.110	3.465	5.787	3.622	0.591	2.480	2.402	1.142	1.772	0.118	3/8 NPT
2.375	60.325	3.504	3.976	5.866	4.134	0.689	2.520	2.441	1.181	1.811	0.118	3/8 NPT
2.438	61.925	3.642	4.114	6.181	4.272	0.689	2.520	2.441	1.181	1.811	0.118	3/8 NPT
2.500	63.500	3.642	4.114	6.181	4.272	0.689	2.520	2.441	1.181	1.811	0.118	3/8 NPT
2.750	69.850	3.858	4.449	6.929	4.646	0.787	2.520	2.441	1.181	1.811	0.118	3/8 NPT
2.938	74.625	4.213	4.803	7.559	5.000	0.787	2.559	2.480	1.299	1.850	0.118	3/8 NPT
3.000	76.200	4.213	4.803	7.559	5.000	0.787	2.559	2.480	1.299	1.850	0.118	3/8 NPT
3.250	82.550	4.331	5.197	7.520	5.315	0.787	2.559	2.480	1.220	1.850	0.118	3/8 NPT
3.500	88.900	4.764	5.512	7.992	5.709	0.866	2.854	2.776	1.240	1.988	0.118	1/2 NPT
3.625	92.075	4.764	5.512	7.992	5.709	0.866	2.854	2.776	1.240	1.988	0.118	1/2 NPT
3.750	95.250	4.921	5.630	8.110	5.827	0.866	2.854	2.776	1.240	1.988	0.118	1/2 NPT
3.875	98.425	5.157	5.906	8.504	6.102	0.866	2.854	2.776	1.240	1.988	0.118	1/2 NPT
4.000	101.600	5.157	5.906	8.504	6.102	0.866	2.854	2.776	1.240	1.988	0.118	1/2 NPT
4.250	107.950	5.591	6.496	9.055	6.693	0.866	2.854	2.776	1.240	1.988	0.118	1/2 NPT
4.500	114.300	5.984	6.890	9.449	7.087	0.866	2.854	2.776	1.240	1.988	0.118	1/2 NPT
4.750	120.650	5.984	6.890	9.449	7.087	0.866	2.854	2.776	1.240	1.988	0.118	1/2 NPT
5.000	127.000	6.378	7.283	10.551	7.480	1.024	3.524	3.445	1.713	2.461	0.157	1/2 NPT
5.500	139.700	6.890	7.874	11.929	8.071	1.024	3.524	3.445	1.713	2.461	0.157	1/2 NPT
6.000	152.400	7.402	8.465	12.126	8.661	1.024	3.524	3.445	1.713	2.461	0.157	1/2 NPT

Dimensions in inch

## RELY ON EXCELLENCE

### Dimensions

$d_w$	$d_w$	$d_1$	$d_2$	$d_a$	$a$	$s$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	X
50	1.969	75	84	138	88	15	63	61	30	45	3	3/8 NPT
60	2.362	89	101	149	105	17,5	64	62	30	46	3	3/8 NPT
70	2.756	98	113	176	118	20	64	62	30	46	3	3/8 NPT
80	3.150	110	132	191	135	20	65	63	31	47	3	3/8 NPT
90	3.543	121	140	203	145	22	72.5	70.5	31.5	50.5	3	1/2 NPT
100	3.937	131	150	216	155	22	72.5	70.5	31.5	50.5	3	1/2 NPT
110	4.331	142	165	230	170	22	72.5	70.5	31.5	50.5	3	1/2 NPT
120	4.724	152	175	240	180	22	72.5	70.5	31.5	50.5	3	1/2 NPT
125	4.921	162	185	268	190	26	89.5	87.5	43.5	62.5	4	1/2 NPT
140	5.512	175	200	303	205	26	89.5	87.5	43.5	62	4	1/2 NPT
150	5.906	188	215	308	220	26	89.5	87.5	43.5	62.5	4	1/2 NPT

Dimensions in Millimeter

RELY ON EXCELLENCE

## CGSH-K

Mechanical seals | Mechanical seals for pumps | Gas-lubricated seals



### Features

- For stepped shafts
- Balanced
- Rotating spring
- Single or double seal available
- Standard version with U-grooves, V-grooves optional (dependent of direction of rotation)
- Gas-lubricated
- Does not open in the event of buffer pressure failure, self closing at pressure reversal

### Advantages

- Contact-free operation, no friction
- No differential pressure required with hard/soft material combination
- Applicable as containment seal acc. to API 682

### Operating range

Shaft diameter:

$d_1 = 28 \dots 125 \text{ mm} (1.10" \dots 4.92")$

Pressure:  $p_1 = 25 \text{ bar} (363 \text{ PSI})$

Temperature:

$t^* = -20 \text{ °C} \dots +170 \text{ °C} (-4 \text{ °F} \dots +338 \text{ °F})$

Sliding velocity:

$vg = 4 \dots 25 \text{ m/s} (13 \dots 82 \text{ ft/s})$

\* Depending on resistance of O-Rings

### Materials

Seal face: Carbon graphite antimony impregnated (A), Silicon carbide (Q2),

alternatively: Carbon graphite resin impregnated (B), Silicon carbide (Q1)

Seat: Silicon carbide (Q1, Q2),

Silicon carbide (Q19, Q29) with seal face in Q1 resp. Q2

Metal parts: CrNiMo steel (G)

### Standards and approvals

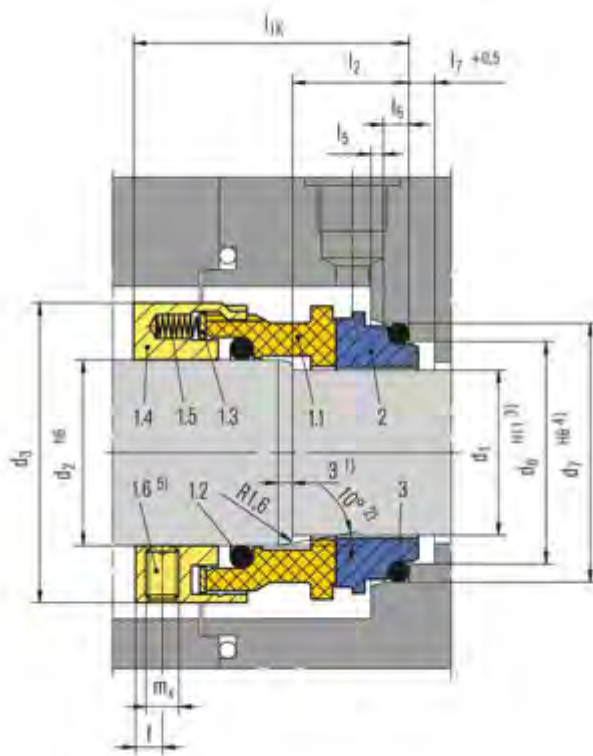
- EN 12756
- API 682 / ISO 21049

### Recommended applications

- Chemical industry
- Refining technology
- Gases and liquids (single seals only gas)
- Gases and liquids which must not get into the atmosphere (dual seal)
- Gases not harmful to the environment (single seal)
- Fans
- Small steam turbines
- Blowers
- Roots compressors
- Pumps



## RELY ON EXCELLENCE



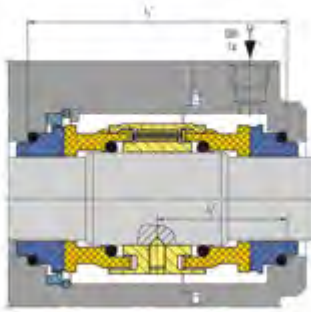
### Item Parts no. to Description DIN 24250

1.1	472	Sliding face
1.2	412.1	O-Ring
1.3	474	Thrust ring
1.4	485	Drive collar
1.5	477	Spring
1.6	904	Set screw
2	475.1	Seat
3	412.3	O-Ring

1)  $d1 > 105$ : 2 mm x 30°  
 2)  $d1 > 105$ : 30°  
 3)  $d1 > 105$ : +0.1  
 4)  $d1 > 105$ : H7  
 5) 3 x 120°

RELY ON EXCELLENCE

## Product variants



### CGSH-KD

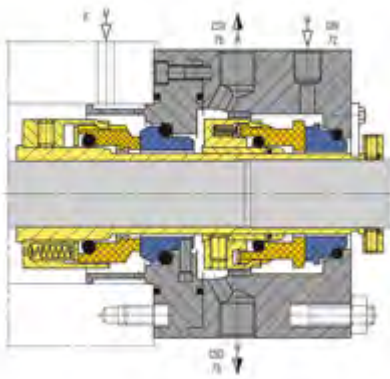
Double seal back-to-back, buffered with gas, according to API 682 configuration 3NC-BB, Plan 74. Items, descriptions and unspecified dimensions as for CGSH-K.

Pressure:  $p_1 = \dots 22 \text{ bar (319 PSI)}$ ,  $p_3 = \dots 25 \text{ bar (363 PSI)}$

(over the whole nominal diameter range, higher values on request).

Differential pressure  $\Delta p = \text{min. } 3 \text{ bar (44 PSI)}$

Other operating limits as CGSH-K.



### CGSH Tandem arrangement

acc. to API 682 3rd Edition.

Configuration: 2CW-CS, [API Plan 72](#), [API Plan 75](#), [API Plan 76](#).

For media with a gaseous leakage. H75VN on the product side. In case of a failure, the CGSH on the atmosphere side works as a liquid seal.

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>1K</sub>	l <sub>1'</sub>	l <sub>2</sub>	l <sub>4'</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	f	m <sub>x</sub>
28*	33	53	37.0	43.0	50.0	89	20	44.5	2.0	5	9	5	M6
30*	35	55	39.0	45.0	50.0	89	20	44.5	2.0	5	9	5	M6
32*	38	60	42.0	48.0	50.0	89	20	44.5	2.0	5	9	5	M6
33*	38	60	42.0	48.0	50.0	89	20	44.5	2.0	5	9	5	M6
35*	40	62	44.0	50.0	50.0	89	20	44.5	2.0	5	9	5	M6
38*	43	65	49.0	56.0	52.5	95	23	47.5	2.0	6	9	5	M6
40*	45	67	51.0	58.0	52.5	95	23	47.5	2.0	6	9	5	M6
43*	48	70	54.0	61.0	52.5	95	23	47.5	2.0	6	9	5	M6
45*	50	72	56.0	63.0	52.5	95	23	47.5	2.0	6	9	5	M6
48*	53	75	59.0	66.0	52.5	95	23	47.5	2.0	6	9	5	M6
50*	55	77	62.0	70.0	57.5	104	25	52.0	2.5	6	9	5	M6
53*	58	84	65.0	73.0	57.5	104	25	52.0	2.5	6	9	5	M6
55*	60	86	67.0	75.0	57.5	106	25	53.0	2.5	6	9	5	M6
58*	63	89	70.0	78.0	62.5	112	25	56.0	2.5	6	9	7	M8
60*	65	91	72.0	80.0	62.5	112	25	56.0	2.5	6	9	7	M8
63*	68	94	75.0	83.0	62.5	112	25	56.0	2.5	6	9	7	M8
65*	70	97	77.0	85.0	62.5	112	25	56.0	2.5	6	9	7	M8
70*	75	104	83.0	92.0	70.0	126	28	63.0	2.5	7	9	7	M8
75*	80	109	88.0	97.0	70.0	126	28	63.0	2.5	7	9	7	M8
80*	85	114	95.0	105.0	70.0	126	28	63.0	3.0	7	9	7	M8
85*	90	119	100.0	110.0	75.0	126	28	63.0	3.0	7	9	7	M8
90*	95	124	105.0	115.0	75.0	126	28	63.0	3.0	7	9	7	M8
95*	100	129	110.0	120.0	75.0	126	28	63.0	3.0	7	9	7	M8
100*	105	132	115.0	125.0	75.0	126	28	63.0	3.0	7	9	7	M8
105*	115	153	122.2	134.3	73.0	136	32	68.0	2.0	10	-	7	M8
110*	120	158	128.2	140.3	73.0	136	32	68.0	2.0	10	-	7	M8
115*	125	163	136.2	148.3	73.0	136	32	68.0	2.0	10	-	7	M8
120*	130	168	138.2	150.3	73.0	136	32	68.0	2.0	10	-	7	M8
125*	135	173	142.2	154.3	73.0	136	32	68.0	2.0	10	-	7	M8

Dimensions in millimeter

\* EN 12756

RELY ON EXCELLENCE

## EM300

Mechanical seals | Mechanical seals for pumps | Gas-lubricated seals



### Advantages

- Dry contact secondary seal
- Prevention of hazardous emissions
- Can be used as a secondary seal of tandem seal in liquid applications

### Operating range

Pressure:  $p = 2$  bar (29 PSI) normal operation, max. 60 bar (870 PSI)

Temperature:

$t = -20$  °C ...  $+200$  °C ( $-4$  °F ...  $+392$  °F)

Sliding velocity:  $v_g = 25$  m/s (82 ft/s)

### Materials

Seal face: Special carbon

Seat: Silicon carbide (Q1, Q2)

Secondary seals: FKM (V)

Metal parts: CrNiMo steel (G)

### Standards and approvals

- API 682 / ISO 21049

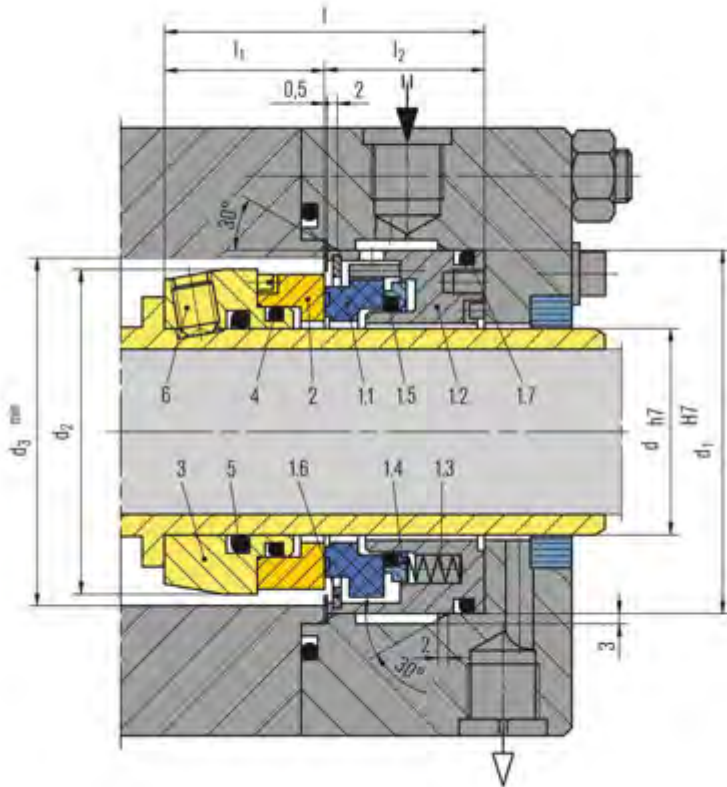
### Recommended applications

- Chemical industry
- Refining technology

### Features

- Balanced
- Independent of direction of rotation
- Stationary multiple springs
- API682 arrangement 2 containment seal

RELY ON EXCELLENCE



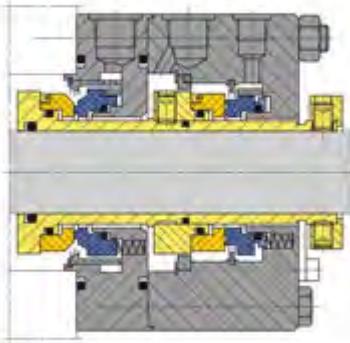
**Item Description**

- 1.1 Seal face
- 1.2 Adapter
- 1.3 Spring
- 1.4 Thrust ring
- 1.5 O-Ring
- 1.6 Retaining ring
- 1.7 O-Ring
- 2 Seat
- 3 Drive collar
- 4 O-Ring
- 5 O-Ring
- 6 Set screw

## RELY ON EXCELLENCE

### Product variants

**Configuration example**  
acc. to API 682 (2CW-CS)



### Dimensions

d <sub>max.</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	l	l <sub>1</sub>	l <sub>2</sub>
20	50	40	46	56	27	29
25	54	46	52	56	27	29
30	60	51	57	56	27	29
35	64	56	62	56	27	29
40	72	63	69	62	31	31
45	76	68	74	62	31	31
50	85	76	82	66	33	33
55	90	82	88	66	33	33
60	100	90	96	66	33	33
65	105	93	99	66	33	33
70	110	99	105	66	33	33
75	115	104	110	66	33	33
80	120	111	117	68	35	33
85	127	117	123	68	35	33
90	132	120	126	68	35	33
95	140	129	135	68	35	33
100	145	132	138	68	35	33

Dimensions in millimeter

RELY ON EXCELLENCE

## GSO-DN

Mechanical seals | Mechanical seals for pumps | Gas-lubricated seals



### Features

- Seat rotating
- Stationary springs
- Double seal
- Balanced
- Standard version with V-grooves, U-grooves optional (independent of direction of rotation)
- Gas-lubricated

### Advantages

- Contact free operation
- Face-to-face
- Cartridge unit
- Does not open in the event of buffer pressure failure
- Self closing at pressure reversal
- No additional complex components to dissipate frictional heat

### Operating range

Shaft diameter:  
 $d_1 = 30 \dots 75 \text{ mm}$  (1,125" ... 2,625")  
 (other dimensions on request)  
 Product pressure:  
 $p_1 = \text{max. } 22 \text{ bar}$  (319 PSI),  
 (dependent on shaft diameter and sliding materials)  
 Barrier pressure:  $p_3 = \text{max. } 25 \text{ bar}$  (362 PSI),  
 Differential pressure:  $\Delta p = \text{min. } 3 \text{ bar}$  (44 PSI)  
 Temperature:  
 $t = -20 \text{ }^\circ\text{C} \dots +170 \text{ }^\circ\text{C}$  (-4 °F ... +338 °F)  
 (dependent on resistance of O-Rings)  
 Sliding velocity:  $v_g = 16 \text{ m/s}$  (52 ft/s),  
 with special design max. 25 m/s (82 ft/s)  
 Axial movement:  $\pm 0.2 \text{ mm}$

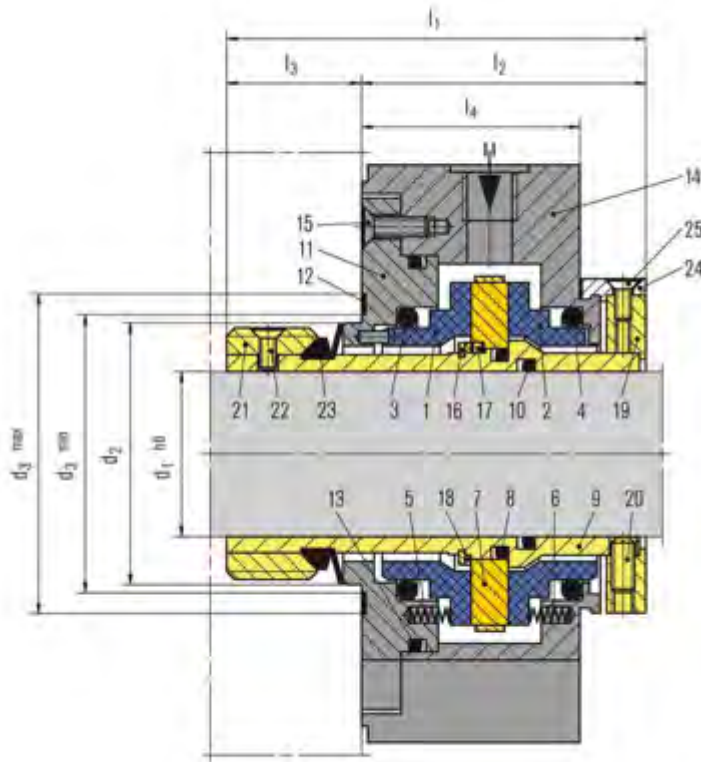
### Materials

Seal faces: Carbon graphite (A)  
 Seat: Silicon carbide (Q1, Q2)  
 Secondary seals:  
 FKM (V), EPDM (E), FFKM (K)  
 Springs: Hastelloy® C-4 (M)  
 Metal parts:  
 CrNiMo steel (G), Hastelloy® C-4 (M)

### Recommended applications

- Chemical industry
- Refining technology
- Gases and liquids
- Media which require high purity
- Environmental harmful media
- Blowers
- Fans
- Pumps

## RELY ON EXCELLENCE

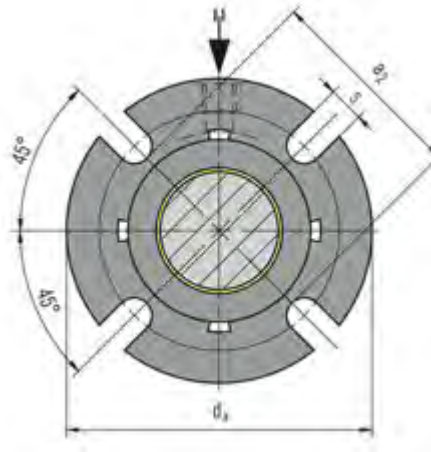


Item	Description
1, 2	Seal face
3, 4, 8, 10, 13	O-Ring
5, 6	Spring
7	Seat
9	Shaft sleeve
11	Flange
12	Gasket
14	Cover
15, 22, 25	Countersunk screw
16	Retaining ring
17	Pin
18	Ring
19	Set ring
20	Set screw
21	Pumping ring
23	V-Seal
24	Assembly fixture



## RELY ON EXCELLENCE

### Installation, details, options



Seal cover

### Dimensions

Type	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> min.	d <sub>3</sub> max.	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	d <sub>a</sub>	a <sub>2</sub>	s
GSO-DN/30-00-R	30	46	49	59	85	55	30	39	104	69.7	14
GSO-DN/33-00-R	33	49	53	65	85.5	55.5	30	39.5	122	72.7	14
GSO-DN/35-00-R	35	51	52	65	85.5	55.5	30	39.5	124	74.7	14
GSO-DN/43-00-R	43	63	64	78	90.5	57.5	33	41.5	138	84.7	16
GSO-DN/48-00-R	48	69	69	80	90.5	57.5	33	41.5	145	89.7	16
GSO-DN/50-00-R	50	70	72	82	90.5	57.5	33	41.5	147	91.7	16
GSO-DN/53-00-R	53	73	73	87	92.8	57.8	35	41.8	148	94.7	18
GSO-DN/60-00-R	60	85	87	102	97.5	60.5	37	44.5	157	104	18
GSO-DN/65-00-R	65	90	91	107	100.5	59.5	41	43.5	178	109	18

Dimensions in millimeter  
Other diameters on request.

RELY ON EXCELLENCE

## HRGS-D

Mechanical seals | Mechanical seals for pumps | Gas-lubricated seals



### Features

- Double seal
- Balanced
- Standard version with U-grooves (bi-directional)
- Gas-lubricated

### Advantages

- Contact-free operation
- Suitable for solids containing media
- Internally pressurized
- Cartridge unit
- Does not open in the event of buffer pressure failure, self closing at pressure reversal
- HR principle with rotating seat
- No friction on the seal faces, no heat generated at the seal or in the medium

### Operating range

Shaft diameter:  $\pm dw = 20 \dots 200 \text{ mm}$  (0.787" ... 7.874")

Pressure HRGS-DC:  $p_1 = \dots 22 \text{ bar}$  (319 PSI)

$p_3 = \dots 25 \text{ bar}$  (363 PSI)

Pressure HRGS-DD:  $p_1 = \dots 40 \text{ bar}$  (580 PSI)

$p_3 = \dots 43 \text{ bar}$  (624 PSI)

Operating temperature limits for:

EPDM -20 °C ... +140 °C (-4 °F ... +284 °F)

FFKM -20 °C ... +120 °C (-4 °F ... 248 °F)

FKM -20 °C ... +170 °C (-4 °F ... 338 °F)

Sliding velocity:  $v_g = 4 \dots 25 \text{ m/s}$  (13 ... 82 ft/s)

Differential pressure  $\Delta p = \text{min. } 3 \text{ bar}$  (44 PSI),  
max. 16 bar (232 PSI)(internal pressure)

### Materials

Product side (HRGS-DC, HRGS-DD):

Seal face: Silicon carbide (Q19, Q29)

Seat: Silicon carbide (Q1, Q2)

Atmosphere side HRGS-DC:

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)

Seat: Silicon carbide (Q1, Q2)

Atmosphere side HRGS-DD:

Seal face: Silicon carbide (Q19, Q29)

Seat: Silicon carbide (Q1, Q2)

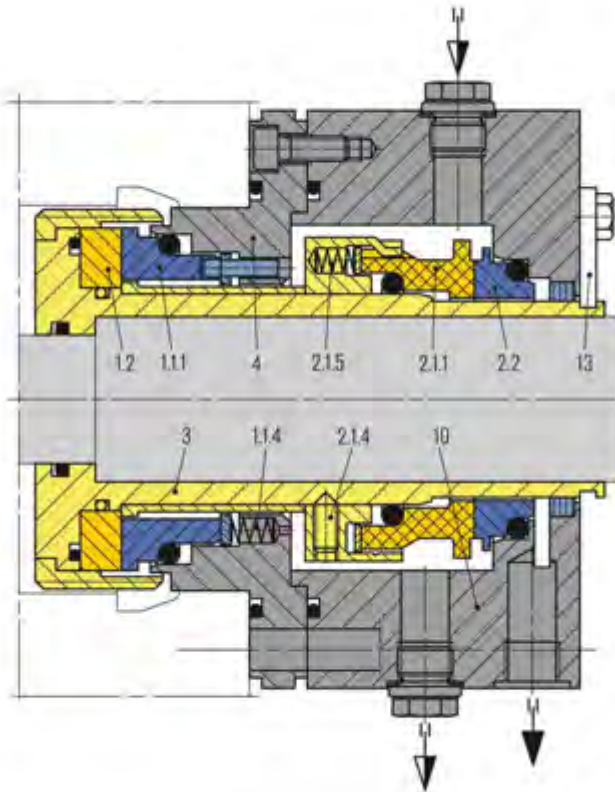
Springs: CrNiMo steel (G), Hastelloy® C-4 (M)

Metal parts: CrNiMo steel (G), Hastelloy® C-4 (M)

### Recommended applications

- Chemical industry
- Refining technology
- Gases and liquids
- Media which require high purity
- Environmental harmful media
- Pumps

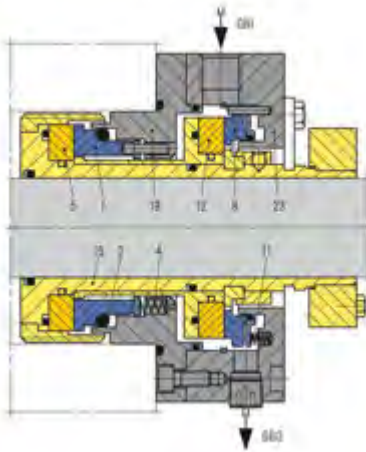
RELY ON EXCELLENCE



Item	Part no.	Description
<b>DIN 24250</b>		
1.1.1	472.1	Seal face
1.1.4	477	Spring
1.2	475.1	Seat
2.1.1	472.2	Seal face
2.1.4	485	Drive collar
2.1.5	477	Spring
2.2	475.2	Seat
3	523	Shaft sleeve
4	513	Insert
10	441	Housing
13		Assembly fixture

## RELY ON EXCELLENCE

### Product variants



#### HRGS-DD

Acc. to API 682 configuration 3NC-FB, [API Plan 74](#).

The HRGS-DD corresponds to the HRGS-DC in terms of design principal and materials. It is designed for applications involving large shaft diameters of up to 200 mm (7.87") or fairly high pressure levels of up to 40 bar (580 PSI). The outboard seal used in such cases is the DGS.

#### HRGS-DC

Gas-buffered double seal. The HRGS-DC is designed for applications involving fitting dimensions in line with DIN 24960 C or ANSI Big Bore standard, but can also be used even when the fitting dimensions are not of standardized nature if large, open spaces are available for installation. The CGSH is used as outboard seal up to nominal width 125.

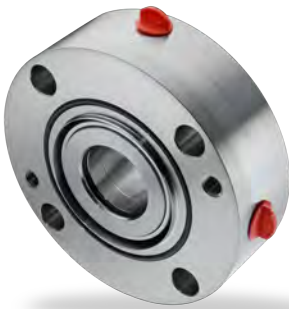
#### Dimensions

Dimensions on request.

RELY ON EXCELLENCE

## APIItex-S

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 1, Type A, Arrangement 1 seal
- Single seal
- Balanced
- Cartridge unit
- Independent of direction of rotation
- Solid seal face
- Solid seat

### Advantages

- 100 % API compliant
- Security due to proofed design (API Seal qualification test)
- Insensitive to shaft deflections and process fluctuations
- Pre-assembled, ready to install unit
- Low space requirements
- Springs protected from the product
- Multipoint Ring Injection for optimized cooling distribution
- Quench connections as standard

### Operating range

Shaft diameter:

$d_1 = 20 \dots 110 \text{ mm (0.79" ... 4.33")}$

Pressure:  $p_1 = 22 \text{ bar (319 PSI)}$

Temperature:  $t = -40 \text{ °C ... } +176 \text{ °C}^*$   
 $(-40 \text{ °F ... } +349 \text{ °F})$

Sliding velocity:  $v_g = 23 \text{ m/s (75 ft/s)}$

\* API standard, other on request

### Materials

Seal ring: Silicon carbide SSiC (Q1)

Mating ring: Silicon carbide SSiC (Q1), antimony impregnated carbon graphite (B)

Secondary seals:

EPDM (E), FKM (V), FFKM (K)

Springs: Hastelloy C-4 (M)

Metal parts: CrNiMo steel 316 (G) or equivalent, optional materials on request.

### Standards and approvals

- API 682 3rd ed. Cat. 1 / ISO 21049
- API 682 4th ed. Cat. 1

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- Highly volatile hydrocarbons
- Toxic and hazardous media
- Media with poor lubrication properties
- Low solids content and low abrasive media
- CCUS
- Lithium
- Hydrogen
- Sustainable plastics production
- Alternative fuels production
- Power generation
- Vertical and horizontal ANSI chemical standard pumps

### Recommended piping plans

Process side:

[API Plan 01](#)

[API Plan 02](#)

[API Plan 03](#)

[API Plan 11](#)

## RELY ON EXCELLENCE

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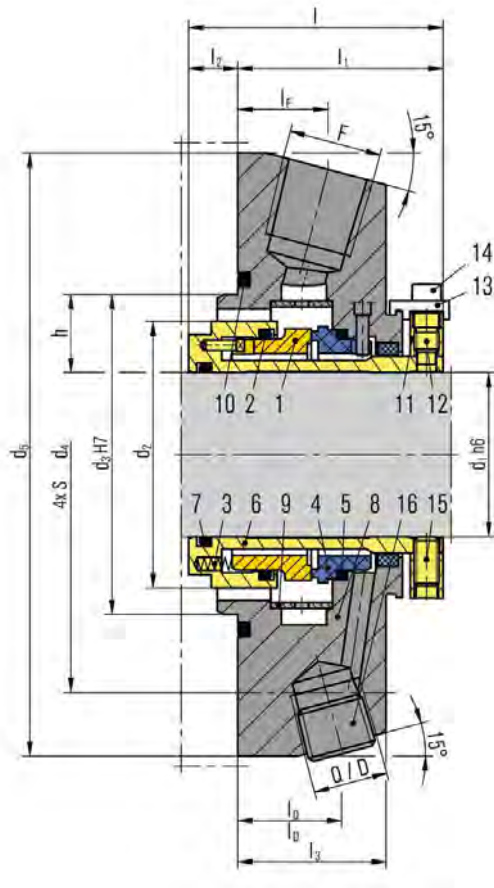
API Plan 12  
API Plan 13  
API Plan 14\*  
API Plan 21  
API Plan 22  
API Plan 23\*  
API Plan 31  
API Plan 32  
API Plan 41

Atmospheric side:

API Plan 51  
API Plan 61  
API Plan 62  
API Plan 65A  
API Plan 65B  
API Plan 66A\*  
API Plan 66B\*

\* Non standard

RELY ON EXCELLENCE

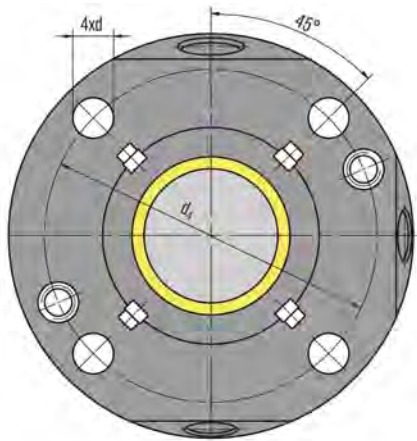


Item	Description
1	Seal face
2, 5, 7, 10	O-Ring
3	Spring
4	Seat
6	Shaft sleeve
8	Cover
9	Inset
11	Set ring
12, 15	Set screw
13	Assembly fixture
14	Socket head screw
16	Screw plug

F Flush  
Q Quench  
D Drain

## RELY ON EXCELLENCE

### Installation, details, options



APitex-S Seal Cover

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> stand.	d <sub>3</sub> min.	d <sub>4</sub>	d <sub>5</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>f</sub>	l <sub>dq</sub>	d	Qty.	Acc. ASME B73.1(h min.)
25	49	63	58	110	127	62	49	13	22	25	13.5	4	19.05
30	55	68	64	115	137	62	49	13	22	25	13.5	4	19.05
35	60	73	69	120	137	62	49	13	22	25	13.5	4	19.05
40	65	78	74	125	147	62	49	13	22	25	13.5	4	19.05
45	70	83	79	135	157	62	49	13	22	25	17.5	4	19.05
50	75	88	84	140	157	62	49	13	22	25	17.5	4	19.05
55	80	93	89	145	167	62	49	13	22	25	17.5	4	19.05
60	87	105	96	160	167	62	49	13	22	25	17.5	4	22.22
65	93.5	110	102.5	165	177	62	49	13	22	25	17.5	4	22.22
70	100	115	109	170	197	77	57	20	25	28	17.5	4	22.22
75	107	120	116	175	207	77	57	20	25	28	17.5	4	22.22
80	110	125	119	185	207	77	57	20	25	28	17.5	4	22.22
85	116	136	125	190	217	77	57	20	25	28	22	4	25.4
90	120	141	129	195	217	77	57	20	25	28	22	4	25.4
95	126	146	135	200	227	77	57	20	25	28	22	4	25.4
100	131	151	140	205	227	77	57	20	25	28	22	4	25.4
110	141	161	150	215	237	77	57	20	25	28	22	4	25.4

Dimensions in mm



RELY ON EXCELLENCE

## APIItex-T

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 1, Type A, Arrangement 2 or 3 seal
- Dual seal in face-to-back arrangement
- Balanced
- Cartridge unit
- Independent of direction of rotation
- Solid seal faces
- Solid mating rings

### Advantages

- 100% API compliant
- Security due to proofed design (API Seal qualification test)
- Insensitive to shaft deflections and process fluctuations
- Pre-assembled, ready to install unit
- Low space requirements
- Springs protected from the product
- No external pump necessary
- Internal pumping device

### Operating range

Shaft diameter:

$d_1 = 20 \dots 110 \text{ mm (0.79" ... 4.33")}$

Pressure:  $p_1 = 22 \text{ bar (319 PSI)}$

Temperature:  $t = -40 \text{ °C ... } +176 \text{ °C}^*$   
 $(-40 \text{ °F ... } +349 \text{ °F})$

( $>176 \text{ °C (349 °F)}$ ) please inquire)

Sliding velocity:  $v_g = 23 \text{ m/s (75 ft/s)}$

\* API standard, other on request

### Materials

Seal ring: Silicon carbide SSiC (Q1)

Mating ring: Silicon carbide SSiC (Q1),

antimony impregnated carbon graphite (A)

Secondary seals:

EPDM (E), FKM (V), FFKM (K)

Springs: C-276 (M5)

Metal parts: CrNiMo steel 316 (G) or equivalent,

optional materials on request.

### Standards and approvals

- API 682 3rd ed. Cat. 1 / ISO 21049
- API 682 4th ed. Cat. 1
- Compliant to TA Luft (German Clean Air Act)

### Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Petrochemical industry
- Chemical industry
- CCUS
- Lithium
- Hydrogen
- Sustainable plastics production
- Alternative fuels production
- Power generation
- Highly volatile hydrocarbons
- Toxic and hazardous media
- Media with poor lubrication properties
- Low solids content and low abrasive media
- Vertical and horizontal ANSI chemical standard pumps

### Recommended piping plans

Process side (optional):

[API Plan 01](#)

[API Plan 02](#)

[API Plan 03](#)

## RELY ON EXCELLENCE

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[API Plan 11](#)  
[API Plan 12](#)  
[API Plan 13](#)  
[API Plan 14](#)  
[API Plan 21](#)  
[API Plan 22](#)  
[API Plan 23](#)  
[API Plan 31](#)  
[API Plan 32](#)  
[API Plan 41](#)

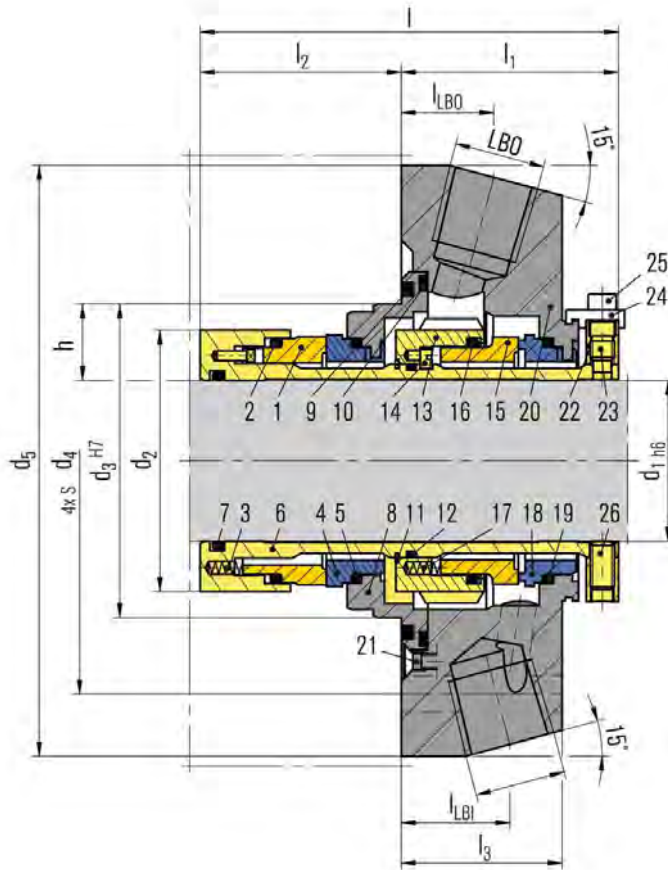
Between seals (standard):

[API Plan 52](#)  
[API Plan 53A](#)  
[API Plan 53B](#)  
[API Plan 53C](#)  
[API Plan 54](#)  
[API Plan 55](#)

Atmospheric side (optional):

[API Plan 61](#)  
[API Plan 62](#)  
[API Plan 65A](#)  
[API Plan 65B](#)

RELY ON EXCELLENCE

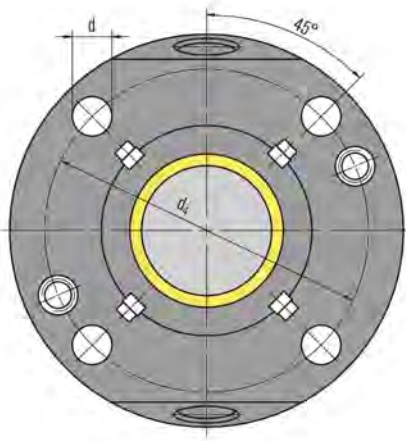


Item	Description
1, 15	Seal ring
4, 18	Mating ring
2, 5, 7, 9, 10, 12, 16, 19	O-Ring
3, 17	Spring
6	Shaft sleeve
8	Adapter
11	Retaining ring
13	Driver
14	Holder
23, 26	Set screw
20	Cover
21	Countersunk screw
22	Set ring
24	Assembly fixture
25	Socket head screw

LBO Liquid buffer/barrier OUT  
LBI Liquid buffer/barrier IN

## RELY ON EXCELLENCE

### Installation, details, options



APitex-T seal cover

### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub> stand.	d <sub>3</sub> min.	d <sub>4</sub>	d <sub>5</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l LBI	l LBO	NPT	d	Anz. Qty.	Acc. ASME B73.1(h min.)
25	49	63	58	110	127	105	64	41	36	30	1/2 NPT	13.5	4	19.05
30	55	68	64	115	137	105	64	41	36	30	1/2 NPT	13.5	4	19.05
35	60	73	69	120	137	105	64	41	36	30	1/2 NPT	13.5	4	19.05
40	65	78	74	125	147	105	64	41	36	30	1/2 NPT	13.5	4	19.05
45	70	83	79	135	157	105	64	41	36	30	1/2 NPT	17.5	4	19.05
50	75	88	84	140	157	105	64	41	36	30	1/2 NPT	17.5	4	19.05
55	80	93	89	145	167	105	64	41	36	30	1/2 NPT	17.5	4	19.05
60	87	105	96	160	167	105	64	41	36	30	1/2 NPT	17.5	4	22.22
65	93.5	110	102.5	165	177	105	64	41	36	30	1/2 NPT	17.5	4	22.22
70	100	115	109	170	197	105	64	41	36	30	3/4 NPT	17.5	4	22.22
75	107	120	116	175	207	126	78	48	44	40	3/4 NPT	17.5	4	22.22
80	110	125	119	185	207	126	78	48	44	40	3/4 NPT	17.5	4	22.22
85	116	136	125	190	217	126	78	48	44	40	3/4 NPT	22	4	25.4
90	120	141	129	195	217	126	78	48	44	40	3/4 NPT	22	4	25.4
95	126	146	135	200	227	126	78	48	44	40	3/4 NPT	22	4	25.4
100	131	151	140	205	227	126	78	48	44	40	3/4 NPT	22	4	25.4
110	141	161	150	215	237	126	78	48	44	40	3/4 NPT	22	4	25.4

RELY ON EXCELLENCE

## CGSH-KD

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 3 seal
- Dual seal in back-to-back arrangement
- Cartridge unit
- Independent of direction of rotation (with U-grooves)
- Gas-lubricated
- Contact free operation, no friction
- Rotating multiple springs

### Advantages

- Universally applicable both for retrofits or original equipment
- Efficient stock keeping due to standardized components
- Extended selection of materials
- Metal parts also in special materials available

### Operating range

Shaft diameter:  
 $d_1 = 20 \dots 110 \text{ mm (0.79" \dots 4.33")}$   
 Pressure:  $p_1 = 23 \text{ bar (333 PSI)}$   
 Temperature:  
 $t = -20 \dots +176 \text{ °C (-4°F \dots +350°F)}$   
 Sliding velocity:  $v_g = 23 \text{ m/s (76 ft/s)}$   
 Axial movement:  $\pm 1.0 \text{ mm}$

### Materials

Seal ring: Blister resistant carbon, Silicon carbide SSiC (Q1)  
 Mating ring: Silicon carbide SSiC (Q1), RBSiC (Q2)  
 Secondary seals: EPDM (E), NBR (P), FKM (V), FFKM (K)  
 Springs: Hastelloy® C-4 (M)\* and C-276 (M5)  
 Metal parts: CrNiMo steel 316 (G) or equivalent, optional materials on request.

\* EagleBurgmann standard

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 3NC-BB
- API 682 4th ed. Cat. 1 - 3NC-BB

### Recommended applications

- Refining technology
- Petrochemical industry
- Chemical industry
- Oil and gas industry
- CCUS
- Alternative fuels production
- Media with gaseous leakage
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side\*:

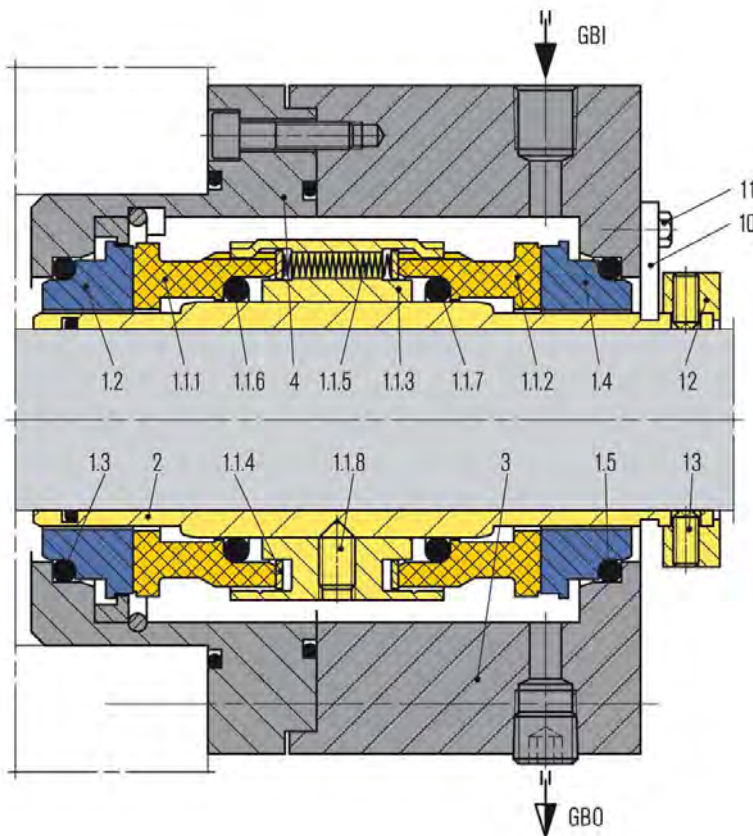
- [API Plan 01](#)
- [API Plan 02](#)
- [API Plan 03](#)
- [API Plan 11](#)
- [API Plan 12](#)
- [API Plan 21](#)
- [API Plan 22](#)
- [API Plan 31](#)
- [API Plan 32](#)
- [API Plan 41](#)

## RELY ON EXCELLENCE

Between seals:

[API Plan 74](#)

\* Piping plans 11 ... 41: Integration in seal to be dimensionally checked.



Item	Description
1.1.1, 1.1.2	Seal ring
1.1.3	Driver
1.1.4	Thrust ring
1.1.5	Spring
1.1.6, 1.1.7, 1.3, 1.5	O-Ring
1.1.8, 13	Set screw
1.2, 1.4	Mating ring
2	Seal sleeve
3, 4	Gland plate
10	Setting device
11	Hexagon bolt
12	Set ring

GBI Gas barrier IN  
GBO Gas barrier OUT

### Dimensions

Dimensions on request.

RELY ON EXCELLENCE

## H75A4-B

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 3 seal
- Dual seal in back-to-back arrangement
- Balanced
- Cartridge unit
- Rotating multiple springs
- Integrated pumping device
- Suitable for pressure reversals
- Replaces the H75VK seal

### Advantages

- Universally applicable both for retrofits or original equipment
- Efficient stock keeping due to standardized components
- Extended selection of materials
- Extended field of operation in terms of temperature and pressure
- Metal parts also in special materials available
- Safe operation due to metal torque transmission at the rotating carbon seal rings

### Operating range

Shaft diameter:

$d_1 = 20 \dots 110 \text{ mm (0.79" ... 4.33")}$

Pressure:  $p_1 = 42 \text{ bar (609 PSI)}$

Temperature:

$t = -40 \text{ °C ... +176 °C (-40 °F ... +350 °F)*}$

Sliding velocity:  $v_g = 23 \text{ m/s (76 ft/s)}$

Axial movement:

$d \leq 50 \text{ mm } \pm 1.0 \text{ mm}$

$d > 50 \text{ mm } \pm 1.5 \text{ mm}$

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

### Materials

Seal rings: Blister resistant carbon, Silicon carbide SSiC (Q1), RBSiC (Q2)

Mating rings:

Silicon carbide SSiC (Q1), RBSiC (Q2)

Secondary seals:

EPDM (E), NBR (P), FKM (V), FFKM (K)

Springs: C-276 (M5)

Metal parts: CrNiMo steel 316 (G) or equivalent, optional materials on request.

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 3CW-BB
- Compliant to TA Luft (German Clean Air Act)

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Hydrogen
- Sustainable plastics production
- Alternative fuels production
- Highly volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side\*:

[API Plan 01](#)

[API Plan 02](#)

[API Plan 03](#)

[API Plan 11](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 14](#)

## RELY ON EXCELLENCE

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[API Plan 21](#)  
[API Plan 22](#)  
[API Plan 31](#)  
[API Plan 32](#)  
[API Plan 41](#)

Between seals:

[API Plan 53A](#)  
[API Plan 53B](#)  
[API Plan 53C](#)  
[API Plan 54](#)

Atmospheric side\*\*:

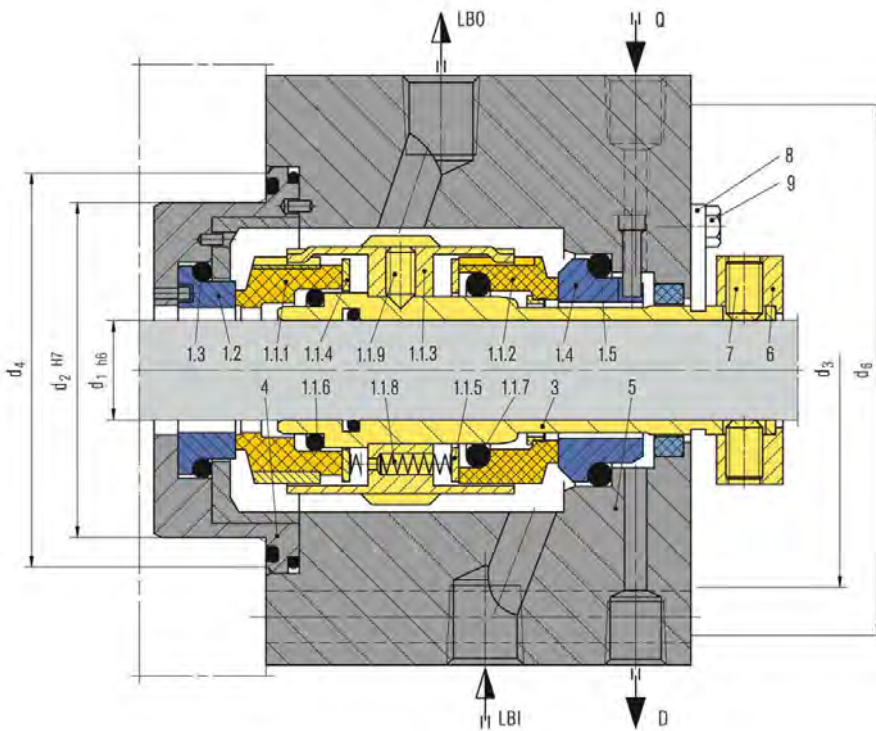
[API Plan 61](#)  
[API Plan 62](#)  
[API Plan 65A](#)  
[API Plan 65B](#)

\* Piping plans 11 ... 41: Integration in seal to be dimensionally checked.

