

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 °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:  
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 - 2CW-CS

### 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

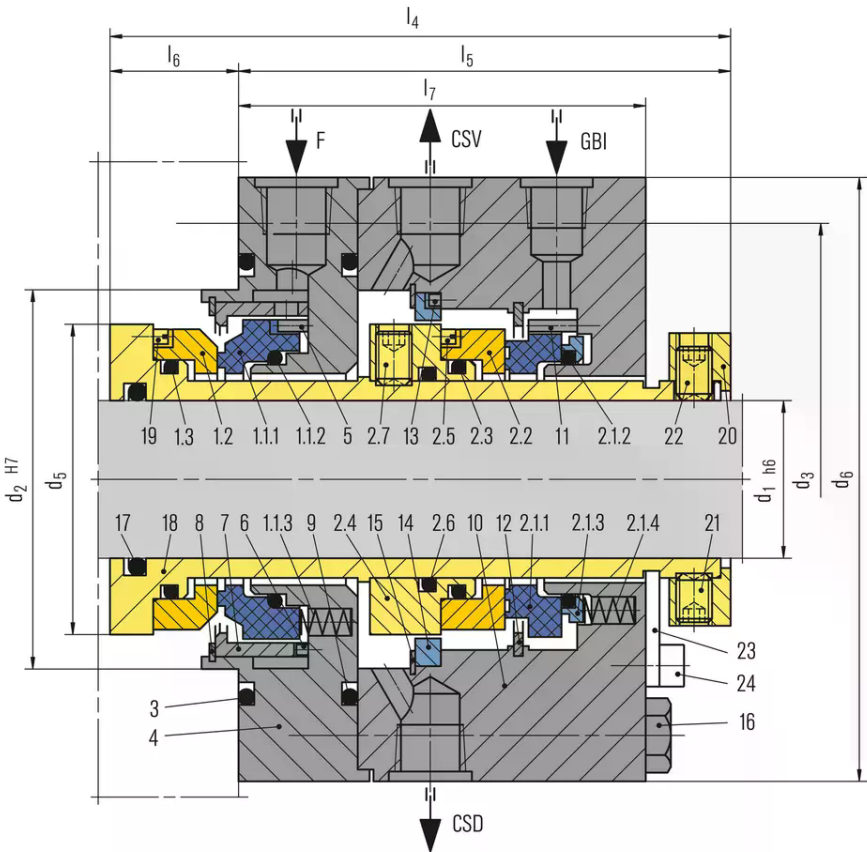
#### Process side:

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

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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, 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

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## 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