

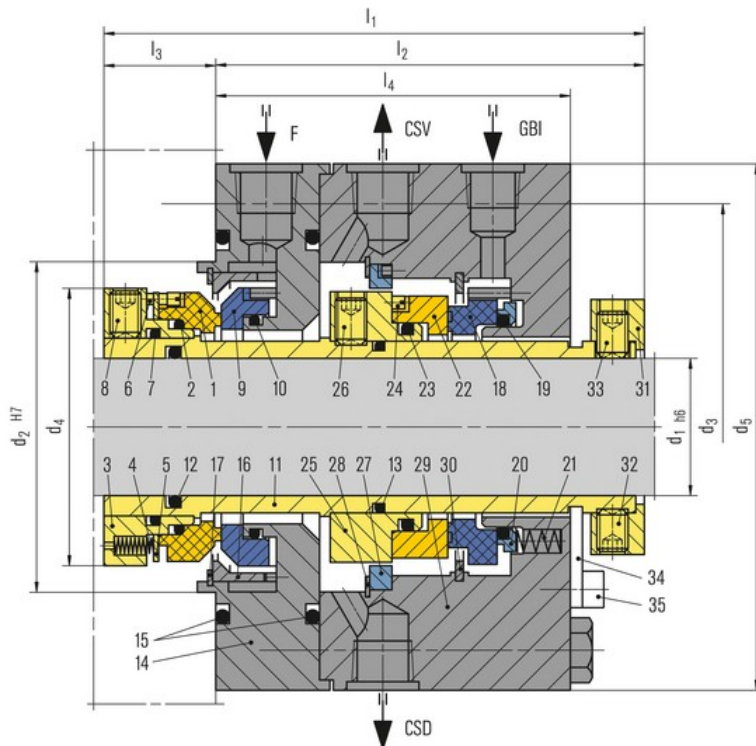
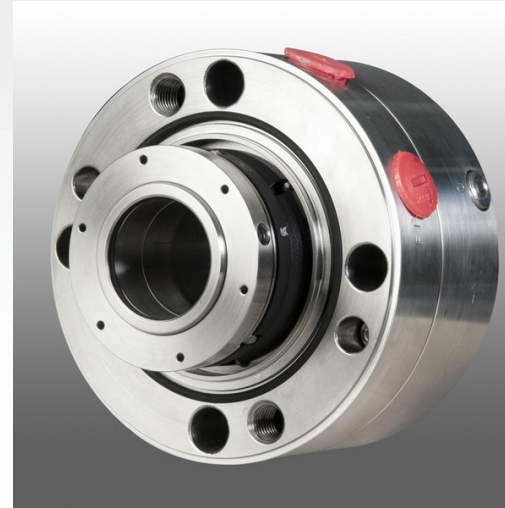
# LL9DTUE

## 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



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	Shaft sleeve
14, 29	Gland plate
16	Flow distributor
17, 28, 30	Retaining ring
27	Throat bushing
31	Drive collar
34	Setting device
35	HSH Cap screw

# LL9DTUE (2)

## Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology
- Light volatile hydrocarbons
- LPG plants
- API 610 / ISO 13709 pumps
- Process pumps

## Operating range

Pressure (primary Seal): p = vacuum ... 42 bar (... 609 PSI)  
Pressure (secondary seal): p = 2.75 bar (40 PSI) normal operation,  
max. 60 bar (870 PSI) in wet operation  
Temperature: -40 °C ... +176 °C (-40 °F ... +349 °F)\*  
Sliding velocity: ... 23 m/s (... 75 ft/s)  
Viscosity: ... 300 mPas  
Solids content: ... 0.5 wt.%

\* Engineered up to 260 °C (500 °F) with FFKM (K) secondary seals

## Standards and approvals

- API 682 / ISO 21049

## Materials

Seal ring (primary seal): Blister resistant carbon,  
Silicon carbide SSiC (Q1), RBSiC (Q2)  
Seal ring (secondary seal): Special carbon  
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)

## Recommended piping plans

Process side:  
02, 11, 12, 13, 14, 21, 22, 23, 31, 32, 41  
Between seals:  
71, 72, 75, 76

## Dimensions

API/d <sub>1</sub>	API/d <sub>2</sub>	API/d <sub>3</sub>	d <sub>4</sub>	d <sub>6</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	238	150	115	35	93
100	170	215	150	248	150	115	35	93
110	180	225	163	258	155	115	40	93

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