\*\* Throttle bushing on request.



## RELY ON EXCELLENCE



Item	Description
1.1.1, 1.1.2	Seal ring
1.1.3	Driver
1.1.4, 1.1.5	Thrust ring
1.1.6, 1.1.7, 1.3, 1.5	O-Ring
1.1.8	Spring
1.1.9, 7	Set screw
1.2, 1.4	Mating ring
3	Seal sleeve
4, 5	Gland plate
6	Set ring
8	Setting device
9	Hexagon bolt

LBO Liquid barrier OUT  
 Q Quench  
 LBI Liquid barrier IN  
 D Drain

### Dimensions

Dimensions on request.

RELY ON EXCELLENCE

## H75A4-C

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 2 seal
- Dual seal in face-to-back arrangement
- Non-contact outer seal (containment seal)
- Balanced
- Cartridge unit
- Rotating multiple springs

### Advantages

- Universally applicable both for retrofits or original equipment
- Efficient stock keeping due to standardized components
- Extended selection of materials
- Metal parts also in special materials available
- Safe operation due to metal torque transmission at the rotating carbon seal rings

### Operating range

Shaft diameter:

d1 = 20 ... 110 mm (0,79" ... 4,33")

Pressure: p1 ... 42 bar (609 PSI)

Temperature:

t = -40 °C ... +176 °C (-40 °F ... +350 °F)

Sliding velocity: vg = 23 m/s (76 ft/s)

Axial movement: ±1.0 mm

### Materials

Seal rings: Blister resistant carbon, Silicon carbide SSiC (Q1), RBSiC (Q2)

Mating rings:

Silicon carbide SSiC (Q1), RBSiC (Q2)

Secondary seals:

EPDM (E), NBR (P), FKM (V), FFKM (K)

Springs: Hastelloy® C-276 (M5)

Metal parts: CrNiMo steel 316 (G) or equivalent, optional materials on request.

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 2CW-CS

### Recommended applications

- Refining technology
- Petrochemical industry
- Oil and gas industry
- CCUS
- Hydrogen
- Sustainable plastics production
- Alternative fuels production
- CCUS
- Wasserstoff
- Nachhaltige Kunststoffe
- Alternative Kraftstoffe
- Media with gaseous leakage
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side:

[API Plan 01](#)

[API Plan 02](#)

[API Plan 03](#)

[API Plan 11](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 14](#)

[API Plan 21](#)

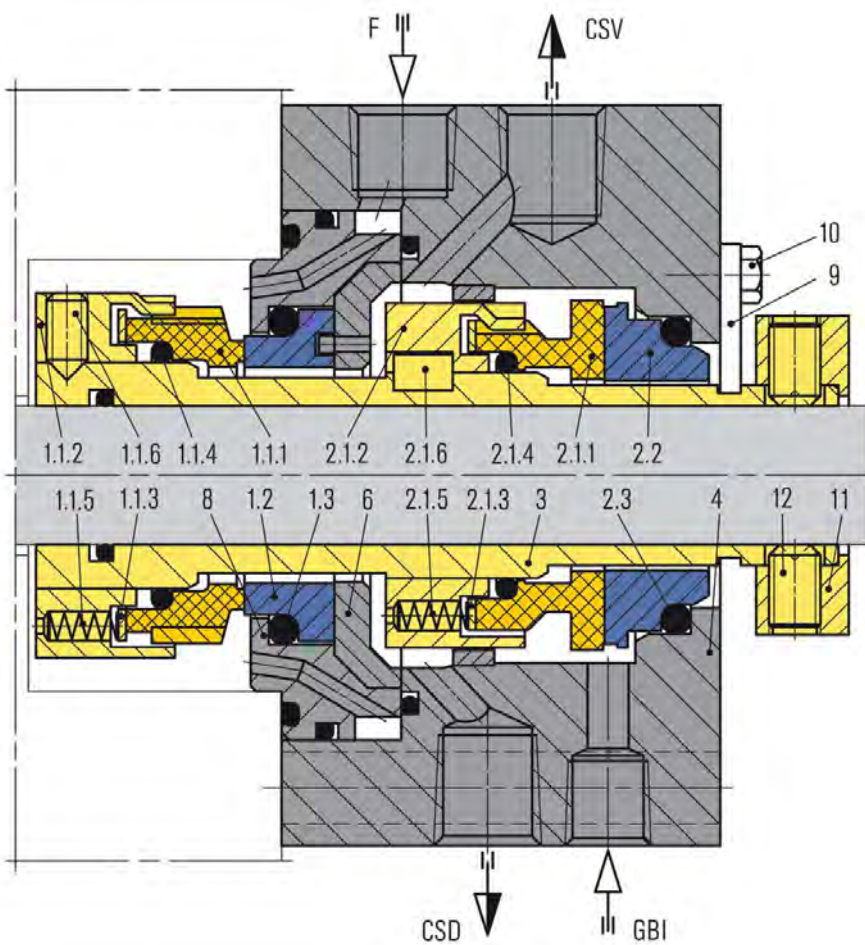
[API Plan 22](#)

RELY ON EXCELLENCE

API Plan 23  
API Plan 31  
API Plan 32  
API Plan 41

Between seals:

API Plan 71  
API Plan 72  
API Plan 75  
API Plan 76



Item	Description
1.1.1, 2.1.1	Seal ring
1.1.2, 2.1.2	Driver
1.1.3, 2.1.3	Thrust ring
1.1.4, 1.3, 2.1.4, 2.3	O-Ring
1.1.5, 2.1.5	Spring
1.1.6, 12	Set screw
1.2, 2.2	Mating ring
2.1.6	Key
3	Seal sleeve
4	Gland plate
6	Insert
8	Fixing ring
9	Setting device
10	Hexagon bolt
11	Set ring

F Flush  
CSV Containment seal vent  
CSD Containment seal drain  
GBI Gas buffer IN

**Dimensions**  
Dimensions on request.

RELY ON EXCELLENCE

## H75A4-T

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 2 and 3 seal
- Dual seal in face-to-back arrangement
- Balanced
- Cartridge unit
- Rotating multiple springs
- Integrated pumping device
- Suitable for pressure reversals
- Replaces the H75VK seal

### Advantages

- Universally applicable both for retrofits or original equipment
- Efficient stock keeping due to standardized components
- Extended selection of materials
- Extended field of operation in terms of temperature and pressure
- Optimized torque transmission
- Metal parts also in special materials available

### Operating range

Shaft diameter:

$d_1 = 20 \dots 110 \text{ mm} (0,79" \dots 4,33")$

Pressure:  $p_1 = \dots 42 \text{ bar} (609 \text{ PSI})$

Temperature:

$t = -40 \text{ °C} \dots +176 \text{ °C} (-40 \text{ °F} \dots +349 \text{ °F})^*$

Sliding velocity:  $v_g = 23 \text{ m/s} (76 \text{ ft/s})$

Axial movement:

$d < 50 \text{ mm} \pm 1,0 \text{ mm}$

$d \geq 50 \text{ mm} \pm 1,5 \text{ mm}$

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

### Materials

Seal rings: Blister resistant carbon, Silicon carbide SSiC (Q1), RBSiC (Q2)

Mating rings:

Silicon carbide SSiC (Q1), RBSiC (Q2)

Secondary seals:

EPDM (E), NBR (P), FKM (V), FFKM (K)

Springs: Hastelloy® C-276 (M5)

Metal parts: CrNiMo steel 316 (G) or equivalent, optional materials on request.

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 2CW-CW
- API 682 4th ed. Cat. 2/3 - 3CW-FB
- Compliant to TA Luft (German Clean Air Act)

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Hydrogen
- Sustainable plastics production
- Alternative fuels production
- Highly volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side:

[API Plan 01](#)

[API Plan 02](#)

[API Plan 03](#)

[API Plan 11](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 14](#)

## RELY ON EXCELLENCE

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[API Plan 21](#)  
[API Plan 22](#)  
[API Plan 23](#)  
[API Plan 31](#)  
[API Plan 32](#)  
[API Plan 41](#)

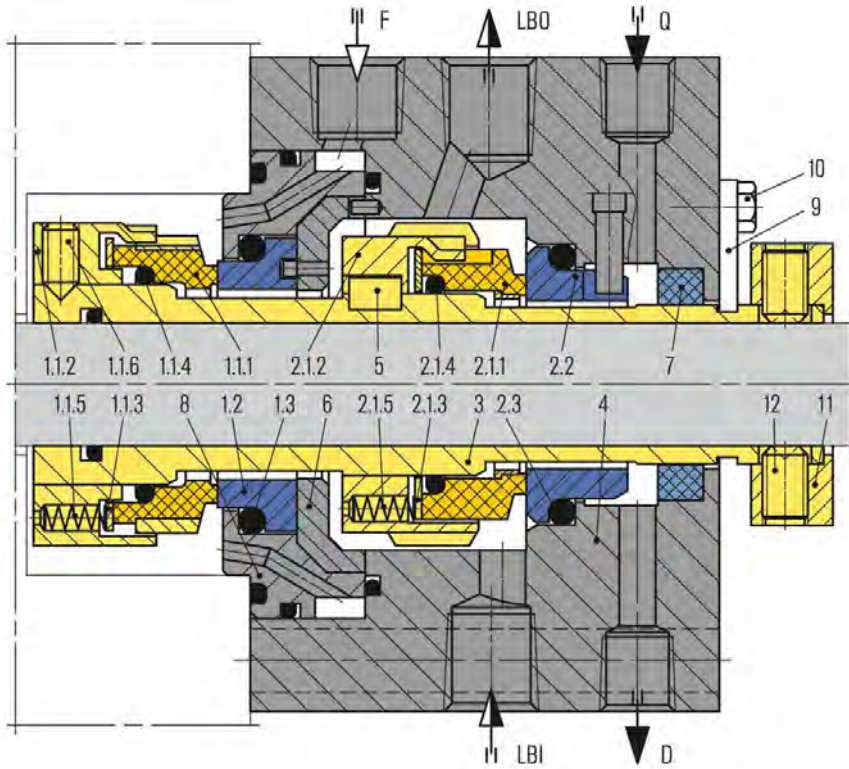
Between seals:

[API Plan 52](#)  
[API Plan 53A](#)  
[API Plan 53B](#)  
[API Plan 53C](#)  
[API Plan 54](#)  
[API Plan 55](#)

Atmospheric side:

[API Plan 61](#)  
[API Plan 62](#)  
[API Plan 65A](#)  
[API Plan 65B](#)

RELY ON EXCELLENCE



Item	Description
1.1.1, 2.1.1	Seal ring
1.1.2, 2.1.2	Driver
1.1.3, 2.1.3	Thrust ring
1.1.4, 1.3, 2.1.4, 2.3	O-Ring
1.1.5, 2.1.5	Spring
1.1.6, 12	Set screw
1.2, 2.2	Mating ring
3	Seal sleeve
4	Gland plate
5	Key
6	Adapter ring
7	Throttle ring
8	Adapter
9	Setting device
10	Hexagon bolt
11	Set ring

F Flush  
 LBO Liquid buffer/barrier OUT  
 Q Quench  
 LBI Liquid buffer/barrier IN  
 D Drain

### Dimensions

Dimensions on request.



RELY ON EXCELLENCE

## H75LG4-C

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 und 3, Type A, Arrangement 2 seal
- Dual seal in face-to-back arrangement
- Cartridge unit
- Rotating multiple springs
- Dry non-contact outer seal (containment seal)

### Advantages

- Universally applicable both for retrofits or original equipment
- Efficient stock keeping due to standardized components
- Extended selection of materials
- Metal parts also in special materials available
- Designed for vaporizing media
- Operation close to vapor pressure

### Operating range

Shaft diameter:  
 $d_1 = 20 \dots 110 \text{ mm} (0.79" \dots 4.33")$   
 Pressure:  $p_1 = 20 \text{ bar} (290 \text{ PSI})$   
 Temperature:  
 $t = -40 \text{ °C} \dots +176 \text{ °C} (-40 \text{ °F} \dots +350 \text{ °F})$   
 Sliding velocity:  
 $vg = 4 \dots 23 \text{ m/s} (13 \dots 76 \text{ ft/s})$   
 Axial movement:  $\pm 1.0 \text{ mm}$

### Materials

Seal rings: Blister resistant carbon  
 Mating rings:  
 Silicon carbide SSiC (Q1), RBSiC (Q2)  
 Secondary seals:  
 EPDM (E), NBR (P), FKM (V), FFKM (K)  
 Springs: Hastelloy® C-4 (M)\* and C-276 (M5)  
 Metal parts: CrNiMo steel 316 (G) or equivalent, optional materials on request.

\* EagleBurgmann standard

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 2NC-CS
- API 682 4th ed. Cat. 1 - 2NC-CS

### Recommended applications

- Refining technology
- Petrochemical industry
- Chemical industry
- Oil and gas industry
- CCUS
- Media with gaseous leakage
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

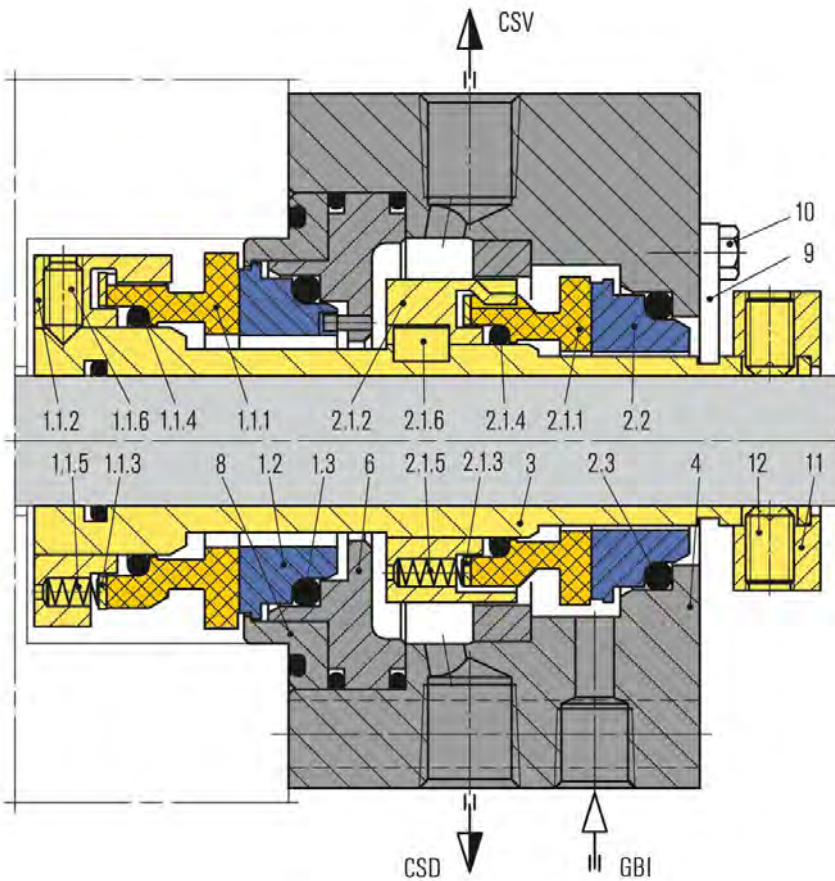
Process side:

[API Plan 02](#)  
[API Plan 03](#)

Between seals:

[API Plan 71](#)  
[API Plan 72](#)  
[API Plan 76](#)

RELY ON EXCELLENCE



Item	Description
1.1.1, 2.1.1	Seal ring
1.1.2, 2.1.2	Driver
1.1.3, 2.1.3	Thrust ring
1.1.4, 1.3, 2.1.4, 2.3	O-Ring
1.1.5, 2.1.5	Spring
1.1.6, 12	Set screw
1.2, 2.2	Mating ring
2.1.6	Key
3	Seal sleeve
4	Gland plate
6	Insert
8	Fixing ring
9	Setting device
10	Hexagon bolt
11	Set ring

CSV Containment seal vent  
 CSD Containment seal drain  
 GBI Gas buffer IN

### Dimensions

Dimensions on request.



RELY ON EXCELLENCE

## H75VA4-S

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 1 seal
- Single seal
- Balanced
- Cartridge unit
- Bi-directional design
- Rotating multiple springs
- Integrated pumping device available
- Replaces the H75VN seal

### Advantages

- Compact design
- Universally applicable both for retrofits or original equipment
- Efficient stock-keeping due to standardized components
- Extended selection of materials
- Extended field of operation in terms of temperature and pressure
- Metal parts also in special materials available

### Operating range

Shaft diameter:

$d_1 = 20 \dots 110 \text{ mm (0.79" ... 4.33")}$

Pressure:  $p_1 = \dots 42 \text{ bar (609 PSI)}$

Temperature:

$t = -40 \text{ °C ... } +176 \text{ °C (-40 °F ... } +349 \text{ °F)}^*$

Sliding velocity:  $v_g = 23 \text{ m/s (75 ft/s)}$

Axial movement:

$d < 50 \text{ mm } \pm 1,0 \text{ mm}$

$d \geq 50 \text{ mm } \pm 1,5 \text{ mm}$

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

### Materials

Seal ring: Blister resistant carbon, Silicon carbide SSiC (Q1), RBSiC (Q2)

Mating ring:

Silicon carbide SSiC (Q1), RBSiC (Q2)

Secondary seals:

EPDM (E), NBR (P), FKM (V), FFKM (K)

Springs: Hastelloy® C-276 (M5)

Metal parts: CrNiMo steel 316 (G) or equivalent, optional materials on request.

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 1CW-FL

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Hydrogen
- Sustainable plastics production
- Alternative fuels production
- Highly volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side:

[API Plan 01](#)

[API Plan 02](#)

[API Plan 03](#)

[API Plan 11](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 14](#)

[API Plan 21](#)

[API Plan 22](#)

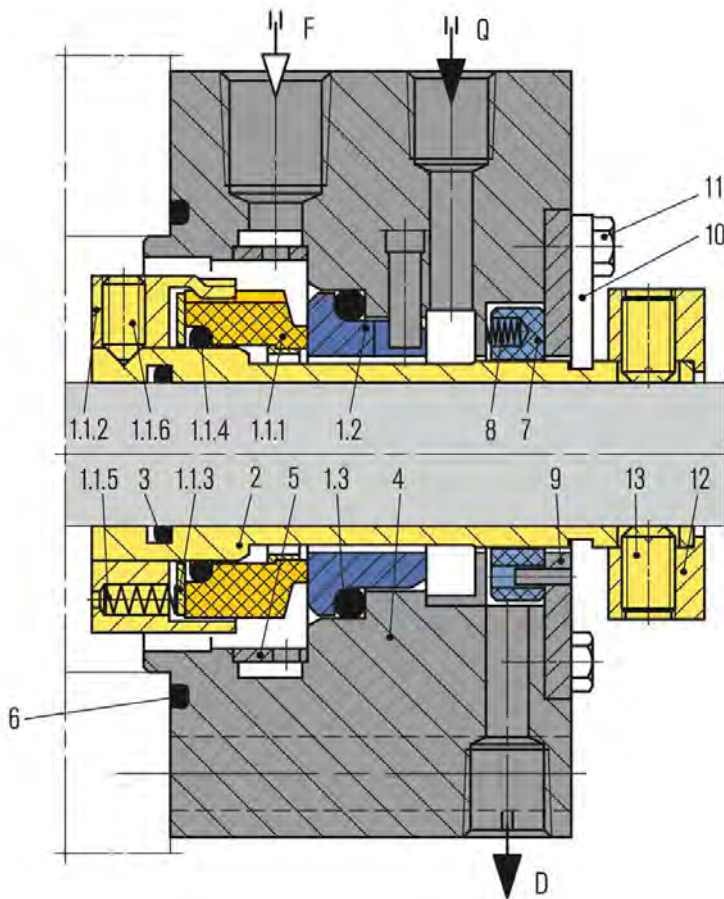
[API Plan 23](#)

RELY ON EXCELLENCE

API Plan 31  
API Plan 32  
API Plan 41

Atmospheric side:

API Plan 51  
API Plan 61  
API Plan 62  
API Plan 65A  
API Plan 65B  
API Plan 66A  
API Plan 66B



Item	Description
1.1.1	Seal ring
1.1.2	Driver
1.1.3	Thrust ring
1.1.4, 1.3, 3, 6	O-Ring
1.1.5, 8	Spring
1.1.6, 13	Set screw
1.2	Mating ring
2	Seal sleeve
4	Gland plate
5	Flow distributor
7	Throttle ring
9	Disc
10	Setting device
11	Hexagon bolt
12	Set ring

F Flush  
Q Quench  
D Drain

### Dimensions

Dimensions on request.

RELY ON EXCELLENCE

## HRGS-DD

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 3 seal
- Dual seal in face-to-back arrangement
- Gas-lubricated
- Balanced
- Cartridge unit
- Independent of direction of rotation
- Stationary springs
- Contact free operation, no friction

### Advantages

- Universally applicable both for retrofits or original equipment
- Efficient stock keeping due to standardized components
- Extended selection of materials
- Metal parts also in special materials available

### Operating range

Shaft diameter:  
 $d_1 = 20 \dots 110 \text{ mm} (0.79" \dots 4.33")^*$   
 Pressure:  $p_1 = 42 \text{ bar} (609 \text{ PSI})$   
 Temperature:  
 $t = -20 \text{ °C} \dots +176 \text{ °C} (-4 \text{ °F} \dots +350 \text{ °F})$   
 Sliding velocity:  
 $vg = 4 \dots 23 \text{ m/s} (13 \dots 76 \text{ ft/s})$   
 Axial movement:  $\pm 1.0 \text{ mm}$

### Materials

Seal ring (product side):  
 Silicon carbide Q19, SSiC (Q1)  
 Seal ring (atmospheric side):  
 Blister resistant carbon,  
 Silicon carbide SSiC (Q1), Q19  
 Mating rings:  
 Silicon carbide SSiC (Q1), RBSiC (Q2)  
 Secondary seals:  
 EPDM (E), NBR (P), FKM (V), FFKM (K)  
 Springs: Hastelloy® C-4 (M)\* and C-276 (M5)  
 Metal parts: CrNiMo steel 316 (G) or equivalent,  
 optional materials on request.

\* EagleBurgmann standard

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 3NC-FB

### Recommended applications

- Refining technology
- Petrochemical industry
- Oil and gas industry
- Gases and liquids
- Media which require high purity
- Environmental harmful media
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side:

[API Plan 01](#)  
[API Plan 02](#)  
[API Plan 03](#)  
[API Plan 11](#)  
[API Plan 12](#)  
[API Plan 21](#)  
[API Plan 22](#)  
[API Plan 31](#)  
[API Plan 32](#)

RELY ON EXCELLENCE

API Plan 41

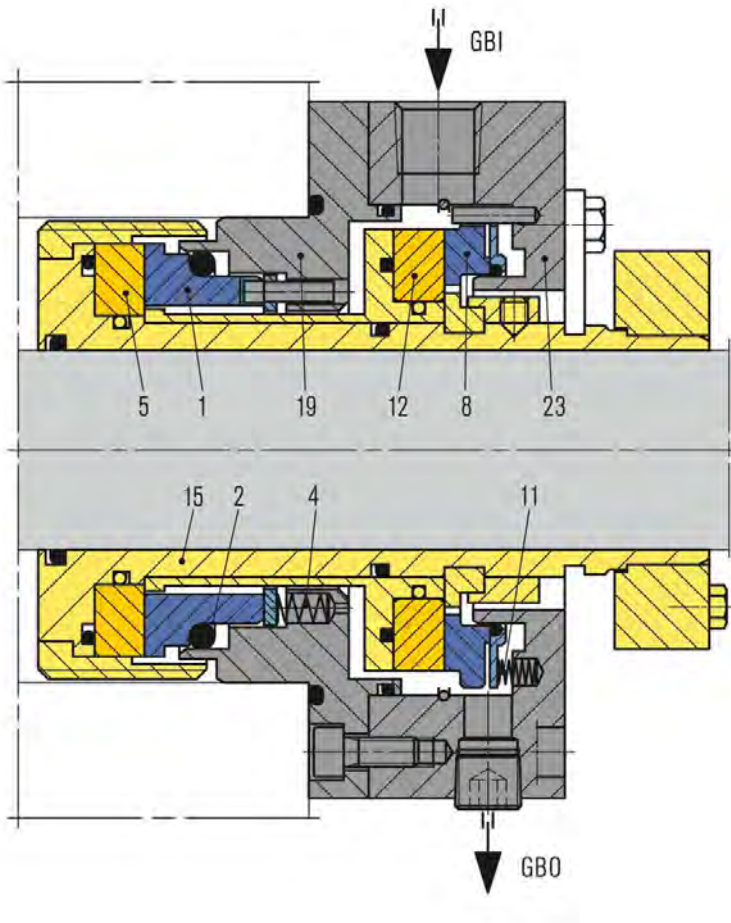
Between seals:

API Plan 74

**Item Description**

- 1, 8 Seal ring
- 4, 11 Spring
- 5, 12 Mating ring
- 15 Seal sleeve
- 19 Insert
- 23 Gland plate

GBI Gas barrier IN  
GBO Gas barrier OUT



**Dimensions**

Dimensions on request

RELY ON EXCELLENCE

## LEK777

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 1 seal
- Single seal
- Balanced
- Cartridge unit
- Stationary multiple springs
- Solid seal faces

### Advantages

- Suitable for higher speeds
- Good followability due to no influence from run-out, squareness or vibration of the shaft
- 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

### Operating range

Shaft diameter:  
 $d_1 = 20 \dots 110 \text{ mm (0.79" ... 4.33")}$   
 Pressure (product seal):  
 $p = \text{vacuum} \dots 60 \text{ bar ( ... 870 PSI)}$   
 Temperature:  
 $t = -40 \text{ °C} \dots +176 \text{ °C (-40 °F ... +349 °F)*}$   
 Sliding velocity:  $v_g = 50 \text{ m/s (164 ft/s)}$

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

### Materials

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

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 1CW-FL

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Alternative fuels production
- Light volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

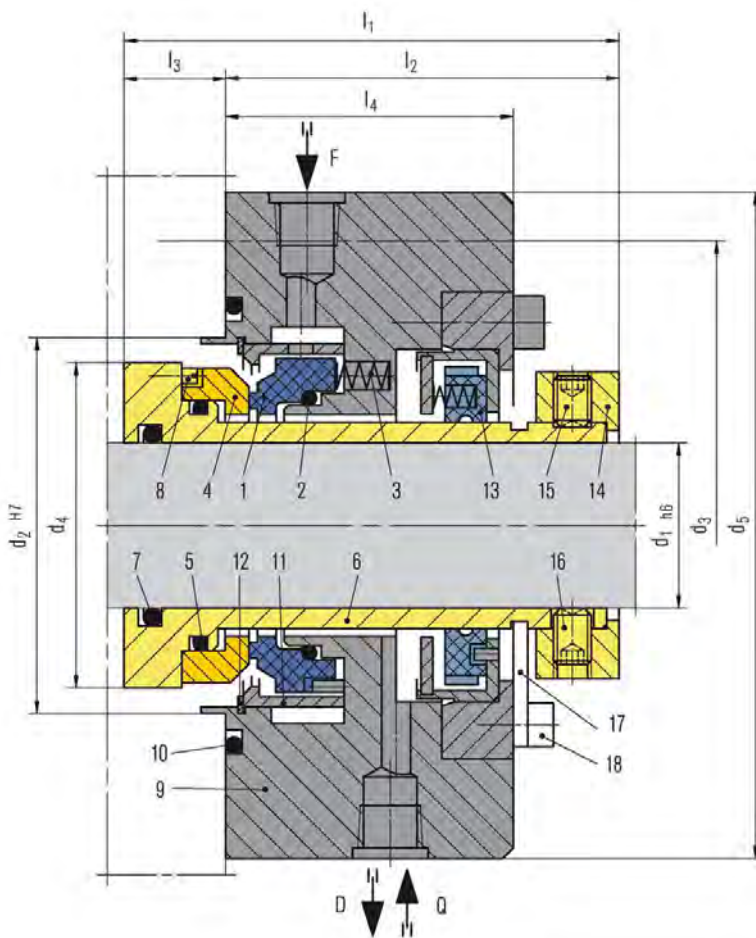
Process side:

- [API Plan 01](#)
- [API Plan 02](#)
- [API Plan 03](#)
- [API Plan 11](#)
- [API Plan 12](#)
- [API Plan 13](#)
- [API Plan 14](#)
- [API Plan 21](#)
- [API Plan 22](#)
- [API Plan 23](#)
- [API Plan 31](#)
- [API Plan 32](#)
- [API Plan 41](#)

RELY ON EXCELLENCE

Atmospheric side:

- [API Plan 51](#)
- [API Plan 61](#)
- [API Plan 62](#)
- [API Plan 65A](#)
- [API Plan 65B](#)
- [API Plan 66A](#)
- [API Plan 66B](#)



Item	Description
1	Seal ring
2, 5, 7, 10	O-Ring
3	Spring
4	Mating ring
6	Seal sleeve
8	Drive screw
9	Gland plate
11	Flow distributor
12	Retaining ring
13	Throttle bushing
14	Drive collar
15, 16	Set screw
17	Setting device
18	HSH Cap screw

F Flush  
D Drain  
Q Quench

## RELY ON EXCELLENCE

### Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
20	70	105	51	128	100	70	30	50
30	80	115	63	138	102	70	32	50
40	90	125	74	148	105	70	35	50
50	100	140	84	168	105	70	35	50
60	120	160	99	188	107	72	35	52
70	130	170	108	198	107	72	35	52
80	140	180	120	208	107	72	35	52
90	160	205	138	248	114	79	35	59
100	170	215	148	258	115	80	35	60
110	180	225	157	268	120	80	40	60

Dimensions in millimeter



RELY ON EXCELLENCE

## LL9DJUE

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 2 seal
- Dual seal in face-to-back arrangement
- Dry contact outer seal (containment seal)
- Balanced
- Cartridge unit
- Stationary multiple springs
- Solid seal faces

### Advantages

- Outer seal which can be used for flashing as well as non-flashing applications prevents hazardous emissions in case of inboard seal failure
- Low heat generation and power consumption due to narrow seal face width of inner seal
- Longer seal life
- Good followability due to no influence from run-out, squareness or vibration of the shaft
- 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

### Operating range

Shaft diameter:  $d_1 = 20 \dots 110 \text{ mm}$  (0.79" ... 4.33")  
 Pressure (primary seal):  $p = \text{vacuum} \dots 60 \text{ bar}$  (870 PSI)  
 Pressure (secondary seal):  $p = 2.75 \text{ bar}$  (40 PSI) normal operation, max. 60 bar (870 PSI) in wet operation  
 Temperature:  $-40 \text{ }^\circ\text{C} \dots +176 \text{ }^\circ\text{C}$  ( $-40 \text{ }^\circ\text{F} \dots +349 \text{ }^\circ\text{F}$ )\*  
 Sliding velocity:  $\dots 25 \text{ m/s}$  (82 ft/s)

\* Engineered up to  $260 \text{ }^\circ\text{C}$  ( $500 \text{ }^\circ\text{F}$ ) with FFKM (K) secondary seals.

### Materials

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

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 2CW-CS

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Alternative fuels production
- Light volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side:

- [API Plan 01](#)
- [API Plan 02](#)
- [API Plan 03](#)
- [API Plan 11](#)
- [API Plan 12](#)
- [API Plan 13](#)
- [API Plan 14](#)
- [API Plan 21](#)
- [API Plan 22](#)
- [API Plan 23](#)
- [API Plan 31](#)
- [API Plan 32](#)



## RELY ON EXCELLENCE

### API Plan 41

Between seals:

[API Plan 71](#)

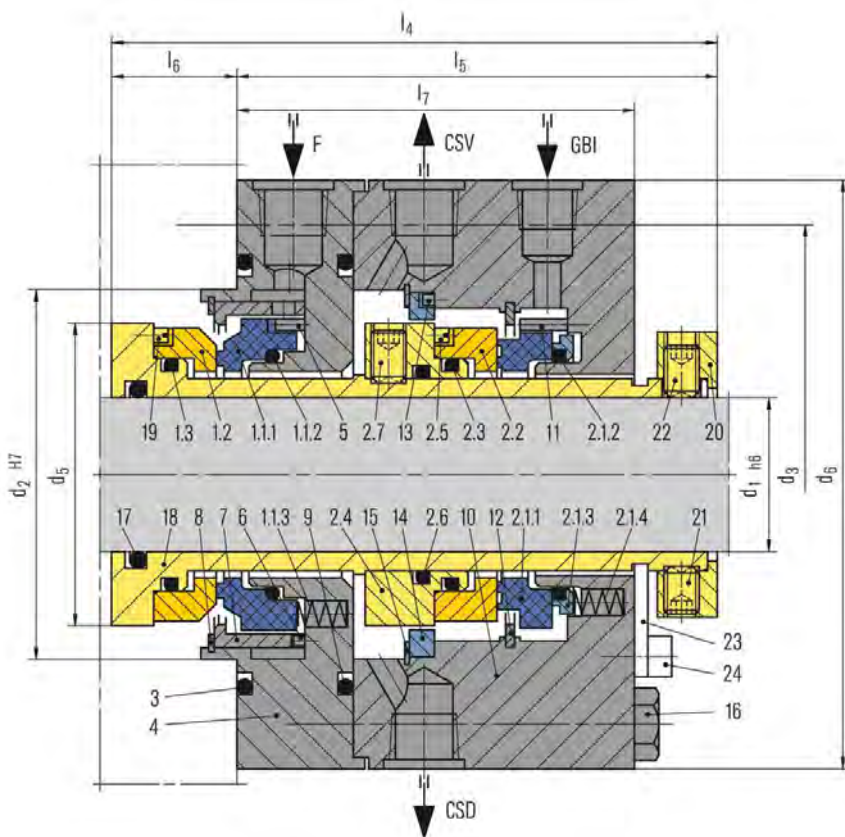
[API Plan 72](#)

[API Plan 75](#)

[API Plan 76](#)

Item	Description
1.1.1, 2.1.1	Seal ring
1.1.2, 1.3, 2.1.2, 2.3,	
2.6, 3, 9, 17	O-Ring
1.1.3, 2.1.4	Spring
1.2, 2.2	Mating ring
2.1.3	Thrust ring
2.4	Collar
2.5, 19	Drive screw
2.7, 21, 22	Set screw
4, 10	Gland plate
5, 6, 11, 13	Pin
7	Flow distributor
8, 12, 15	Retaining ring
14	Throat bushing
16	Hexagon bolt
18	Seal sleeve
20	Drive collar
23	Setting device
24	HSH Cap screw

F Flush  
 CSV Containment seal vent  
 GBI Gas buffer IN  
 CSD Containment seal drain



## RELY ON EXCELLENCE

### Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>5</sub>	d <sub>6</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>
20	70	105	51	128	128	98	30	80
30	80	115	63	138	130	98	32	80
40	90	125	74	148	133	98	35	80
50	100	140	84	168	142	107	35	87
60	120	160	99	188	142	107	35	87
70	130	170	108	198	142	107	35	87
80	140	180	120	208	142	107	35	87
90	160	205	138	248	150	115	35	93
100	170	215	148	258	150	115	35	93
110	180	225	157	268	155	115	40	93

Dimensions in millimeter

RELY ON EXCELLENCE

## LL9DJUU

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

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

### Advantages

- Suitable for higher speeds
- Good followability due to no influence from run-out, squareness or vibration of the shaft
- 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

### Operating range

Shaft diameter:  $d_1 = 20 \dots 110 \text{ mm} (0.79" \dots 4.33")$

Pressure:  $p = 60 \text{ bar} (870 \text{ PSI})$

Temperature:  $-40 \text{ °C} \dots +176 \text{ °C} (-40 \text{ °F} \dots +349 \text{ °F})^*$

Sliding velocity:  $vg = 50 \text{ m/s} (164 \text{ ft/s})$

\* Engineered up to  $260 \text{ °C} (500 \text{ °F})$  with FFKM (K) secondary seals.

### Materials

Seal rings: Blister resistant carbon, Silicon carbide SSiC (Q1), RBSiC (Q2)

Mating rings:

Silicon carbide SSiC (Q1), RBSiC (Q2)

Secondary seals:

EPDM (E), NBR (P), FKM (V), FFKM (K)

Springs: Hastelloy® C-276 (M5)

Metal parts: CrNiMo steel 316 (G)

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 2CW-CW
- API 682 4th ed. Cat. 2/3 - 3CW-FB

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Alternative fuels production
- Light volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side:

[API Plan 01](#)

[API Plan 02](#)

[API Plan 03](#)

[API Plan 11](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 14](#)

[API Plan 21](#)

[API Plan 22](#)

[API Plan 23](#)

[API Plan 31](#)

[API Plan 32](#)

[API Plan 41](#)

RELY ON EXCELLENCE

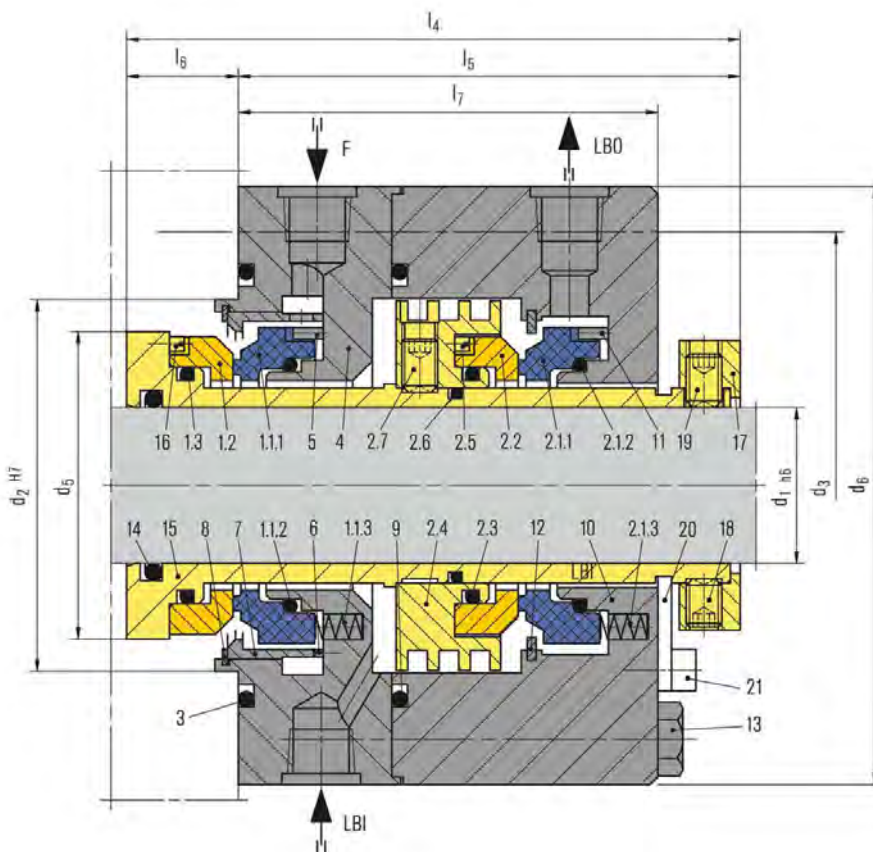
Between seals:

- [API Plan 52](#)
- [API Plan 53A](#)
- [API Plan 53B](#)
- [API Plan 53C](#)
- [API Plan 54](#)
- [API Plan 55](#)

Atmospheric side\*:

- [API Plan 61](#)
- [API Plan 62](#)
- [API Plan 65A](#)
- [API Plan 65B](#)

\* Throttle bushing on request



Item	Description
1.1.1, 2.1.1	Seal ring
1.1.2, 1.3, 2.1.2, 2.3,	
2.6, 3, 9, 14	O-Ring
1.1.3, 2.1.3	Spring
1.2, 2.2	Mating ring
2.4	Collar
2.5, 16	Drive screw
2.7, 18, 19	Set Screw
4, 10	Gland plate
5, 6, 11	Pin
7	Flow distributor
8, 12	Retaining ring
13	Hexagon bolt
15	Seal sleeve
17	Drive collar
20	Setting device
21	HSH Cap screw

F Flush  
 LBO Liquid barrier/buffer OUT  
 LBI Liquid barrier/buffer IN

## RELY ON EXCELLENCE

### Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>5</sub>	d <sub>6</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>
20	70	105	51	128	128	98	30	80
30	80	115	63	138	130	98	32	80
40	90	125	74	148	133	98	35	80
50	100	140	84	168	142	107	35	87
60	120	160	99	188	142	107	35	87
70	130	170	108	198	142	107	35	87
80	140	180	120	208	142	107	35	87
90	160	205	138	248	150	115	35	93
100	170	215	148	258	150	115	35	93
110	180	225	157	268	155	115	40	93

Dimensions in millimeter

RELY ON EXCELLENCE

## LL9DKUU

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### 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

### Operating range

Shaft diameter:  $d_1 = 20 \dots 110 \text{ mm}$  (0.79" ... 4.33")

Pressure:  $p = \text{vacuum} \dots 42 \text{ bar}$  (... 609 PSI)

Temperature:  $t = -40 \text{ °C} \dots +176 \text{ °C}$  (-40 °F ... +349 °F)\*

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

### Materials

Seal rings: Blister resistant carbon, Silicon carbide SSiC (Q1), RBSiC (Q2)

Mating rings:

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)

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 3CW-BB

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Alternative fuels production
- Light volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side:

[API Plan 01](#)

[API Plan 02](#)

[API Plan 03](#)

[API Plan 11](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 14](#)

[API Plan 21](#)

[API Plan 22](#)

[API Plan 31](#)

[API Plan 32](#)

[API Plan 41](#)

Between seals:

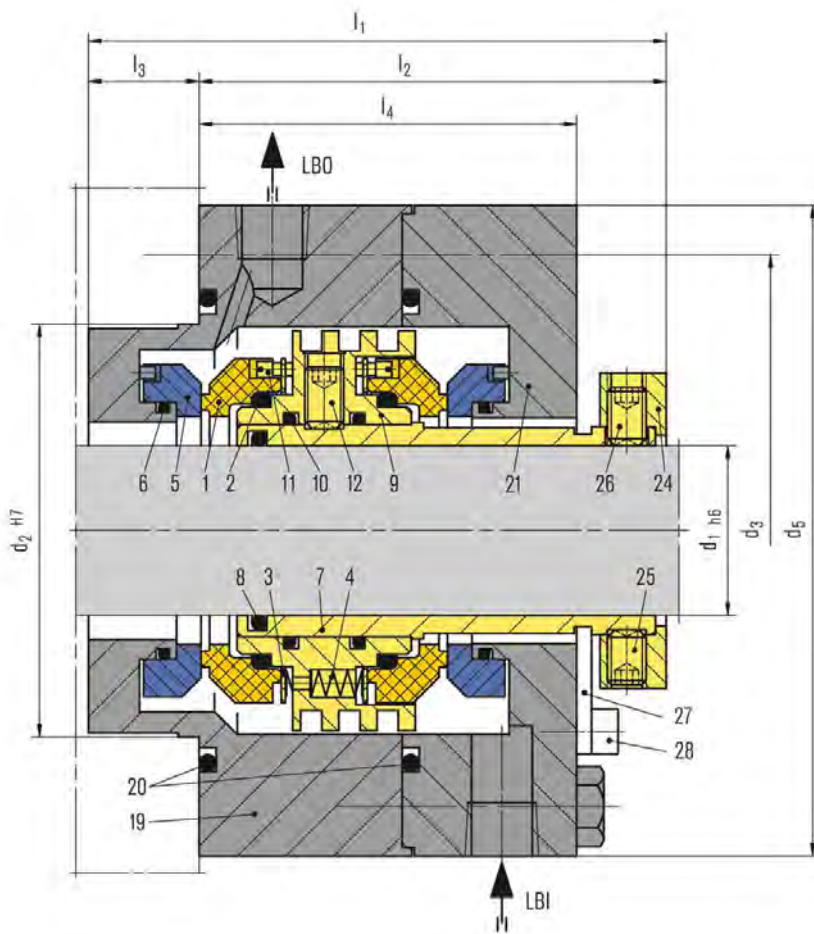
RELY ON EXCELLENCE

API Plan 53A  
 API Plan 53B  
 API Plan 53C  
 API Plan 54

Atmospheric side\*:

API Plan 61  
 API Plan 62  
 API Plan 65A  
 API Plan 65B

\* Throttle bushing on request.



Item	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
24	Drive collar
27	Setting device
28	HSH Cap screw

LBO Liquid barrier OUT  
 LBI Liquid barrier IN

## RELY ON EXCELLENCE

### Dimensions

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>	l <sub>3</sub>	l <sub>4</sub>
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	248	146	116	30	92
100	170	215	258	131	94	37	113
110	180	225	268	139.5	109.5	30	89

Dimensions in millimeter



RELY ON EXCELLENCE

## LL9DSUU

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

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

### Advantages

- Suitable for higher speeds
- Good followability due to no influence from run-out, squareness or vibration of the shaft
- 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

### Operating range

Shaft diameter:  $d_1 = 20 \dots 110 \text{ mm}$  (0.79" ... 4.33")

Pressure:  $p = 60 \text{ bar}$  (870 PSI)

Temperature:  $-40 \text{ °C} \dots +176 \text{ °C}$  ( $-40 \text{ °F} \dots +349 \text{ °F}$ )\*

Sliding velocity:  $v_g = 50 \text{ m/s}$  (164 ft/s)

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

### Materials

Seal rings: Blister resistant carbon, Silicon carbide SSiC (Q1), RBSiC (Q2)

Mating rings:

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), Duplex (G1)

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 3CW-FF

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Alternative fuels production
- Light volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side:

[API Plan 01](#)

[API Plan 02](#)

[API Plan 03](#)

[API Plan 11](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 14](#)

[API Plan 21](#)

[API Plan 22](#)

[API Plan 31](#)

[API Plan 32](#)

[API Plan 41](#)

Between seals:

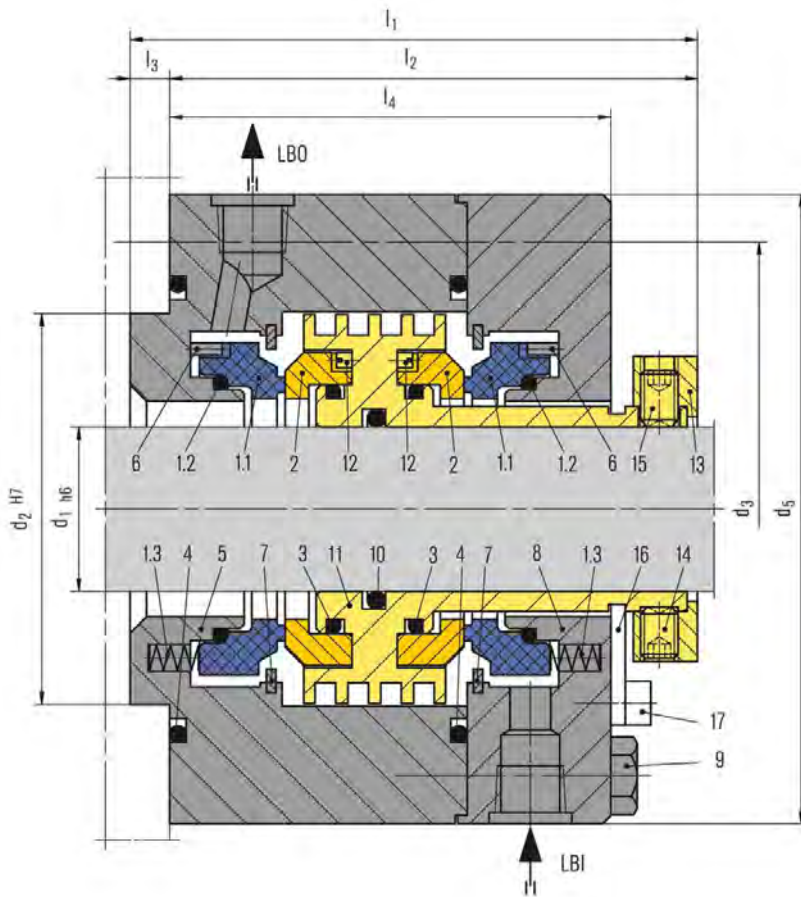
## RELY ON EXCELLENCE

API Plan 53A  
 API Plan 53B  
 API Plan 53C  
 API Plan 54

Atmospheric side\*:

API Plan 61  
 API Plan 62  
 API Plan 65A  
 API Plan 65B

\* Throttle bushing on request



Item	Description
1.1	Seal ring
1.2, 3, 4, 10	O-Ring
1.3	Spring
2	Mating ring
5, 8	Gland plate
6	Pin
7	Retaining ring
9	Hexagon bolt
11	Seal sleeve
12	Drive screw
13	Drive collar
14, 15	Set screw
16	Setting device
17	HSH Cap screw

LBO Liquid barrier OUT  
 LBI Liquid barrier IN

## RELY ON EXCELLENCE

### Dimensions

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>	l <sub>3</sub>	l <sub>4</sub>
20	70	105	128	108	98	10	80
30	80	115	138	110	98	12	80
40	90	125	148	113	98	15	80
50	100	140	168	122	107	15	87
60	120	160	188	122	107	15	87
70	130	170	198	122	107	15	87
80	140	180	208	122	107	15	87
90	160	205	248	130	115	15	93
100	170	215	258	130	115	15	93
110	180	225	268	135	115	20	93

Dimensions in millimeter

RELY ON EXCELLENCE

## LL9DTUE

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 2 seal
- Dual seal in face-to-back arrangement
- Dry contact outer seal (containment seal)
- Balanced
- Cartridge unit
- Solid seal faces

### Advantages

- Outer seal which can be used for flashing as well as non-flashing applications prevents hazardous emissions in case of inboard seal failure
- Low heat generation and power consumption due to narrow seal face width of inner seal
- 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

### Operating range

Shaft diameter:  $d_1 = 20 \dots 110 \text{ mm}$  (0.79" ... 4.33")  
 Pressure (primary Seal):  $p = \text{vacuum} \dots 42 \text{ bar}$  (... 609 PSI)  
 Pressure (secondary seal):  $p = 2.75 \text{ bar}$  (40 PSI) normal operation, max. 60 bar (870 PSI) in wet operation  
 Temperature:  $-40 \text{ }^\circ\text{C} \dots +176 \text{ }^\circ\text{C}$  ( $-40 \text{ }^\circ\text{F} \dots +349 \text{ }^\circ\text{F}$ )\*  
 Sliding velocity: ... 23 m/s (... 75 ft/s)

\* Engineered up to  $260 \text{ }^\circ\text{C}$  ( $500 \text{ }^\circ\text{F}$ ) with FFKM (K) secondary seals.

