

RELY ON EXCELLENCE

## LL9DTUU

API 682 4th edition | 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:  $t = -40 \text{ }^\circ\text{C} \dots +176 \text{ }^\circ\text{C}$  (-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

- Light volatile hydrocarbons
- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- CCUS
- Alternative fuels production
- 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](#)

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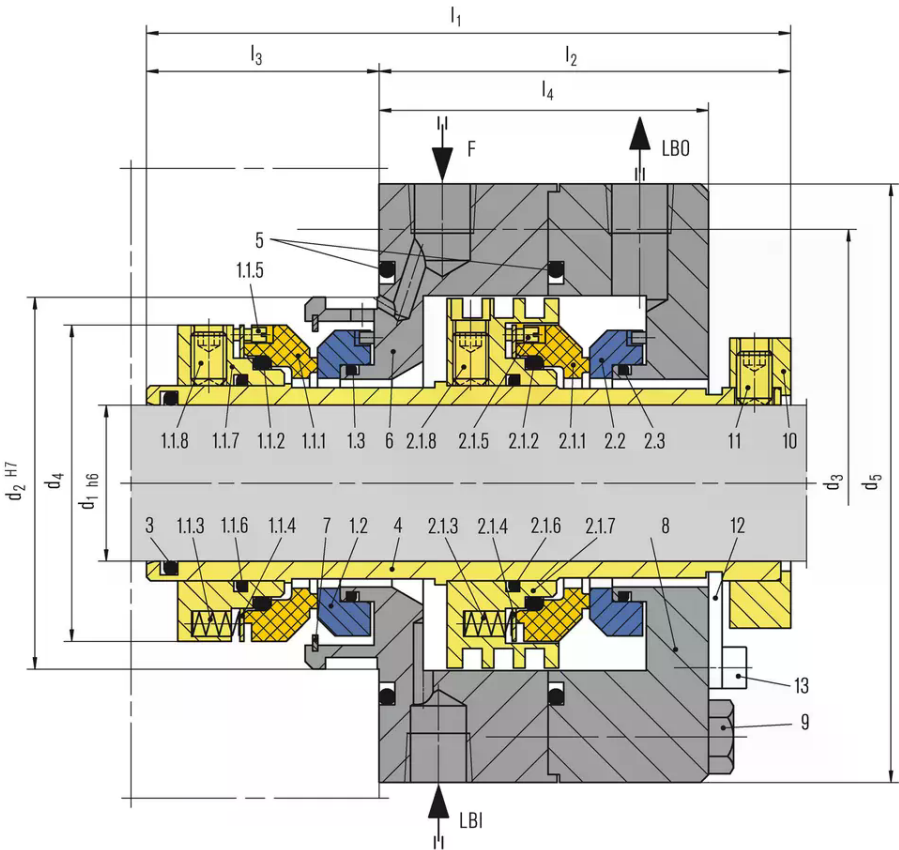
Between seals:

- 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,	
2.1.6, 2.3, 3, 5	O-Ring
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

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## 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