### Materials

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

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 2CW-CS

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Alternative fuels production
- Light volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side:

- [API Plan 01](#)
- [API Plan 02](#)
- [API Plan 03](#)
- [API Plan 11](#)
- [API Plan 12](#)
- [API Plan 13](#)
- [API Plan 14](#)
- [API Plan 21](#)
- [API Plan 22](#)
- [API Plan 23](#)
- [API Plan 31](#)
- [API Plan 32](#)

## RELY ON EXCELLENCE

### API Plan 41

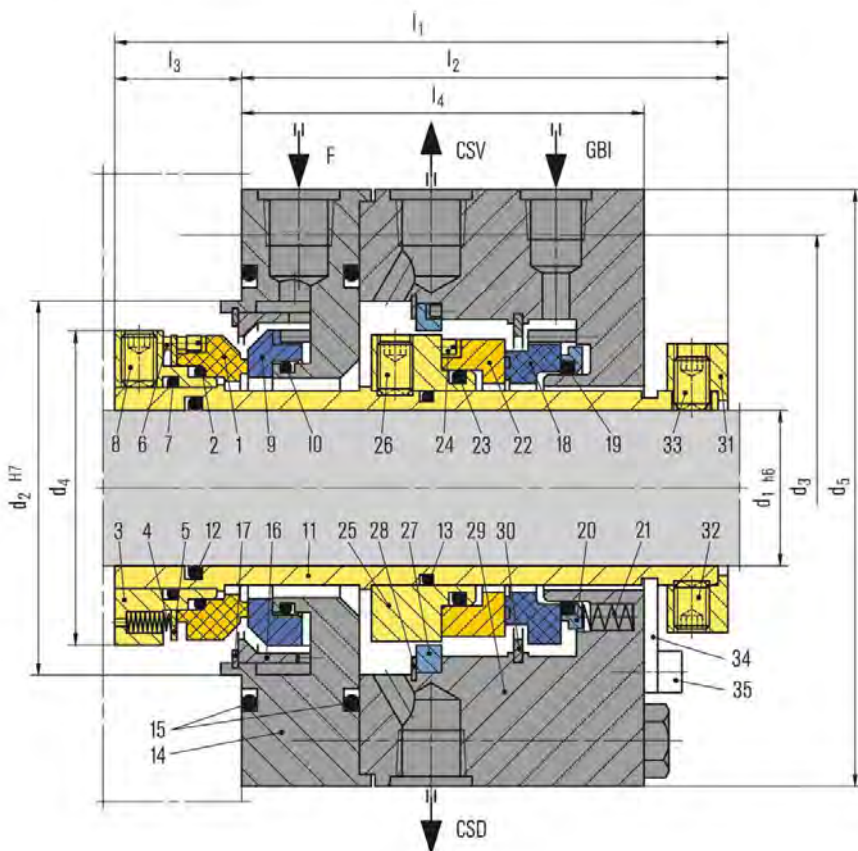
Between seals:

[API Plan 71](#)

[API Plan 72](#)

[API Plan 75](#)

[API Plan 76](#)



Item	Description
1, 18	Seal ring
2, 7, 10, 12, 13, 15, 19, 23	O-Ring
3, 25	Collar
4, 21	Spring
5, 20	Thrust ring
6, 24	Drive screw
8, 26, 32, 33	Set screw
9, 22	Mating ring
11	Seal sleeve
14, 29	Gland plate
16	Flow distributor
17, 28, 30	Retaining ring
27	Throat bushing
31	Drive collar
34	Setting device
35	HSB Cap screw

F Flush

CSV Containment seal vent

GBI Gas buffer IN

CSD Containment seal drain

## RELY ON EXCELLENCE

### Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
20	70	105	-	-	-	-	-	-
30	80	115	69	138	130	98	32	80
40	90	125	79	148	133	98	35	80
50	100	140	89	168	142	107	35	87
60	120	160	105	188	142	107	35	87
70	130	170	115	198	142	107	35	87
80	140	180	125	208	142	107	35	87
90	160	205	137	248	150	115	35	93
100	170	215	150	258	150	115	35	93
110	180	225	163	268	155	115	40	93

Dimensions in millimeter

RELY ON EXCELLENCE

## LL9DTUU

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 2 or 3 seal
- Dual seal in face-to-back arrangement
- Same seal size on 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

### Operating range

Shaft diameter:  $d_1 = 20 \dots 110 \text{ mm}$  (0.79" ... 4.33")

Pressure:  $p = \text{vacuum} \dots 42 \text{ bar}$  (... 609 PSI)

Temperature:  $t = -40 \text{ °C} \dots +176 \text{ °C}$  (-40 °F ... +349 °F)\*

Sliding velocity:  $v_g \dots 23 \text{ m/s}$  (... 75 ft/s)

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

### Materials

Seal rings: Blister resistant carbon, Silicon carbide SSiC (Q1), RBSiC (Q2)

Mating rings:

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), Duplex (G1)

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 2CW-CW
- API 682 4th ed. Cat. 2/3 - 3CW-FB

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Alternative fuels production
- Light volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side:

[API Plan 01](#)

[API Plan 02](#)

[API Plan 03](#)

[API Plan 11](#)

[API Plan 12](#)

[API Plan 13](#)

[API Plan 14](#)

[API Plan 21](#)

[API Plan 22](#)

[API Plan 23](#)

[API Plan 31](#)

[API Plan 32](#)

[API Plan 41](#)



## RELY ON EXCELLENCE

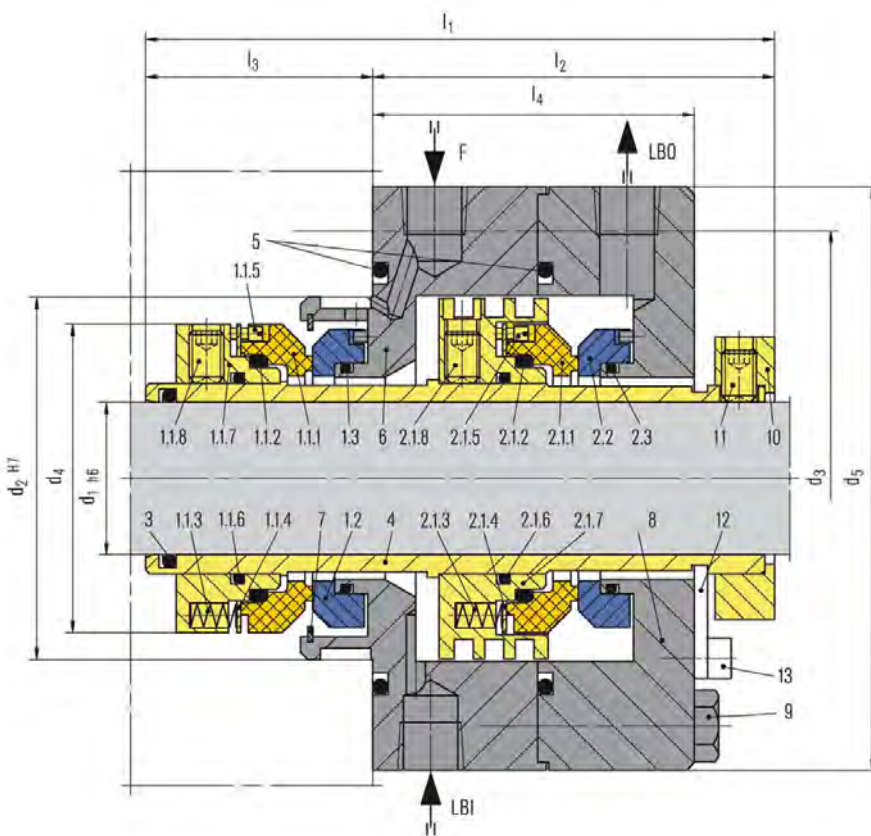
Between seals:

- [API Plan 52](#)
- [API Plan 53A](#)
- [API Plan 53B](#)
- [API Plan 53C](#)
- [API Plan 54](#)
- [API Plan 55](#)

Atmospheric side\*:

- [API Plan 61](#)
- [API Plan 62](#)
- [API Plan 65A](#)
- [API Plan 65B](#)

\* Throttle bushing on request.



Item	Description
1.1.1, 2.1.1	Seal ring
1.1.2, 1.1.6, 1.3, 2.1.2,	O-Ring
2.1.6, 2.3, 3, 5	
1.1.3, 2.1.3	Spring
1.1.4, 2.1.4	Thrust ring
1.1.5, 2.1.5	Drive screw
1.1.7, 2.1.7	Collar
1.1.8, 2.1.8, 11	Set screw
1.2, 2.2	Mating ring
4	Seal sleeve
6, 8	Gland plate
7	Retaining ring
9	Hexagon bolt
10	Drive collar
12	Setting device
13	HSH Cap screw

F Flush

LBO Liquid buffer/barrier OUT

LBI Liquid buffer/barrier IN



RELY ON EXCELLENCE

## Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
20	70	105	-	-	-	-	-	-
30	80	115	69	138	141	94	47	76
40	90	125	79	148	140	93	47	76
50	100	140	89	168	140	93	47	76
60	120	160	105	188	151.1	101	50.1	82
70	130	170	115	198	151.1	101	50.1	82
80	140	180	125	208	153.1	103	50.1	84
90	160	205	137	248	165	112	53	88
100	170	215	150	258	184	117	67	98
110	180	225	163	268	162	108.5	53.5	88

Dimensions in millimeter

RELY ON EXCELLENCE

## LL9UC

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 1 seal
- Single 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
- Extended selection of materials
- Metal parts also in special materials available

### Operating range

Shaft diameter:  $d_1 = 20 \dots 110 \text{ mm (0.79" \dots 4.33")}$   
 Pressure:  $p = \text{vacuum} \dots 42 \text{ bar (... 609 PSI)}$   
 Temperature:  $t = -40 \text{ °C} \dots +176 \text{ °C (-40 °F} \dots +349 \text{ °F)}^*$   
 Sliding velocity:  $vg \dots 23 \text{ m/s (... 75 ft/s)}$

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

### 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)

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 1CW-FL

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Hydrogen
- Alternative fuels production
- Light volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

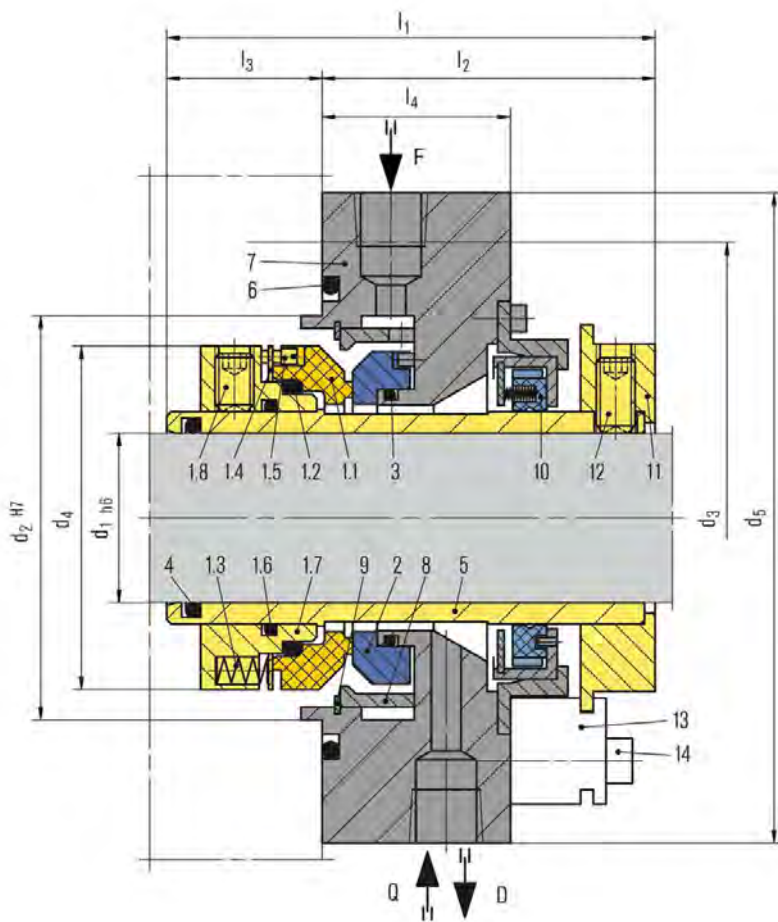
Process side:

- [API Plan 01](#)
- [API Plan 02](#)
- [API Plan 03](#)
- [API Plan 11](#)
- [API Plan 12](#)
- [API Plan 13](#)
- [API Plan 14](#)
- [API Plan 21](#)
- [API Plan 22](#)
- [API Plan 23](#)
- [API Plan 31](#)
- [API Plan 32](#)
- [API Plan 41](#)

RELY ON EXCELLENCE

Atmospheric side:

- [API Plan 51](#)
- [API Plan 61](#)
- [API Plan 62](#)
- [API Plan 65A](#)
- [API Plan 65B](#)
- [API Plan 66A](#)
- [API Plan 66B](#)



Item	Description
1.1	Seal ring
1.2, 1.6, 3, 4, 6	O-Ring
1.3	Spring
1.4	Thrust ring
1.5	Drive screw
1.7	Collar
1.8, 12	Set screw
2	Mating ring
5	Seal sleeve
7	Gland plate
8	Flow distributor
9	Retaining ring
10	Throttle bushing
11	Drive collar
13	Setting device
14	HSH Cap screw

F Flush  
Q Quench  
D Drain

## RELY ON EXCELLENCE

### Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
20	70	105	-	-	-	-	-	-
30	80	115	69	138	102	77	25	45
40	90	125	79	148	102	77	25	45
50	100	140	89	168	102	77	25	45
60	120	160	105	188	107	79	28	45
70	130	170	115	198	108	79	29	45
80	140	180	125	208	108	79	29	45
90	160	205	137	248	117	86	31	50
100	170	215	150	258	128.6	88.5	40.1	50
110	180	225	163	268	120.2	88.5	31.7	50

Dimensions in millimeter

RELY ON EXCELLENCE

## LNF992

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 3 seal
- Dual seal in face-to-back arrangement
- Gas-lubricated
- Balanced
- Cartridge unit
- Stationary multiple springs
- Independent of direction of rotation
- Solid seal faces

### Advantages

- Non-contacting stationary spring unit design
- No process fluid penetration into the seal faces, no leakage to the atmospheric side
- Appropriate to slurry fluid
- Applicable inboard seal design for reverse and positive pressure
- Low power consumption

### Operating range

Shaft diameter:  $d_1 = 20 \dots 110 \text{ mm}$  (0.79" ... 4.33")

Pressure:  $p = \text{vacuum} \dots 16 \text{ bar}$  (232 PSI)

Temperature:  $t = -40 \text{ °C} \dots +160 \text{ °C}$  (-40 °F ... +320 °F)

Sliding velocity:  $v_g = 23 \text{ m/s}$  (75 ft/s)

### Materials

Seal rings: Silicon carbide SSiC (Q1),

High density carbon graphite

Mating rings: Silicon carbide SSiC (Q1)

Secondary seals: FKM (V)

Springs: Hastelloy® C-276 (M5)

Metal parts: CrNiMo steel 316 (G)

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 3NC-FB

### Recommended applications

- Chemical industry
- Petrochemical industry
- Oil and gas industry
- Refining technology
- CCUS
- Alternative fuels production
- Gases and liquids
- Hazardous media
- Environmental harmful media
- Monomers
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

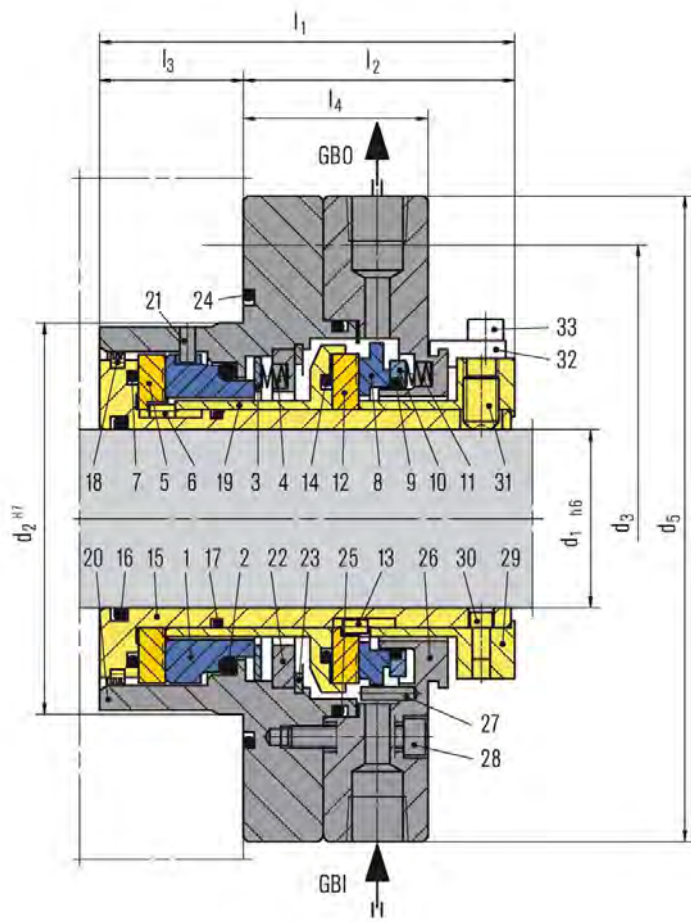
Process side:

- [API Plan 01](#)
- [API Plan 02](#)
- [API Plan 03](#)
- [API Plan 11](#)
- [API Plan 12](#)
- [API Plan 21](#)
- [API Plan 22](#)
- [API Plan 31](#)
- [API Plan 32](#)
- [API Plan 41](#)

Between seals:

- [API Plan 74](#)

## RELY ON EXCELLENCE



Item	Description
1, 8	Seal ring
2, 7, 9, 14, 16, 17, 24, 25	O-Ring
3, 10	Thrust ring
4, 11	Spring
5, 12	Mating ring
6, 13, 21, 27, 30	Pin
15	Seal sleeve
18	Labyrinth
19	Adapter sleeve
20, 26	Gland plate
22	Adapter
23	Retaining ring
28, 33	HSH cap screw
29	Drive collar
31	Set screw
32	Setting device

GBO Gas barrier OUT  
GBI Gas barrier IN

## Dimensions

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>	l <sub>3</sub>	l <sub>4</sub>
30	80	115	138	87	49	38	31.5
40	90	125	148	93	52	41	32.5
50	100	140	168	97	54	43	34.5
60	120	160	188	97	54	43	34.5
70	130	170	198	97	54	43	34.5
80	140	180	208	99	56	43	34.5
90	160	205	248	99	56	43	34.5
100	170	215	258	99	56	43	34.5

Dimensions in millimeter

RELY ON EXCELLENCE

## LY9TCR

API 682 4th edition product range | Mechanical seals | Metal bellows seals



### Features

- API 682 Category 2 and 3, Type C seal
- Balanced
- Cartridge unit
- Rotating metal bellows
- Shrink fitted seal rings and solid mating rings

### Advantages

- Compact design
- Also available in double ply design
- Suited for application with extreme high and low temperature
- Absence of dynamic O-ring eliminates/ reduces seal face hang-up
- Bellows design minimizes variation in face load due to shaft expansion or face wear
- Resistant to abrasive particles in the medium, no shaft or sleeve fretting

### Operating range

Shaft diameter:  
 $d_1 = 20 \text{ mm} \dots 110 \text{ mm} (0.79" \dots 4.33")$   
 Pressure single ply bellows:  
 $p = \text{vacuum} \dots 25 \text{ bar}^* (\dots 363 \text{ PSI}^*)$   
 Pressure double ply bellows:  
 $p = \text{vacuum} \dots 35 \text{ bar} (\dots 508 \text{ PSI})$   
 Temperature:  
 $t = -75 \text{ }^\circ\text{C}^* \dots +400 \text{ }^\circ\text{C} (-103 \text{ }^\circ\text{F}^* \dots 752 \text{ }^\circ\text{F})$   
 Sliding velocity:  
 $vg = \dots 23 \text{ m/s} (\dots 75 \text{ ft/s})$

\* Please contact an EagleBurgmann engineering expert when the operating range of the required seal exceeds the range shown above.

### Materials

Seal ring: Blister resistant carbon (C4), RBSiC (Q2)  
 Mating ring: RBSiC (Q2)  
 Bellows: Inconel® 718 (M6)  
 Secondary seal: Graphite (G)  
 Metal parts: CrNiMo steel 316/316L (G), Carpenter® 42 (T4)

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3
- Compliant to TA Luft (German Clean Air Act)

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- LPG plants / Process pumps
- API 610 / ISO 13709 pumps
- CCUS
- Hydrogen
- Sustainable plastics production
- Alternative fuels production

### Recommended piping plans

Process side (Dual seal / Single seal):

[API Plan 01](#)  
[API Plan 02](#)  
[API Plan 03](#)  
[API Plan 11](#)  
[API Plan 12](#)  
[API Plan 13](#)  
[API Plan 14](#)  
[API Plan 21](#)  
[API Plan 22](#)  
[API Plan 23](#)  
[API Plan 31](#)  
[API Plan 32](#)

## RELY ON EXCELLENCE

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API Plan 41

**Between seals (Dual seal):**

API Plan 52

API Plan 53A

API Plan 53B

API Plan 53C

API Plan 54

API Plan 55

**Atmospheric side (Dual seal):**

API Plan 61

API Plan 62

API Plan 65A

API Plan 65B

**Atmospheric side (Single seal):**

API Plan 51

API Plan 61

API Plan 62

API Plan 65A

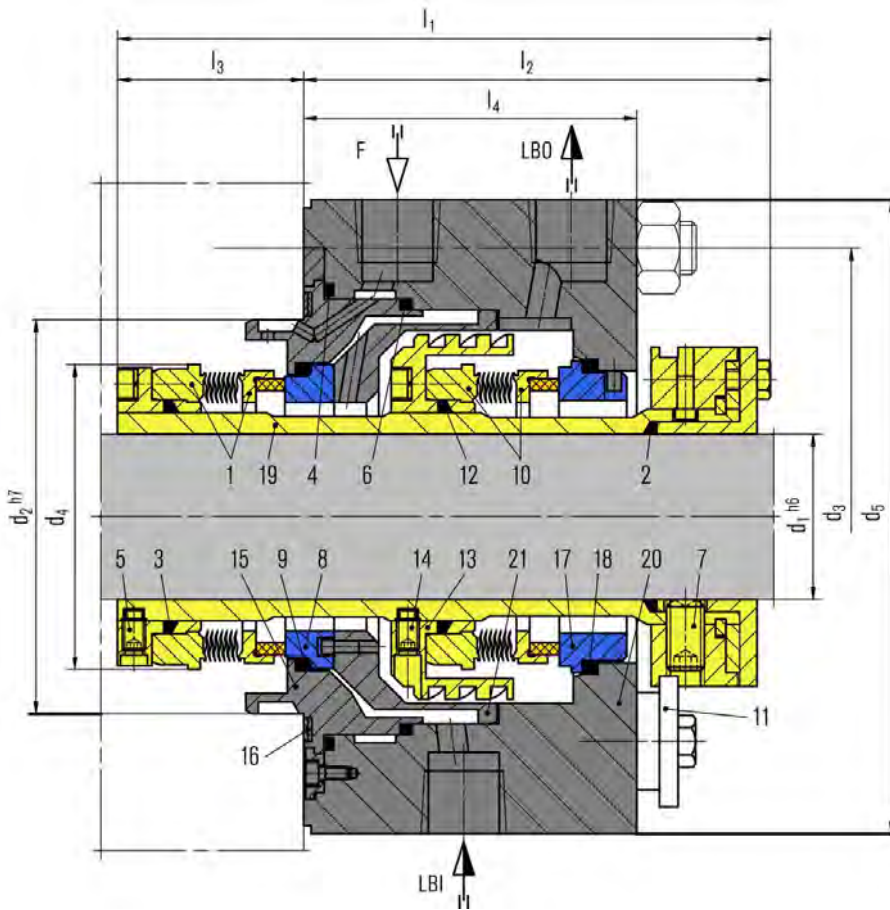
API Plan 65B

API Plan 66A

API Plan 66B



RELY ON EXCELLENCE



## LY9TCR-T

Dual seal

Arrangement: Face-to-back (Tandem),  
2CW-CW, 3CW-FB

Item	Description
1,10	Seal ring with bellows unit
2, 3, 4, 6, 9, 12, 18	Graphite ring
5, 7, 14	Set screw
8, 17	Mating ring
11	Assembly fixture
13	Driver with pumping screw
15	Adapter
16	Spiral wound gasket
19	Seal sleeve
20	Gland plate
21	Insert

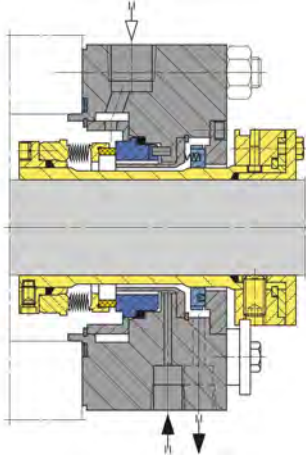
F Flush

LBO Liquid buffer/barrier OUT

LBI Liquid buffer/barrier IN

## RELY ON EXCELLENCE

### Product variants



**LY9TCR-S**  
Single seal  
Arrangement: 1CW-FL

### Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
20	70	105	52.3	128	140.5	94.5	46	70.5
30	80	115	62.3	138	145	97.5	47.5	71
40	90	125	72.3	148	147	98	49	71.5
50	100	140	82.7	168	150.5	101.5	49	75
60	120	160	94.3	188	159	105	54	78.5
70	130	170	105.9	198	162.5	104.5	58	78
80	140	180	117.9	208	163.5	107.5	56	79.5
90	160	205	128.7	248	167	112	55	83
100	170	215	141	258	169	114	55	83
110	180	225	151	268	169	114	55	83

**LY9TCR-T** Dimensions in millimeter - for single ply bellows. Dimension for double ply bellows on request.

### Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
20	70	105	52.3	128	106	82	24	58
30	80	115	62.3	138	109	84.5	24.5	58
40	90	125	72.3	148	111.5	84.5	27	58
50	100	140	82.7	168	113.5	84.5	29	58
60	120	160	94.3	188	116.5	89.5	27	63
70	130	170	105.9	198	117.5	89.5	28	63
80	140	180	117.9	208	119	91	28	63
90	160	205	128.7	248	120.5	92	28.5	63
100	170	215	141	258	122.5	94	28.5	63
110	180	225	151	268	122.5	94	28.5	63

**LY9TCR-S** Dimensions in millimeter - for single ply bellows. Dimension for double ply bellows on request.

RELY ON EXCELLENCE

## LY9TCS

API 682 4th edition product range | Mechanical seals | Metal bellows seals



### Features

- API 682 Category 2 and 3, Type C seal
- Balanced
- Cartridge unit
- Stationary metal bellows
- Shrink fitted seal rings and solid mating rings

### Advantages

- Suitable for higher speeds
- Good followability due to no influence from run-out, squareness or vibration of the shaft
- Compact design
- Also available in double ply design
- Suited for application with extreme high and low temperature
- Absence of dynamic O-ring eliminates/reduces seal face hang-up
- Bellows design minimizes variation in face load due to shaft expansion or face wear
- Resistant to abrasive particles in the medium, no shaft or sleeve fretting

### Operating range

Shaft diameter:  
 $d_1 = 20 \dots 110 \text{ mm}^* (0.79" \dots 4.33"^{**})$   
 Pressure single ply bellows:  
 $p = \text{vacuum} \dots 25 \text{ bar}^* (\dots 363 \text{ PSI}^*)$   
 Pressure double ply bellows:  
 $p = \text{vacuum} \dots 35 \text{ bar} (\dots 508 \text{ PSI})$   
 Temperature:  
 $t = -75 \text{ }^\circ\text{C}^* \dots +400 \text{ }^\circ\text{C} (-103 \text{ }^\circ\text{F}^* \dots 752 \text{ }^\circ\text{F})$   
 Sliding velocity:  
 $vg = \dots 50 \text{ m/s}^* (\dots 164 \text{ ft/s}^*)$

\* Please contact an EagleBurgmann engineering expert when the operating range of the required seal exceeds the range shown above.

### Materials

Seal ring: Blister resistant carbon (C4), RBSiC (Q2)  
 Mating ring: RBSiC (Q2)  
 Bellows: Inconel® 718 (M6)  
 Secondary seal: Graphite (G)  
 Metal parts: CrNiMo steel 316/316L (G), Carpenter® 42 (T4)

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3
- Compliant to TA Luft (German Clean Air Act)(LY9TCS-T, LY9TCS-F)

### Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- LPG plants / Process pumps
- API 610 / ISO 13709 pumps
- CCUS
- Hydrogen
- Sustainable plastics production
- Alternative fuels production

### Recommended piping plans

**Process side (Dual seal / Single seal):**

[API Plan 01](#)  
[API Plan 02](#)  
[API Plan 03](#)  
[API Plan 11](#)  
[API Plan 12](#)  
[API Plan 13](#)  
[API Plan 14](#)  
[API Plan 21](#)  
[API Plan 22](#)  
[API Plan 23](#)  
[API Plan 31](#)  
[API Plan 32](#)

RELY ON EXCELLENCE

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API Plan 41

**Between seals (Dual seal):**

API Plan 52

API Plan 53A

API Plan 53B

API Plan 53C

API Plan 54

API Plan 55

**Atmospheric side (Dual seal):**

API Plan 61

API Plan 62

API Plan 65A

API Plan 65B

**Atmospheric side (Single seal):**

API Plan 51

API Plan 61

API Plan 62

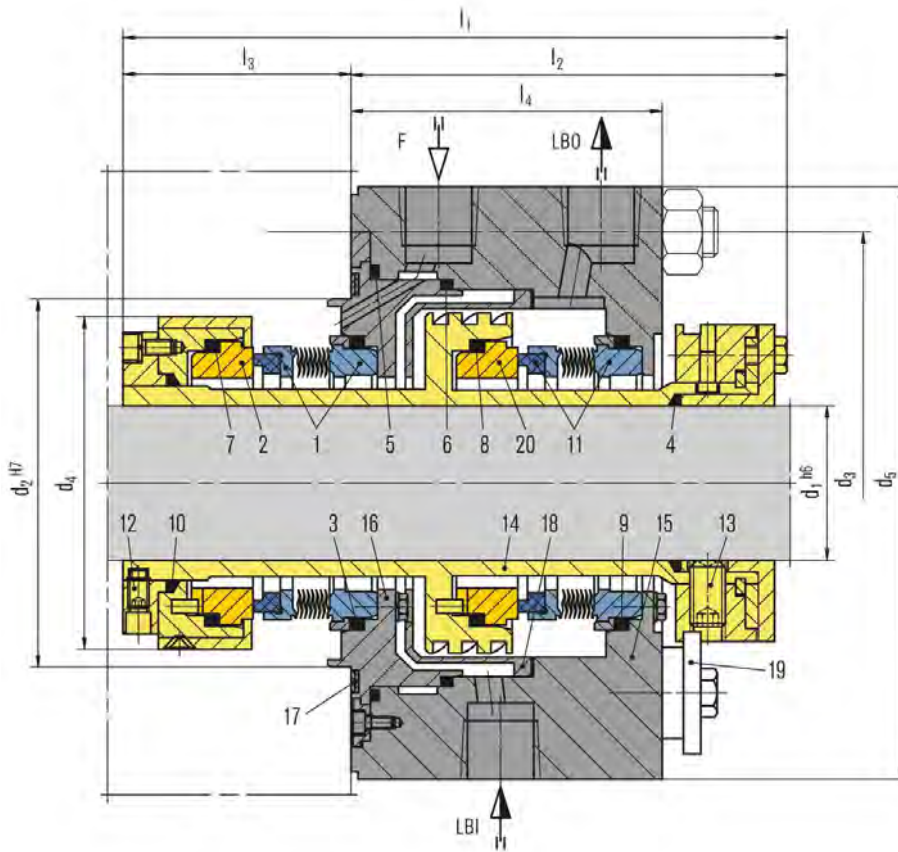
API Plan 65A

API Plan 65B

API Plan 66A

API Plan 66B

RELY ON EXCELLENCE



## LY9TCS-T

Dual seal

Arrangement: Face-to-back (Tandem),  
2CW-CW, 3CW-FB

Item	Description
1, 11	Seal ring with bellows unit
3, 4, 5, 6, 7, 8, 9, 10	Graphite ring
2, 20	Mating ring
12, 13	Set screw
14	Seal sleeve with pumping screw
15	Gland plate
16	Adapter
17	Spiral wound gasket
18	Flow guide
19	Assembly fixture

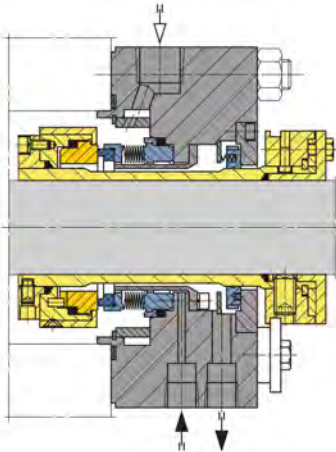
F Flush

LBO Liquid buffer/barrier OUT

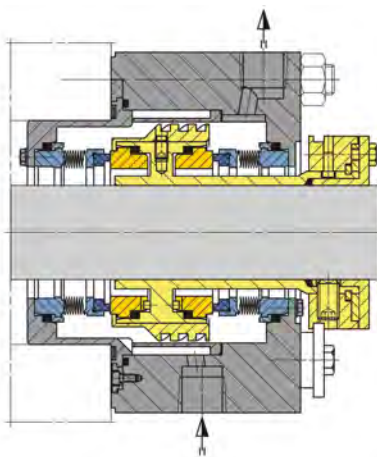
LBI Liquid buffer/barrier IN

## RELY ON EXCELLENCE

### Product variants



**LY9TCS-S**  
Single seal  
Arrangement: 1CW-FL



**LY9TCS-F**  
Dual seal  
Arrangement: Face-to-face, 3CW-FF

### Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
20	70	105	61	128	146	98	48	74
30	80	115	71.5	138	151	98	53	71.5
40	90	125	81	148	153.5	98	55.5	71.5
50	100	140	93	168	158.5	105.5	53	79
60	120	160	103	188	163.5	106	57.5	79.5
70	130	170	113	198	171	108	63	81.5
80	140	180	125.5	208	172.5	108	64.5	80
90	160	205	138	248	177	115	62	86
100	170	215	150	258	181	116.5	64.5	85.5
110	180	225	159	268	181	116.5	64.5	85.5

**LY9TCS-T** Dimensions in millimeter - for simple ply bellows. Dimensions for double ply bellows on request.

## RELY ON EXCELLENCE

### Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
20	70	105	61	128	132	82	50	58
30	80	115	71.5	138	122	84.5	37.5	58
40	90	125	81	148	123	84.5	38.5	58
50	100	140	93	168	125.5	84.5	41	58
60	120	160	103	188	128.5	89.5	39	63
70	130	170	113	198	132.5	89.5	43	63
80	140	180	125.5	208	134	91	43	63
90	160	205	138	248	136.5	92	44.5	63
100	170	215	150	258	139.5	94	45.5	63
110	180	225	159	268	139.5	94	45.5	63

**LY9TCS-S** Dimensions in millimeter - for simple ply bellows. Dimensions for double ply bellows on request.

### Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
20	70	105	128	129	95	34	71
30	80	115	138	133.5	97	36.5	70.5
40	90	125	148	136.5	98	38.5	71.5
50	100	140	168	141.5	106	35.5	79.5
60	120	160	188	146.5	106	40.5	79.5
70	130	170	198	152.5	107	45.5	80.5
80	140	180	208	155	108	47	80
90	160	205	248	158	115	43	86
100	170	215	258	162	117	45	86
110	180	225	268	162	117	45	86

**LY9TCS-F** Dimensions in millimeter - for simple ply bellows. Dimensions for double ply bellows on request.

RELY ON EXCELLENCE

## RGS-D

API 682 4th edition product range | Mechanical seals | Balanced pusher seals



### Features

- API 682 Category 2 and 3, Type A, Arrangement 3 seal
- Dual seal in back-to-back arrangement
- Gas-lubricated
- Balanced
- Cartridge unit
- Independent of direction of rotation
- Stationary spring on process and atmospheric side
- Contact free operation, no friction

### Advantages

- Universally applicable both for retrofits or original equipment
- Efficient stock keeping due to standardized components
- Extended selection of materials
- Metal parts also in special materials available

### Operating range

Shaft diameter:  
 $d_1 = 20 \dots 110 \text{ mm} (0.79" \dots 4.33")^*$   
 Pressure:  $p_1 = 42 \text{ bar} (609 \text{ PSI})$   
 Temperature:  
 $t = -20 \text{ °C} \dots +176 \text{ °C} (-4 \text{ °F} \dots +350 \text{ °F})$   
 Sliding velocity:  
 $vg = 4 \dots 23 \text{ m/s} (13 \dots 76 \text{ ft/s})$   
 Axial movement:  $\pm 1.0 \text{ mm}$

### Materials

Seal rings: Blister resistant carbon, Silicon carbide Q19  
 Mating rings:  
 Silicon carbide SSiC (Q1), RBSiC (Q2)  
 Secondary seals:  
 EPDM (E), NBR (P), FKM (V), FFKM (K)  
 Springs: Hastelloy® C-4 (M)\* and C-276 (M5)  
 Metal parts: CrNiMo steel 316 (G) or equivalent,  
 optional materials on request.

\* EagleBurgmann standard

### Standards and approvals

- API 682 / ISO 21049
- API 682 4th ed. Cat. 2/3 - 3NC-FF

### Recommended applications

- Refining technology
- Petrochemical industry
- Oil and gas industry
- Gases and liquids
- Media which require high purity
- Environmental harmful media
- API 610 / ISO 13709 pumps
- Process pumps

### Recommended piping plans

Process side\*:

[API Plan 01](#)  
[API Plan 02](#)  
[API Plan 03](#)  
[API Plan 11](#)  
[API Plan 12](#)  
[API Plan 21](#)  
[API Plan 22](#)  
[API Plan 31](#)  
[API Plan 32](#)  
[API Plan 41](#)

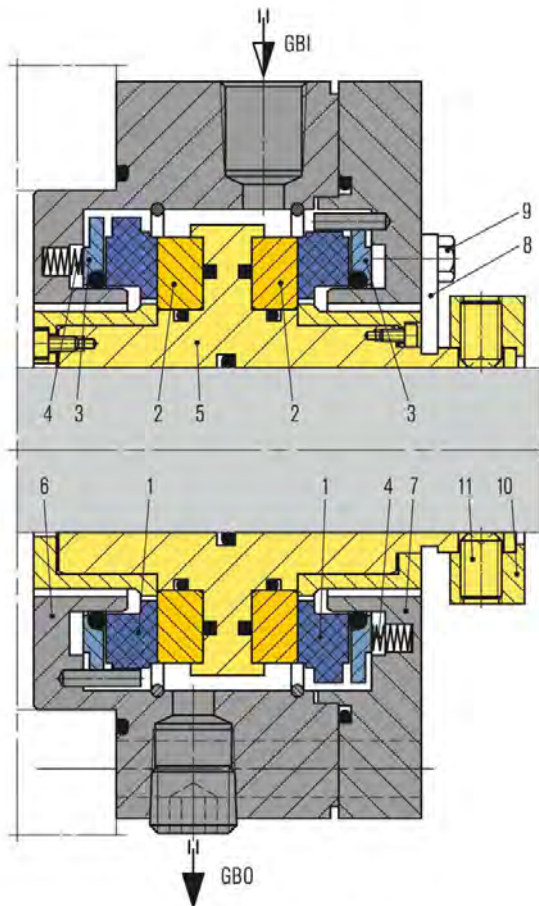
Between seals:



RELY ON EXCELLENCE

## API Plan 74

\* Piping plans 11 ... 41: Integration in seal to be dimensionally checked.



### Item Description

- |      |                |
|------|----------------|
| 1    | Seal ring      |
| 2    | Mating ring    |
| 3    | Thrust ring    |
| 4    | Spring         |
| 5    | Seal sleeve    |
| 6, 7 | Gland plate    |
| 8    | Setting device |
| 9    | Hexagon bolt   |
| 10   | Set ring       |
| 11   | Set screw      |

GBI Gas barrier IN  
GBO Gas barrier OUT

### Dimensions

Dimensions on request.

RELY ON EXCELLENCE

## AD510 / AD520

Mechanical seals | Agitator seals | Dry running seals



### Features

- Dry running
- Single seal
- Independent of direction of rotation

### Advantages

AD510 includes housing

### Operating range

Pressure:

$p = \text{vacuum (7 mbara)} \dots 5 \text{ bar (73 PSI)}$

Temperature:

$t = -30 \text{ °C} \dots +175 \text{ °C} (-22 \text{ °F} \dots +347 \text{ °F})$

Sliding velocity:  $v_g = \text{max. } 1.0 \text{ m/s (3 ft/s)}$

Allowable gas consumption: 2 NI/h

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal face: PTFE, Carbon fiber and glass fiber reinforced

Seat: Silicon carbide (Q1), Aluminium oxide (V)

### Notes

Options:

Cooling jacket on the vessel side flange and carbon bush and version with gas flushing line and lip seal. Please inquire.

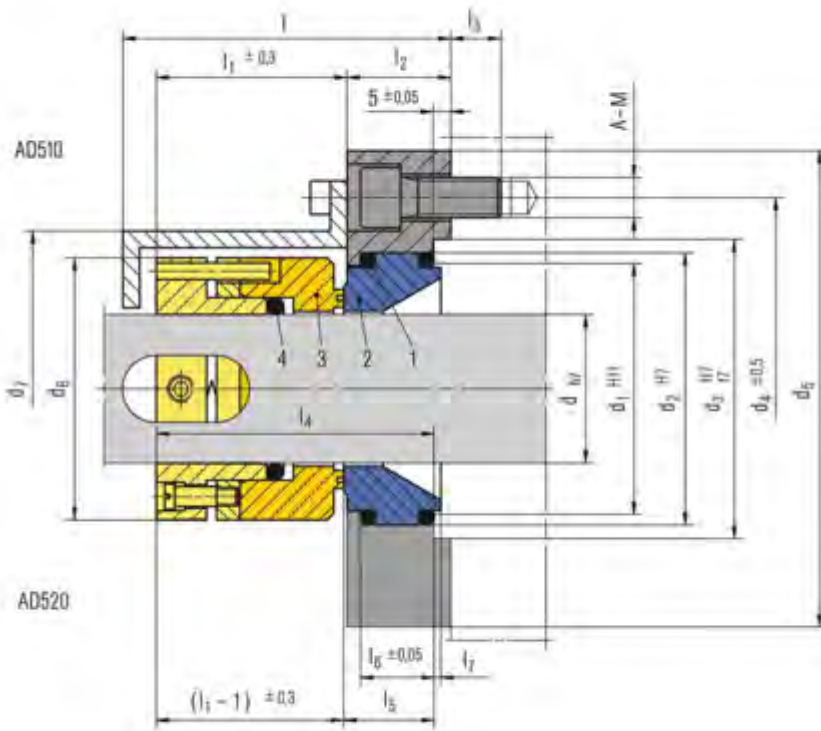
### Recommended applications

- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Reactors
- Polymerization agitators
- Mixers

RELY ON EXCELLENCE

**Item Description**

- 1 O-Ring
- 2 Seat
- 3 Seal face
- 4 O-Ring



## Product variants

AD520

## RELY ON EXCELLENCE

### Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	l	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	A-M
20	36	42	50	70	90	46	60	77	44	24	11	63	20	16	2	4-M8
25	41	47	55	75	95	51	65	77	44	24	11	63	20	16	2	4-M8
30	46	52	60	80	100	56	70	77	44	24	11	63	20	16	2	4-M8
35	51	57	65	85	105	61	75	77	44	24	11	63	20	16	2	4-M8
40	60	66	75	95	120	70	85	82	47	26	12	68	22	18	2	4-M10
45	65	71	80	100	125	75	90	82	47	26	12	68	22	18	2	4-M10
50	70	76	85	105	130	80	95	82	47	26	12	68	22	18	2	8-M10
55	75	81	90	110	135	85	100	82	47	26	12	68	22	18	2	8-M10
60	85	91	100	120	145	92	110	89	51	28	12	74	24	20	2	8-M10
65	90	96	105	125	150	97	115	89	51	28	12	74	24	20	2	8-M10
70	95	101	110	130	155	102	120	91	51	30	12	76	26	21	2	8-M10
75	104	110	120	140	165	109	130	91	51	30	12	76	26	21	2	8-M10
80	109	115	125	150	178	114	130	98	57	31	15	83	27	22	2	8-M12
85	114	120	130	155	183	120	140	98	57	31	15	83	27	22	2	8-M12
90	119	125	135	160	188	124	140	98	57	31	15	83	27	22	2	8-M12
95	124	130	140	165	193	130	150	98	57	31	15	83	27	22	2	8-M12
100	129	135	145	170	198	134	150	98	57	31	15	83	27	22	2	8-M12
105	134	140	150	175	203	140	160	98	57	31	15	83	27	22	2	8-M12
110	139	145	155	180	208	146	165	98	57	31	15	83	27	22	2	8-M12
120	150	160	170	200	236	160	180	110	63	37	20	95	33	27	3	8-M16
130	160	170	180	210	246	170	190	110	63	37	20	95	33	27	3	8-M16
140	175	185	195	225	260	180	200	110	63	37	20	95	33	27	3	8-M16
150	190	200	210	240	276	200	225	136	85	40	20	120	36	30	3	8-M16
160	200	210	220	250	286	210	230	136	85	40	20	120	36	30	3	8-M16
170	210	220	230	260	296	220	250	136	85	40	20	120	36	30	3	8-M16
180	220	230	240	270	306	230	250	136	85	40	20	120	36	30	3	8-M16

Dimensions in millimeter

RELY ON EXCELLENCE

## SeccoLip461

Mechanical seals | Agitator seals | Dry running seals



### Features

- For top entry drives, on request for side and bottom entry drives
- For glass-lined vessels
- Dry-running
- Modular and flexible design
- Compensation of shaft deflection by patented technology
- Independent of direction of rotation
- Cartridge unit

### Advantages

- Available as a ready-to-mount cartridge for quick and easy installation
- Ready-to-fit and factory-tested units
- Safe and environmentally compatible technology
- The glass-lined flange does not have to be replaced - an adaptation is possible
- No monitoring necessary
- No cost-intensive supply system necessary
- Low maintenance requirements
- No additional roller bearing necessary, but optionally available
- Sealing element made of bright chemically highly resistant PTFE compound
- ATEX certification available on request
- Customized adjustments possible

### Operating range

Shaft diameter (on stock): d1 = 40 ... 125 mm (1.57" ... 4.92")

Special shaft diameters between 25 mm and 200 mm possible (0.98" ... 7.87")

Pressure: p1 = vacuum ... 6 bar (87 PSI)

Temperature: -30 °C ... +200 °C (-22 °F ... +392 °F)

Sliding velocity: v<sub>g</sub> = 0 ... 2 m/s (0 ... 6 ft/s)

Axial movement: ±3.0 mm

Radial movement: 1.0 mm (up to 3 mm on request)

For applications beyond this range, please inquire.

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Lip sealing element: bright chemically highly resistant PTFE-compound

Secondary seals: FKM (V)

Adapter: AL-Oxid

Metallic parts: 316L /1.4404

Other materials are possible, depending on customer requirements.

### Standards and approvals

- FDA
- ATEX
- TA-Luft

### Recommended applications

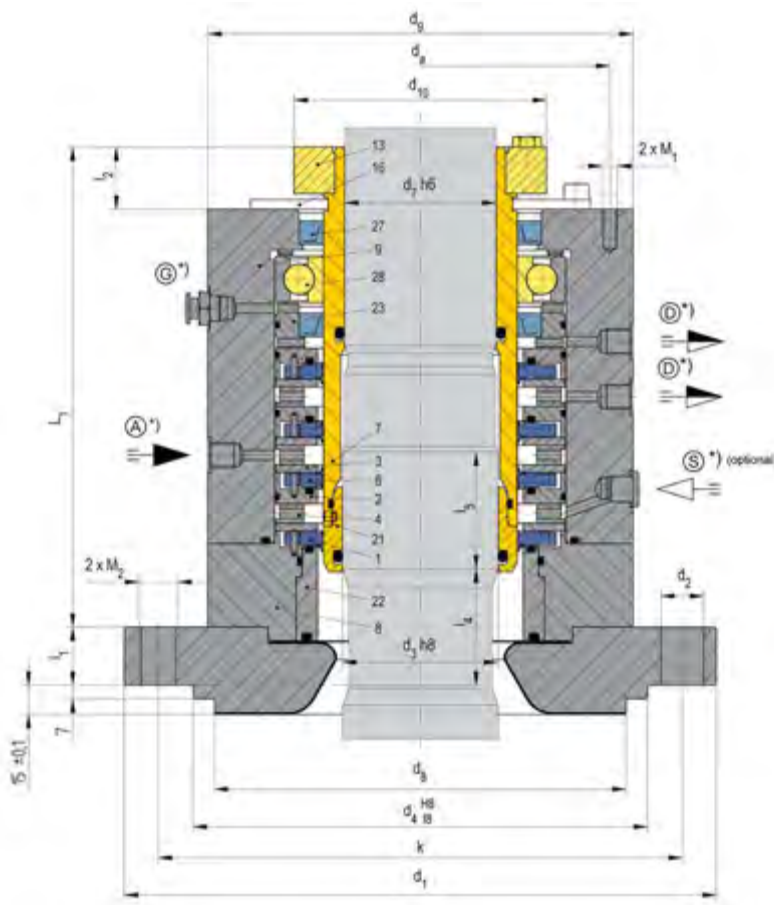
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Non-toxic media
- Agitators
- Mixers
- Reactors

## RELY ON EXCELLENCE

### SeccoLip461L-4

#### Item Description

- 1 Lip seal
- 2 Inset
- 3 Disc
- 4 Insert ring
- 6 O-Ring
- 7 Shaft sleeve
- 8 Flange
- 9 Housing
- 13 Shrink disc
- 16 Setting device
- 23 Spacer ring
- 27 Lip seal
- 28 Sliding bearing



## Dimensions

d <sub>3</sub> <sup>1)</sup>	d <sub>7</sub> <sup>1)</sup>	Nominal size	Flange size <sup>2)</sup>	d <sub>1</sub>	nxd <sub>2</sub> <sup>2)</sup>	d <sub>4</sub>	nxd <sub>5</sub>	d <sub>6</sub>	d <sub>8</sub>	k	d <sub>9</sub>	d <sub>10</sub>	L <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>a</sub>	M <sub>1</sub>	M <sub>2</sub>	A, D, S
40	38	40	E125	175	4x18	110	-	-	102	145	175	80	216.5	25	26	150	M8	M16	G1/4
50	48	50	E200	240	8x18	176	-	-	138	210	177	90	222	25	26	160	M8	M16	G1/4
60	58	60	E250	240	8x18	204	-	-	188	240	195	100	232	25	26	176	M8	M20	G1/4
80	78	80	E300	275	8x22	234	-	-	212	270	219	130	247	30	32	195	M8	M20	G1/4
100	98	100	E400	305	8x22	313	-	-	268	350	249	150	263	30	37	200	M8	M20	G1/4
100	98	100	E500	305	8x22	313	-	-	268	350	249	150	263	30	37	200	M8	M20	G1/4
125	120	100	E700	330	8x22	422	12x22	320	306	460	286	174	276	30	47	222	M8	M20	G1/4

Dimensions in millimeter

1) Shaft diameters d<sub>1</sub> and d<sub>7</sub> according to DIN 28159

2) Flange dimensions according to DIN 28137 T2

RELY ON EXCELLENCE

## SeccoLip481

Mechanical seals | Agitator seals | Dry running seals



### Features

- For top entry drives, on request other drives possible
- Dry-running
- Modular and flexible design
- Compensation of shaft deflection by patented technology
- Independent of direction of rotation
- Cartridge unit

### Advantages

- Available as a ready-to-mount cartridge for quick and easy installation
- Tested technology ensures safe use
- Dry-running lip seal - depending on the application no supply system is necessary
- No additional rolling bearing required, but optionally available
- Sealing element made of bright chemically highly resistant PTFE compound
- ATEX certificate on request
- Customized adjustments possible

### Operating range

Shaft diameter (on stock): d1 = 40 ... 125 mm (1.57" ... 4.92")

Special shaft diameters between 25 mm and 200 mm possible (0.98" ... 7.87")

Pressure: p1 = vacuum ... 6 bar (87 PSI)

Temperature: -30 °C ... +200 °C (-22 °F ... +392 °F)

Sliding velocity: v<sub>g</sub> = 0 ... 2 m/s (0 ... 6 ft/s)

Axial movement: ±3.0 mm

Radial movement: 1.0 mm (up to 3 mm on request)

For applications beyond this range, please inquire.

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Lip sealing element: bright chemically highly resistant PTFE-compound with FDA

Secondary seals: FKM (V)

Metallic parts: 316L / 1.4404

Other materials are possible, depending on customer requirements.

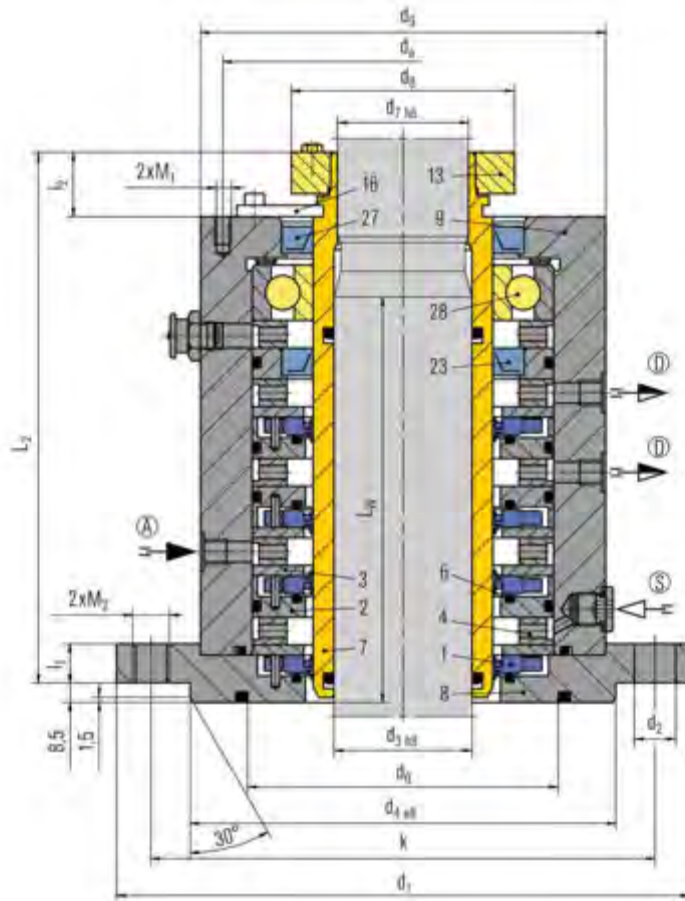
### Standards and approvals

- FDA
- ATEX
- TA-Luft

### Recommended applications

- Chemical industry
- Petrochemical industry
- Pharmaceutical industry
- Food and beverage industry
- Agitators
- Mixers
- Reactors

RELY ON EXCELLENCE



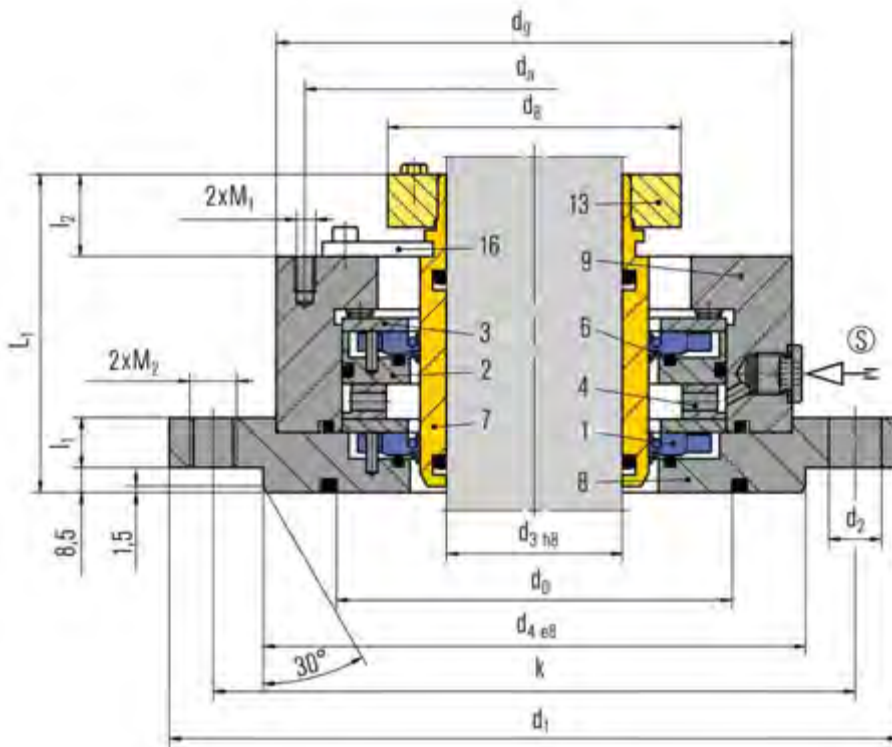
## SeccoLip 481L-4

Item	Description
1	Lip seal
2	Inset
3	Disc
4	Insert ring
6	O-Ring
7	Shaft sleeve
8	Flange
9	Housing
13	Shrink disc
16	Setting device
23	Spacer ring
27	Lip seal
28	Sliding bearing



RELY ON EXCELLENCE

## SeccoLip 481-2



### Item Description

- 1 Lip seal
- 2 Inset
- 3 Disc
- 4 Insert ring
- 6 O-Ring
- 7 Shaft sleeve
- 8 Flange
- 9 Housing
- 13 Shrink disc
- 16 Setting device

## Dimensions

$d_3$	$d_1$	$n \times d_2$	$d_4$	$d_0$	$k$	$d_8$	$d_9$	$L_1$	$l_1$	$l_2$	$d_a$	$M_1$	$M_2$	$S$
40	175	4x18	110	90	145	80	175	91.5	19.5	26	145	M8	M16	G1/4
50	240	8x18	176	135	210	90	168	91.5	19.5	28	153	M8	M16	G1/4
60	240	8x18	176	135	210	100	178	91.5	18	27.5	155	M8	M16	G1/4
80	275	8x22	204	155	240	130	198	100.5	21	33.5	175	M8	M20	G1/4
100	305	8x22	234	190	270	150	218	102.5	23	33.5	195	M8	M20	G1/4
125	330	8x22	260	215	295	179	243	107.5	23	38.5	220	M8	M20	G1/4

SeccoLip 481-2 Dimensions in millimeter

## RELY ON EXCELLENCE

### Dimensions

d <sub>3</sub>	d <sub>7</sub>	d <sub>1</sub>	nxd <sub>2</sub>	d <sub>4</sub>	d <sub>0</sub>	k	d <sub>8</sub>	d <sub>9</sub>	L <sub>2</sub>	L <sub>w</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>a</sub>	M <sub>1</sub>	M <sub>2</sub>	A, D, S
40	38	175	4x18	110	90	145	80	175	198.5	143	19.5	27.5	145	M8	M16	G1/4
50	48	240	8x18	176	135	210	90	168	205.5	148	19.5	29	155	M8	M16	G1/4
60	58	240	8x18	176	135	210	100	178	205.5	158	18	29	155	M8	M16	G1/4
80	78	275	8x22	204	155	240	130	198	216.5	168	21	35	184	M8	M20	G1/4
100	98	305	8x22	234	190	270	150	218	232.5	178	23	37	195	M8	M20	G1/4
125	120	330	8x22	260	215	295	179	243	245.5	203	23	47	222	M8	M20	G1/4

**SeccoLip 481L-4** Dimensions in millimeter

RELY ON EXCELLENCE

## SeccoMix 1

Mechanical seals | Agitator seals | Dry running seals



### Features

- For top entry drives, on request side drive possible
- Dry-running
- Single seal
- Balanced
- Outboard mounted
- Multiple springs rotating
- Independent of direction of rotation

### Advantages

- Available as semi-cartridge with or without basic flange
- Suitable for vacuum operation
- Friction-locked connection to the shaft
- ATEX certification available on request
- Inherently safe, even without temperature monitoring

### Operating range

Shaft diameter:  
 $d_1 = 25 \dots 220 \text{ mm} (0,98" \dots 8,66")$   
 Pressure:  $p_1 = \text{vacuum} \dots 6 \text{ bar} (87 \text{ PSI})$   
 Temperature:  
 $t_1 = -20 \text{ }^\circ\text{C} \dots +200 (250^*) \text{ }^\circ\text{C}$   
 $(-4 \text{ }^\circ\text{F} \dots 392 (482^*) \text{ }^\circ\text{F})$   
 Sliding velocity:  $v_g = 0 \dots 2 \text{ m/s} (0 \dots 6 \text{ ft/s})$   
 Axial movement:  $\pm 1.5 \text{ mm}$   
 Radial movement:  $\pm 1.5 \text{ mm}$

For applications beyond this range, please inquire.

\* with cooling flange

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal face: Carbon graphite, FDA conform  
 Seat: Silicon carbide  
 Secondary seals and metal parts according to application and customer's specifications.

### Standards and approvals

- FDA
- ATEX

### Notes

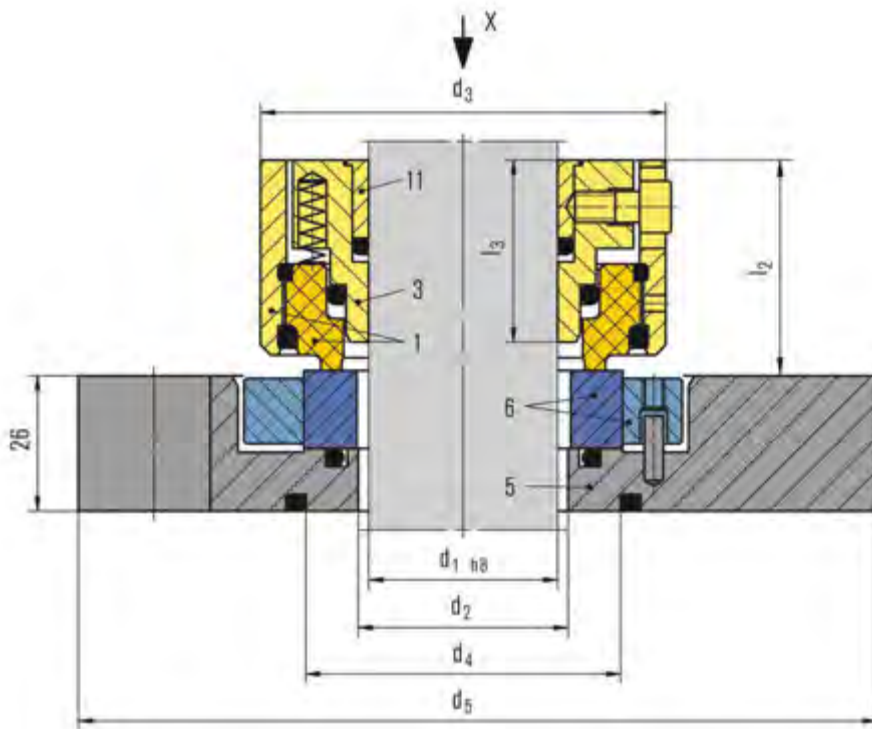
Options:

- Without flange
- Cooling resp. heating flange
- Wear trap with flush
- Wear trap with flush and cooling / heating flange

### Recommended applications

- Chemical industry
- Petrochemical industry
- Pharmaceutical industry
- Food and beverage industry
- Non-toxic media
- Agitators
- Mixers
- Reactors

RELY ON EXCELLENCE

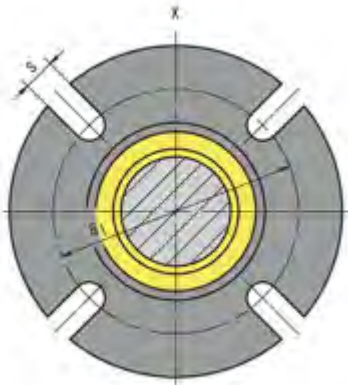


**Item Description**

- 1 Seal face with seal face housing
- 3 Drive collar
- 5 Flange
- 6 Seat with seat housing
- 11 Clamping ring

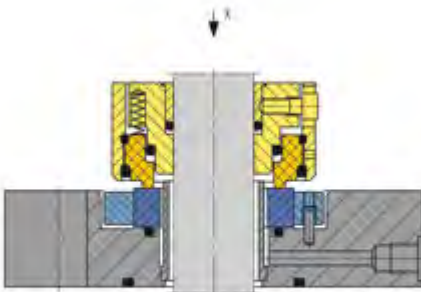
RELY ON EXCELLENCE

## Installation, details, options



Seal flange

## Product variants



### Seccomix 1-11

The SeccoMix 1-11 is equipped in addition with a sleeve for trapping any abraded particles from the seal face. Contamination of the medium in the container is thus ruled out. The sleeve can be cleaned through a flushing bore. Please note: diameters ( $d_2$  to  $d_5$ ) increase to the next possible design size.

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub> (mm)	d <sub>1</sub> (inch)	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	l <sub>2</sub>	l <sub>3</sub>	a <sub>1</sub> (min)	a <sub>1</sub> (max)	s
25	1.000	34	68	-	148	41.5	35	100	132	11
28	1.125	34	68	55	148	41.5	35	100	132	11
30	-	34	68	55	148	41.5	35	100	132	11
32	1.250	39	73	60	153	41.5	35	105	137	11
35	1.375	39	73	60	153	41.5	35	105	137	11
38	1.500	44	78	65	158	41.5	35	110	142	11
40	-	44	78	65	158	41.5	35	110	142	11
45	1.625	49	83	68	163	41.5	35	115	152	11
-	1.750	49	83	68	163	41.5	35	115	152	11
48	1.875	54	88	73	178	41.5	35	125	160	14
50	-	54	88	73	178	41.5	35	125	160	14
55	2.000	59	93	78	183	41.5	35	130	165	14
-	2.125	59	93	78	183	41.5	35	130	165	14
60	2.250	64	98	85	188	41.5	35	135	170	14
65	2.375	69	103	90	193	44.5	35	140	175	14
-	2.500	69	103	90	193	44.5	35	140	175	14
70	2.625	74	108	95	198	44.5	38	145	180	14
-	2.750	74	108	95	198	44.5	38	145	180	14
75	2.875	79	113	100	203	44.5	38	150	185	14
80	3.000	84	118	105	208	44.5	38	155	190	14
85	3.250	89	123	110	213	44.5	38	160	195	14
90	3.500	94	128	115	218	44.5	38	165	200	14
95	3.750	99	133	120	223	44.5	38	170	205	14
100	-	104	138	125	228	44.5	38	175	210	14
105	4.000	109	143	130	233	44.5	38	180	215	14
110	4.250	114	148	135	238	44.5	38	185	220	14
115	4.500	119	153	140	267	44.5	38	196	243	18
125	4.750	129	163	150	277	44.5	38	206	253	18
140	5.000	144	178	165	297	44.5	38	221	273	18
-	5.250	144	178	165	297	44.5	38	221	273	18
-	5.500	144	178	165	297	44.5	38	221	273	18
150	5.750	154	188	175	307	44.5	38	231	283	18
160	6.000	164	198	185	317	44.5	38	241	293	18
-	6.250	164	198	185	317	44.5	38	241	293	18

SeccoMix 1 - Dimensions in millimeter

RELY ON EXCELLENCE

## SeccoMix 461

Mechanical seals | Agitator seals | Dry running seals



### Features

- For top entry drives
- For glass-lined vessels acc. to DIN resp. Non-DIN
- Dry running
- Nitrogen pressurized dual seal
- Balanced
- Multiple springs rotating
- Independent of direction of rotation

### Advantages

- Ready-to-fit and factory-tested unit
- With or without bearing available
- Suitable for pressure reversal e.g. in case of barrier pressure failure
- No contamination of the product by barrier fluid
- Friction-locked connection to the shaft
- Connections to DIN 28138 standards or as required (SeccoMix 491)
- ATEX certification available on request
- The seal can be lifted off the glass-lined flange as a complete cartridge. The sensitive glass-lined basic flange remains mounted on the vessel.

### Operating range

Shaft diameter:

$d_1 = 40 \dots 160 \text{ mm (1.57" \dots 6.3")}$

Pressure:  $p_1 = \text{vacuum} \dots 6 \text{ bar (87 PSI)}$

Temperature:  $t_1 = -20 \text{ °C} \dots +200 \text{ (250*) °C}$

$(-4 \text{ °F} \dots +392 \text{ (482*) °F})$

Sliding velocity:  $v_g = 0 \dots 2 \text{ m/s (0 \dots 6 ft/s)}$

For applications beyond this range, please inquire.

\* with cooling flange

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal face: Carbon graphite, FDA conform

Seat: Silicon carbide, FDA conform

Secondary seals and metal parts according to application and customer's specifications.

### Standards and approvals

- FDA
- ATEX
- DIN 28138 (mechanical seals for agitator shafts)
- DIN 28136 T3 (for glass-lined vessels)
- DIN 28137 T2 (flange connection for glass-lined vessels)
- DIN 28159 (shaft end for glass-lined vessels)

### Notes

Options:

- Cooling or heating flange

### Recommended applications

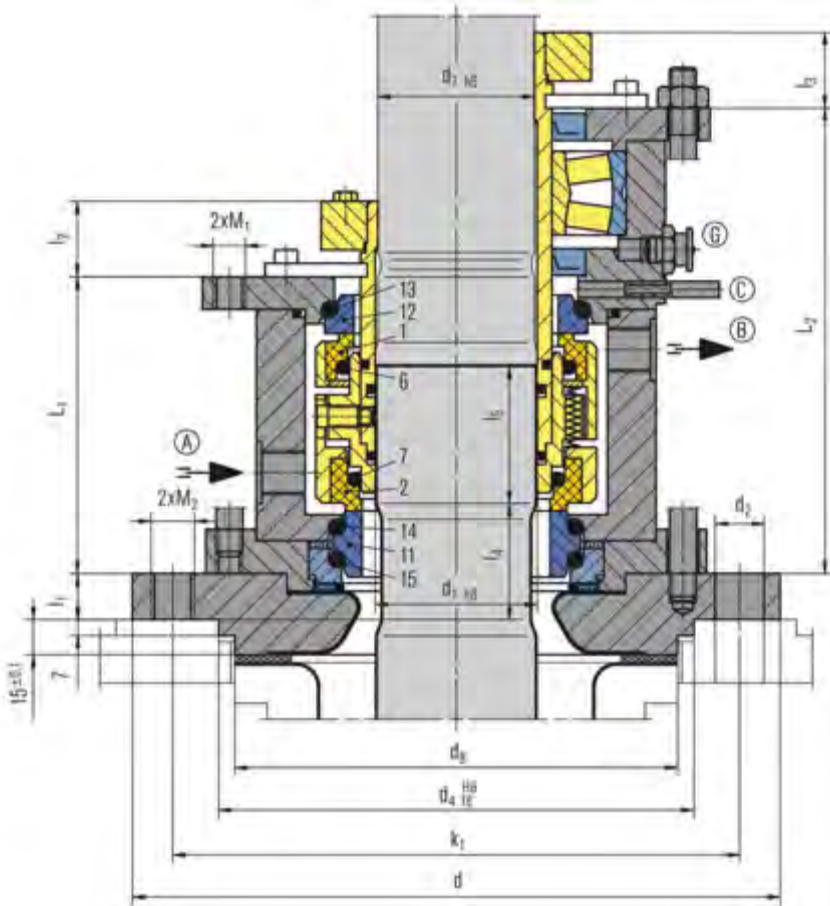
- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Agitators
- Mixers
- Reactors

### Recommended piping plans

Gas supply

EagleBurgmann GSS4015/A400-D0 for double seals SeccoMix 461...D..

## RELY ON EXCELLENCE

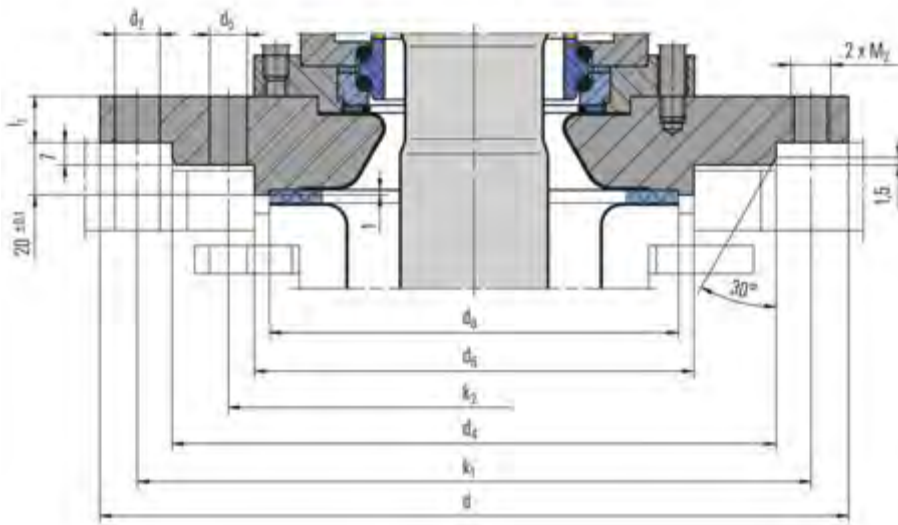


Item	Description
1	Seal face, atmosphere side
2	Seal face, product side
6, 7, 13, 14, 15	O-Ring
11	Seat, product side
12	Seat, atmosphere side



## RELY ON EXCELLENCE

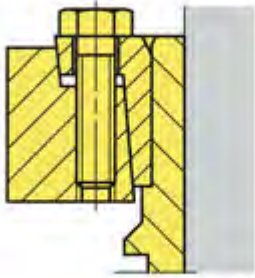
Flange connection acc. to DIN 28137 T2.



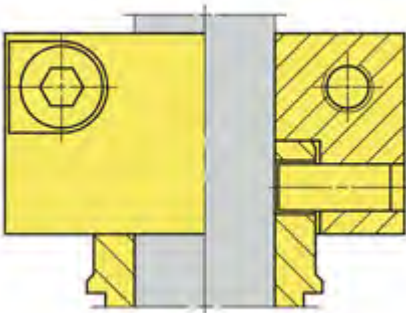
RELY ON EXCELLENCE

## Torque transmissions

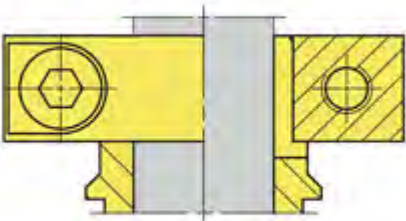
Shrink disk



Clamping ring with pin

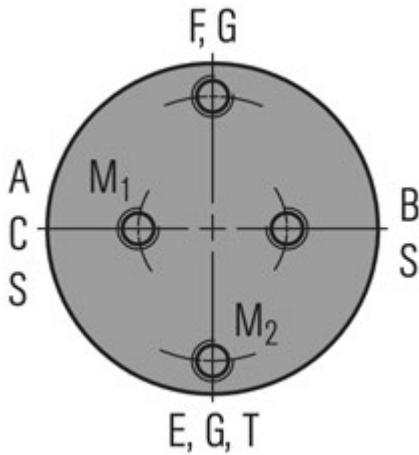


Clamping ring



RELY ON EXCELLENCE

## Installation, details, options



### Supply connections

Designation and positions acc. to DIN 28138 T3.

- A Barrier gas IN
- B Barrier gas OUT
- C Drainage
- E Cooling IN
- F Cooling OUT
- G Grease
- S Flush
- T Temperature metering

### Cooling flange

Can be used alternatively as a heating flange.



## Product variants

### SeccoMix 461-D

Dual seal

### SeccoMix 461L-D

Dual seal with integrated floating bearing.

### SeccoMix 491

Seal designation for adaptations beyond DIN (e.g. unstepped shaft).

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub> <sup>1)</sup>	d <sub>7</sub> <sup>1)</sup>	Nominal size	Flange size <sup>2)</sup>	d	nxd <sup>2</sup>	d <sub>4</sub>	nxd <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	k <sub>1</sub>	k <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	M <sub>1</sub>	M <sub>2</sub>	A,B
40	38	40	E125	175	4x18	110	-	-	102	145	-	142	184	25	35	28	50	50	M12	M16	G3/8
50	48	50	E200	240	8x18	176	-	-	138	210	-	147	195	25	40	28	50	50	M12	M16	G3/8
60	58	60	E250	275	8x22	204	-	-	188	240	-	158	203	25	42	28	50	60	M12	M20	G3/8
80	78	80	E300	305	8x22	234	-	-	212	270	-	170	240	30	45	34	60	60	M16	M20	G1/2
100	98	100	E400	395	12x22	313	-	-	268	350	-	177	240	30	52	34	60	60	M16	M20	G1/2
100	98	100	E500	395	12x22	313	-	-	268	350	-	177	240	30	52	34	60	60	M16	M20	G1/2
125	120	125	E700	505	4x22	422	12x22	320	306	460	350	208	266	30	75	40	60	80	M20	M20	G1/2
140	135	140	E700	505	4x22	422	12x22	320	306	460	350	223	282	30	79	40	60	80	M20	M20	G1/2
160	150	160	E700	505	4x22	422	12x22	320	306	460	350	228	282	30	77	40	60	85	M20	M20	G1/2
160	150	160	E900	505	4x22	422	12x22	320	306	460	350	228	282	30	77	40	60	85	M20	M20	G1/2
160	150	161	E901	565	4x26	474	12x22	370	356	515	400	228	282	30	77	40	60	85	M20	M20	G1/2

Dimensions in millimeter

1) Shaft diameters d<sub>1</sub> and d<sub>7</sub> to DIN 28159

2) Flange size to DIN 28137 T2

RELY ON EXCELLENCE

## SeccoMix 481



### Features

- For top entry drives (also inclined position) of steel vessels
- Dry running
- Nitrogen buffered dual seal, single seal optional
- With or without spherical roller bearing available
- Balanced
- Outboard mounted
- Multiple springs rotating
- Independent of direction of rotation

### Advantages

- Ready-to-fit and factory-tested units
- Suitable for pressure reversals e.g. in case of barrier pressure failure
- No contamination of the product by barrier fluid
- Friction-locked connection to the shaft
- Connections for steel reactors are available to DIN 28138 standards or as required
- ATEX certification available on request

### Operating range

Shaft diameter:  $d_1 = 40 \dots 200 \text{ mm}$

Pressure:  $p_1 = \text{Vacuum} \dots 6 \text{ bar (87 PSI)}$

Temperature:

$t_1 = -20 \text{ °C} \dots +150 (250^*) \text{ °C} (-4 \text{ °F} \dots +302$

$(482^*) \text{ °F}$

Sliding velocity:  $v_g = 0 \dots 2 \text{ m/s (0} \dots 6 \text{ ft/s)}$

For applications beyond this range, please inquire.

\* With cooling flange

### Materials

Seal face: Carbon graphite, FDA conform

Seat: Silicon carbide

Secondary seals and metal parts according to application and customer's specifications.

### Standards and approvals

- FDA
- ATEX
- DIN 28136 T2 (steel vessels)
- DIN 28141 (flange connection)
- DIN 28154 (shaft end)

### Notes

Options:

- Cooling or heating flange
- Abrasion particles collector with flush
- Abrasion particles collector with flush and cooling / heating flange
- Leakage drain or flush
- Flange integrated polymerization barrier

### Recommended applications

- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Non-toxic media with single seal
- Toxic media with double seal
- Agitators
- Mixers
- Reactors

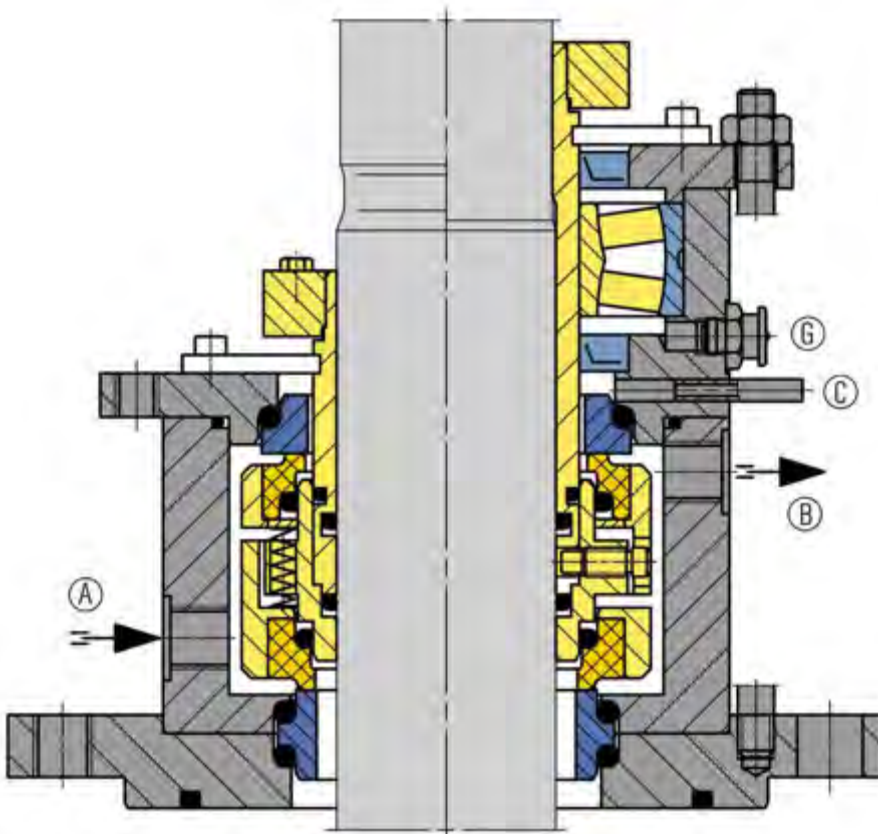
### Recommended piping plans

Gas supply EagleBurgmann GSS4016/A ... for double seals SeccoMix 481...D..

Product link:

[EagleBurgmann GSS](#)

## RELY ON EXCELLENCE

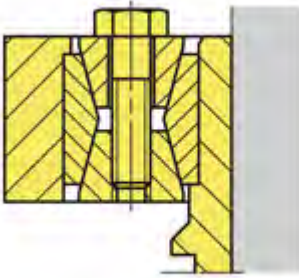


Item	Description
1	Seal face, on the atmosphere side
2	Seal face, on the product side
6, 7, 13, 14, 15	O-Ring
11	Stationary seat, on the product side
12	Stationary seat, on the atmosphere side
34	Shaft seal

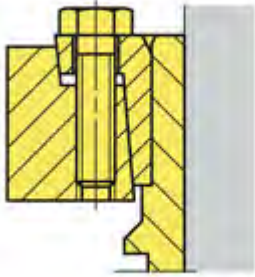
RELY ON EXCELLENCE

## Torque transmissions

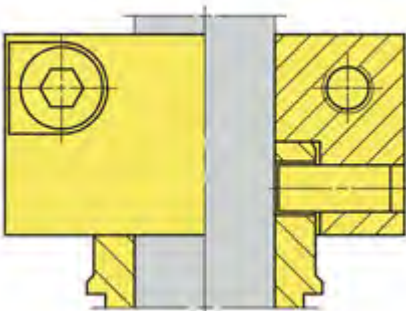
Clamping set



Shrink disk

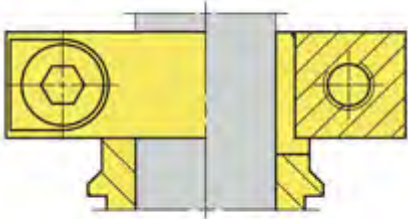


Clamping ring with pin



RELY ON EXCELLENCE

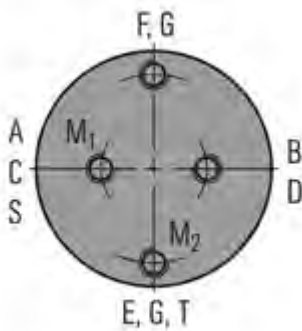
Clamping ring





## RELY ON EXCELLENCE

### Installation, details, options



#### Supply connections

Designation and position acc. to DIN 28138 T3.

- A Barrier fluid resp. quench IN
- B Barrier fluid resp. quench OUT
- C Drainage
- D Leakage drain G1/8"
- E Cooling IN G3/8"
- F Cooling OUT G3/8"
- G Grease
- S Flush
- T Temperature metering

For reasons of standardization, the supply connections of single seals are matched to those of the double seals (in deviation from DIN 28138 T3).

#### Cooling flange

Can be used alternatively as a heating flange (t<sub>max.</sub> = 250 °C (482 °F)).

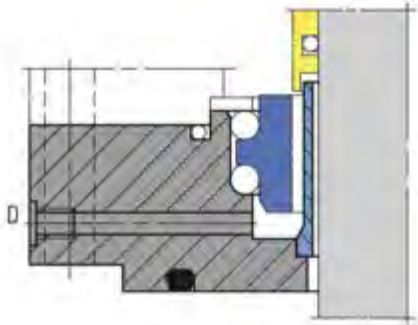


#### Leakage drain

Can be used alternatively as a flush or as a heating flange.

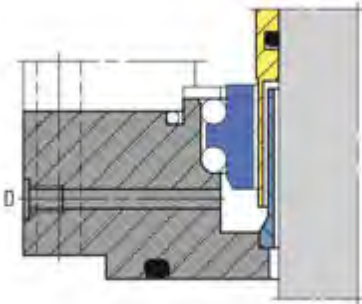


## RELY ON EXCELLENCE



### Leakage drain

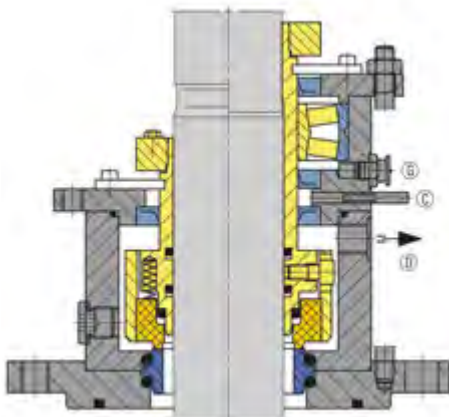
Can be used alternatively as a flush.



### Polymerization barrier

Can be used alternatively as a leakage drain or a flush.

## Product variants



### SeccoMix 481

Single seal

### SeccoMix 481L

Single seal with integrated floating bearing.

### SeccoMix 451

All types of the SeccoMix 481 range available for unstepped shafts (all diameters). Seal identification: SeccoMix 451 ... Customized design or e.g. different drives (torque transmissions) are available.

### SeccoMix 461 / (491)

For glass-lined vessels. Dimensions as M461.

## RELY ON EXCELLENCE

### Dimensions

d <sub>3</sub> <sup>1)</sup>	d <sub>7</sub> <sup>1)</sup>	d <sub>1</sub>	n x d <sub>2</sub>	d <sub>4</sub>	d <sub>0</sub>	k	L <sub>1</sub>	L <sub>2</sub>	L <sub>w</sub> <sup>2)</sup>	l <sub>1</sub>	l <sub>2</sub>	A	M <sub>1</sub>	M <sub>1</sub>	A, B
40	38	175	4x18	110	90	145	87	136	143	15	28	122	M12	M16	G3/8
50	48	240	8x18	176	135	210	89	149	148	17	28	157	M12	M16	G3/8
60	58	240	8x18	176	135	210	93.5	156	158	17	28	168	M12	M16	G3/8
80	78	275	8x22	204	155	240	104.5	189	168	20	34	203	M16	M20	G1/2
100	98	305	8x22	234	190	270	109	190	178	20	34	228	M16	M20	G1/2
125	120	330	8x22	260	215	295	110	205	203	20	40	268	M20	M20	G1/2
140	135	395	12x22	313	250	350	124	222	208	20	40	285	M20	M20	G1/2
160	150	395	12x22	313	265	350	127.5	219.5	213	25	40	297	M20	M20	G1/2
180	170	445	12x22	364	310	400	132.5	230	233	25	45	332	M24	M20	G1/2
200	190	445	12x22	364	310	400	137.5	237.5	243	25	45	352	M24	M20	G1/2
220	210	505	16x22	422	340	460	149.5	249.5	263	25	50	381	M24	M20	G1/2

Dimensions in millimeter

1) Shaft diameters d<sub>3</sub> and d<sub>7</sub> to DIN 28154 2) Shaft step to DIN 28154

RELY ON EXCELLENCE

## SeccoMix R

Mechanical seals | Agitator seals | Dry running seals



### Features

- For top, side and bottom entry drives
- Dry running
- Nitrogen pressurized dual seal
- Rotating seat at product side
- Balanced
- Independent of direction of rotation

### Advantages

- Ready-to-fit and factory-tested units
- With or without bearing available
- Smooth surface, free of dead spaces
- No contamination of the product by barrier fluid
- Friction-locked connection to the shaft
- ATEX certification available on request

### Operating range

Shaft diameter:

$d_1 = 35 \dots 220 (300) \text{ mm} (1.38" \dots 8.66" (11.81"))$

Axial offset shaft/housing:  $d_1 = 35 \dots 60 \text{ mm} (1.38" \dots 2.36")$ : max.  $\pm 1.5 \text{ mm} (0.059")$

$d_1 > 60 \text{ mm} (2.36")$ : max.  $\pm 2.0 \text{ mm} (0.079")$

Radial offset shaft/housing:

max.  $\pm 0.3 \text{ mm} (0.012")$

Pressure:  $p_1 = \text{Vacuum} \dots 6 \text{ bar} (87 \text{ PSI})$

Temperature:

$t_1 = -20 \text{ }^\circ\text{C} \dots +200 \text{ }^\circ\text{C} (-4 \text{ }^\circ\text{F} \dots +392 \text{ }^\circ\text{F})$

Sliding velocity:  $v_g = 0 \dots 2 \text{ m/s} (0 \dots 6 \text{ ft/s})$

For applications beyond this range, please inquire.

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal face: Carbon graphite, FDA conform

Seat: Silicon carbide, FDA conform

Secondary seals and metal parts according to application and customer's specifications.

### Standards and approvals

- FDA
- ATEX

### Notes

Options:

- Axial bellows expansion joint (shaft movement)
- Scraper (shaft movement)

### Recommended applications

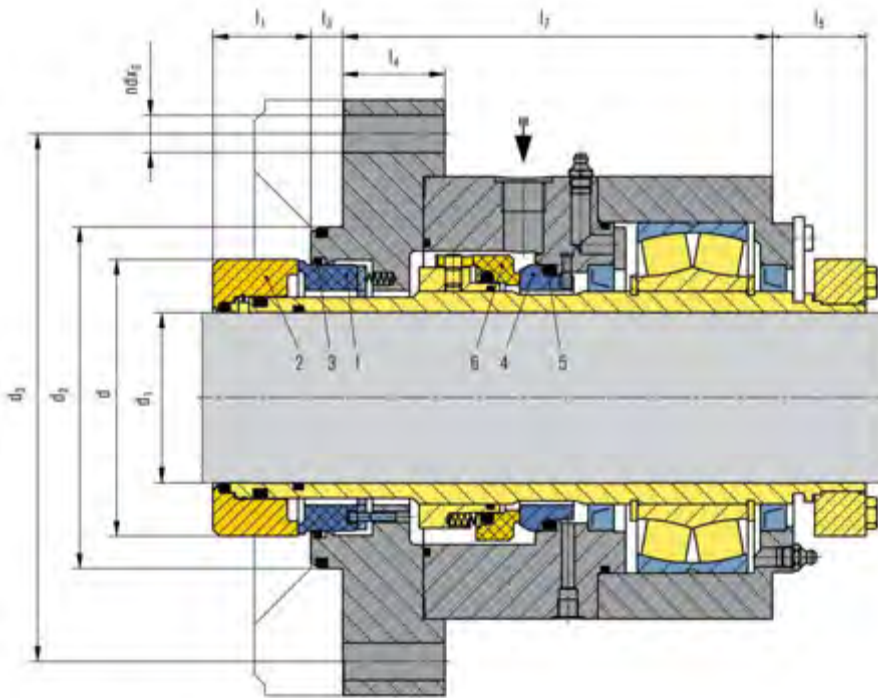
- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Agitators
- Mixers
- Kneaders
- Dryers
- Reactors

### Recommended piping plans

Gas supply

EagleBurgmann GSS4015/A400-D0 for double seals SeccoMix R

## RELY ON EXCELLENCE

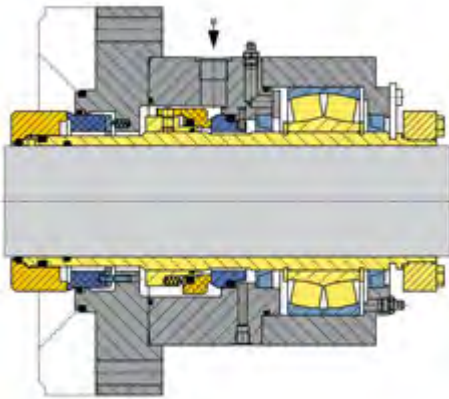


### Item Description

- |   |                            |
|---|----------------------------|
| 1 | Seal face, product side    |
| 2 | Seat, product side         |
| 3 | O-Ring, dynamic            |
| 4 | Seat, atmosphere side      |
| 5 | O-Ring                     |
| 6 | Seal face, atmosphere side |

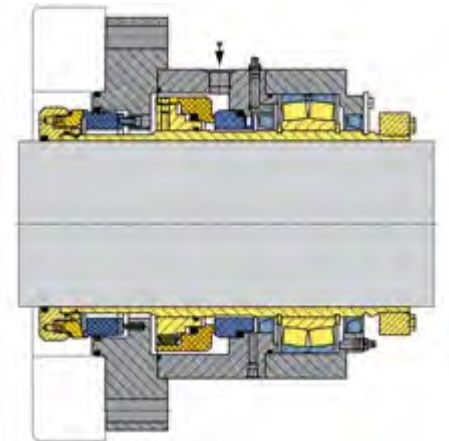
## RELY ON EXCELLENCE

### Product variants



#### SeccoMix R3

Dual seal with solid seat and integrated floating bearing  $d_1 \leq 140$  mm (5,51").  
As an option with fixed bearing or without bearing available.



#### SeccoMix R5

Dual seal with „hook-sleeve“ and integrated floating bearing  $d_1 > 140$  mm (5,51").  
As an option with fixed bearing or without bearing available.

### Dimensions

$d_1$	$d$	$l_1$	$d_2$	$l_3$	$d_3$	$n \times d_3$	$l_4$	$l_5$	$l_7$
35	68	43	105	13	148	8 x 13.5	35.5	20.5	141.0
45	82.7	43	119.5	13	166	8 x 13.5	43.0	26.0	149.5
50	90.0	43	119.5	13	190	8 x 17.5	40.5	28.5	165.0
60	100.0	43	134.5	14	200	8 x 17.5	41.0	28.0	173.0
80	130.0	46	160.5	15	248	8 x 17.5	48.0	34.0	212.0
100	150.0	49	181.5	12	264	8 x 22.0	54.0	33.5	219.0
120	172.0	49	209.5	12	293	8 x 22.0	52.0	40.0	232.0
140	195.0	49	224.5	12	338	12 x 22.0	52.0	39.5	251.5

Dimensions in millimeter

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## SeccoMix1-E32

Mechanical seals | Agitator seals | Dry running seals



### Features

- Retrofit for JC Type 32
- Dry-running single seal
- For top entry drives, on request side drive possible
- Balanced
- Outboard mounted
- Multiple springs rotating
- Independent of direction of rotation

### Advantages

- Available as semi-cartridge
- No supply system required
- No product contamination with barrier fluid
- Low wear due to optimized seal face load
- Suitable for vacuum operation
- Friction-locked connection to the shaft
- ATEX certification available on request
- Inherently safe, even without temperature monitoring

### Operating range

Shaft diameter  $d_1 = 40 \dots 80 \text{ mm}$  (1,57" ... 3,15")

Pressure:  $p_1 = \text{vacuum} \dots 6 \text{ bar}$  (87 PSI)

Temperature:  $-20 \text{ }^\circ\text{C} \dots +200$  (250\*)  $^\circ\text{C}$   
 (-4  $^\circ\text{F} \dots +392$  (482\*)  $^\circ\text{F}$ )

Sliding velocity:  $v_g = 0 \dots 2 \text{ m/s}$  (0 ... 6 ft/s)

Axial movement:  $\pm 1,5 \text{ mm}$

Radial movement:  $\pm 1,5 \text{ mm}$

### Materials

Seal face: Carbon graphite, FDA compliant

Seat: Silicon carbide

Secondary seals and metal parts according to application and customer's specifications.

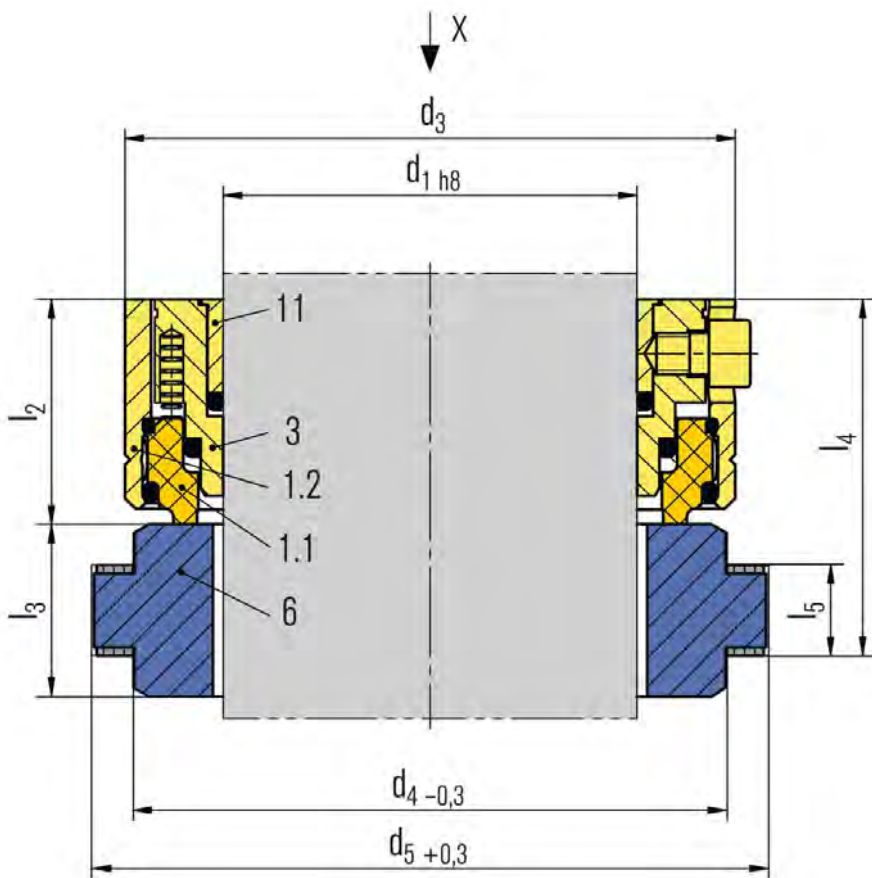
### Standards and approvals

- FDA
- ATEX

### Recommended applications

- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Non-toxic media
- Agitators
- Mixers
- Reactors

RELY ON EXCELLENCE



- 1.1, 1.2 Seal face with face housing
- 3 Drive collar
- 6 Seat
- 11 Clamping ring

## Dimensions

d1	d3	d4	d5	l2	l3	l4	l5
40	78	66.68	80	40.5	27	61.1	14.2
45	88	79.38	96	40.5	33.3	65.9	17.5
50	88	79.38	96	40.5	33.3	65.9	17.5
60	98	88.9	105	40.5	33.3	65.9	17.5
80	118	114.3	130	43.5	33.3	68.9	17.5

SeccoMix 1-E32 - Dimensions in millimeter



RELY ON EXCELLENCE

## SeccoMix1-E32D

Mechanical seals | Agitator seals | Dry running seals



### Features

- Retrofit for JC Type 32D
- Dry-running single seal
- For top entry drives, on request side drive possible
- Balanced
- Outboard mounted
- Multiple springs rotating
- Independent of direction of rotation

### Advantages

- Available as semi-cartridge
- No supply system required
- No product contamination with barrier fluid
- Low wear due to optimized seal face load
- Suitable for vacuum operation
- Friction-locked connection to the shaft
- ATEX certification available on request
- Inherently safe, even without temperature monitoring

### Operating range

Shaft diameter  $d_1 = 40 \dots 80 \text{ mm}$  (1,57" ... 3,15")

Pressure:  $p_1 = \text{vacuum} \dots 6 \text{ bar}$  (87 PSI)

Temperature:  $-20 \text{ }^\circ\text{C} \dots +200$  (250\*)  $^\circ\text{C}$   
 (-4  $^\circ\text{F} \dots +392$  (482\*)  $^\circ\text{F}$ )

Sliding velocity:  $v_g = 0 \dots 2 \text{ m/s}$  (0 ... 6 ft/s)

Axial movement:  $\pm 1,5 \text{ mm}$

Radial movement:  $\pm 1,5 \text{ mm}$

### Materials

Seal face: Carbon graphite, FDA compliant

Seat: Silicon carbide

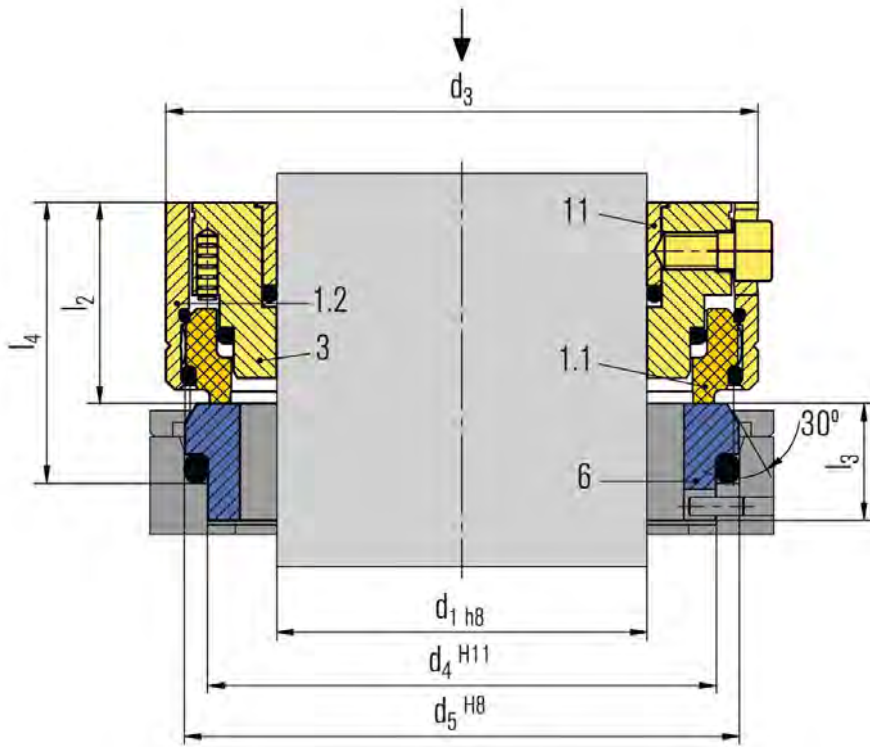
Secondary seals and metal parts according to application and customer's specifications.

### Recommended applications

- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Non-toxic media
- Agitators
- Mixers
- Reactors

RELY ON EXCELLENCE

- 1.1, 1.2 Seal face with face housing
- 3 Drive collar
- 6 Seat
- 11 Clamping ring



## Dimensions

d1	d3	d4	d5	l2	l3	l4
40	83	65	73	40.5	23	55.3
45	88	70	78	40.5	23	55.5
50	98	81	90	40.5	26	58.5
60	103	83	92	43.5	26	61.5
80	128	110	120	43.5	25.2	60.7

SeccoMix 1-E32D - Dimensions in millimeter

RELY ON EXCELLENCE

## AGSR

Mechanical seals | Agitator seals | Gas-lubricated seals



### Features

- For top, bottom and side entry drives
- Double seal
- Balanced
- Stationary springs on product side
- Independent of direction of rotation
- Gas-lubricated
- Cartridge unit

### Advantages

- Ready-to-fit and factory-tested unit
- Rotating seat at product side
- Torque transmission by clamping ring for large axial movements
- Non-contacting operation
- No friction on the seal faces, no heat generated at the seal or in the medium
- Sterile design available
- ATEX certification on request

### Operating range

Shaft diameter:

$d_1 = 20 \dots 200 \text{ mm (0.8" ... 7.9")}$

Pressure:

$p_1 = \text{Vakuum} \dots 6 \text{ bar (87 PSI)}$ ,

$\Delta p = \text{min. } 3 \text{ bar (44 PSI)}$ ,

$p_3 = \text{max. } 9 \text{ bar (131 PSI)}$

Temperature:

$t_1 = -20 \text{ }^\circ\text{C} \dots +200 \text{ }^\circ\text{C}$

$(-4 \text{ }^\circ\text{F} \dots +392 \text{ }^\circ\text{F})$

Sliding velocity:  $v_g = 0 \dots 5 \text{ m/s (0 ... 16 ft/s)}^*$

\* Higher velocities on request

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces and seats: Silicon carbide, FDA conform

Secondary seals and metallic parts acc. to application and customers' requirement.

### Standards and approvals

- FDA
- ATEX

### Notes

Options:

- Flush

### Recommended applications

- Chemical industry
- Food and beverage industry
- Pharmaceutical industry
- Mixers
- Dryers
- Special rotating equipment

### Recommended piping plans

Gas supply by EagleBurgmann

GSS4015/A400-D0,

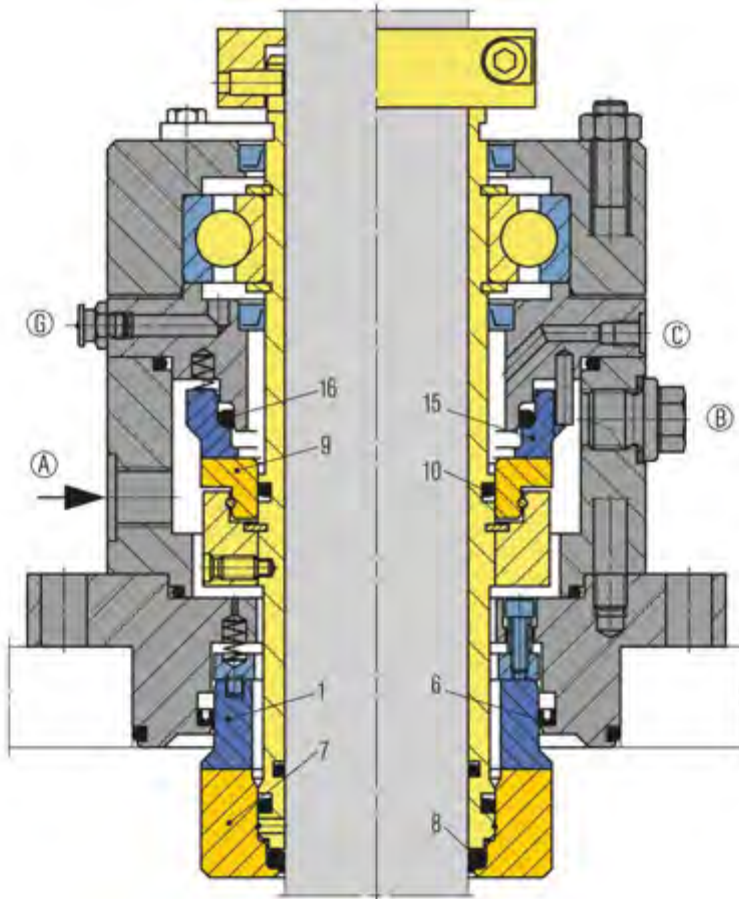
GSS4016/A250-D1 or GSS4016/A350-D1.

Note: To assure a sufficient supply of the mechanical seal, pressure at entry of the supply system must be min. 3 bar (44 PSI) above max. barrier pressure always.

Product link:

[EagleBurgmann GSS](#)

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### AGSR3(L)-D

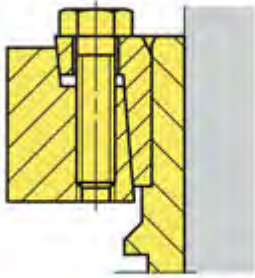
Double seal (with floating bearing for the shaft) for sterile applications. The specific design free of dead spaces with polished surfaces on the product side meets the requirements for hygienic applications.

Item	Description
1, 15	Seal face
6	Sealing ring
7, 9	Seat
8, 10, 16	O-Ring

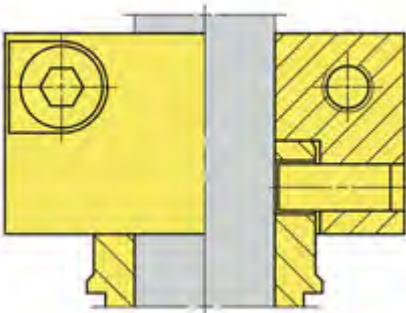
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## Torque transmissions

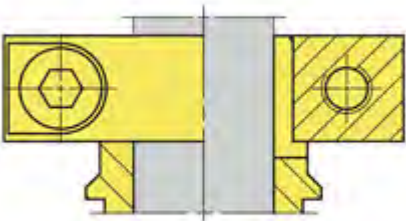
Shrink disk



Clamping ring with pin

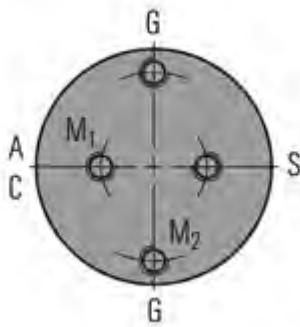


Clamping ring



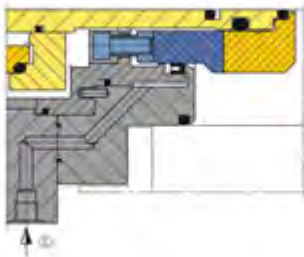
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## Installation, details, options



### Supply connections

A Barrier gas IN  
C Leakage  
G Grease  
S Flush



### Option

Flushing the AGSR: Especially when the seal is operated in side or bottom entry drives, an optional flush on the product side enhances operational reliability.

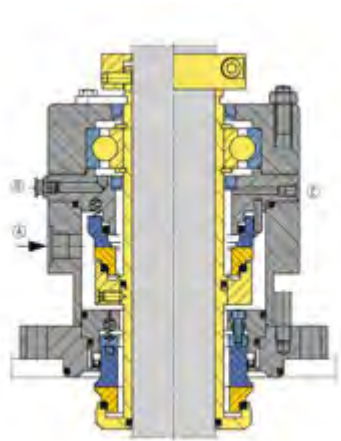
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## Product variants



### AGSR5(L)-D

Double seal (with floating bearing for the shaft). If the seal has to run in the product, please inquire.



### AGSR5(L)-D

Double seal (with floating bearing for the shaft).

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## AGSZ

Mechanical seals | Agitator seals | Gas-lubricated seals



### Features

- For top entry drives
- Double seal
- Balanced
- Independent of direction of rotation
- Gas-lubricated
- Cartridge unit

### Advantages

- Ready-to-fit and factory-tested unit
- Central rotating seat
- Torque transmission by clamping ring for large axial movements
- Non-contacting operation
- No friction on the seal faces, no heat generated at the seal or in the medium
- ATEX certification on request

### Operating range

Shaft diameter:

$d_1 = 40 \dots 220 \text{ mm (1.6" ... 8.7")}$

Pressure:

$p_1 = \text{vacuum} \dots 6 \text{ bar (87 PSI)}$ ,

$\Delta p = \text{min. } 3 \text{ bar (44 PSI)}$ ,  $p_3 = 9 \text{ bar (131 PSI)}$

Temperature:

$t_1 = -20 \text{ }^\circ\text{C} \dots +200 \text{ (+250*) }^\circ\text{C}$

$(-4 \text{ }^\circ\text{F} \dots +392 \text{ (+482*) }^\circ\text{F})$

Sliding velocity:

$v_g = 0 \dots 5 \text{ m/s (0 ... 16 ft/s)}$ ,

higher velocities on request.

\* with cooling flange

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces and seats: Silicon carbide, FDA conform

Secondary seals and metallic parts acc. to application and customers' requirement.

### Standards and approvals

- FDA
- ATEX
- DIN 28138 (mechanical seals for agitator shafts)
- DIN 28136 T2 (for steel vessels)
- DIN 28141 (flange connection for steel vessels)
- DIN 28154 (shaft end for steel vessels)
- DIN 28136 T3 (for glass-lined vessels)
- DIN 28137 T2 (flange connection for glass-lined vessels)
- DIN 28159 (shaft end for glass-lined vessels)

### Notes

Options:

- Cooling resp. heating flange
- Flush
- Hygienic flange

### Recommended applications

- Chemical industry
- Food and beverage industry
- Pharmaceutical industry
- Gases and liquids
- Media which require high purity
- Agitators
- Reactors

### Recommended piping plans

Gas supply by EagleBurgmann

GSS4015/A400-D0,

GSS4016/A250-D1 or GSS4016/A350-D1.

Note: To assure a sufficient supply of the



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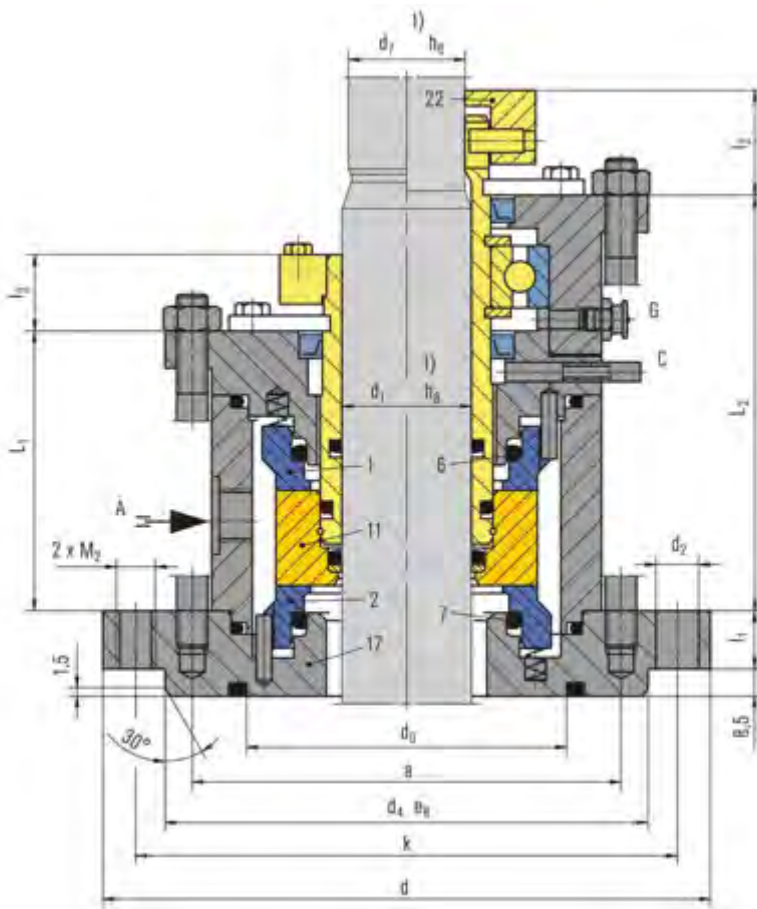
mechanical seal, pressure at entry of the supply system must be min. 3 bar (44 PSI) above max. barrier pressure always.

Product link:

[EagleBurgmann GSS](#)

### Item Description

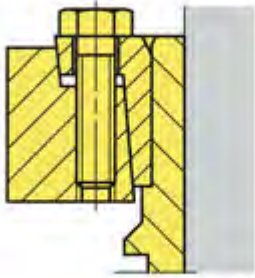
- 1 Seal face, atmosphere side
- 2 Seal face, product side
- 6, 7 O-Ring
- 11 Seat
- 17 Flange
- 22 Clamping ring



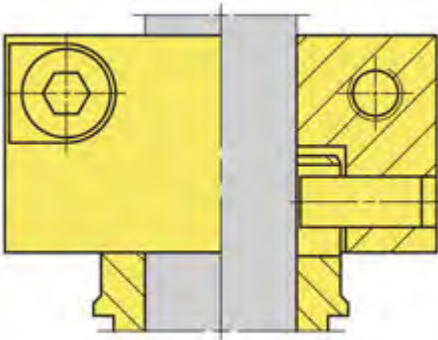
RELY ON EXCELLENCE

## Torque transmissions

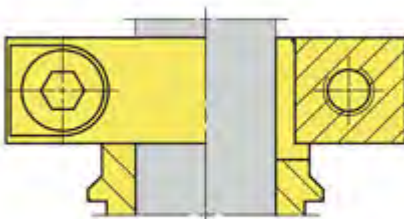
Shrink disk



Clamping ring with pin

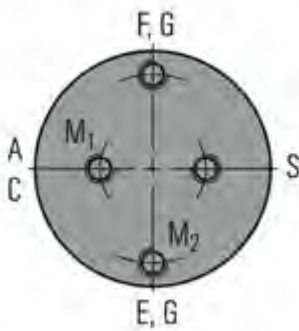


Clamping ring



## RELY ON EXCELLENCE

### Installation, details, options



#### Supply connections

Designation and positions of supply connections, pull-off and jacket threads acc. to DIN 28138 T3.

- A Barrier gas IN
- C Leakage
- E Cooling IN
- F Cooling OUT
- S Flush
- G Grease

#### Cooling flange

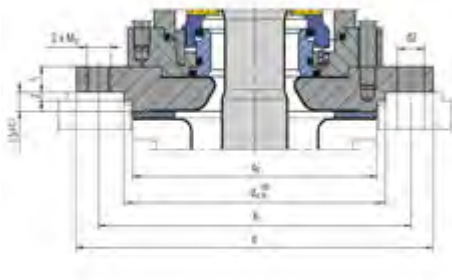
Can be used alternatively as a heating flange.



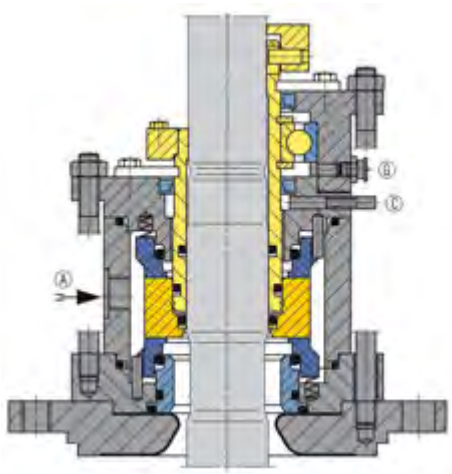
RELY ON EXCELLENCE

## Product variants

**AGSZ461K(L)-D** Flange connection acc. to DIN 28137 T2 for nominal diameters 40 ... 100.



**AGSZ461K(L)-D** Flange connection acc. to DIN 28137 T2 for nominal diameters 125 ... 161.



### **AGSZ481K(L)-D**

Double seal (with integrated bearing) for steel vessels to DIN 28136, connection flange to DIN 28141 and shaft ends to DIN 28154.

### **AGSZ461K(L)-D**

Double seal (with integrated bearing) for glass-lined vessels to DIN 28136, connection flange to DIN 28137 and shaft ends to DIN 28159.

### **AGSZ451K(L)-D**

Version with special connection dimensions or unstepped shafts. For steel vessels.

### **AGSZ491K(L)-D**

Variant with special connection dimensions for glass-lined vessels.

## RELY ON EXCELLENCE

### Dimensions

d <sub>1</sub> <sup>1)</sup>	d <sub>7</sub> <sup>1)</sup>	d	nx d <sub>2</sub>	d <sub>4</sub>	d <sub>0</sub>	k	L <sub>1</sub>	L <sub>2</sub>	L <sub>w</sub> <sup>1)</sup>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	A	M <sub>1</sub>	M <sub>2</sub>	A, B
40	38	175	4x18	110	90	145	81	137	143	15	35	28	122	M12	M16	G3/8
50	48	240	8x18	176	135	210	82.5	130.5	148	17	42	28	155	M12	M16	G3/8
60	58	240	8x18	176	135	210	78.5	128	158	18	39	28	176	M12	M16	G3/8
80	78	275	8x22	204	155	240	94.5	146	168	20	50	34	203	M16	M20	G1/2
100	98	305	8x22	234	190	270	95	156.5	178	20	56.5	34	228	M16	M20	G1/2
125	120	330	8x22	260	215	295	95	163.5	203	20	60	39	268	M20	M20	G1/2
140	135	395	12x22	313	250	350	97	168.5	208	20	82	41	285	M20	M20	G1/2
160	150	395	12x22	313	265	350	97	176.5	213	25	81	41	302	M20	M20	G1/2
180	170	445	12x22	364	310	400	-	-	233	25	-	-	332	M24	M20	G1/2
200	190	445	12x22	364	310	400	-	-	243	25	-	-	352	M24	M20	G1/2
220	210	505	16x22	422	340	460	-	-	263	25	-	-	-	M24	M20	G1/2

**AGSZ481** - Dimensions in millimeter

1) Shaft diameters d<sub>1</sub> and d<sub>7</sub> to DIN 28154

### Dimensions

d <sub>1</sub> <sup>1)</sup>	d <sub>7</sub> <sup>1)</sup>	Nominal size	Flange size <sup>2)</sup>	d	nx d <sub>2</sub>	d <sub>4</sub>	nx d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	k <sub>1</sub>	k <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	M <sub>1</sub>	M <sub>2</sub>	A
40	38	40	E125	175	4x18	110	-	-	102	145	-	142	184	25	35	28	50	50	M12	M16	G3/8
50	48	50	E200	240	8x18	176	-	-	138	210	-	147	195	25	40	28	50	50	M12	M16	G3/8
60	58	60	E250	275	8x22	204	-	-	188	240	-	158	203	25	42	28	50	60	M12	M20	G3/8
80	78	80	E300	305	8x22	234	-	-	212	270	-	170	240	30	45	34	60	60	M16	M20	G1/2
100	98	100	E400	395	12x22	313	-	-	268	350	-	177	240	30	52	34	60	60	M16	M20	G1/2
100	98	100	E500	395	12x22	313	-	-	268	350	-	177	240	30	52	34	60	60	M16	M20	G1/2
125	120	125	E700	505	4x22	422	12x22	320	306	460	350	208	266	30	75	40	60	80	M20	M20	G1/2
140	135	140	E700	505	4x22	422	12x22	320	306	460	350	223	282	30	79	40	60	80	M20	M20	G1/2
160	150	160	E700	505	4x22	422	12x22	320	306	460	350	228	282	30	77	40	60	85	M20	M20	G1/2
160	150	160	E900	505	4x22	422	12x22	320	306	460	350	228	282	30	77	40	60	85	M20	M20	G1/2
160	150	161	E901	565	4x26	474	12x22	370	356	515	400	228	282	30	77	40	60	85	M20	M20	G1/2

**AGSZ461** - Dimensions in millimeter

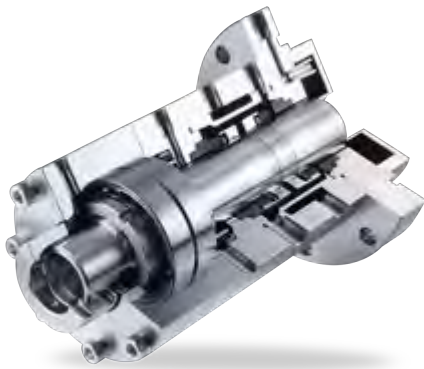
1) Shaft diameters d<sub>1</sub> and d<sub>7</sub> to DIN 28159

2) Flange size to DIN 28137 T2

RELY ON EXCELLENCE

## ERB

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- Cartridge unit
- Double seal with integrated bearing
- Unbalanced
- Independent of direction of rotation

### Advantages

- Ready-to-fit and factory-tested units
- Available with or without bearing
- Suitable for standardizations
- Balanced seal can be applied at high pressure

### Operating range

Pressure:  $p = \text{vacuum} \dots 10 \text{ bar (145 PSI)}$

Temperature:

$t = -30 \text{ °C} \dots +200 \text{ °C} (-22 \text{ °F} \dots +392 \text{ °F})$

Rotational speed:  $= \text{max. } 200 \text{ min}^{-1}$

Axial movement:  $\text{max. } 0.3 \text{ mm}$

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Diameter 50 ... 100 mm:

Seal faces: Carbon graphite resin impregnated(B)

Seat: Silicon carbide (Q1), Tungsten carbide (U1), chromium oxide coated

Diameter 110 ... 200 mm:

Seal faces: Silicon carbide (Q1), Tungsten carbide(U1), chromium oxide coated

Seats: Carbon graphite resin impregnated (B), Silicon carbide (Q1), Tungsten carbide (U1)

### Notes

Options:

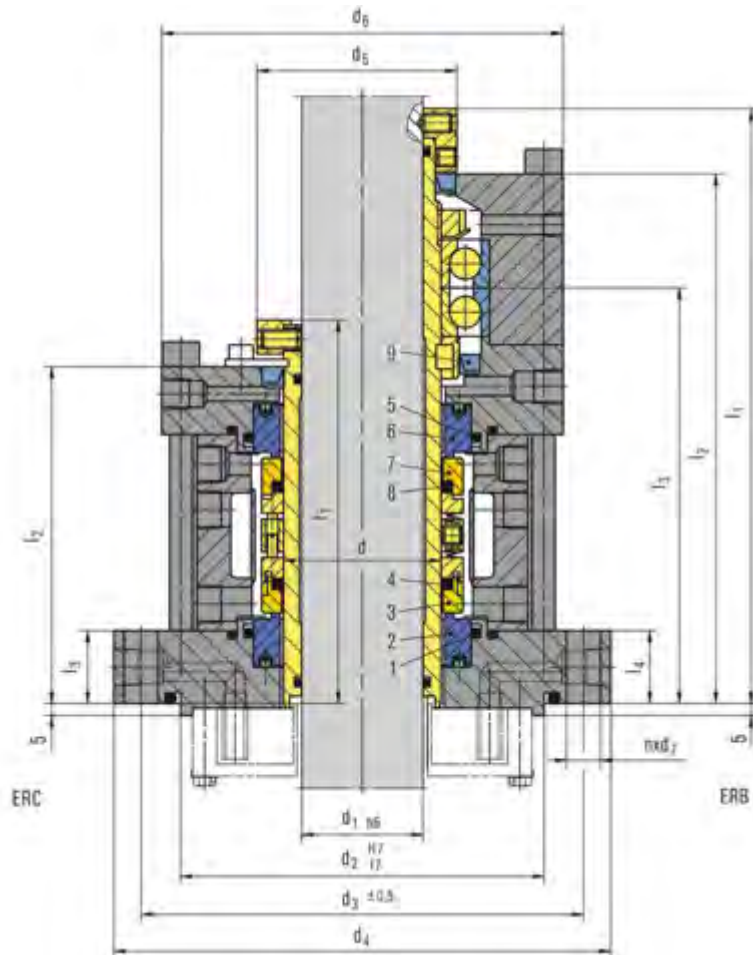
Cooling jacket on the vessel side flange.

Please inquire.

### Recommended applications

- Chemical industry
- Food and beverage industry
- Reactors
- Polymerization agitators
- Mixers

RELY ON EXCELLENCE



Item	Description
1, 4, 5, 8	O-Ring
2, 6	Seat
3, 7	Seal face
9	Shaft seal



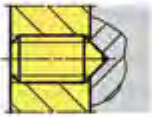


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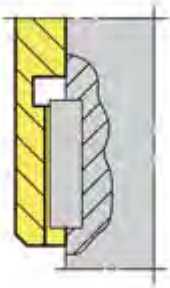
### Torque transmissions

#### Set screw with cone point

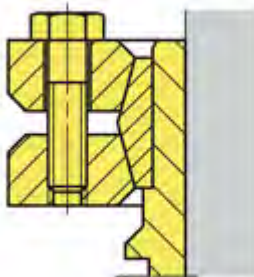
for diameter  $d_1 > 120$  mm and/or vessel pressure  $p > 1$  barg



#### Drive key



#### Shrink disk



## RELY ON EXCELLENCE

### Product variants

#### ERA

Double seal integrated shaft and bearing.

#### ERC

Double seal without bearing.

#### ERD

Single seal integrated shaft and bearing.

#### ERE

Single seal integrated bearing.

#### ERG

Double seal with integrated bearing. For glass-lined vessels.

### Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	n	Bearing Type
50	35	135	170	195	61	134	14	268	237	185	30	8	#7210ADB
60	45	145	180	205	75	144	14	283	252	197	30	8	#7212ADB
70	55	155	190	215	85	154	14	293	262	205	30	8	#7014ADB
80	65	165	200	225	95	164	14	303	272	207	30	8	#7016ADB
90	75	175	210	235	105	174	14	323	287	219	30	8	#7018ADB
100	85	185	220	245	115	184	14	323	287	219	30	8	#7020ADB
110	95	205	240	265	125	218	14	33	291	216	30	8	#7022ADB
120	105	215	261	289	135	235	19	371	309	233	35	12	#7024ADB
130	110	225	271	299	145	245	19	364	322	238	35	12	#7026ADB
140	120	235	281	309	159	255	19	369	322	238	35	12	#7028ADB
150	130	280	335	375	169	295	23	424	377	288	45	12	#7030ADB
160	140	290	345	385	179	305	23	433	386	291	45	12	#7032ADB
170	150	300	355	395	189	315	23	452	400	295	45	12	#7034ADB
180	160	310	365	405	199	328	23	458	406	299	45	12	#7036ADB
190	170	320	375	415	209	338	23	473	416	309	45	12	#7038ADB
200	180	330	390	430	219	358	23	483	426	312	45	12	#7040ADB

ERB - Dimensions in millimeter

### Dimensions

d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	n
50	35	135	170	195	66	134	14	162	144	30	8
60	45	145	180	205	76	144	14	175	157	30	8
70	55	155	190	215	86	154	14	186	168	30	8
80	65	165	200	225	96	164	14	186	168	30	8
90	75	175	210	235	110	174	14	198	178	30	8
100	85	185	220	245	120	184	14	198	178	30	8
110	95	205	240	265	130	218	14	200	173	30	8
120	105	215	261	289	140	235	19	217	190	35	12
130	110	225	271	299	154	245	19	222	190	35	12
140	120	235	281	309	164	255	19	222	190	35	12
150	130	280	335	375	174	295	23	261	229	45	12
160	140	290	345	385	184	305	23	263	231	45	12
170	150	300	355	395	194	315	23	263	231	45	12
180	160	310	365	405	204	328	23	263	231	45	12
190	170	320	375	415	214	338	23	273	241	45	12
200	180	330	390	430	224	358	23	277	245	45	12

## RELY ON EXCELLENCE

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ERC - Dimensions in millimeter

RELY ON EXCELLENCE

## HS-D

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- For top entry drives
- Double seal
- Unbalanced
- Independent of direction of rotation
- Multiple springs rotating
- Liquid-lubricated
- Cartridge unit

### Advantages

- Ready-to-fit and factory-tested unit
- With or without bearing available
- Patented hydrodynamic grooves
- Designed for medium pressure range
- Connection dimensions to customers' requirements
- Self-closing on product side
- ATEX certification on request

### Operating range

Shaft diameter:  
 $d_1 = 20 \dots 500 \text{ mm (0.79" } \dots 19.69\text{")}$   
 Pressure:  $p_1 = \text{vacuum } \dots 30 \text{ bar (... 435 PSI)}$   
 Temperature:  
 $t_1 = -40 \text{ }^\circ\text{C } \dots +200 \text{ (350}^*\text{)} \text{ }^\circ\text{C}$   
 $(-40 \text{ }^\circ\text{F } \dots +392 \text{ (662}^*\text{)}) \text{ }^\circ\text{F}$   
 Sliding velocity:  
 $vg = 0 \dots 5 \text{ m/s (0 } \dots 16 \text{ ft/s)}$

\* with cooling flange

For applications beyond this range, please inquire.

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces: Carbon graphite or Silicon carbide, FDA conform  
 Seats: Silicon carbide, FDA conform  
 Secondary seals and metallic parts acc. to application and customers' requirement.

### Standards and approvals

- FDA

### Notes

Options:

- Cooling resp. heating flange
- Leakage drain
- Flush
- Polymerization barrier

### Recommended applications

- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Reactors
- Agitators
- Special rotating equipment

### Recommended piping plans

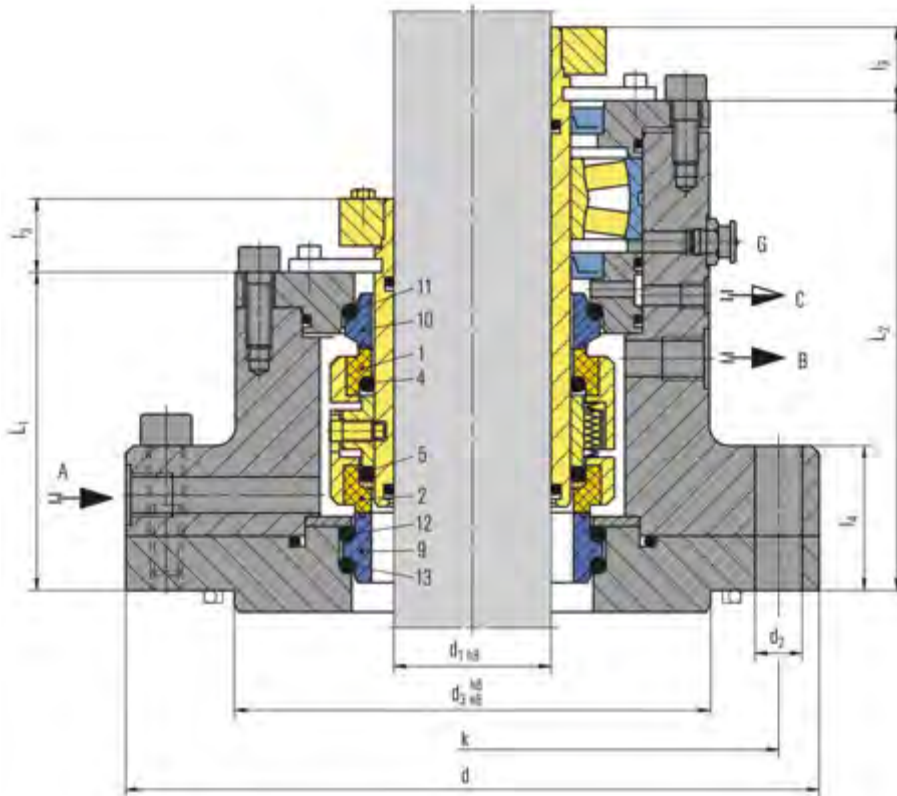
Open circuit

e.g. EagleBurgmann SPA, EagleBurgmann SPN

Product links:

- [EagleBurgmann SPA](#)
- [EagleBurgmann SPN manual](#)
- [EagleBurgmann SPN automatic](#)

## RELY ON EXCELLENCE

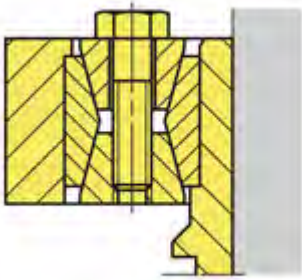


Item no.	Description
1	Seal face, atmosphere side
2	Seal face, product side
4, 5, 11, 12, 13	O-Ring
9	Seat, product side
10	Seat, atmosphere side

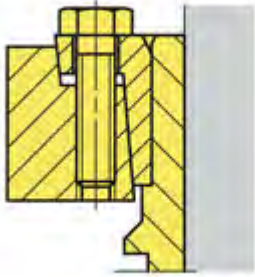
RELY ON EXCELLENCE

## Torque transmissions

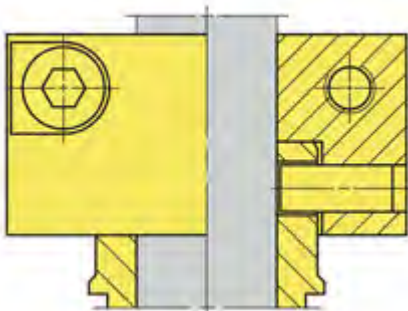
Clamping set



Shrink disk

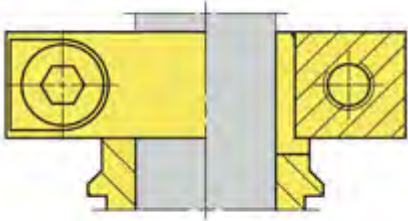


Clamping ring with pin



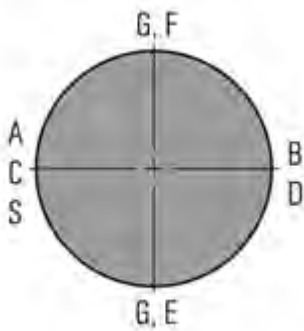
RELY ON EXCELLENCE

Clamping ring



RELY ON EXCELLENCE

## Installation, details, options



### Supply connections

- A Barrier fluid IN
- B Barrier fluid OUT
- C Drainage
- D Leakage drain
- E Cooling IN
- F Cooling OUT
- G Grease
- S Flush



### Cooling flange

Can be used alternatively as a heating flange.

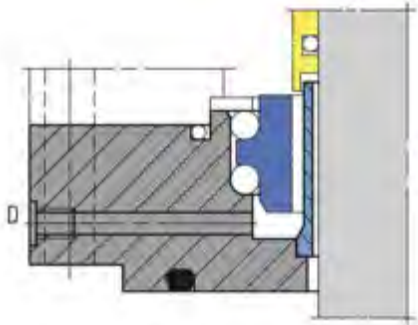


### Leakage drain with cooling flange

Can be used alternatively as a flush or as a heating flange.

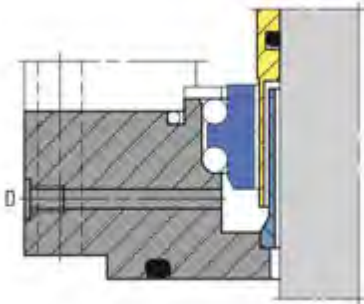


## RELY ON EXCELLENCE



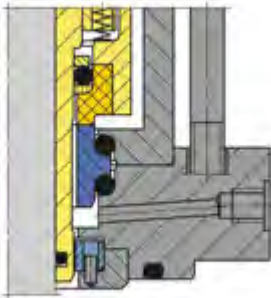
### Leakage drain

Can be used alternatively as a flush.



### Polymerization barrier

Can be used alternatively as a leakage drain or a flush.



### Flush

## RELY ON EXCELLENCE

### Product variants

#### HS ... -D

Double seal

#### HS .. L-D

Double seal with integrated floating bearing.

#### HS ..(L)U-D

Double seal for bottom and side entry drives with or without floating bearing.

These seals are designed to be self-closing on the product side, i.e. they will remain closed even with pressure variations or a pressure reversal.

### Dimensions

d <sub>1</sub>	d	n x d <sub>2</sub>	d <sub>3</sub>	[k	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>
40	200	6 x 18	80	170	115	170	35	45
50	230	8 x 18	100	200	120	185	35	55
60	255	8 x 18	120	225	140	210	35	60
80	295	8 x 23	145	260	145	230	44	60
100	315	8 x 23	170	280	160	245	44	65
120	345	8 x 23	190	310	160	250	50	65
140	380	12 x 23	215	345	165	265	50	65
160	440	12 x 27	240	395	185	300	50	75
180	475	12 x 27	260	430	185	310	55	75
200	465	12 x 27	290	420	190	290	55	75

Dimensions in millimeter

RELY ON EXCELLENCE

## HSH(L)U-D

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- For bottom entry drives
- Double seal
- Balanced
- Independent of direction of rotation
- Multiple springs rotating
- Liquid-lubricated
- Cartridge unit

### Advantages

- Ready-to-fit and factory-tested unit
- With or without bearing available
- Patented hydrodynamic grooves
- High pressure seal for customer-specific solutions
- Floating throttle on product side for protection of the seal or for flush
- Connection dimensions to customers' requirements
- Self-closing on product side
- ATEX certification on request

### Operating range

Shaft diameter:

d1 = ... 500 mm (... 19.69")

Pressure: p1 = vacuum ... 60 bar (870 PSI)

Temperature:

t1 = -40 °C ... +200 °C (-40 °F ... +392 °F)

Sliding velocity:

vg = 0 ... 5 m/s (0 ... 16 ft/s)

For applications beyond this range, please inquire.

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces: Carbon graphite

Seats: Silicon carbide, FDA conform

Secondary seals and metallic parts acc. to application and customers' requirement.

### Standards and approvals

- FDA

### Notes

Options:

- Cooling resp. heating flange
- Flush
- [Shut-down seal](#)

### Recommended applications

- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Agitators
- Reactors
- Dryers
- Mixers
- Filters
- Special rotating equipment with bottom entry drive

### Recommended piping plans

Open circuit

e.g. EagleBurgmann SPA, EagleBurgmann SPN

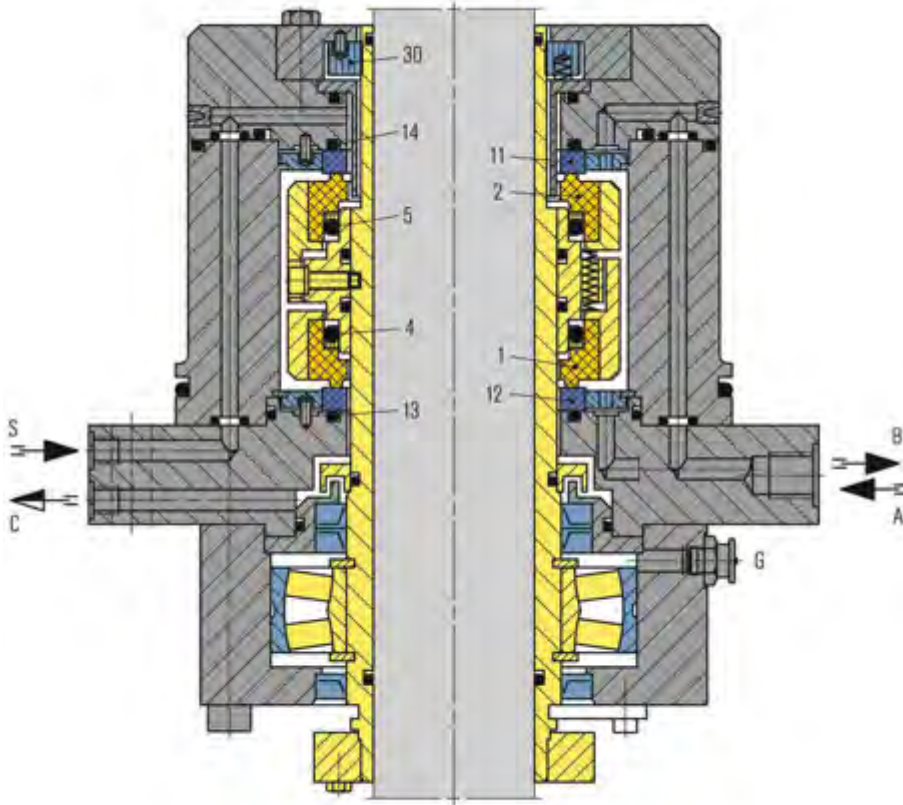
Product links:

[EagleBurgmann SPA](#)

[EagleBurgmann SPN manual](#)

[EagleBurgmann SPN automatic](#)

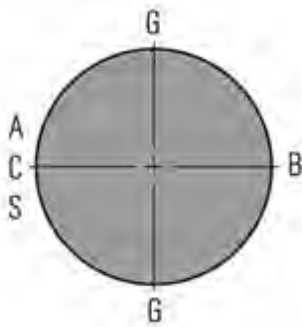
RELY ON EXCELLENCE



Item no.	Description
1	Seal face, atmosphere side
2	Seal face, product side
4, 5, 13, 14	O-Ring
11	Seat, product side
12	Seat, atmosphere side
30	Throttle ring

## RELY ON EXCELLENCE

### Installation, details, options



#### Supply connections

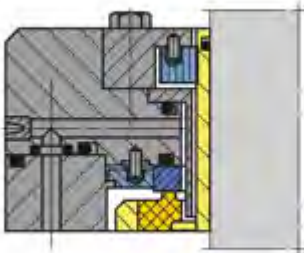
- A Barrier fluid IN
- B Barrier fluid OUT
- C Drainage
- G Grease
- S Flush

#### Cooling flange

Can be used alternatively as a heating flange.



#### Flush



RELY ON EXCELLENCE

## HSH-D

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- For top entry drives
- Double seal
- Balanced
- Independent of direction of rotation
- Multiple springs rotating
- Liquid-lubricated
- Cartridge unit

### Advantages

- Ready-to-fit and factory-tested unit
- With or without bearing available
- Patented hydrodynamic grooves
- Designed for high pressure range
- Connection dimensions to customers' requirements
- ATEX certification on request

### Operating range

Shaft diameter:  
 $d_1 = 20 \dots 500 \text{ mm (0.79" ... 19.69")}$   
 Pressure:  
 $p_1 = \text{vacuum} \dots 250 \text{ bar (... 3,625 PSI)*}$ ,  
 $p_3 = p_1 + 10 \%$   
 Temperature:  
 $t_1 = -40 \text{ °C} \dots +200 \text{ (350**)} \text{ °C}$   
 $(-40 \text{ °F} \dots +392 \text{ (662**)} \text{ °F})$   
 Sliding velocity:  
 $vg = 0 \dots 5 \text{ m/s (0 ... 16 ft/s)}$

\* Depending on size, from 100 ... 150 bar (1,450 ... 2,175 PSI) executed as tandem seal (pressure reduction in 2 stages).

\*\* with cooling flange

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces: Carbon graphite  
 Seats: Silicon carbide, FDA conform  
 Secondary seals and metallic parts acc. to application and customers' requirement.

### Standards and approvals

- FDA

### Notes

Options:

- Cooling resp. heating flange
- Leakage drain
- Flush
- Polymerization barrier

### Recommended applications

- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Reactors
- Agitators
- Special rotating equipment with top entry drive

### Recommended piping plans

Open circuit

e.g. EagleBurgmann SPA, EagleBurgmann SPN

Product links:

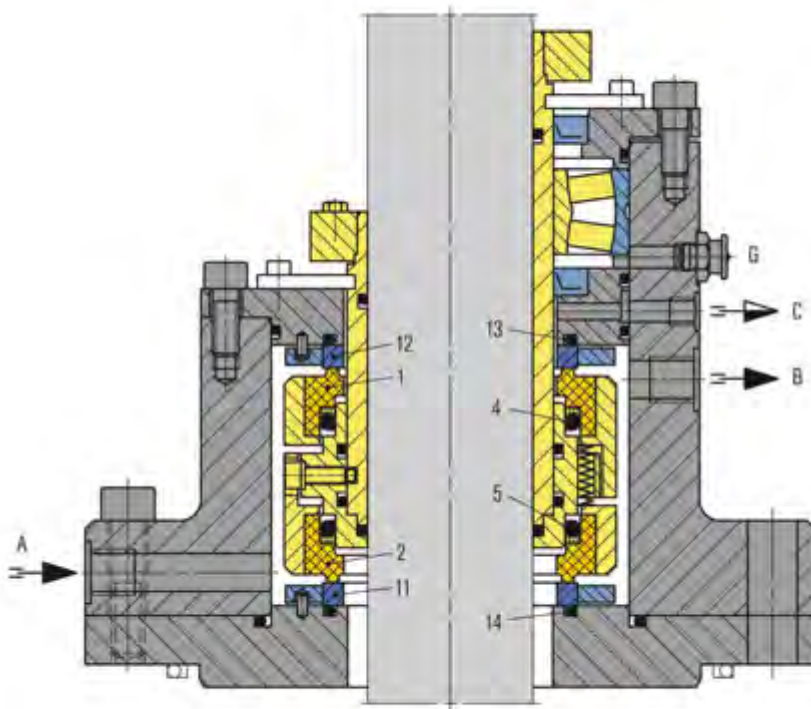
[EagleBurgmann SPA](#)

[EagleBurgmann SPN manual](#)

[EagleBurgmann SPN automatic](#)

RELY ON EXCELLENCE

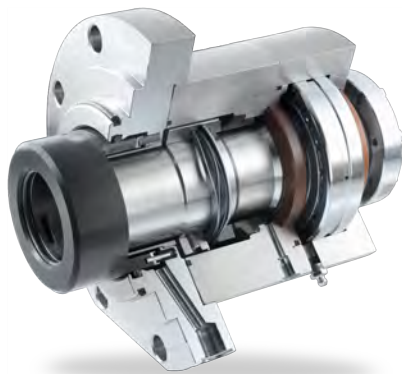
Item no.	Description
1	Seal face, atmosphere side
2	Seal face, product side
4, 5, 13, 14	O-Ring
11	Seat, product side
12	Seat, atmosphere side



RELY ON EXCELLENCE

## HSMR34

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- For top, side and bottom entry drives
- Seat at product side rotating
- Unbalanced
- Liquid-lubricated
- Double seal
- Independent of direction of rotation
- Cartridge unit
- With or without bearing available
- Shaft sleeve not in contact with product (with standard diameters)

### Advantages

- Smooth surface, free of dead spaces
- CIP-/SIP (Cleaning in Place, Sterilization in Place) capable
- Sliding materials FDA conform
- Variant for sterile applications available
- ATEX certification on request

### Operating range

Shaft diameter:  
 $d_1 = 35 \dots 140$  (500) mm  
 (1.38" ... 5.51" (19.68"))  
 Axial offset shaft/housing:  
 $d_1 = 35 \dots 60$  mm  
 (1.38" ... 2.36"): max.  $\pm 1.5$  mm (0.059")  
 $d_1 > 60$  mm (2.36"): max.  $\pm 2.0$  mm (0.079")  
 Radial offset shaft/housing:  
 max.  $\pm 0.3$  mm (0.012")  
 Pressure:  
 $p_1 = \text{vacuum} \dots 14$  (23) bar (203 (334) PSI)  
 $p_3 = \text{max. } 16$  (25) bar (232 (363) PSI)  
 $\Delta p_3 - p_1 = 2 \dots 10$  bar (29 ... 145 PSI),  
 higher  $\Delta p$  on request  
 Temperature:  $t_1 = -20$  °C ...  $+200$  (300) °C  
 (-4 °F ...  $+392$  (572) °F)  
 Sliding velocity:  
 $vg = \text{max. } 10$  (20) m/s (33 (66) ft/s)

For applications beyond this range and for values in brackets, please inquire.

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces: Silicon carbide, FDA conform  
 Seat: Carbon graphite (atmosphere side) resp. Silicon carbide (product side), FDA conform  
 Secondary seals and metallic parts acc. to application and customers' requirement.

### Standards and approvals

- FDA

### Notes

Options:

- Cooling resp. heating flange
- Temperature sensor
- Metal-free on product side

Please inquire.

### Recommended applications

- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Mixers
- Dryers
- Mills
- Kneaders
- Reactors
- Pressure filters

### Recommended piping plans

Closed circuit: EagleBurgmann TS system, EagleBurgmann DRU pressure booster,  
 Open circuit: EagleBurgmann SPA / SPN

Product links:

[EagleBurgmann TS1000](#)  
[EagleBurgmann TS2000](#)  
[EagleBurgmann TS3016 \(sterile version\)](#)  
[EagleBurgmann DRU](#)  
[EagleBurgmann SPA](#)

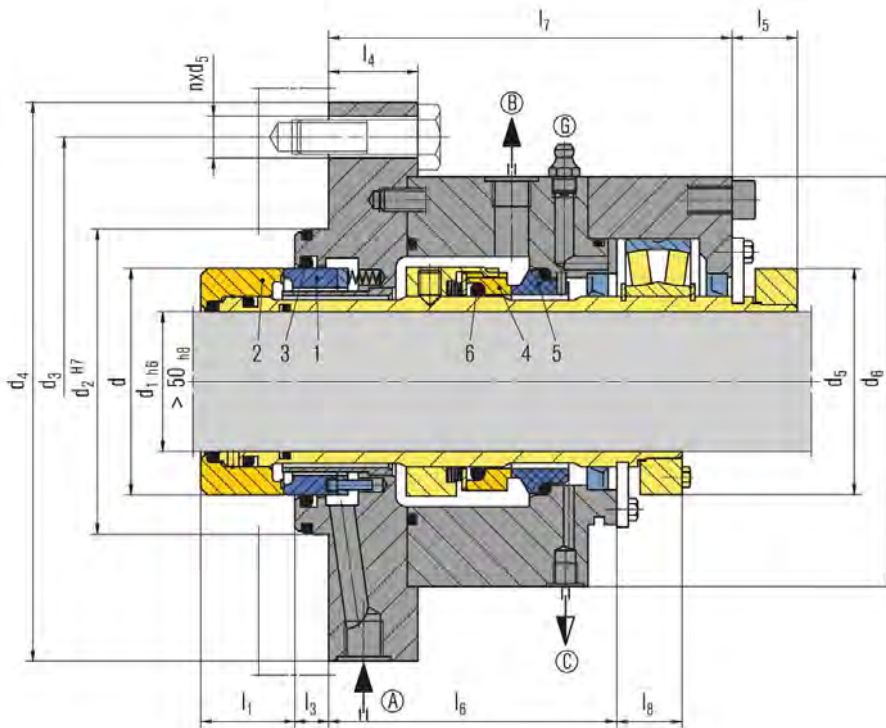


RELY ON EXCELLENCE

[EagleBurgmann SPN manual](#)  
[EagleBurgmann SPN automatic](#)

**Item Description**

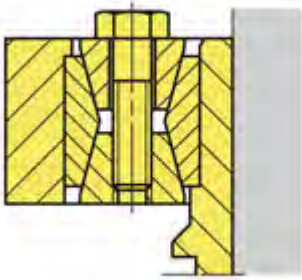
- 1 Seal face, product side
- 2 Seat, product side
- 3, 6 O-Ring, dynamic
- 4 Seal face, atmosphere side
- 5 Seat, atmosphere side



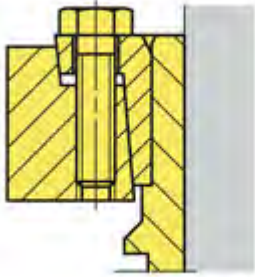
RELY ON EXCELLENCE

## Torque transmissions

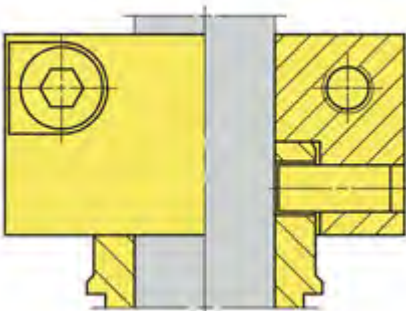
Clamping set



Shrink disk

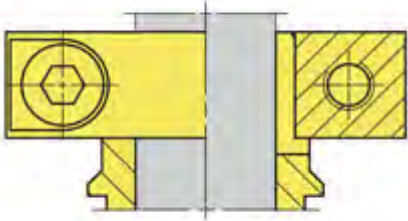


Clamping ring with pin



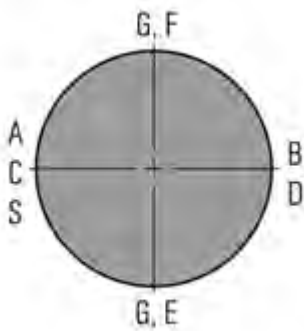
RELY ON EXCELLENCE

Clamping ring



RELY ON EXCELLENCE

## Installation, details, options



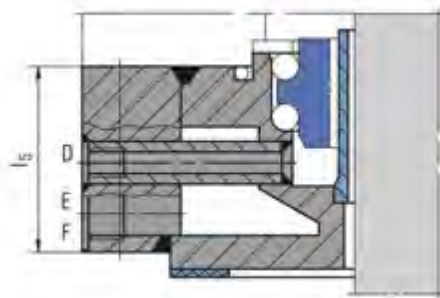
### Supply connections

- A Barrier fluid IN
- B Barrier fluid OUT
- C Drainage
- D Leakage drain
- E Cooling IN
- F Cooling OUT
- G Grease
- S Flush



### Cooling flange

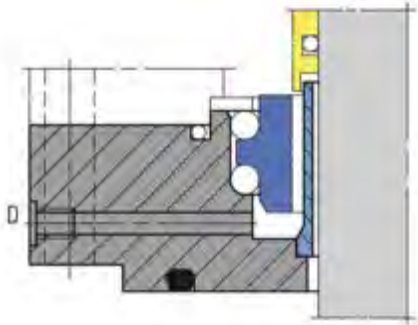
Can be used alternatively as a heating flange.



### Leakage drain with cooling flange

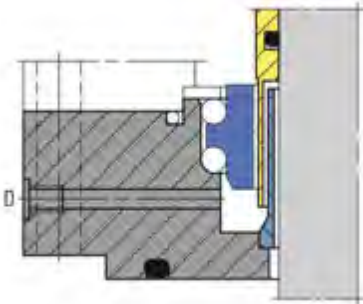
Can be used alternatively as a flush or as a heating flange.

## RELY ON EXCELLENCE



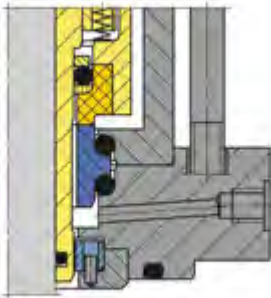
### Leakage drain

Can be used alternatively as a flush.



### Polymerization barrier

Can be used alternatively as a leakage drain or a flush.



### Flush

## RELY ON EXCELLENCE

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### Product variants

#### HSH(V)-D

Double seal

#### HSH(V)L-D

Double seal with integrated floating bearing (axial thrust bearing on request).

These seals are designed to be self-closing on the product side, i.e. they will remain closed even with pressure variations or a pressure reversal.

RELY ON EXCELLENCE

## M461CL

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- Cartridge double seal for top entry drives
- For glass lined vessels
- With integrated floating bearing
- Liquid lubricated
- Self-closing on product side
- For stepped and unstepped shafts
- Unbalanced
- Independent of direction of rotation
- Multiple springs rotating

### Advantages

- Ready-to-fit and factory-tested units
- The M461CL will remain closed even during pressure variations or pressure reversal. Operation is possible with buffer fluid ( $p_{1max} = 6 \text{ bar (87 PSI)}$ ) or pressurized with barrier fluid as double seal.
- The seal can be lifted off the glass-lined flange as a complete cartridge. The sensitive glass lined basic flange remains mounted on the vessel.
- Can be applied at higher pressure and rotating speed than specified by DIN.

### Operating range

Shaft diameter:  
 $d_1 = 40 \dots 125 \text{ mm (1.57" \dots 4.92")}$

Pressure:  
 $p_1 = \text{vacuum} \dots 10 \text{ bar (145 PSI)}$   
 $p_3 = \text{max. } 12 \text{ bar (174 PSI)}$   
 Temperature:  
 $t_1 = -40 \text{ °C} \dots +200 \text{ °C}$   
 $(-40 \text{ °F} \dots +392 \text{ °F})$

Sliding velocity:  
 $vg = 0 \dots 3 \text{ m/s (0 \dots 9.8 ft/s)}$

For applications beyond this range, please inquire.

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces: Carbon graphite or Silicon carbide, FDA compliant  
 Seats: Silicon carbide, FDA compliant  
 Secondary seals and metallic parts acc. to application and customer's requirement.

### Standards and approvals

- FDA
- ATEX
- DIN 28138 (mechanical seals for agitator shafts)
- DIN 28136 T3 (for steel vessels)
- DIN 28137 T2 (flange connections for glass lined vessels)
- DIN 28159 (shaft end for glass lined vessels)

### Recommended applications

- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Agitators
- Reactors

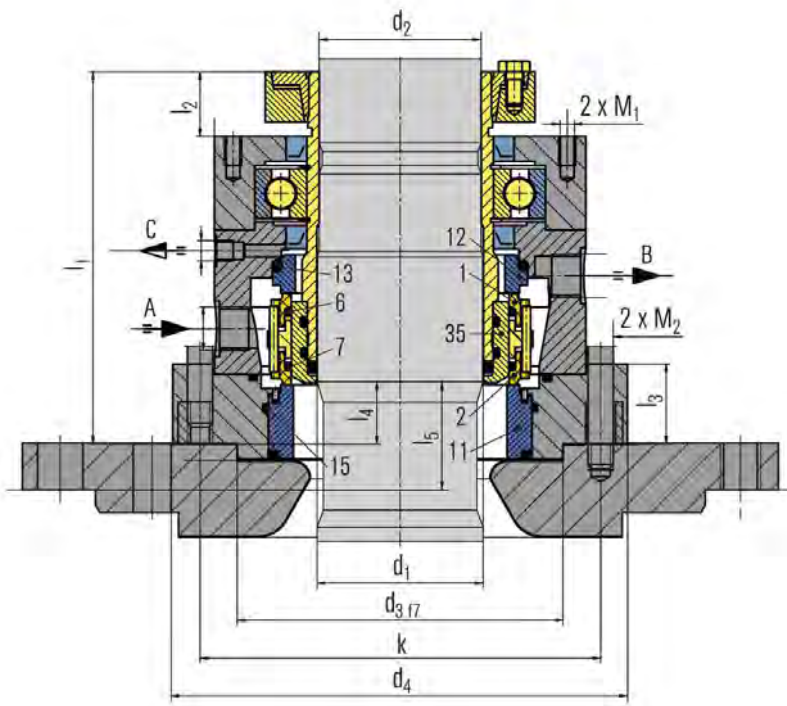
### Recommended piping plans

Closed circuit EagleBurgmann TS system, open circuit EagleBurgmann SPA, EagleBurgmann SPN

Product links:

[EagleBurgmann TS1000](#)  
[EagleBurgmann TS2000](#)  
[EagleBurgmann SPA](#)  
[EagleBurgmann SPN \(manual\)](#)  
[EagleBurgmann SPN \(automatic\)](#)

RELY ON EXCELLENCE



Item	Description
1	Seal face, atmosphere side
2	Seal face, product side
11	Seat, product side
12	Seat, atmosphere side
35	Torque transmission, metal free
6, 7, 13, 15	O-Ring

## Product variants

### M491CL

Variant for customer-specific dimensions.  
Further customer-specific adaptations are also possible.

## Dimensions

d1	d2	d3 f7	d4	k	l1	l2	l3	l4	l5	M1	M2	nx quantity	A, B	C
40	38	93	175	145	147.5	22.5	31.5	25	50	M8	M8	M8X8	G3/8	G1/8
50	48	116	240	210	161.5	26.5	33.5	25	50	M8	M8	M8X2	G3/8	G1/8
60	58	125	204	176	161.5	26.5	33.5	25	50	M8	M8	M10X8	G3/8	G1/8
80	78	157	219	203	179	31	38.5	30	60	M8	M10	M10X8	G1/2	G1/8
100	98	185	247	228	187	32	36	30	60	M10	M10	M10X8	G1/2	G1/8
125	120	210	294	268	211	38.5	38.5	30	60	M10	M10	M10X8	G1/2	G1/8



## RELY ON EXCELLENCE

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Dimensions in millimeter

- 1) Shaft diameters d1 and d2 according to DIN 28159
- 2) Shaft shoulder according to DIN 28159
- 3) Flange according to DIN 28138 T2

RELY ON EXCELLENCE

## M461CL-E3

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- Retrofit for JC Type 109 / Type 109B
- Cartridge double seal for top entry drives
- For glass lined vessels
- With integrated floating bearing
- Liquid lubricated
- Self-closing on product side
- For stepped and unstepped shafts
- Unbalanced
- Independent of direction of rotation
- Multiple springs rotating

### Advantages

- Ready-to-fit and factory-tested unit
- The M461CL-E3 will remain closed even during pressure variations or pressure reversal. Operation is possible with buffer fluid ( $p_{1max} = 6 \text{ bar (87 PSI)}$ ) or pressurized with barrier fluid as double seal.
- The seal can be lifted off the glass-lined flange as a complete cartridge. The sensitive glass lined basic flange remains mounted on the vessel.
- Can be applied at higher pressure and rotating speed than specified by DIN.
- Made of stainless steel, no protective coating required

### Operating range

Shaft diameter:  
 $d_1 = 40 \dots 125 \text{ mm (1.57" } \dots \text{ 4.92")}$

Pressure:  
 $p_1 = \text{vacuum } \dots 10 \text{ bar } (\dots 145 \text{ PSI})$   
 $p_3 = \text{max. } 12 \text{ bar (174 PSI)}$

Temperature:  
 $t_1 = -40 \text{ }^\circ\text{C } \dots +200 \text{ }^\circ\text{C}$   
 $(-40 \text{ }^\circ\text{F } \dots +392 \text{ }^\circ\text{F})$

Sliding velocity:  
 $vg = 0 \dots 3 \text{ m/s (0 } \dots \text{ 9.8 ft/s)}$

For applications beyond this range, please inquire.

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces: Carbon graphite (B), FDA compliant  
 Seats: Silicon carbide (Q1), FDA compliant  
 Secondary seals on product side: KL/M5  
 Secondary seals on atmospheric side: V  
 Springs: G  
 Metal parts: E (1.4122)  
 Parts in contact with product: Al-oxide (Buke5)

### Standards and approvals

- FDA
- ATEX
- DIN 28138 (mechanical seals for agitators)
- DIN 28136 T3 (for glass lined vessels)
- DIN 28137 T2 (flange connections for glass lined vessels)
- DIN 28159 (shaft end for glass lined vessels)
- Compliant to TA Luft (German Clean Air Act)

### Recommended applications

- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Agitators
- Reactors

### Recommended piping plans

Closed circuit EagleBurgmann TS system, open circuit EagleBurgmann SPA, EagleBurgmann SPN

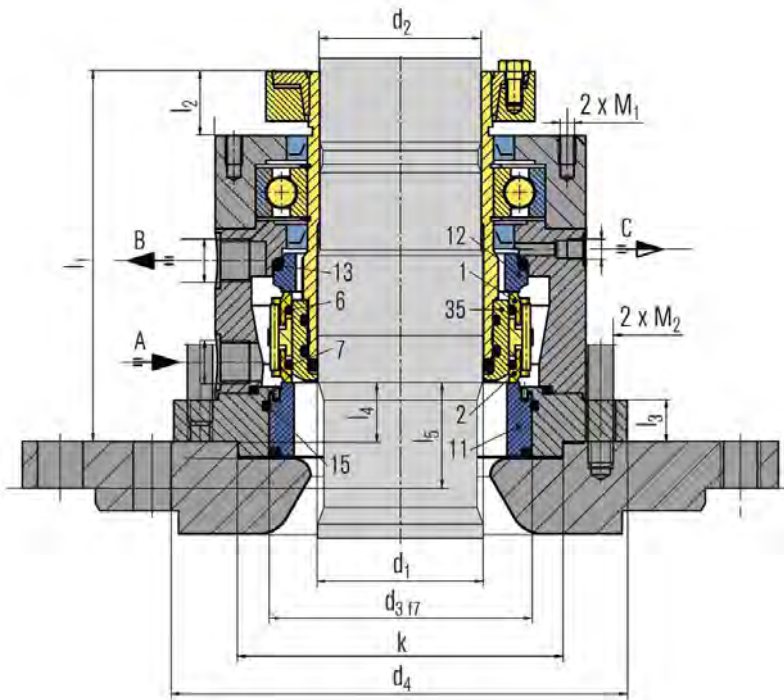
Product links:

[EagleBurgmann TS1000](#)  
[EagleBurgmann TS2000](#)  
[EagleBurgmann SPA](#)

RELY ON EXCELLENCE

EagleBurgmann SPN (manual)  
EagleBurgmann SPN (automatic)

Item	Description
1	Seal face, atmospheric side
2	Seal face, product side
11	Seat, product side
12	Seat, atmospheric side
35	Torque transmission, metal free
6, 7, 13, 15	O-Ring



## Dimensions

SAP	Shaft*	M461CL-...	Material combination
1001236076	40	D20/40-E3	B01KL/M5GE(AL-OXID)-B01VGE
1001236080	50	D20/50-E3	B01KL/M5GE(AL-OXID)-B01VGE
1001236079	60	D20/60-E3	B01KL/M5GE(AL-OXID)-B01VGE
1001215335	80	D20/80-E3	B01KL/M5GE(AL-OXID)-B01VGE
1001236078	100	D20/100-E3	B01KL/M5GE(AL-OXID)-B01VGE
1001236081	125	D20/125-E3	B01KL/M5GE(AL-OXID)-B01VGE

\* Dimensions in millimeter

RELY ON EXCELLENCE

## M481C

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- Liquid-lubricated double seal for top-entry drives
- Cartridge unit
- Self-closing on the product side
- For stepped and unstepped shafts
- Unbalanced
- Independent of direction of rotation
- Multiple springs rotating

### Advantages

- Ready-to-fit and factory-tested units
- The M481C and its variants will remain closed even during pressure variations or pressure reversal. Operation is possible with buffer fluid ( $p_{1max} = 6 \text{ bar (87 PSI)}$ ) or pressurized with barrier fluid as double seal
- Available with or without bearing
- Metal-free on product side as option
- Suitable for standardizations
- Seal can be applied at higher pressure and rotating speed than specified by DIN

### Operating range

Shaft diameter:  
 $d_1 = 40 \dots 125 \text{ mm (1.57" \dots 4.92")}$

Pressure:  
 $p_1 = \text{vacuum} \dots 10 \text{ bar (145 PSI)}$ ,

$p_3 = \text{max. } 12 \text{ bar (174 PSI)}$   
 Temperature:  
 $t_1 = -40 \text{ °C} \dots +200 \text{ °C}$   
 $(-40 \text{ °F} \dots +392 \text{ °F})$

Sliding velocity:  
 $vg = 0 \dots 3 \text{ m/s (0} \dots 16 \text{ ft/s)}$

For applications beyond this range, please inquire.

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces: Carbon graphite or Silicon carbide, FDA conform  
 Seats: Silicon carbide, FDA conform  
 Secondary seals and metallic parts acc. to application and customers' requirement.

### Standards and approvals

- FDA
- ATEX
- DIN 28138 (mechanical seals for agitator shafts)
- DIN 28136 T2 (for steel vessels)
- DIN 28141 (flange connection for steel vessels)
- DIN 28154 (shaft end for steel vessels)
- Compliant to TA Luft (German Clean Air Act)

### Recommended applications

- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Agitators
- Reactors

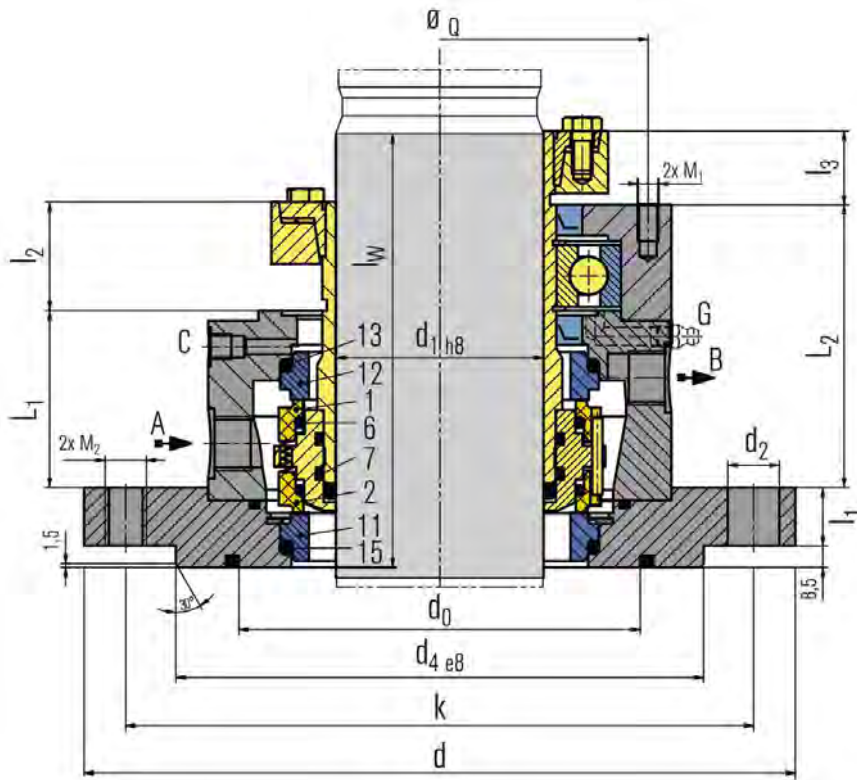
### Recommended piping plans

Closed circuit EagleBurgmann TS system, open circuit EagleBurgmann SPA, EagleBurgmann SPN

Product links:

[EagleBurgmann TS1000](#)  
[EagleBurgmann TS2000](#)  
[EagleBurgmann SPA](#)  
[EagleBurgmann SPN manual](#)  
[EagleBurgmann SPN automatic](#)

RELY ON EXCELLENCE



Item	Description
1	Seal face, atmosphere side
2	Seal face, product side
6, 7, 13, 15	O-Ring
11	Seat, product side
12	Seat, atmosphere side

## Product variants

### M481CL

Variant with integrated floating bearing

### M451C

Variant for customer-specific connection dimensions. Further customer-specific adaptations are also possible.

## Dimensions

d <sub>1</sub> <sup>1)</sup>	d <sup>1)</sup>	n x d <sub>2</sub>	d <sub>4</sub>	d <sub>0</sub>	k	L <sub>1</sub>	L <sub>2</sub>	L <sub>w</sub> <sup>2)</sup>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	a	M <sub>1</sub>	M <sub>2</sub>	A,B	C	G
40	175	4x18	110	90	145	60.5	93.5	143	18.5	32.5	22.5	105	M8	M16	G3/8	G1/8	M6
50	240	8x18	176	159	210	63	101.5	148	17.5	26	22	143	M8	M16	G3/8	G1/8	M8X1
60	240	8x18	176	159	210	63	101.5	158	17.5	27	25	143	M8	M16	G3/8	G1/8	M8X1
80	275	8x22	204	155	240	68.5	109.5	168	22.5	42	28.5	161	M8	M20	G1/2	G1/8	M8X1
100	305	8x22	234	190	270	73.5	119	178	20	32	30.5	195	M10	M20	G1/2	G1/8	M8X1
125	330	8x22	260	215	295	80.5	134	203	22.5	39	38	231	M10	M20	G1/2	G1/8	M8X1

RELY ON EXCELLENCE

## M461K

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- Cartridge double seal for top entry drives
- For glass-lined vessels
- Liquid lubricated
- Self-closing on product side
- Unbalanced
- Independent of direction of rotation
- Multiple springs rotating

### Advantages

- Ready-to-fit and factory-tested unit
- Available with or without bearing
- Suitable for standardizations
- Seal can be applied at higher pressure and rotating speed than specified by DIN
- The seal can be lifted off the glass-lined flange as a complete cartridge. The sensitive glass lined basic flange remains mounted on the vessel.
- ATEX certification on request

### Operating range

Shaft diameter:

$d_1 = 40 \dots 160 \text{ mm} (1.57" \dots 6.30")$

Pressure:

$p_1 = \text{vacuum} \dots 16 \text{ bar} (232 \text{ PSI})$ ,

$p_3 = \text{max. } 18 \text{ bar} (261 \text{ PSI})$

Temperature:

$t_1 = -40 \text{ }^\circ\text{C} \dots +200 (250^*) \text{ }^\circ\text{C}$

$(-40 \text{ }^\circ\text{F} \dots +392 (482^*) \text{ }^\circ\text{F})$

Sliding velocity:

$vg = 0 \dots 5 \text{ m/s} (0 \dots 16 \text{ ft/s})$

For applications beyond this range, please inquire.

\* with cooling flange

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces: Carbon graphite or Silicon carbide, FDA conform

Seats: Silicon carbide, FDA conform

Secondary seals and metallic parts acc. to application and customers' requirement.

### Standards and approvals

- FDA
- ATEX
- DIN 28138 (mechanical seals for agitator shafts)
- DIN 28136 T3 (for glass-lined vessels)
- DIN 28137 T2 (flange connection for glass-lined vessels)
- DIN 28159 (shaft end for glass-lined vessels)

### Notes

Options:

- Cooling resp. heating flange
- Leakage drain resp. flush

### Recommended applications

- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Agitators
- Reactors

### Recommended piping plans

Closed circuit TS system, open circuit SPA, SPN

Product links:

[EagleBurgmann TS1000](#)

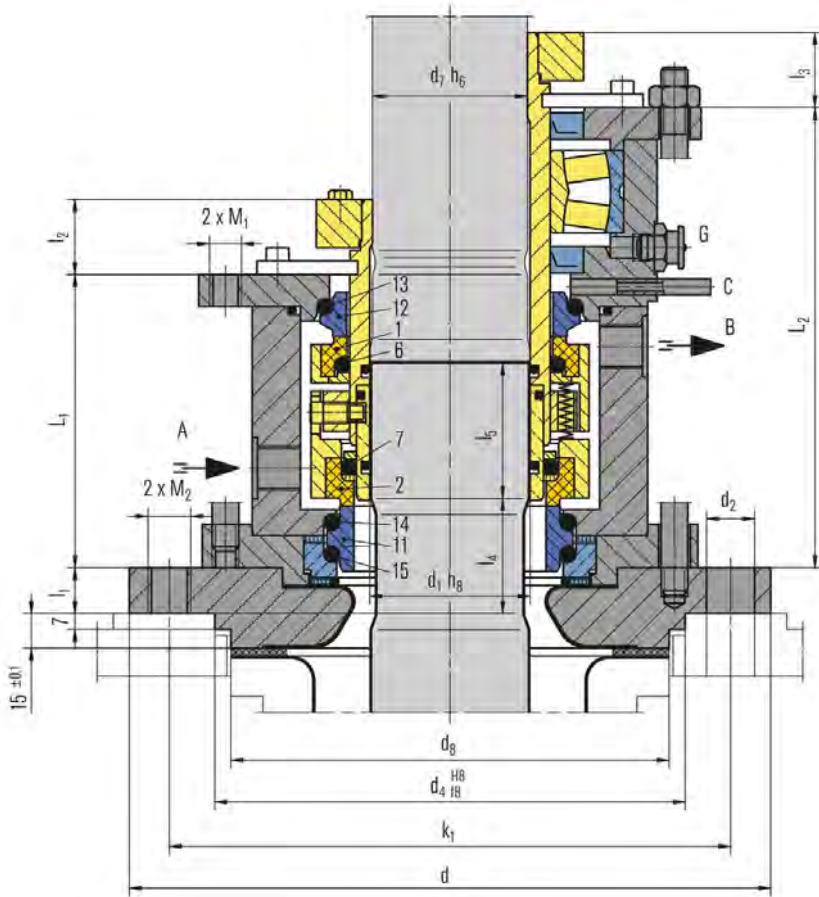
[EagleBurgmann TS2000](#)

[EagleBurgmann SPA](#)

[EagleBurgmann SPN manual](#)

[EagleBurgmann SPN automatic](#)

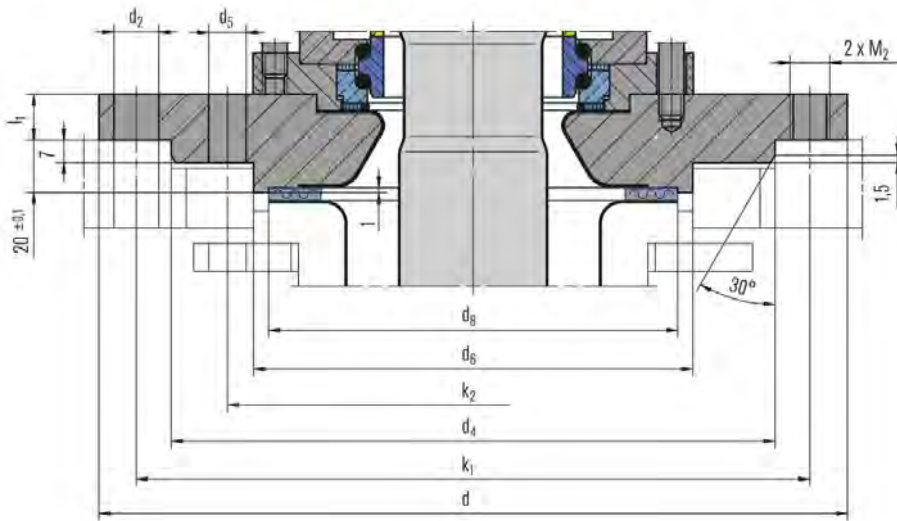
RELY ON EXCELLENCE



Item	Description
1	Seal face, atmosphere side
2	Seal face, product side
6, 7, 13, 14, 15	O-Ring
11	Seat, product side
12	Seat, atmosphere side

## RELY ON EXCELLENCE

Flange connections acc. to DIN 28137 T2  
for nominal diameters 125 ... 161.

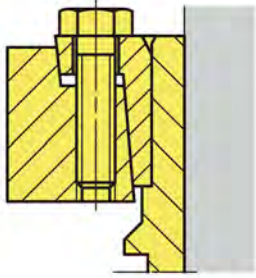




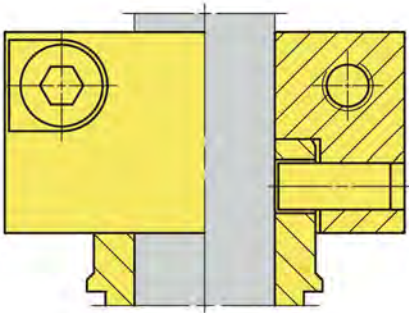
RELY ON EXCELLENCE

## Torque transmissions

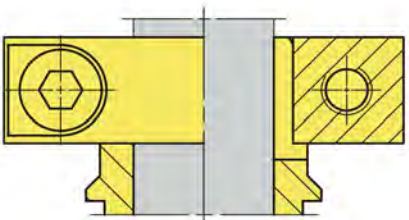
Shrink disk



Clamping ring with pin

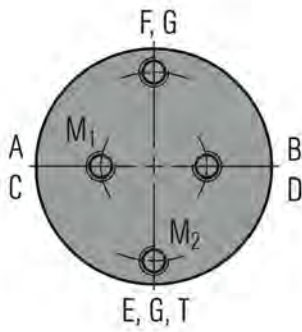


Clamping ring



## RELY ON EXCELLENCE

### Installation, details, options



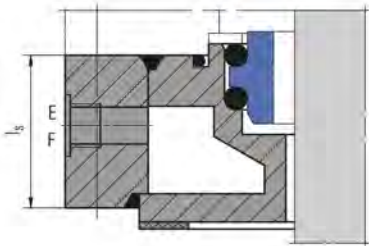
#### Supply connections

Designation and positions of screwed connections, pull-off and jacket threads acc. to DIN 28138 T3.

- A Liquid IN
- B Liquid OUT
- C Drainage
- D Leakage drain
- E Cooling IN
- F Cooling OUT
- G Grease
- T Temperature metering

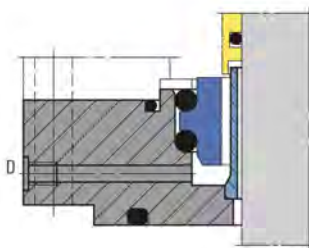
#### Cooling flange

Can be used alternatively as a heating flange.



#### Leakage drain

Can be used alternatively as a flush.



## RELY ON EXCELLENCE

### Product variants

#### M461KL-D

The variant with integrated floating bearing.

#### M56K(L)

Double seal without/with floating bearing for PN 25 (Special seal on request.)

#### M491KL

The series for unstepped shafts (all diameters) and connection diamentions not covered by DIN. Customized design or e.g. different drives (torque transmissions) are available.

### Dimensions

d <sub>1</sub> <sup>1)</sup>	d <sub>7</sub> <sup>1)</sup>	Nominal size	Flange size <sup>2)</sup>	d	nx d <sup>2</sup>	d <sub>4</sub>	nx d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	k <sub>1</sub>	k <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	M <sub>1</sub>	M <sub>2</sub>	A, B
40	38	40	E125	175	4x18	110	-	-	102	145	-	142	184	25	35	28	50	50	M12	M16	G3/8
50	48	50	E200	240	8x18	176	-	-	138	210	-	147	195	25	40	28	50	50	M12	M16	G3/8
60	58	60	E250	275	8x22	204	-	-	188	240	-	158	203	25	42	28	50	60	M12	M20	G3/8
80	78	80	E300	305	8x22	234	-	-	212	270	-	170	240	30	45	34	60	60	M16	M20	G1/2
100	98	100	E400	395	12x22	313	-	-	268	350	-	177	240	30	52	34	60	60	M16	M20	G1/2
100	98	100	E500	395	12x22	313	-	-	268	350	-	177	240	30	52	34	60	60	M16	M20	G1/2
125	120	125	E700	505	4x22	422	12x22	320	306	460	350	208	266	30	75	40	60	80	M20	M20	G1/2
140	135	140	E700	505	4x22	422	12x22	320	306	460	350	223	282	30	79	40	60	80	M20	M20	G1/2
160	150	160	E700	505	4x22	422	12x22	320	306	460	350	228	282	30	77	40	60	85	M20	M20	G1/2
160	150	160	E900	505	4x22	422	12x22	320	306	460	350	228	282	30	77	40	60	85	M20	M20	G1/2
160	150	161	E901	565	4x26	474	12x22	370	356	515	400	228	282	30	77	40	60	85	M20	M20	G1/2

Dimensions in millimeter

1) Shaft diameters d<sub>1</sub> and d<sub>7</sub> to DIN 28159

2) Flange size to DIN 28137 T2

RELY ON EXCELLENCE

## M481K

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- Liquid-lubricated double seal for top-entry drives
- Cartridge unit
- Self-closing on the product side
- For stepped and unstepped shafts
- Unbalanced
- Independent of direction of rotation
- Multiple springs rotating

### Advantages

- Ready-to-fit and factory-tested units
- The M481K and its variants will remain closed even during pressure variations or pressure reversal. Operation is possible with buffer fluid ( $p_{1max} = 6 \text{ bar (87 PSI)}$ ) or pressurized with barrier fluid as double seal
- Available with or without bearing
- Suitable for standardizations
- Seal can be applied at higher pressure and rotating speed than specified by DIN

### Operating range

Shaft diameter:  
 $d_1 = 40 \dots 220 \text{ mm (1.57" \dots 8.66")}$

Pressure:  
 $p_1 = \text{vacuum} \dots 16 \text{ bar (232 PSI)}$ ,

$p_3 = \text{max. } 18 \text{ bar (261 PSI)}$   
 Temperature:  
 $t_1 = -40 \text{ °C} \dots +200 \text{ (350*) °C}$   
 $(-40 \text{ °F} \dots +392 \text{ (662*) °F})$

Sliding velocity:  
 $v_g = 0 \dots 5 \text{ m/s (0 \dots 16 ft/s)}$

For applications beyond this range, please inquire.

\* with cooling flange

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces: Carbon graphite or Silicon carbide, FDA conform

Seats: Silicon carbide, FDA conform  
 Secondary seals and metallic parts acc. to application and customers' requirement.

### Standards and approvals

- FDA
- ATEX
- DIN 28138 (mechanical seals for agitator shafts)
- DIN 28136 T2 (for steel vessels)
- DIN 28141 (flange connection for steel vessels)
- DIN 28154 (shaft end for steel vessels)
- Compliant to TA Luft (German Clean Air Act)

### Notes

Options:

- Cooling resp. heating flange
- Leakage drain
- Flush
- Polymerization barrier
- Axial expansion joint (shaft movement)
- Wiper ring (shaft movement)

Please inquire.

### Recommended applications

- Refining technology
- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Agitators
- Reactors

### Recommended piping plans

## RELY ON EXCELLENCE

Closed circuit EagleBurgmann TS system,  
open circuit EagleBurgmann SPA, SPN

Product links:

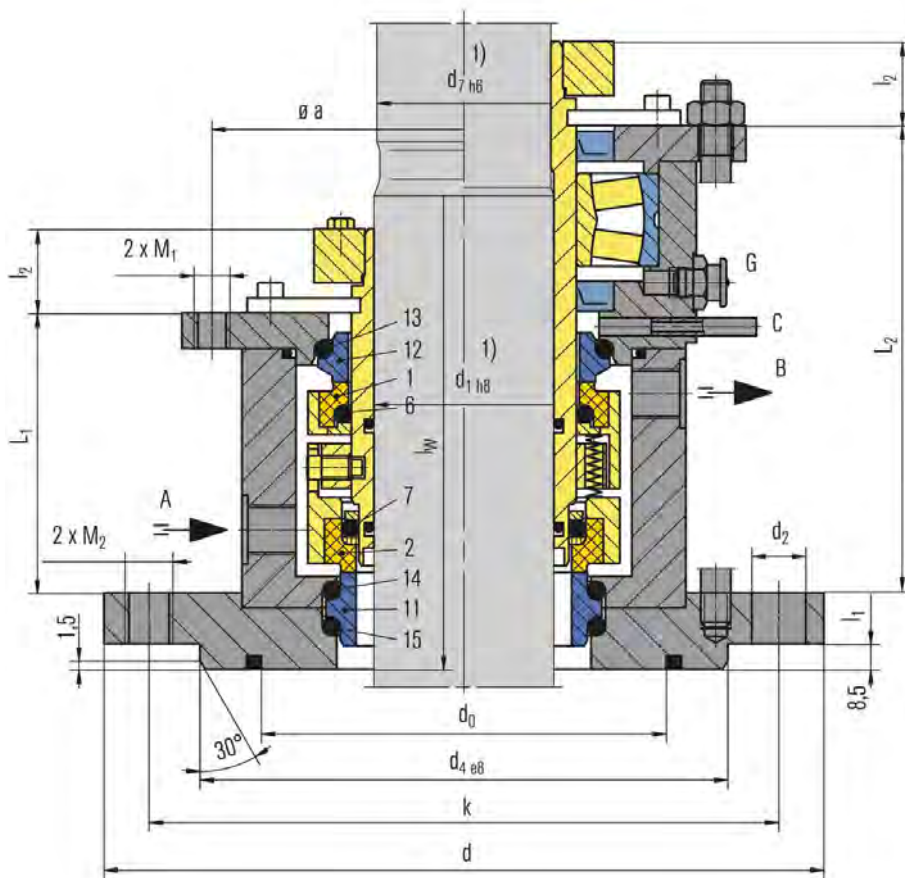
[EagleBurgmann TS1000](#)

[EagleBurgmann TS2000](#)

[EagleBurgmann SPA](#)

[EagleBurgmann SPN manual](#)

[EagleBurgmann SPN automatic](#)

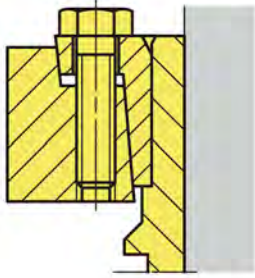


Item	Description
1	Seal face, atmosphere side
2	Seal face, product side
6, 7, 13, 14, 15	O-Ring
11	Seat, product side
12	Seat, atmosphere side

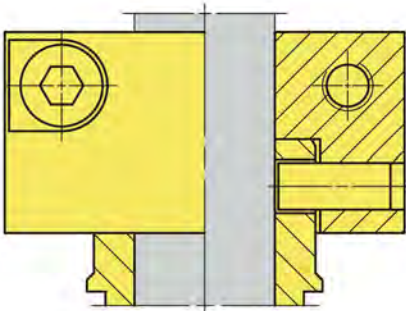
RELY ON EXCELLENCE

## Torque transmissions

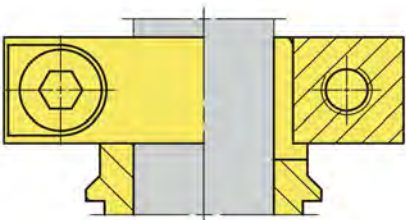
Shrink disk



Clamping ring with pin

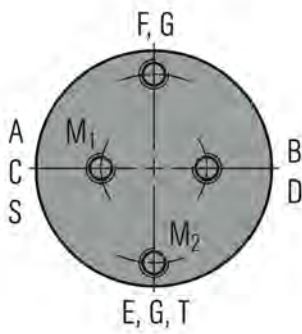


Clamping ring



RELY ON EXCELLENCE

## Installation, details, options



### Supply connections

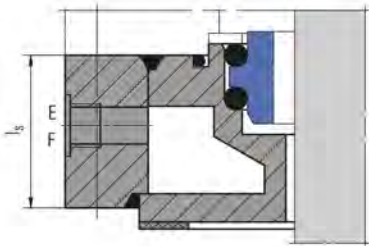
Designation and position acc. to DIN 28138 T3.

- A Supply liquid IN
- B Supply liquid OUT
- C Drainage
- D Leakage drain
- E Cooling IN
- F Cooling OUT
- G Grease
- S Flush
- T Temperature metering

For reasons of standardization, the supply connections of single seals are matched to those of the double seals (in deviation from DIN 28138 T3).

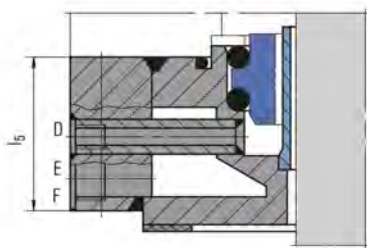
### Cooling flange

Can be used alternatively as a heating flange.



### Leakage drain with cooling flange

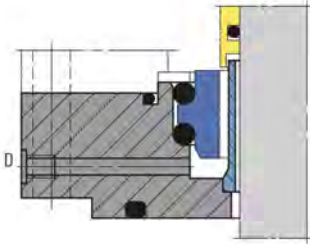
Can be used alternatively as a flush or as a heating flange.



## RELY ON EXCELLENCE

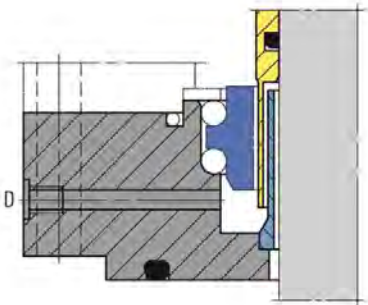
### Leakage drain

Can be used alternatively as a flush.

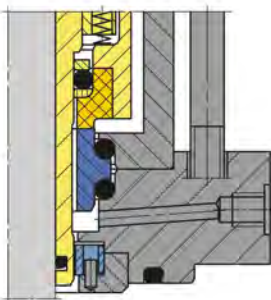


### Polymerization barrier

Can be used alternatively as a leakage drain or a flush.



### Flush





## RELY ON EXCELLENCE

### Product variants

#### M481KL

Variant with integrated floating bearing

#### M451K

Variant for unstepped shafts or customer-specific connection dimensions. The seal is available for any diameter. Further customer-specific adaptations are also possible.

### Dimensions

d <sub>1</sub> <sup>1)</sup>	d <sub>7</sub> <sup>1)</sup>	d	n x d <sub>2</sub>	d <sub>4</sub>	d <sub>0</sub>	k	L <sub>1</sub>	L <sub>2</sub>	L <sub>w</sub> <sup>2)</sup>	h <sub>1</sub>	l <sub>2</sub>	A	M <sub>1</sub>	M <sub>2</sub>	A, B
40	38	175	4x18	110	90	145	87	136	143	15	28	122	M12	M16	G3/8
50	48	240	8x18	176	135	210	89	149	148	17	28	157	M12	M16	G3/8
60	58	240	8x18	176	135	210	93.5	156	158	17	28	168	M12	M16	G3/8
80	78	275	8x22	204	155	240	104.5	189	168	20	34	203	M16	M20	G1/2
100	98	305	8x22	234	190	270	109	190	178	20	34	228	M16	M20	G1/2
125	120	330	8x22	260	215	295	110	205	203	20	40	268	M20	M20	G1/2
140	135	395	12x22	313	250	350	124	222	208	20	40	285	M20	M20	G1/2
160	150	395	12x22	313	265	350	127.5	219.5	213	25	40	297	M20	M20	G1/2
180	170	445	12x22	364	310	400	132.5	230	233	25	45	332	M24	M20	G1/2
200	190	445	12x22	364	310	400	137.5	237.5	243	25	45	352	M24	M20	G1/2
220	210	505	16x22	422	340	460	149.5	249.5	263	25	50	381	M24	M20	G1/2

Dimensions in millimeter

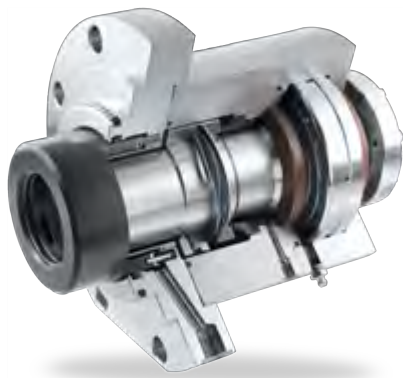
1) Shaft diameters d<sub>1</sub> and d<sub>7</sub> to DIN 28154

2) Shaft step to DIN 28154

RELY ON EXCELLENCE

## MR-D

Mechanical seals | Agitator seals | Liquid-lubricated seals



### Features

- For top, side and bottom entry drives
- Seat at product side rotating
- Unbalanced
- Liquid-lubricated
- Double seal
- Independent of direction of rotation
- Cartridge unit
- With or without bearing available
- Shaft sleeve not in contact with product

### Advantages

- Smooth surface, free of dead spaces
- CIP-/SIP (Cleaning in Place, Sterilization in Place) capable
- Sliding materials FDA conform
- Variant for sterile applications available
- ATEX certification on request

### Operating range

Shaft diameter:  $d_1 = 35 \dots 140$  (500) mm  
(1.38" ... 5.51" (19.68"))  
 Axial offset shaft/housing:  $d_1 = 35 \dots 60$  mm  
(1.38" ... 2.36"): max.  $\pm 1.5$  mm (0.059")  
 $d_1 > 60$  mm (2.36"): max.  $\pm 2.0$  mm (0.079")  
 Radial offset shaft/housing:  
 max.  $\pm 0.3$  mm (0.012")  
 Pressure:  
 $p_1 = \text{vacuum} \dots 14$  (23) bar (203 (334) PSI)  
 $p_3 = \text{max. } 16$  (25) bar (232 (363) PSI)  
 $\Delta p_3 - p_1 = 2 \dots 10$  bar (29 ... 145 PSI),  
 higher  $\Delta p$  on request  
 Temperature:  $t_1 = -20$  °C ...  $+200$  (300) °C  
 (-4 °F ...  $+392$  (572) °F)  
 Sliding velocity:  
 $vg = \text{max. } 10$  (20) m/s (33 (66) ft/s)

For applications beyond this range and for values in brackets, please inquire.

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Materials

Seal faces: Silicon carbide, FDA conform  
 Seat: Carbon graphite (atmosphere side) resp. Silicon carbide (product side), FDA conform  
 Secondary seals and metallic parts acc. to application and customers' requirement.

### Standards and approvals

- FDA

### Notes

Options:

- Cooling resp. heating flange
- Temperature sensor
- Axial expansion joint (shaft movement)
- Wiper ring (shaft movement)
- Metal-free on product side

Please inquire.

### Recommended applications

- Petrochemical industry
- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Mixers
- Dryers
- Mills
- Kneaders
- Reactors
- Pressure filters

### Recommended piping plans

Closed circuit: EagleBurgmann TS system, EagleBurgmann DRU pressure booster,  
 Open circuit: EagleBurgmann SPA / SPN

Product links:

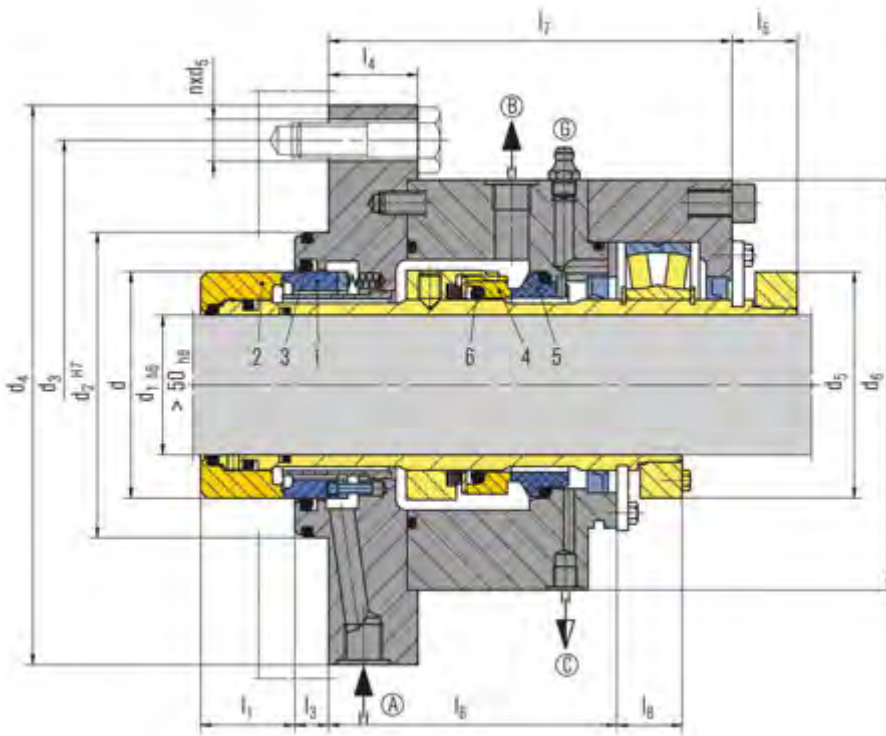
[EagleBurgmann TS1000](#)  
[EagleBurgmann TS2000](#)  
[EagleBurgmann TS3016 \(sterile version\)](#)  
[EagleBurgmann DRU](#)  
[EagleBurgmann SPA](#)

RELY ON EXCELLENCE

[EagleBurgmann SPN manual](#)  
[EagleBurgmann SPN automatic](#)

**Item Description**

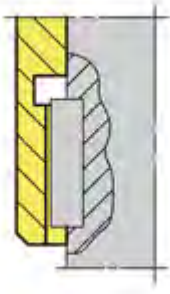
- 1 Seal face, product side
- 2 Seat, product side
- 3, 6 O-Ring, dynamic
- 4 Seal face, atmosphere side
- 5 Seat, atmosphere side



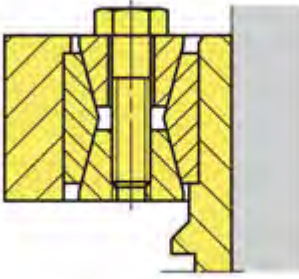
RELY ON EXCELLENCE

## Torque transmissions

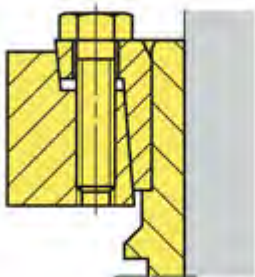
Drive key



Clamping set

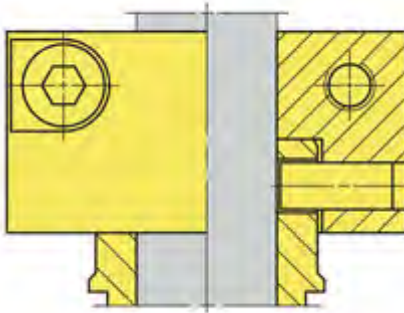


Shrink disc

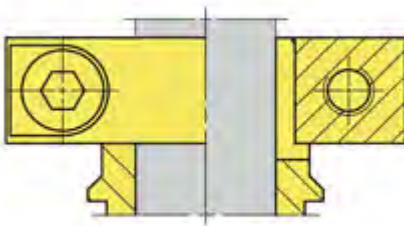


## RELY ON EXCELLENCE

Clamping ring with pin



Clamping ring



## RELY ON EXCELLENCE

### Installation, details, options



#### Supply connections

- A Barrier fluid IN
- B Barrier fluid OUT
- C Drainage
- G Grease

### Dimensions

d <sub>1</sub>	d	l <sub>1</sub>	d <sub>2</sub>	l <sub>3</sub>	d <sub>3</sub>	n x d <sub>5</sub>	d <sub>4</sub>	l <sub>4</sub>	d <sub>5</sub>	d <sub>6</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>
35	68.0	41	105.0	15	148	8 x 13.5	170	35.5	69	118.5	20.5	97.0	141.0	30.5
45	82.7	41	119.5	15	166	8 x 13.5	190	43.0	86	138.0	26.0	103.0	149.5	34.5
50	90.0	41	119.5	15	190	8 x 17.5	220	40.5	90	158.0	28.5	110.0	165.0	28.5
60	100.0	42	134.5	15	200	8 x 17.5	230	41.0	100	168.0	28.0	118.0	173.0	28.0
80	130.0	46	160.5	15	248	8 x 17.5	280	48.0	130	208.0	34.0	133.0	212.0	34.0
100	150.0	46	181.5	15	264	8 x 22.0	300	54.0	150	223.0	33.5	145.0	219.0	33.5
120	172.0	46	209.5	15	293	8 x 22.0	330	52.0	174	253.0	40.0	148.0	232.0	40.0
140	195.0	46	224.5	15	338	12 x 22.0	375	52.0	194	288.0	39.5	160.5	251.5	39.5

Dimensions in millimeter

RELY ON EXCELLENCE

## STD1

Mechanical seals | Agitator seals | Shut-down seals

### Advantages

Can be installed in each position.

### Operating range

Shaft diameter:

$d_3 = 40 \dots 200 \text{ mm (1.57" ... 7.87")}$

Pressure:  $p_1 = 16 \text{ bar (232 PSI)}$

Temperature:  $t = +100 \text{ °C (+212 °F)}$

Elastomer sealing element (Item no. 1) with pneumatic or hydraulic actuation (closing pressure  $p_4 > p_1$ ).

! It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction.

### Notes

This seal can only be used if the product does not harden or congeal during the shut down period or for sterile operation (fermenting vessels). Not available in PTFE.

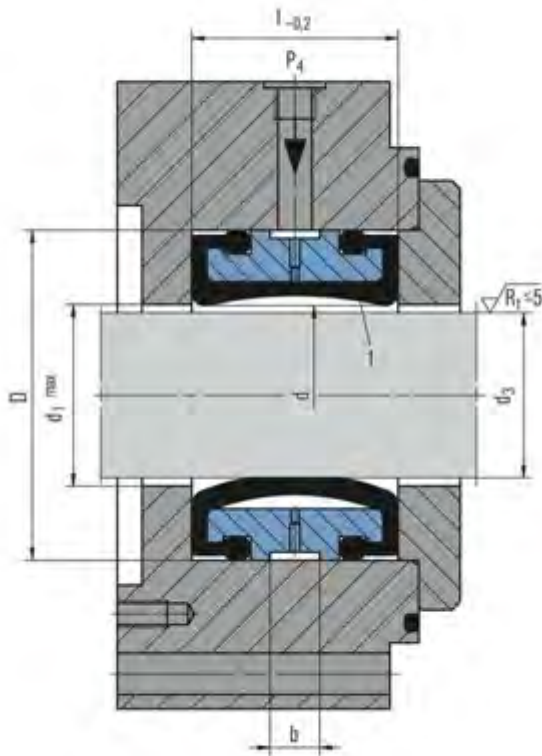
### Recommended applications

- Chemical industry
- Pharmaceutical industry
- Agitators

### Features

If a STD is employed, it is possible to change seals with the vessel loaded and under pressure (shaft must be stationary!). Installation dimensions according to DIN 28138 Part 1 are possible. Material properties have to be taken into account.

RELY ON EXCELLENCE



## Dimensions

$d_3$	$d$	$d$	$d_1$	$l$	$b$
40	76	42.5	42	38.0	8
50	84	52.5	52	38.0	8
60	95	62.5	62	44.5	10
80	118	82.5	82	45.0	10
100	138	102.5	102	45.0	10
125	160	127.5	127	45.0	10
140	180	143.5	143	50.0	12
160	200	163.5	163	50.0	12
180	215	183.5	183	50.0	12
200	240	203.5	203	50.0	12

Dimensions in millimeter



RELY ON EXCELLENCE

## CobaDGS - Zero Emission Solution

Mechanical seals | Compressor seals | Gas-lubricated seals



### Features

The sealing solution for reduction of methane-/ process gas emissions

- Gas-lubricated
- Bi-directional
- Ready-to-fit cartridge unit
- Available for following seal arrangements: single and tandem
- Co-axial primary seal
- Separation seals as CobaSeal, carbon rings or labyrinths optional

### Advantages

- **No methane-/ process gas emissions**
- Supplied with clean nitrogen (no dew point and dirt problems)
- Robust
- Offers higher safety than a double seal
- **Upgrade-possibility of existing single, double and tandem seals**
- No modification of the compressor necessary
- Efficient alternative to hermetically sealed systems
- For compressors with gas- and steam turbines, as well as with electric drive

### CobaDGS eliminates methane emissions.

The CobaDGS reliably prevents any process gas emissions that are technically caused by primary seal leakage during compressor operation. This makes CobaDGS the most climate-friendly sealing solution for high-pressure turbo-compressors. It is recommended as a sustainable sealing solution for modernization of existing compressors and as a first fit for OEM.

### Operating range

Shaft diameter:

$d = 24.5 \dots 360 \text{ mm (0.96" ... 14.17")}$

Pressure (static and dynamic):

$p = \text{from vacuum up to } 160 \text{ bar (2,321 PSI)}$

Design temperature:

$t = -46 \text{ °C ... } +230 \text{ °C}$

$(-51 \text{ °F ... } +446 \text{ °F})$

Sliding velocity:

$vg = \text{up to } 140 \text{ m/s (459 ft/s)}$

Project specific special designs possible.

### Materials

Stationary seal face: Silicon carbide with DLC-coating, DiamondFace-coating optional

Rotating seal face (Seat): Silicon carbide with DLC-coating, DiamondFace-coating optional

Secondary seals: FKM or other elastomers, depending on product gas composition

Metal parts: 1.4006 or other stainless steels

Other materials on request.

Dimensions on request.

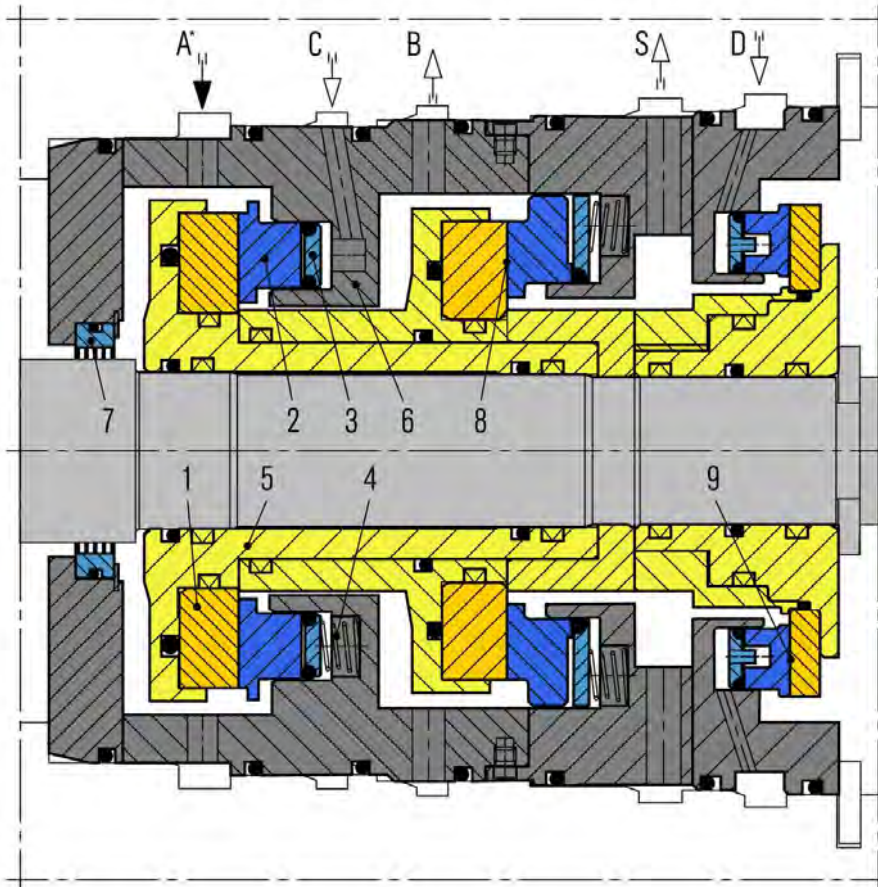
### Standards and approvals

- NACE
- Compliant to TA Luft (German Clean Air Act)(tandem seal)

### Recommended applications

- Pipelines
- Gas storages
- Oil and gas industry
- Chemical industry
- Power plants
- Centrifugal compressors
- Turbo expander
- Turbines
- Pumps
- Blower
- LNG
- CCUS
- Hydrogen
- Alternative fuels production
- Power generation

RELY ON EXCELLENCE



**Item Description**

- 1 (Seat) Rotating seal face
- 2 (Seal face) Stationary seal face
- 3 Thrust ring
- 4 Spring
- 5 Shaft sleeve
- 6 Housing
- 7 Labyrinth
- 8 DGS as secondary seal
- 9 CobaSeal as separation seal
- 10 Intermediate labyrinth

E\* Buffer gas supply - optional

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

## RELY ON EXCELLENCE

### Product variants



#### Optionally available

##### High pressure nitrogen generator

On-site generation of nitrogen.  
Ensures continuous, uninterrupted nitrogen supply  
Solves the logistics problem, especially for sites in remote, hard-to-reach areas.  
No more hassle transporting the nitrogen.

Nitrogen generation is based on pressure swing adsorption. Storage at 330 bar – for intermittent generation/compression and back-up supply – then

reduction to the required pressure.

The complete nitrogen production and supply system comes in a container which should be installed out of ATEX area.

Required power supply: Heavy current, 400V, 50Hz/60Hz, 3 Ph

RELY ON EXCELLENCE

## DGS

Mechanical seals | Compressor seals | Gas-lubricated seals



### Features

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

### 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:  
 $ds_1 = 29 \dots 410 \text{ mm} (1.14" \dots 16.14")$   
 Pressure:  
 $p = 0 \dots 160 \text{ bar} (2,320 \text{ PSI})$   
 Design temperature:  
 $t = -46 \text{ °C} \dots +230 \text{ °C}$   
 $(-51 \text{ °F} \dots +446 \text{ °F})$   
 Sliding velocity:  
 $vg = \text{up to } 227 \text{ m/s} (744 \text{ ft/s})$

### Materials

Seal face: Silicon carbide with DLC coating,  
 Carbon graphite  
 Seat: Silicon carbide with DLC coating  
 Secondary seals: FKM  
 Metal parts: 1.4006 or other stainless steels

Other materials on request.

Available also with EagleBurgmann  
 DiamondFace technology.

### Standards and approvals

- NACE
- API 617
- API 692

### Notes

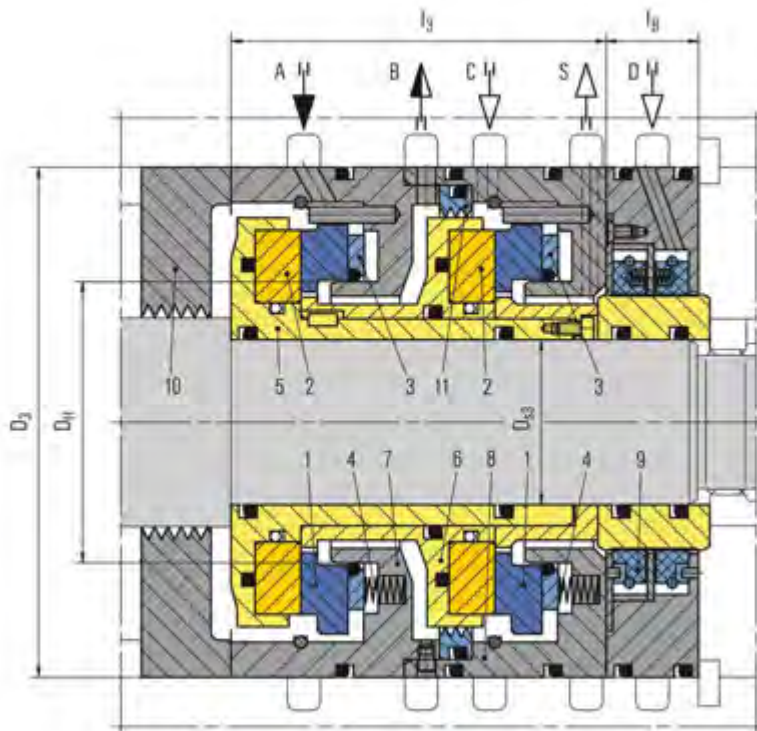
Compressor seals of the DGS series are based on a common technology and technical features, for instance O-Rings as secondary sealing elements. The different product variants are tailored to particular fields of application. The advantage over other products on the market is hidden in the detail. For example, the torque is transmitted to the rotating seat by friction forces only. And thus no holes and resulting weakening of the material are needed.

Dimensions on request.

### Recommended applications

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

RELY ON EXCELLENCE



- Blowers

**DGS 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**

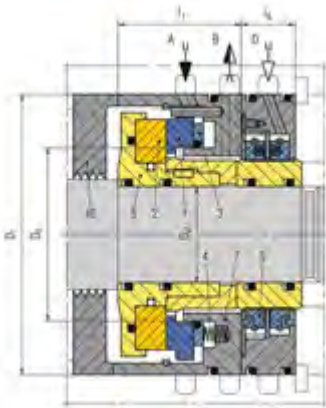
- 1 Seal face, stationary
- 2 Seat, rotating
- 3 Thrust ring
- 4 Spring
- 5 Shaft sleeve and seat retainer
- 6 Intermediate sleeve
- 7,8 Housing (size matched to installation space)
- 9 Separation seal (CSR)
- 10 Labyrinth
- 11 Intermediate labyrinth

Product links separation seals:

- [EagleBurgmann CSE](#)
- [EagleBurgmann CSR](#)
- [EagleBurgmann CobraSeal](#)

## RELY ON EXCELLENCE

### Installation, details, options



#### DGS 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

#### DGS Double seal

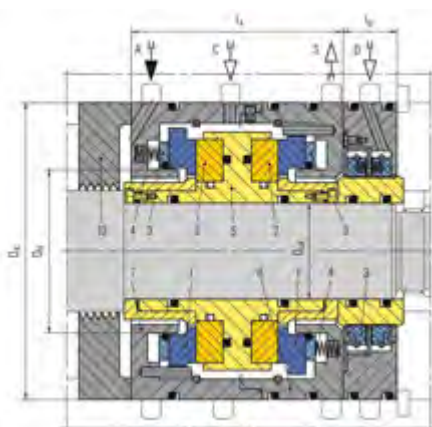
Application: where product leakage to the atmosphere/flare is unacceptable or for low pressure applications. Seal gas leakage into the product needs to be permitted (seal gas pressure  $p_3 > p_1$ ). This is used when a neutral seal gas is available at the appropriate pressure. Typical applications can 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

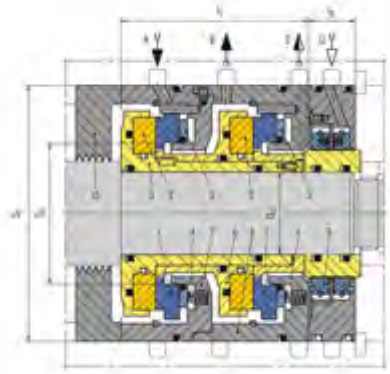
S Vent

D Separation gas supply





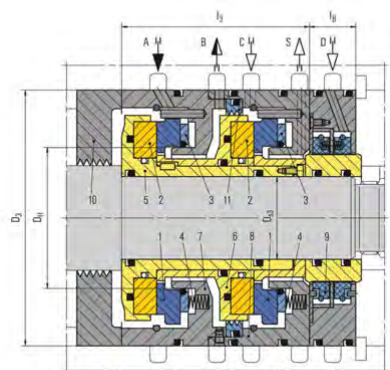
## RELY ON EXCELLENCE



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

### DGS Tandem seal

Application: where no N<sub>2</sub> 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.



### DGS Tandem seal with intermediate labyrinth

Application: where product leakage to the atmosphere is unacceptable, e.g. H<sub>2</sub>, 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

## RELY ON EXCELLENCE

### Product variants



#### DGS25

The DGS25 gas seal series was developed for use in high-speed geared turbo compressors. Due to the special lightweight construction of the core parts and the extremely short working length design, the DGS25 covers the full spectrum of market requirements: Operation at extremely low pressures, robustness to machine vibrations and low impeller overhang. Dangerous stimulation of the core parts by omnipresent machine vibrations are prevented by their low mass or inertia. In addition, the overhang of the impeller from the bearing can be greatly reduced, thus decisively improving rotor dynamics. This enables mechanical run tests without pressure up to 227 m/s seal circumferential speed. No complex pressurization is necessary, open loop tests are child's play. In

addition to the use in geared turbo compressors, the DGS25 can also be used in very short installation spaces. This is particularly often the case when compressors are upgraded from oil to gas seals to reduce emissions and operating costs and increase safety and availability.

#### Operating range

##### Shaft diameter:

$d = 40 \dots 140 \text{ mm} (1,57'' \dots 5,51'')$

##### Pressure:

$p = \text{up to } 50 \text{ bar} (\dots 725 \text{ PSI})$

##### Design temperature:

$t = -46 \text{ }^\circ\text{C} \dots +230 \text{ }^\circ\text{C}$

$(-51 \text{ }^\circ\text{F} \dots +446 \text{ }^\circ\text{F})$

Sliding velocity:  $v_g = \text{up to } 227 \text{ m/s} (744 \text{ ft/s})$

Project specific special designs possible

#### Materials

Stationary seal face: Silicon carbide with DLC-coating, DiamondFace-coating optional

Rotating seal face (Seat): Silicon carbide with DLC-coating, DiamondFace-coating optional

Secondary seals: FKM or other elastomers, depending on product gas composition

Metal parts: 1.4006 or other stainless steels

#### Drawing items

1 Shortened stationary seal face

2 Shortened rotating seal face (seat)

3 Thick dynamic O-ring

11K Shortened installation space

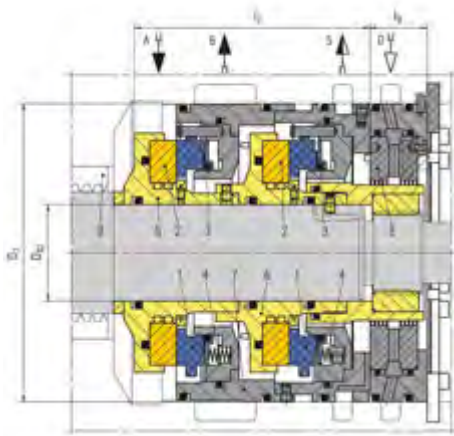
A Seal gas supply

B Vent

C Separation gas supply



## RELY ON EXCELLENCE



### DGS32

Due to the cost effective design, simple components and a hard/soft sliding material combination the DGS32 represents a reliable and economical solution for applications with partial contact of seal faces. This include, for example, slow-roll and turning operation (steam turbine driven compressors) or long and very frequent start/stop cycles.

#### Operating range

Shaft diameter:

$ds_1 = 30 \dots 400 \text{ mm} (1.18 \dots 15.75 \text{")}$

Pressure:  $p = 0 \dots 120 \text{ bar} (0 \dots 1,740 \text{ PSI})$

Design temperature:

$t = -46 \text{ °C} \dots +230 \text{ °C}$

$(-51 \text{ °F} \dots +446 \text{ °F})$

Sliding velocity:

$vg = 0 \dots 140 \text{ m/s} (0 \dots 295 \text{ ft/s})$

#### Materials

Seal face: Carbon graphite

Seat: Silicon carbide

Secondary seals: FKM or other elastomers depending on product gas composition

Metal parts: 1.4006 or other stainless steels

### DGS20

Seals of the DGS20 series are the standard for medium pressures up to 120 bar (1,740 PSI). They have proven their suitability in thousands of applications worldwide. The seals are very rugged and are based on a mature design concept.

#### Operating range

Shaft diameter:

$ds_1 = 40 \dots 280 \text{ mm} (1.57 \dots 11.02 \text{")}$

Pressure:  $p = 20 \dots 120 \text{ bar} (290 \dots 1,740 \text{ PSI})$

Design temperature:

$t = -46 \text{ °C} \dots +230 \text{ °C}$

$(-51 \text{ °F} \dots +446 \text{ °F})$

Sliding velocity:

$vg = \text{up to } 227 \text{ m/s} (744 \text{ ft/s})$

#### Materials

Seal face: Silicon carbide with DLC coating

Seat: Silicon carbide with DLC coating

Secondary seals: FKM or other elastomers depending on product gas composition

Metal parts: 1.4006 or other stainless steels

## RELY ON EXCELLENCE

### DGS21

Seals of the DGS21 series offer the lowest leakages of the elastomer-based DGS platform. They are therefore suitable for applications with high demands on low leakage. As some parts of the high-pressure PDGS series are used in the DGS21 series, the seal can be applied up to a pressure of 160 bar (2,320 PSI).

Operating range

Shaft diameter:

ds1 = 68 ... 280 mm (2.68" ... 11.02")

Pressure:

p = 50 ... 160 bar (725 ... 2,320 PSI)

Design temperature:

t = -46 °C ... +230 °C

(-51 °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: FKM or other elastomers depending on product gas composition

Metal parts: 1.4006 or other stainless steels

RELY ON EXCELLENCE

## MDGS

Mechanical seals | Compressor seals | Gas-lubricated seals



### Features

- Gas-lubricated
- Bi-directional
- Compact, radial design
- Ready-to-fit cartridge unit, also available as a component seal
- Single, double, tandem seal and tandem with intermediate labyrinth available

### Advantages

- Wear-free and contact-free operation
- Self-cleaning 3D gas grooves
- High gas film stiffness
- Fits into small spaces (e.g. process gas screw compressors)
- Available in various materials for optimized chemical resistance
- Proven, reliable and economical solution

### Operating range

Shaft diameter:  
 $d_1 = 48 \dots 200 \text{ mm} (1.89" \dots 7.87")$   
 Pressure:  
 $p = 0 \dots 50 \text{ bar} (0 \dots 725 \text{ PSI})$   
 Temperature:  
 $t = -20 \text{ °C} \dots +200 \text{ °C}$   
 $(-4 \text{ °F} \dots +392 \text{ °F})$   
 Sliding velocity:  
 $vg = 0.6 \dots 200 \text{ m/s} (2 \dots 656 \text{ ft/s})$

### Materials

Seal face: Carbon graphite  
 Seat: Ductile stainless steel with DM-TiN coating  
 Secondary seals: FKM  
 Metal parts: 1.4006 or other stainless steels.

### Standards and approvals

- NACE
- API 692

### Notes

EagleBurgmann MDGS are rugged seals for screw compressors. They have a rotating ring made from ductile material with a high-performance coating. Rotating rings are "in-situ shrouded", making them practically indestructible. The coating offers excellent wear resistance in the low speed range (e.g. coast-down operation) in which contact between the seal faces is unavoidable.

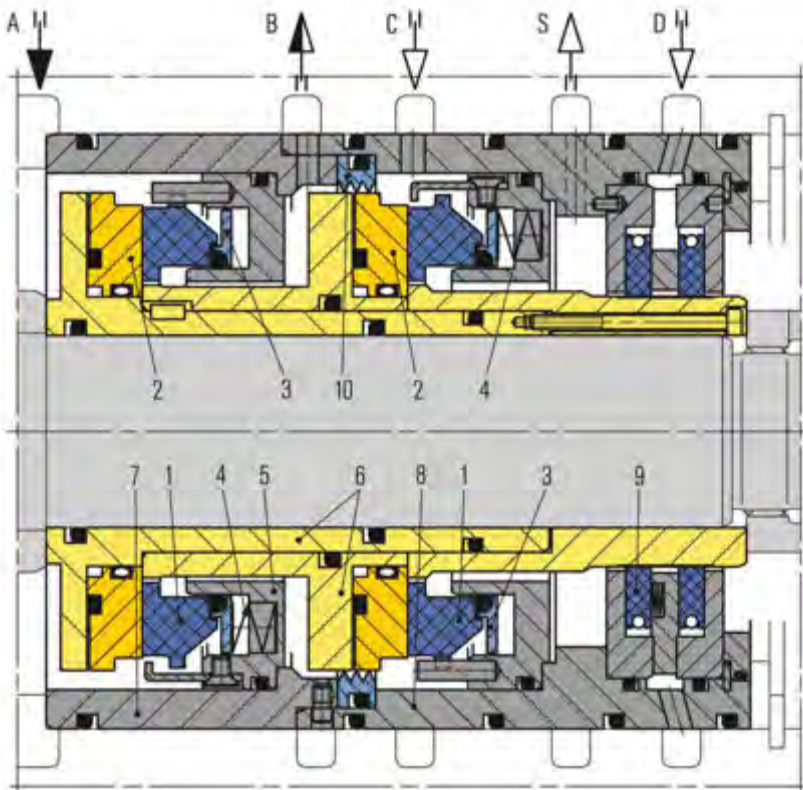
The stationary, spring-mounted system is optionally available as a sub-cartridge in combination with a rotating seat made from ductile material. A secondary sealing function using O-rings allows it to be applied as a component seal.

Dimensions on request.

### Recommended applications

- Oil and gas industry
- Refining technology
- Petrochemical industry
- Hydrocarbon gas
- Nitrogen
- Air
- Centrifugal compressors
- Dry process gas screw compressors
- Blowers

RELY ON EXCELLENCE



## MDGS 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

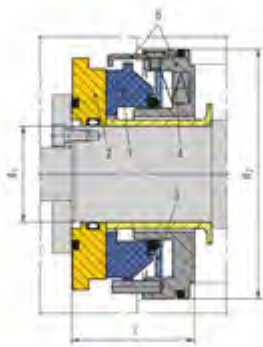
- 1 Seal face, stationary
- 2 Seat, rotating
- 3 Thrust ring
- 4 Spring
- 5 Adapter
- 6 Shaft sleeve, intermediate sleeve
- 7, 8 Housing (size matched to installation space)
- 9 Carbon ring separation seal (CSE)
- 10 Intermediate labyrinth

Product links separation seals:

- [EagleBurgmann CSE](#)
- [EagleBurgmann CSR](#)
- [EagleBurgmann CobraSeal](#)

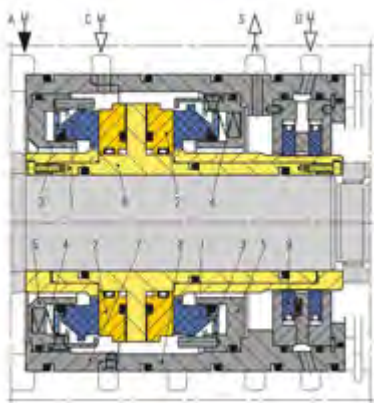
## RELY ON EXCELLENCE

### Installation, details, options



#### MDGS Single seal

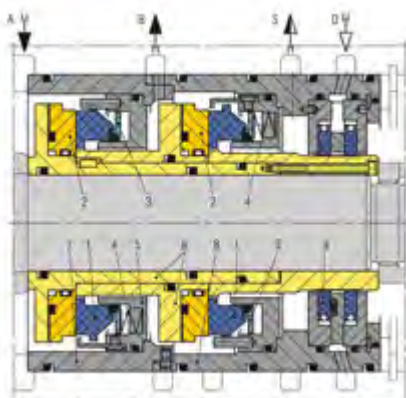
Application: where leakage of the product into the atmosphere is not harmful, e.g. from air or nitrogen compressors or the axial cavity does not allow a tandem seal (e.g. geared compressors). This version allows process gas leakage to the corresponding flare / vent connection. Primary seal leakage is 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.



#### MDGS 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  $p_3 > p_1$ ). 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

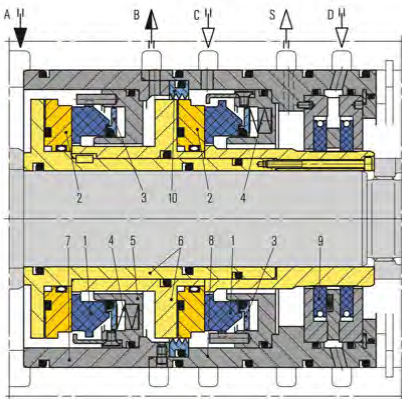


## RELY ON EXCELLENCE

### MDGS Tandem seal

Application: where no N<sub>2</sub> 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



### MDGS Tandem seal with intermediate labyrinth

Application: where product leakage to the atmosphere is unacceptable, e.g. H<sub>2</sub>, 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

RELY ON EXCELLENCE

## NF94

Mechanical seals | Compressor seals | Gas-lubricated seals



### Features

- Single seal with double seal function
- Non-contacting from static to high speed condition
- Balanced
- Bi-directional
- Stationary multiple springs

### Advantages

- Wear-free and contact-free operation
- Prevents the ingress of foreign particles

### Operating range

Pressure:  $p = 5 \text{ bar (73 PSI)}$

Temperature:

$t = -20 \text{ °C ... } +200 \text{ °C (-4 °F ... } +392 \text{ °F)}$

Sliding velocity:  $v_g = 60 \text{ m/s (197 ft/s)}$

### Materials

Seal face: High-density carbon graphite

Seat: Ductile stainless steel with TiN-coating or silicon carbide

Secondary seals: FKM

Metal parts: CrNiMo steel

### Notes

Seals from the NF941 series are used in screw compressors for special applications. They are hybrid seals that seal both aerostatically and aerodynamically. The separation gas is routed through holes in the stationary seal ring directly between the seal faces, while the lift-off is caused by specially designed gas grooves. API 692 compliant.

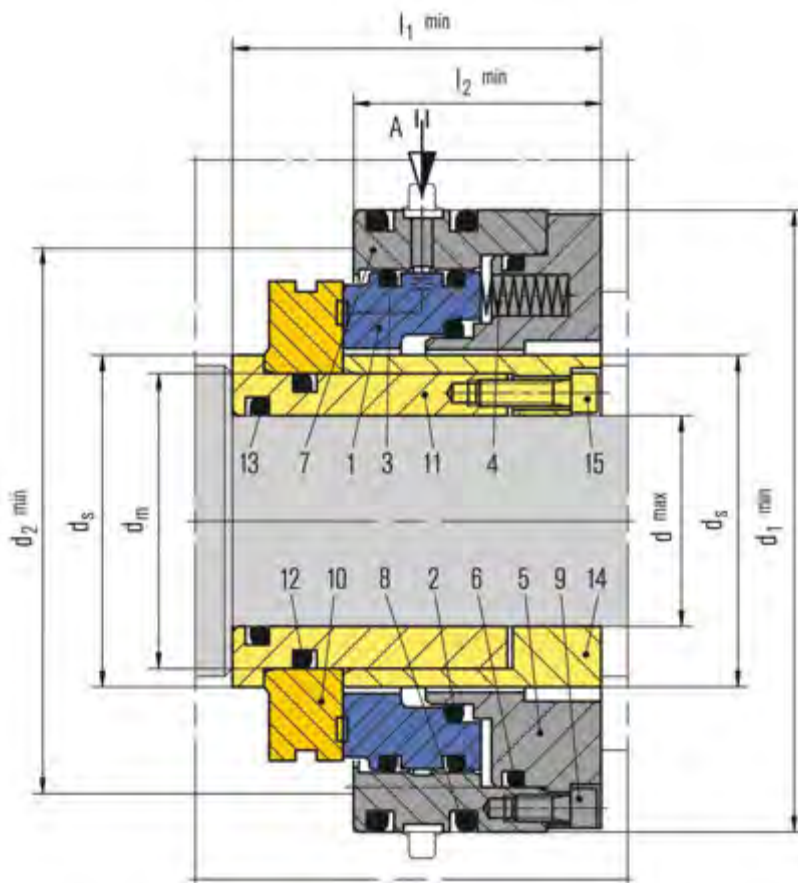
Dimensions on request.

### Recommended applications

- Process industry
- Single wafer cleaning systems
- Dry screw compressors
- Blowers
- Agitators



## RELY ON EXCELLENCE



Item	Description
1	Seal face
2, 3, 6, 8, 12, 13	O-Ring
4	Spring
5	Adapter
7	Housing
9, 15	HSH cap screw
10	Seat
11	Shaft sleeve
14	Clamp sleeve
A	Seal gas supply



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

### 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:  
 $D_{s1} = 29 \dots 390 \text{ mm (1.14" ... 15.35")}$   
 Pressure:  
 $p = \text{up to } 650 \text{ bar (7.977 PSI)}$   
 Temperature:  
 $t = -200 \text{ }^\circ\text{C ... } +230 \text{ }^\circ\text{C}$   
 $(-328 \text{ }^\circ\text{F ... } +446 \text{ }^\circ\text{F})$   
 Sliding velocity:  
 $vg = \text{up to } 227 \text{ m/s (744 ft/s)}$

### 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
- API 692

### Notes

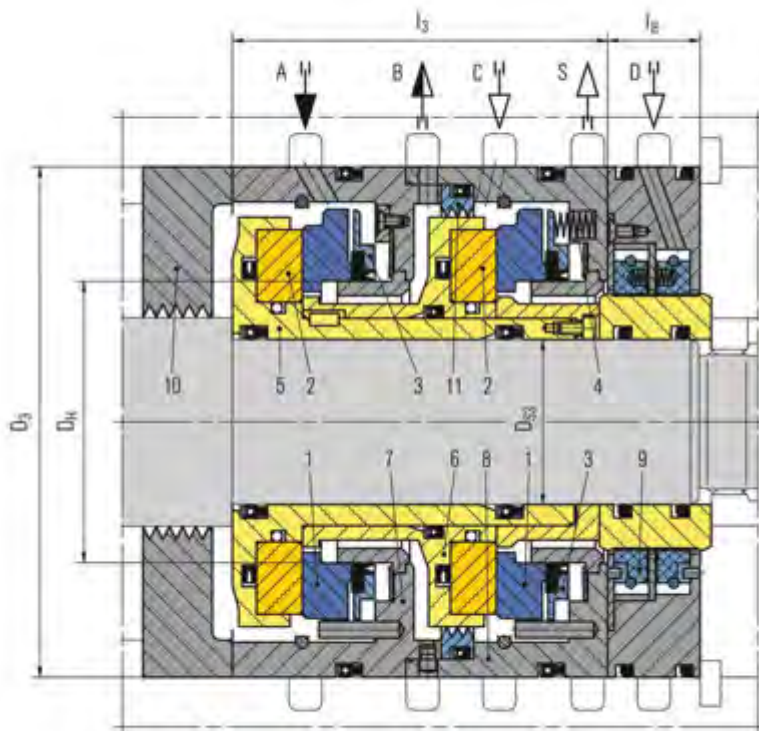
A well-established compressor seal for high pressure and both low and high temperature applications. Innovative design features allow it to cope with even the highest pressures without problems. The application of U-cups and special dynamic sealing elements opens up a wide range of uses for this versatile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

Dimensions on request.

### Recommended applications

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

RELY ON EXCELLENCE



## 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

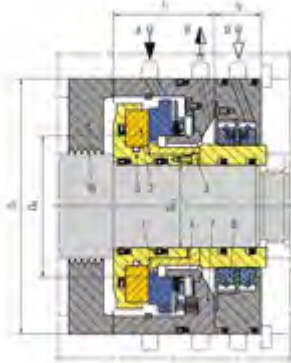
- 1 Seal face, stationary
- 2 Seat, rotating
- 3 Thrust ring
- 4 Spring
- 5 Shaft sleeve and seat retainer
- 6 Intermediate sleeve
- 7,8 Housing (size matched to installation space)
- 9 Separation seal (CSR)
- 10 Labyrinth
- 11 Intermediate labyrinth

Product links separation seals:

- [EagleBurgmann CSE](#)
- [EagleBurgmann CSR](#)
- [EagleBurgmann CobraSeal](#)

## RELY ON EXCELLENCE

### Installation, details, options



#### 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

#### PDGS Double seal

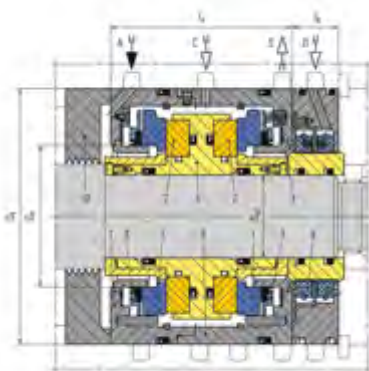
Application: where product leakage to the atmosphere/flare is unacceptable or for low pressure applications. Seal gas leakage into the product needs to be permitted (seal gas pressure  $p_3 > p_1$ ). This is used when a neutral seal gas is available at the appropriate pressure. Typical applications can 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

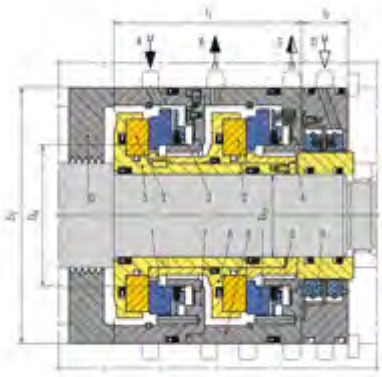
C Seal gas supply

S Vent

D Separation gas supply



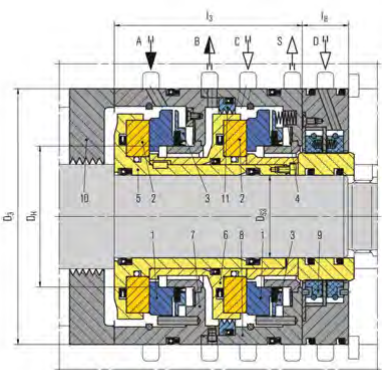
## RELY ON EXCELLENCE



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

### PDGS Tandem seal

Application: where no N<sub>2</sub> 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.

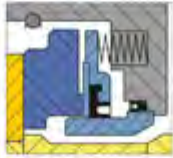


### PDGS Tandem seal with intermediate labyrinth

Application: where product leakage to the atmosphere is unacceptable, e.g. H<sub>2</sub>, 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

## RELY ON EXCELLENCE



### 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.

## 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:

ds1 = 40 ... 390 mm (1,57" ... 15,35")

Druck: p = 0 ... 220 bar (725 ... 3.191 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:

ds1 = 40 ... 390 mm (1,57" ... 15,35")

Pressure: 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:

ds1 = 100 ... 190 mm (3,94" ... 7,48")

Pressure: 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)

#### 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

RELY ON EXCELLENCE

## RigiSeal

Mechanical seals | Compressor seals | Gas-lubricated seals



MAN Energy Solutions 

### Features

Developed in cooperation with MAN Energy Solutions, based on the extremely robust EagleBurgmann RoTechSeal

- Modular design
- As upgrade of MAN centrifugal compressors or for new projects
- Available as single, double, or tandem seal
- Gas-lubricated
- Uni- or bi-directional
- Ready-to-install unit
- Optionally with separation seal such as labyrinths, carbon rings or EagleBurgmann CobraSeal

### Advantages

The RigiSeal is the efficient sealing solution when the supply gas is particularly contaminated (e.g., by particles/liquids). Due to the modular design principle, the seal can be adapted on a case-by-case basis for existing machines as well as for new projects. For this purpose, the respective seal features are defined according to the prevailing operating conditions and/or the result of the failure analysis.

### RotechSeal Features

- "Smart Labyrinth"
- DiamondFace coating
- Self-cleaning 3D gas grooves
- Soft torque transmission
- Debris resistant dynamic sealing element
- Leakage optimization
- CobraSeal (co-axial separation seal)

### Additional RigiSeal Features

- Improved seal gas extraction (Subsea Compressor Technology)
- Seal washing system
- Simplified support system
- Labyrinth as back-up seal (PTFE labyrinth)

### Operating range

Shaft diameter:  
d = up to 410 mm (16.14")  
Pressure:  
p = up to 450 bar (6,525 PSI) and more  
Design-temperature:  
t = -200 °C ... +230 °C (-328 °F ... +446 °F)  
Sliding velocity:  
vg = up to 227 m/s (744 ft/s)

Project specific special designs possible

### Materials

Seal face: Silicon carbide with DLC- or DiamondFace-coating  
Seat: Silicon carbide with DLC- or DiamondFace-coating  
Secondary seals: PTFE or FKM  
Metal parts: 1.4006, 1.4313-QT650, 1.4418, 1.4542, Inconel® or other stainless steels

Other materials on request

### Standards and approvals

- NACE
- API 617
- API 692

### Notes

One of the biggest challenges in operating centrifugal compressors with dry gas seals is contamination from the supply gas. Liquids or particles in the supply gas are the main causes of shortened seal life. Thanks to special features, the RigiSeal extends the lifetime of a normal seal in a particularly wet and dirty environment or in very difficult applications.

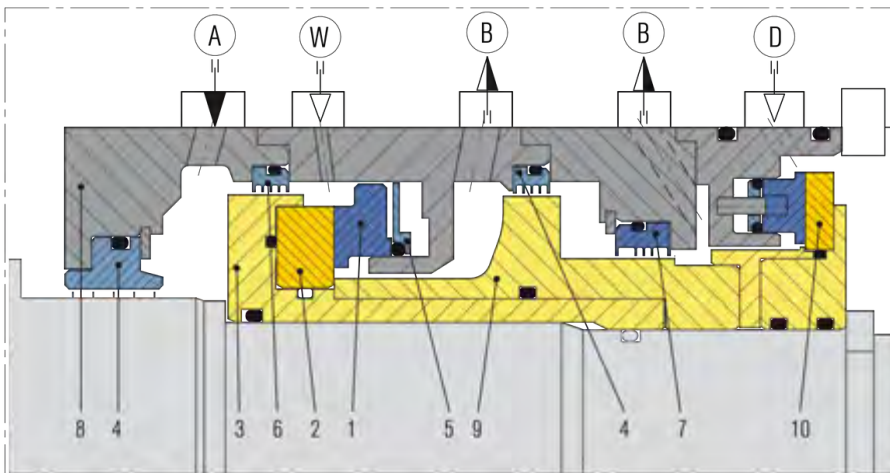
Dimensions on request.

### Recommended applications

- Oil and gas industry
- Refining technology
- Petrochemical industry
- Applications with upstream gas treatment (glycol)
- Hydrocarbon gas
- Ammonia
- Nitrogen
- Air



## RELY ON EXCELLENCE



### Item Description

- |    |  |
|----|--|
| 1  | Seal face, stationary   Option: Primary seal face with DiamondFace coating |
| 2  | Seat, rotating   Option: Primary seat with DiamondFace coating             |
| 3  | Shaft sleeve   |
| 4  | Labyrinth  |
| 5  | Trust ring   |
| 6  | Option: "Smart labyrinth"  |
| 7  | Option: Labyrinth as back-up seal (PTFE labyrinth)                         |
| 8  | Housing (size matched to installation space)                               |
| 9  | Adapter Sleeve   |
| 10 | Separation seal   Option: CobraSeal  |

- |   |  |
|---|--|
| A | Seal gas supply   Option: Improved seal gas extraction |
| W | Seal washing system                                    |
| B | Vent   |
| D | Separation gas supply                                  |

### Dimensions

Dimensions on request.

RELY ON EXCELLENCE

## RoTechSeal

Mechanical seals | Compressor seals | Gas-lubricated seals



### Features

The efficient sealing solution with advanced robustness against seal gas supply contamination (particles/liquids)

- Gas-lubricated
- Uni- or bi-directional
- Ready-to-fit cartridge unit
- Available for all seal arrangements: single, double, tandem
- Based on proven DGS or PDGS design
- Separation seals as labyrinths, carbon rings or CobaSeal optional

### Advantages

The reliable DGS or PDGS is made even more robust by design measures and features:

- "Smart Labyrinth"
- DiamondFace-coating
- Self-cleaning 3D gas grooves
- Soft torque transmission
- Debris resistant dynamic sealing element
- Leakage optimization

### Operating range

Shaft diameter:

d = up to 410 mm (16.14")

Pressure:

p = up to 450 bar (6,525 PSI) and more

Design-temperature:

t = -200 °C ... +230 °C (-328 °F ... +446 °F)

Sliding velocity:

vg = up to 227 m/s (744 ft/s)

Project specific special designs possible

### Materials

Seal face: Silicon carbide with DLC- or DiamondFace-coating

Seat: Silicon carbide with DLC- or DiamondFace-coating

Secondary seals: PTFE or FKM

Metal parts: 1.4006, 1.4313-QT650, 1.4418, 1.4542, Inconel® or other stainless steels

Other materials on request

### Standards and approvals

- NACE
- API 617
- API 692

### Notes

One of the biggest challenges in operating centrifugal compressors with dry gas seals is seal gas supply contamination. Liquids or particles in the supply gas are the main causes of shortened seal life. With special features, the RoTechSeal increases the lifetime of a normal seal in a wet and dirty environment. The robust seal features will be defined case-by-case based on the operating conditions and failure analysis.

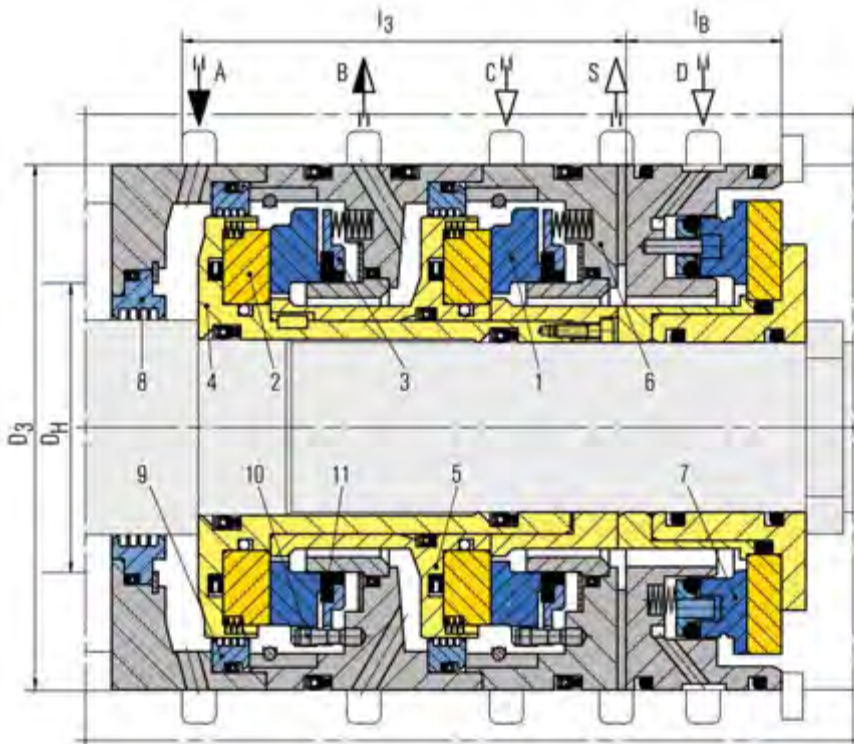
Dimensions on request.

### Recommended applications

- Oil and gas industry
- Refining technology
- Petrochemical industry
- Applications with upstream gas treatment (glycol)
- Hydrocarbon gas
- Ammonia
- Nitrogen
- All types of compressors



RELY ON EXCELLENCE



## RoTechSeal tandem seal

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

### Pos. Benennung

- 1 Seal face, stationary  
Feature option: primary seal face with DiamondFace-coating
- 2 Seat, rotating  
Feature option: primary seat with DiamondFace-coating
- 3 Thrust ring
- 4 Shaft sleeve
- 5 Adapter sleeve
- 6 Housing (size matched to installation space)
- 7 Separation seal (CobaSeal)
- 8 Labyrinth
- 9 Feature option: "smart labyrinth"
- 10 Feature option: "soft torque"
- 11 Feature option: debris resistant dynamic sealing element

### Dimensions

Dimensions on request.

RELY ON EXCELLENCE

## TDGS

Mechanical seals | Compressor seals | Gas-lubricated seals



### Features

- Gas-lubricated
- Uni-directional or bi-directional
- Elastomer-free, no dynamic O-ring
- Ready-to-fit cartridge unit
- Single seal available

### Advantages

- Wear-free and contact-free operation
- Self-cleaning 3D gas grooves
- High gas film stiffness
- Extremely low steam leakage
- Bearing oil not contaminated with condensed steam

### Operating range

Shaft diameter:  
 $ds = 40 \dots 140 \text{ mm} (1.57'' \dots 5.51'')$   
Pressure:  
 $p = 0 \dots 10 \text{ bar} (0 \dots 145 \text{ PSI})$   
Temperature:  
 $t = -50 \text{ °C} \dots +450 \text{ °C}$   
 $(-58 \text{ °F} \dots +842 \text{ °F})$   
Sliding velocity:  
 $vg = 130 \text{ m/s} (427 \text{ ft/s})$

### Materials

Seal face: Carbon graphite  
Seat: Silicon carbide

### Standards and approvals

- NACE

### Notes

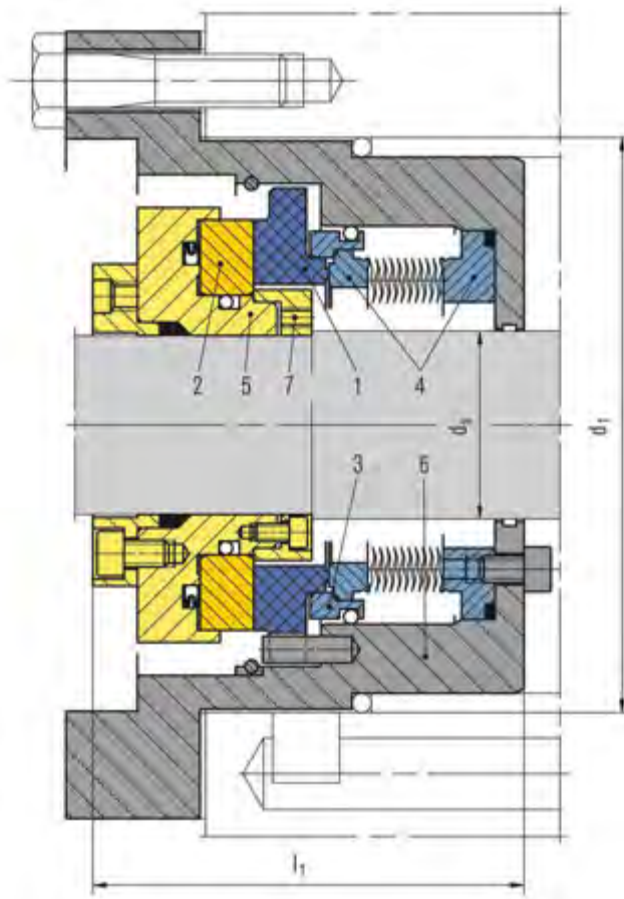
The gas seal for single-stage steam turbines. A metal bellows allows it to work reliably even at high temperatures. Any steam leakage that does occur will be just a fraction of the leakage from carbon ring seals. This both saves energy and improves the performance of the turbine. The bearing oil is no longer contaminated by condensed steam, extending the bearing life and reducing maintenance costs accordingly.

Dimensions on request.

### Recommended applications

- Refining technology
- Petrochemical industry
- Power plant technology
- Single stage steam turbines

RELY ON EXCELLENCE

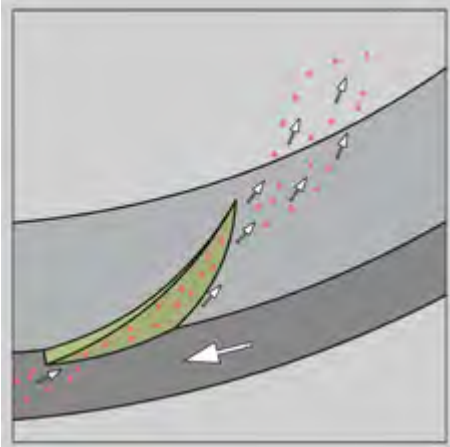


**Item Description**

- 1 Seal face, stationary
- 2 Seat, rotating
- 3 Sleeve
- 4 Metal bellows cartridge unit
- 5 Shaft sleeve
- 6 Housing (size matched to installation space)
- 7 Clamping ring

## RELY ON EXCELLENCE

### Installation, details, options



One outstanding feature of the EagleBurgmann gas grooves is its inclined bottom (picture: V-grooves, unidirectional). The lack of sharp baffle edges at the groove outlet allows dirt particles to be pulled through the sealing gap, reliably avoiding any clogging and guaranteeing safe operation. If deposits do build up in the sealing gap while the turbine is idle, they are expelled once the machine is restarted.

RELY ON EXCELLENCE

## CobaSeal

Mechanical seals | Compressor seals | Separation seals



### Features

- Gas-lubricated
- Bi-directional
- Ready-to-fit cartridge unit
- Self cleaning 3D gas grooves
- Aerostatic and aerodynamic lift-off

### Advantages

- Extremely low leakage
- Double arranged (co-axial) dry gas seal with just one pair of seal faces
- Insensitive to oil contamination due to its special design
- Wear-free, non-contacting operation in all conditions
- Insensitive to radial vibrations due to axial sealing gap
- Slow-roll or turning operation capable (static lift-off)
- No limits regarding dew point of separation gas (silicon carbide instead of carbon)
- Lower N<sub>2</sub> consumption than any other system
- N<sub>2</sub> can be switched off during standstill – the gap will close and still provide the best oil sealing performance
- Best in class oil sealing by extremely small sealing gap and sling effect of rotating ring

### Operating range

Shaft diameter:  
27.2 ... 323.2 mm (1.07" ... 12.72")  
Design pressure (mechanical integrity):  
p = 0 ... 70 bar (0 ... 1000 PSI)  
Normal operating pressure:  
p = 2.7 bar (39.16 PSI)  
Temperature:  
t = -20 °C ... +200 °C (-4 °F ... +392 °F)  
Sliding velocity:  
vg = 0 ... 150 m/s (0 ... 492 ft/s)  
Dew point: No limitation

### Materials

Seal face: Silicon carbide\*  
Seat: Ductile stainless steel\*  
Shaft sleeve: Stainless steel TC-coated  
Secondary seals: FKM  
Metal parts: 1.4006

\* With special EagleBurgmann high performance iDLC (in situ Diamond-Like-Carbon) coating

### Standards and approvals

- NACE
- API 692

### Notes

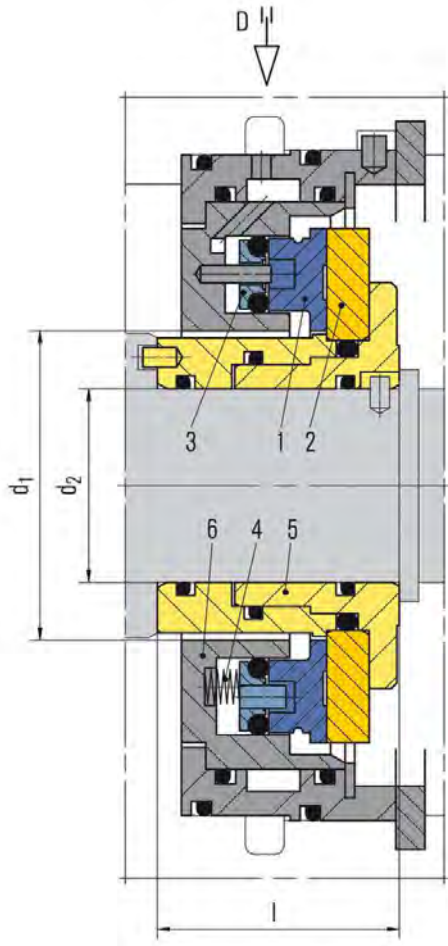
Since it was launched on the market, this innovative sealing solution has proven its worth worldwide in both first fit and retrofit applications. It consists of a rotating seat made of ductile material and a stationary, spring-loaded seal face. The separation gas is routed through axial holes in the stationary seal ring into the middle of the sliding face. It is then divided in the sealing gap into two leakage flows which are routed to the inner and outer diameters of the seal face.

Dimensions on request.

### Recommended applications

- Oil and gas industry
- Refining technology
- Petrochemical industry
- LNG
- CCUS
- Hydrogen
- Alternative fuels production
- Power generation
- Nitrogen
- Air
- Centrifugal compressors

RELY ON EXCELLENCE



- Blowers

**Item Description**

- 1 Seal face, stationary
- 2 Seat, rotating
- 3 Thrust ring
- 4 Spring
- 5 Shaft sleeve and seat retainer
- 6 Housing (size matched to installation space)
- D Separation gas

RELY ON EXCELLENCE

## CSE

Mechanical seals | Compressor seals | Separation seals



### Features

- Non-contacting bushing seal
- Gas-lubricated
- Bi-directional
- Ready-to-fit cartridge unit
- Equipped with Espey carbon rings type WKA400

### Advantages

- Low leakage
- Slow roll capability
- Insensitive to dry nitrogen

### Operating range

Shaft diameter:  
38 ... 390 mm (1,50" ... 15,35")  
Design pressure:  
p = ... 10 bar (145 PSI)  
Operating pressure:  
p = 0.07 bar (1.02 PSI)  
Temperature:  
t = -20 °C ... +200 °C (-4 °F ... +392 °F)  
Sliding velocity:  
vg = 0 ... 200 m/s (0 ... 656 ft/s)  
Dew point: No limitation

Project specific special designs possible.

### Materials

Seal face: Carbon graphite impregnated  
Secondary seals: FKM  
Shaft sleeve: Stainless steel, TC-coated  
Metal parts: 1.4006 or other stainless steels

### Standards and approvals

- NACE
- API 692

### Notes

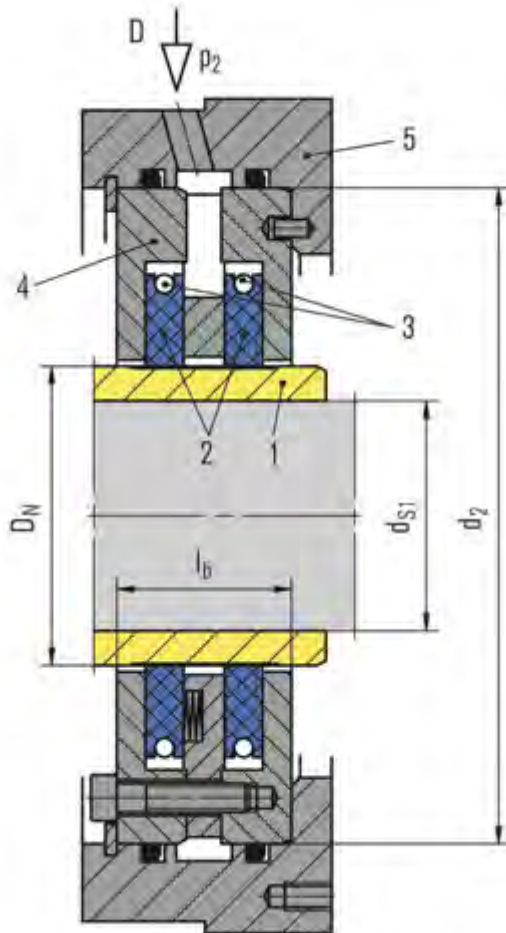
The service-proven non-contacting bushing seal with low gas consumption. Non contact type carbon rings are segmented rings held together by a garter spring at the outer diameter. A defined minimum radial gap provides a contact-free operation. Robust design and reliable operation provide secure oil sealing even at extreme conditions.

Dimensions on request.

### Recommended applications

- Oil and gas industry
- Refining technology
- Petrochemical industry
- Nitrogen
- Air
- Centrifugal compressors
- Turbo expanders
- Screw compressors
- Blowers

RELY ON EXCELLENCE



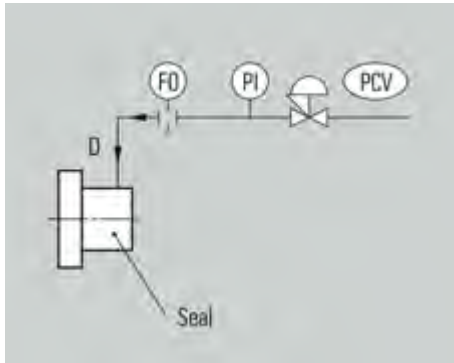
**Item Description**

- 1 Shaft sleeve
- 2 Segmented carbon ring
- 3 Garter spring
- 4 Housing of the standardized sub-cartridge
- 5 Housing (size matched to installation space)
- D Separation gas



RELY ON EXCELLENCE

## Installation, details, options



Piping and instrumentation diagram of a CSE (flow controlled separating gas supply).

RELY ON EXCELLENCE

## CSR

Mechanical seals | Compressor seals | Separation seals



### Features

- Contacting bushing seal
- Gas-lubricated
- Bi-directional
- Ready-to-fit cartridge unit

### Advantages

- Very low leakage
- No increased leakage in static operation

### Operating range

Shaft diameter:

38 ... 360 mm (1,50" ... 14,17")

Design pressure:

$p = 0.5 \dots 10$  bar (7.25 ... 145 PSI)

Operating pressure:

$p = 0.5 \dots 0.8$  bar (7.25 ... 11.60 PSI)

Temperature:

$t = -20 \text{ °C} \dots +200 \text{ °C}$  (-4 °F ... +392 °F)

Sliding velocity:

$vg = 10 \dots 140$  m/s (33 ... 459 ft/s)

Separation gas dew point at 0.8 bar (11.6 PSI):

$t = -50 \text{ °C} \dots -20 \text{ °C}$  (-58 °F ... -4 °F)\*

\* This limitation does not apply to CSR10.

### Materials

Seal face: Carbon graphite impregnated

Secondary seals: FKM

Shaft sleeve: Stainless steel TC-coated

Metal parts: 1.4006 or other stainless steels.

### Standards and approvals

- NACE
- API 692

### Notes

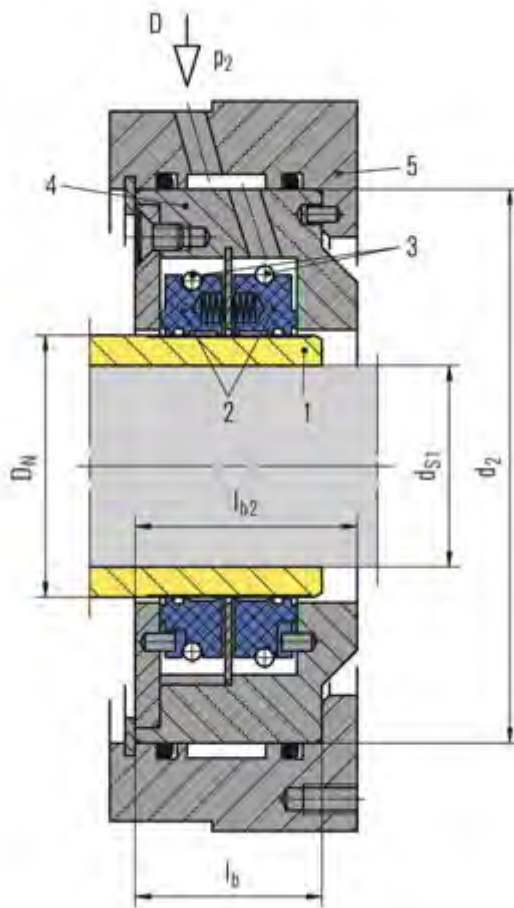
Contacting bushing seals feature very low gas consumption for both dynamic and static operation modes. In static operation the carbon segments will contact the shaft reducing gas consumption to a minimum. In dynamic operation, the profiled inner surface of the segmented ring will ensure an aerodynamic lift-off at circumferential speeds  $>10$  m/s (33 ft/s). The segmented carbon rings float on a very thin gas film of few  $\mu\text{m}$ .

Dimensions on request.

### Recommended applications

- Oil and gas industry
- Refining technology
- Petrochemical industry
- Nitrogen
- Air
- Centrifugal compressors
- Blowers

RELY ON EXCELLENCE

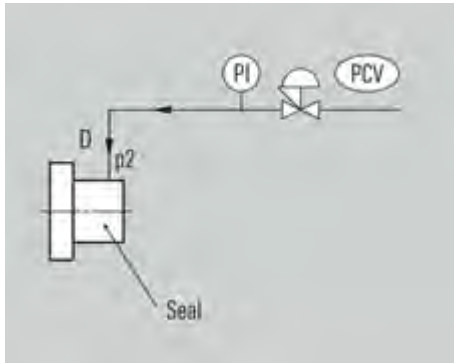


#### Item Description

- 1 Shaft sleeve
- 2 Segmented carbon ring
- 3 Garter spring
- 4 Housing of standardized sub-cartridge
- 5 Housing (size matched to installation space)
- D Separation gas

## RELY ON EXCELLENCE

### Installation, details, options



Piping and instrumentation diagram of a CSR (pressure controlled separation gas supply).

### Product variants

#### CSR version for dry nitrogen

The CSR separation seal is also available for operation with very dry nitrogen with no limitations regarding dew point. Newly developed carbon ring materials ensure smooth operation even when the CSR is supplied with very pure nitrogen, from e.g. cryogenic production. The reliability of the system can be increased significantly as a result.

RELY ON EXCELLENCE

## B800

Mechanical seals | Compressor seals | Oil-lubricated seals



### Features

- Oil-lubricated
- Double seal
- Balanced
- Bi-directional
- Stationary bellows (process side)
- Multiple springs (bearing side)
- Shrink-fit seat
- Double-pressure balanced

### Advantages

- Suitable for high sliding velocities
- Seal does not open if oil pressure drops
- Rugged seat with bandage ensures reliable operation
- Compact design with few sealing components

### Operating range

Shaft diameter:  $d = \dots 220 \text{ mm (8.66")}$   
Pressure:  $(p_2 - p_1) = \dots 5 \text{ bar (73 PSI)}$   
Sliding velocity:  $v_g = 90 \text{ m/s (295 ft/s)}$

### Materials

Bellows: AM350, Inconel® 718, Hastelloy®-C  
Seal face: Special SiC, high-density carbon graphite  
Seat: Silicon carbide  
Secondary seals: FKM (bearing side)  
Metal parts: 1.4301, Carpenter® 42, Inconel® 718, Hastelloy®-C

### Notes

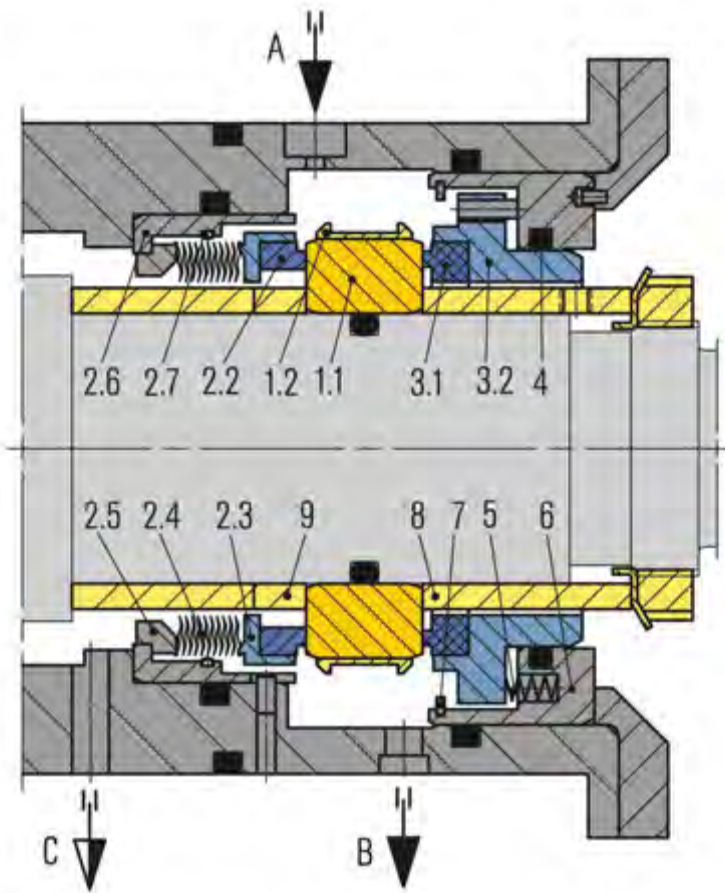
This special shaft seal is characterized by its straightforward structure, compact length and quiet running even under changing pressure conditions. It also seals reliably at both high and low temperatures.

Dimensions on request.

### Recommended applications

- Oil and gas industry
- Refining technology
- Petrochemical industry

## RELY ON EXCELLENCE



Item	Description
1.1	Seat
1.2, 2.3, 3.2	Retainer
2.2, 3.1	Seal face
2.4	Bellows
2.5	Adapter
4	O-ring
5	Spring
2.6, 6	Housing
2.7	Damper
7	Retaining ring
8	Sleeve
9	Spacer
A	Oil IN
B	Oil OUT
C	Drain

RELY ON EXCELLENCE

## WRS

Mechanical seals | Compressor seals | Oil-lubricated seals



### Features

- Oil-lubricated
- Bi-directional
- Externally pressurized
- Ready-to-fit cartridge unit
- Single, face bushing and double seal available
- Suitable for high speed
- Hydrodynamic grooves for increased operating capabilities and stabilized low leakage

### Advantages

- Low oil consumption
- Rugged seat with bandage ensures reliable operation
- Wear-free operation by use of lift-off-design
- Does not open if oil pressure drops

### Operating range

Shaft diameter:  
30 ... 300 mm (1.18" ... 11.81")  
Pressure:  $p = \dots 50$  bar (725 PSI)  
Gas temperature:  
 $t = -20$  °C ...  $+200$  °C ( $-4$  °F ...  $+392$  °F)  
Sliding velocity:  $v_g = 5 \dots 100$  m/s (16 ... 328 ft/s)  
Oil viscosity: ISO VG up to 68

### Materials

Seal face: Silicon carbide  
Seat: Silicon carbide  
Secondary seals: FKM  
Metal parts: 1.4006 or other stainless steels

### Standards and approvals

- NACE

### Notes

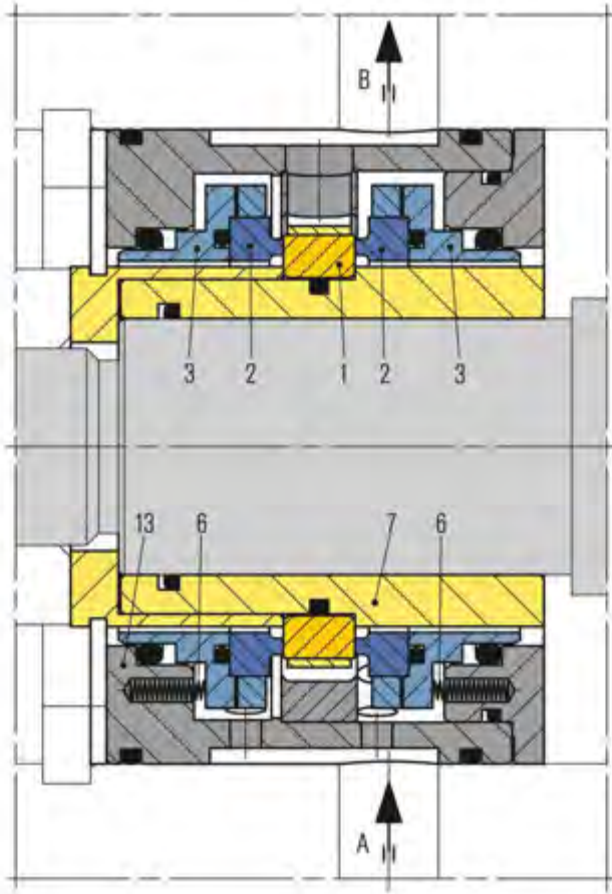
The WRS is an oil-lubricated seal that safely seals various types of compressors and organic media. With its rugged design, low life-cycle costs and long service life, the WRS can be found in thousands of applications. The design is optimized by using the finite element method and computational fluid dynamics.

Dimensions on request.

### Recommended applications

- Oil and gas industry
- Refining technology
- Petrochemical industry
- Refrigerants
- Screw compressors
- Centrifugal compressors
- Geared compressors

RELY ON EXCELLENCE



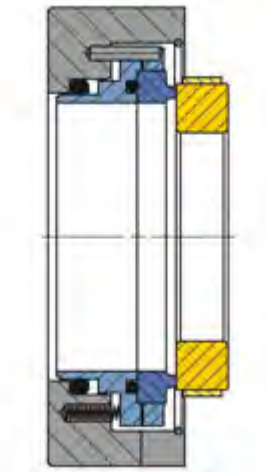
Drawing shows WRS dual seal

Item	Description
1	Seat, rotating
2	Seal face, stationary
3	Face housing
6	Spring
7	Shaft sleeve
13	Housing
A	Oil IN
B	Oil OUT



RELY ON EXCELLENCE

## Product variants



WRS single seal



WRS single seal with face bushing

RELY ON EXCELLENCE

## Type 4600

Mechanical seals | Marine seals | Stern tube seals



### Features

The water-lubricated stern tube seals type 4600 from EagleBurgmann are not alone an environment-friendly solution. They meet all technical requirements of modern sealing technology: modular design, convenient installation, little maintenance, no adjustments.

Type 4600 water-lubricated stern tube seals are virtually leak-free and are leaving no oil or grease residues in the waterway.

And because they prevent getting water into the bilge, no elaborate actions are required for its disposal.

Please ask us for references.

### Advantages

- Water-lubricated
- No oil or grease emissions to the environment
- Low power consumption
- Carbon seal face unsplit for first installation, split for repairs
- Version with split mating ring available

### Operating range

Shaft diameter:  
 $d_1 = 50 \dots 320 \text{ mm} (1.97 \dots 12.60 \text{''})$   
 Pressure:  $p = 2 \dots 7 \text{ bar} (29 \dots 102 \text{ PSI})$   
 Temperature:  
 $t = -5 \text{ °C} \dots 40 \text{ °C} (23 \text{ °F} \dots 104 \text{ °F})$   
 Speed range:  $n = \text{see diagram}$

### Allowed shaft movements

Axial:  $\pm 5 \text{ mm}$ ,  
 Radial: Shaft diameter ( $d_1$ ) up to 200 mm:  $\pm 2 \text{ mm}$ ,  
 $>200 \text{ mm}$ :  $\pm 3 \text{ mm}$

Flushing: approx. 1 l/h per Millimeter of shaft diameter ( $d_1$ )

### Materials

Seal face: Carbon graphite antimony impregnated (A), Carbon graphite resin impregnated (B)  
 Mating ring: Special cast CrNiMo steel  
 Collar: Nitrile-butadiene rubber (P)  
 Face housing: 1.4571 (G)  
 Clamp ring: 1.4572  
 Springs: Hastelloy® C-4 (M)  
 Housing: Bronze / 1.4571  
 Gasket Burasil® (Y)

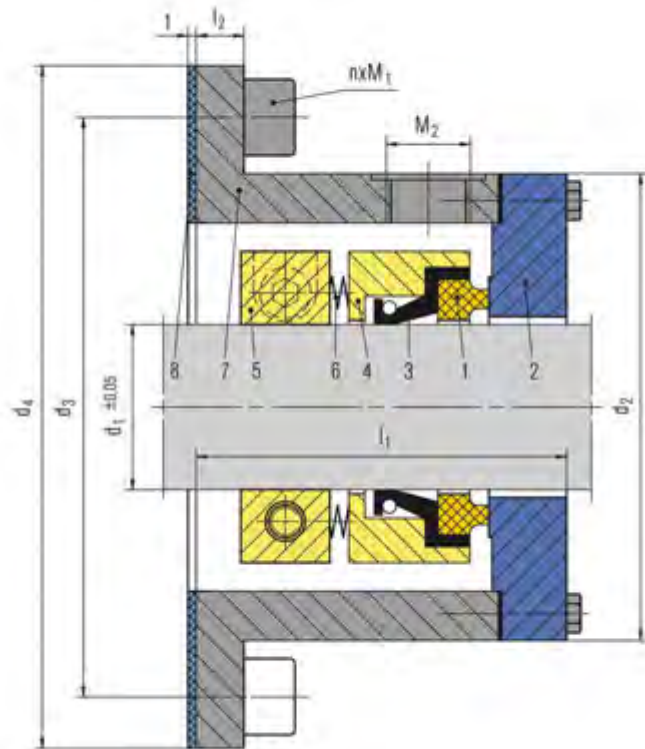
### Notes

- Special designs available:
- Split mating ring
  - Amagnetic properties
  - Shock resistance

### Recommended applications

- Shipbuilding
- Sea water
- Fresh water

## RELY ON EXCELLENCE

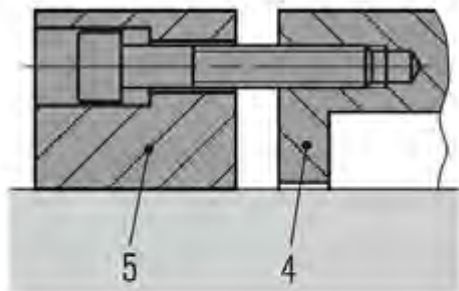
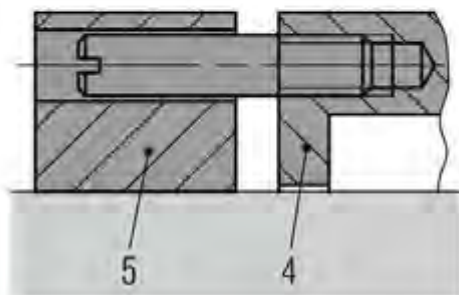


### Item Description

- |   |              |
|---|--------------|
| 1 | Seal face    |
| 2 | Mating ring  |
| 3 | Collar       |
| 4 | Face housing |
| 5 | Clamp ring   |
| 6 | Springs      |
| 7 | Housing      |
| 8 | Gasket       |

RELY ON EXCELLENCE

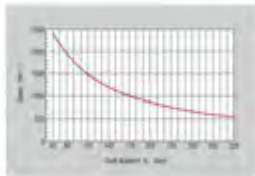
Clamp ring



## RELY ON EXCELLENCE

### Charts

Speed Characteristics



### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	M <sub>1</sub>	M <sub>2</sub>	n
50	125	142	165	110	15	M10	G1/2"	4
60	135	152	175	110	15	M10	G1/2"	4
70	145	185	215	110	15	M16	G1/2"	4
80	155	195	225	115	15	M16	G1/2"	4
90	165	205	235	115	15	M16	G1/2"	4
100	175	215	245	115	15	M16	G1/2"	4
110	192	230	260	120	15	M16	G1/2"	6
120	202	240	270	120	15	M16	G1/2"	6
130	212	250	280	120	15	M16	G1/2"	6
140	222	260	290	120	15	M16	G1/2"	6
150	232	270	300	120	15	M16	G1/2"	6
160	242	280	310	120	15	M16	G1/2"	6
170	252	290	320	120	15	M16	G1/2"	6
180	262	300	330	130	15	M16	G1/2"	6
190	272	310	340	130	15	M16	G1/2"	8
200	282	320	350	130	15	M16	G1/2"	8
210	292	330	360	130	15	M16	G1/2"	8
220	302	340	370	130	15	M16	G1/2"	8
230	312	350	380	130	15	M16	G1/2"	8
240	340	365	405	140	20	M20	G1/2"	8
250	350	375	415	140	20	M20	G1/2"	8
260	360	385	425	140	20	M20	G3/4"	8
270	370	395	435	140	20	M20	G3/4"	8
280	380	405	445	140	20	M20	G3/4"	8
290	390	415	455	140	20	M20	G3/4"	8
300	400	425	465	140	20	M20	G3/4"	8
310	420	445	485	140	20	M20	G3/4"	8
320	430	455	495	140	20	M20	G3/4"	8

Dimensions in millimeter

RELY ON EXCELLENCE

## Type 4600 with Shut Down Seal

Mechanical seals | Marine seals | Stern tube seals



### Features

The water-lubricated stern tube seals type 4600 from EagleBurgmann are not alone an environment-friendly solution. They meet all technical requirements of modern sealing technology: modular design, convenient installation, little maintenance, no adjustments. Applying a shut down seal eliminates costly and time-consuming dry-docking. Maintenance and repairs can be performed with vessel afloat.

Type 4600 water-lubricated stern tube seals are virtually leak-free and are leaving no oil or grease residues in the waterway. And because they prevent getting water into the bilge, no elaborate actions are required for its disposal.

Please ask us for references.

### Advantages

- With shut down seal
- Water-lubricated
- No oil or grease emissions to the environment
- Low power consumption
- Carbon seal face unsplit for first installation, split for repairs
- Version with split mating ring available

### Operating range

Shaft diameter:  
 $d_1 = 50 \dots 320 \text{ mm} (1.97'' \dots 12.60'')$   
 Pressure:  $p = 2 \dots 7 \text{ bar} (29 \dots 102 \text{ PSI})$   
 Temperature:  
 $t = -5 \text{ °C} \dots 40 \text{ °C} (23 \text{ °F} \dots 104 \text{ °F})$   
 Speed range:  $n = \text{see diagram}$

### Allowed shaft movements

Axial:  $\pm 5 \text{ mm}$ ,  
 Radial: Shaft diameter ( $d_1$ ) up to 200 mm:  $\pm 2 \text{ mm}$ ,  
 $>200 \text{ mm}$ :  $\pm 3 \text{ mm}$

Flushing: approx. 1 l/h per Millimeter of shaft diameter ( $d_1$ )

### Materials

Seal face: Carbon graphite antimony impregnated (A),  
 Carbon graphite resin impregnated (B)  
 Mating ring: Special cast CrNiMo steel (S) / 1.4462  
 Collar, shut down seal:  
 Nitrile-butadiene rubber (P)  
 Springs: Hastelloy® C-4 (M) / 1.4401  
 Gasket: Bursil® (Y)  
 Metal parts: 1.4571 / Bronze

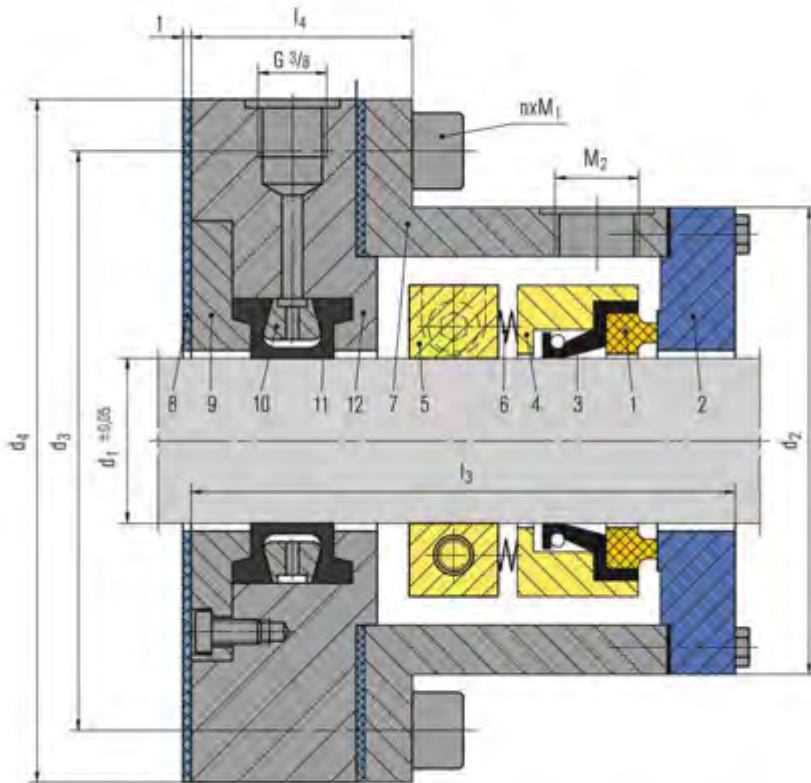
### Notes

- Special designs available:
- Split mating ring
  - Amagnetic properties
  - Shock resistance

### Recommended applications

- Shipbuilding
- Sea water
- Fresh water

## RELY ON EXCELLENCE

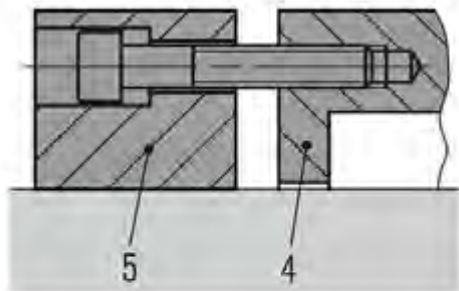
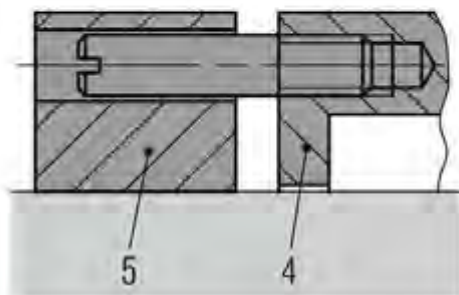


### Item Description

- |    |                |
|----|----------------|
| 1  | Seal face      |
| 2  | Mating ring    |
| 3  | Collar         |
| 4  | Face housing   |
| 5  | Clamping ring  |
| 6  | Springs        |
| 7  | Housing        |
| 8  | Gasket         |
| 9  | Cover          |
| 10 | Back-up ring   |
| 11 | Shut down seal |
| 12 | Flange         |

RELY ON EXCELLENCE

Clamp ring

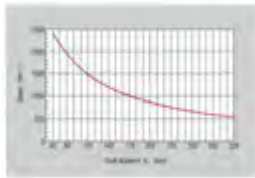




## RELY ON EXCELLENCE

### Charts

Speed Characteristics



### Dimensions

d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	l <sub>3</sub>	l <sub>4</sub>	M <sub>1</sub>	M <sub>2</sub>	n
50	125	142	165	150	55	M10	G1/2"	4
60	135	152	175	150	55	M10	G1/2"	4
70	145	185	215	150	55	M16	G1/2"	4
80	155	195	225	155	55	M16	G1/2"	4
90	165	205	235	155	55	M16	G1/2"	4
100	175	215	245	155	55	M16	G1/2"	4
110	192	230	260	160	55	M16	G1/2"	6
120	202	240	270	160	55	M16	G1/2"	6
130	212	250	280	160	55	M16	G1/2"	6
140	222	260	290	160	55	M16	G1/2"	6
150	232	270	300	160	55	M16	G1/2"	6
160	242	280	310	160	55	M16	G1/2"	6
170	252	290	320	160	55	M16	G1/2"	6
180	262	300	330	170	55	M16	G1/2"	6
190	272	310	340	170	55	M16	G1/2"	8
200	282	320	350	170	55	M16	G1/2"	8
210	292	330	360	170	55	M16	G1/2"	8
220	302	340	370	170	55	M16	G1/2"	8
230	312	350	380	170	55	M16	G1/2"	8
240	340	365	405	180	60	M20	G1/2"	8
250	350	375	415	180	60	M20	G1/2"	8
260	360	385	425	180	60	M20	G3/4"	8
270	370	395	435	180	60	M20	G3/4"	8
280	380	405	445	180	60	M20	G3/4"	8
290	390	415	455	180	60	M20	G3/4"	8
300	400	425	465	180	60	M20	G3/4"	8
310	420	445	485	180	60	M20	G3/4"	8
320	430	455	495	180	60	M20	G3/4"	8

Dimensions in millimeter

RELY ON EXCELLENCE

## Type 4604

Mechanical seals | Marine seals | Stern tube seals

### Features

The water-lubricated stern tube seals for closed systems Type 4604 from EagleBurgmann are not alone an environment-friendly solution. They meet all technical requirements of modern sealing technology: modular design, convenient installation, little maintenance, no adjustments.

Type 4604 water-lubricated stern tube seals are virtually leak-free and are leaving no oil or grease residues in the waterway. And because they prevent getting water into the bilge, no elaborate actions are required for its disposal. Please ask us for references.

### Advantages

- For closed systems
- Water-lubricated
- No oil or grease emissions to the environment
- Low power consumption
- Carbon seal face unsplit for first installation, split for repairs
- Version with split mating ring available

### Operating range

Shaft diameter:

d1 = 50 ... 320 mm (1.97" ... 12.60")

Water pressure: p = max. 2 bar (29 PSI)

Barrier pressure: min. 0.2 bar (2.9 PSI) above water pressure

Temperature:

t = -5 °C ... 40 °C (23 °F ... 104 °F)

Speed range: n = see diagram

Allowed shaft movements

Axial: ±5 mm,

Radial: Shaft diameter (d1) up to 200 mm: ±2 mm,

>200 mm: ±3 mm

Flushing: approx. 1 l/h per Millimeter of shaft diameter (d1)

### Materials

Seal face:

Carbon graphite antimony impregnated (A),

Carbon graphite resin impregnated (B)

Mating ring: Special cast CrNiMo steel (S) / 1.4462

Collar: Nitrile-butadiene rubber (P)

Face housing, clamp ring: CrNiMo steel (G)

Springs: Hastelloy® C-4 (M) / 1.4401

Housing: 1.4571 / Bronze

Gasket: Burasil® (Y)

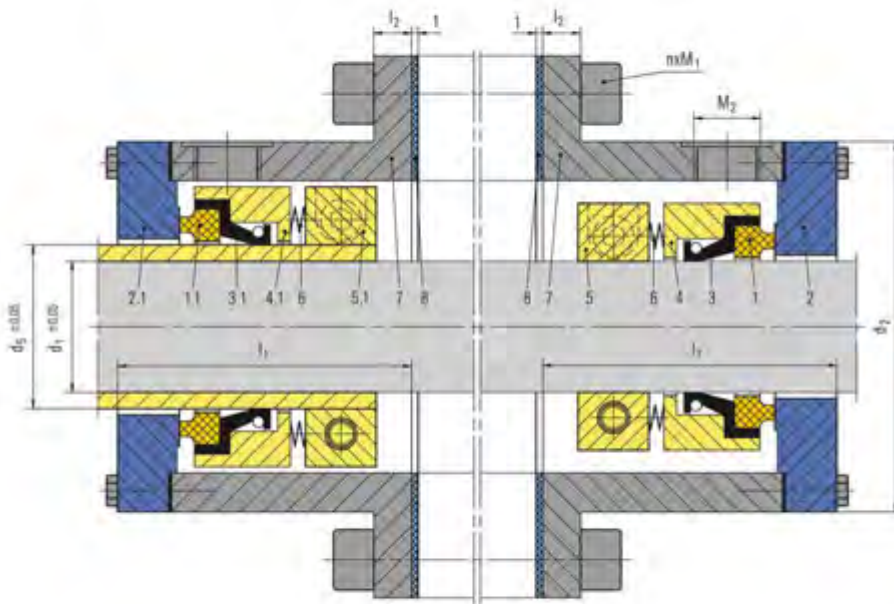
### Notes

- Version with split mating ring available

### Recommended applications

- Shipbuilding
- Sea water
- Fresh water

## RELY ON EXCELLENCE

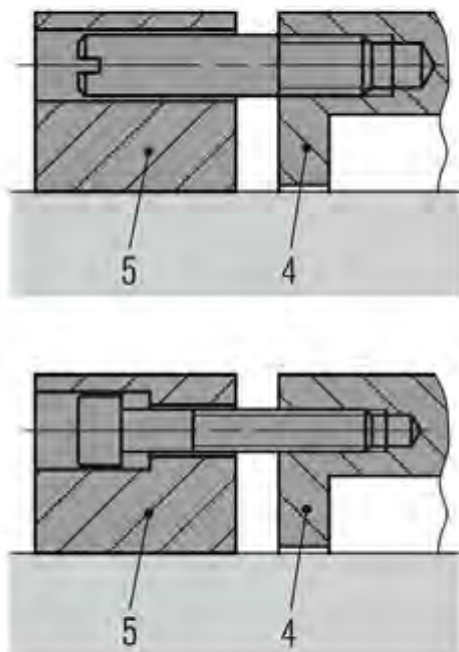


### Item Description

- 1/1.1 Seal face
- 2/2.1 Mating ring
- 3/3.1 Collar
- 4/4.1 Face housing
- 5/5.1 Clamp ring
- 6 Springs
- 7 Housing
- 8 Gasket

## RELY ON EXCELLENCE

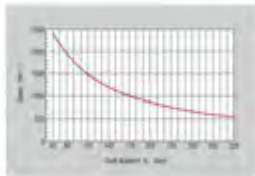
### Axial stop



## RELY ON EXCELLENCE

### Charts

Speed Characteristics



### Dimensions

d <sub>1</sub>	d <sub>5</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	l <sub>1</sub>	l <sub>2</sub>	M <sub>1</sub>	M <sub>2</sub>	n
50	60	135	152	175	110	15	M10	G1/2"	4
60	70	145	185	215	110	15	M10	G1/2"	4
70	80	155	195	225	110	15	M16	G1/2"	4
80	90	165	205	235	115	15	M16	G1/2"	4
90	100	175	215	245	115	15	M16	G1/2"	4
100	110	192	230	260	115	15	M16	G1/2"	4
110	120	202	240	270	120	15	M16	G1/2"	6
120	130	212	250	280	120	15	M16	G1/2"	6
130	140	222	260	290	120	15	M16	G1/2"	6
140	150	232	270	300	120	15	M16	G1/2"	6
150	160	242	280	310	120	15	M16	G1/2"	6
160	170	252	290	320	120	15	M16	G1/2"	6
170	180	262	300	330	120	15	M16	G1/2"	6
180	190	272	310	340	130	15	M16	G1/2"	6
190	200	282	320	350	130	15	M16	G1/2"	8
200	210	292	330	360	130	15	M16	G1/2"	8
210	220	302	340	370	130	15	M16	G1/2"	8
220	230	312	350	380	130	15	M16	G1/2"	8
230	240	340	365	405	130	15	M16	G1/2"	8
240	250	350	375	415	140	20	M20	G1/2"	8
250	260	360	385	425	140	20	M20	G1/2"	8
260	270	370	395	435	140	20	M20	G3/4"	8
270	280	380	405	445	140	20	M20	G3/4"	8

Dimensions in millimeter

## EagleBurgmann – Leading Innovation in Sustainable Sealing Solutions

We are your leading international specialist in industrial sealing technology. We combine innovative technologies, digital solutions and our passion and enthusiasm to create sophisticated and reliable sealing systems. Our products help make entire industries safer and more sustainable. 6,000 employees create added value for our customers around the world with their enthusiasm and competence. EagleBurgmann is a joint venture between the German Freudenberg Group and the Japanese Eagle Industry Group.

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