Operating range

API 682 covers the following ranges:
Shaft sizes: 1" to 5.000"
Temperatures: -40 °F to +750 °F
Pressures: vacuum to 600 psig

"Sealing systems for centrifugal pumps, API 682" is the title of the standard issued by the American Petroleum Institute for pumps in the hydrocarbon processing industry. The API 682, 3rd edition, to ISO 21049, contains sealing and supply systems for applications in refineries and the chemical industry.

- API 682 includes a seal selection procedure as well as an aid for selecting buffer/quench fluids, seal supply systems and modes of operation.
- Cartridge solutions are specified for all applications. API 682 requires all parts of the seal (including its cover and shaft sleeve) to be supplied by the seal manufacturer.
- For the purposes of qualifying the seals, all standard types and arrangements have to be put through stipulated dynamic trial runs under defined conditions.

Type A O-ring seal

- Rotating O-ring seal with multiple springs
- Sliding faces: reaction-bonded silicon carbide against blistering-resistant carbon
- Fluoroelastomer O-rings
- Hastelloy® C-springs
- Metallic components (cover, shaft sleeve etc.) made of stainless steel (type 31 6)

TYPE B Bellows seal

- Rotating metal bellows seal with tiring secondary seals
- Sliding faces: reaction-bonded silicon carbide against blistering-resistant carbon
- Fluoroelastomer O-rings
- Hastelloy® C bellows
- Metallic components (cover, shaft sleeve etc.) made of stainless steel (type 31 6)

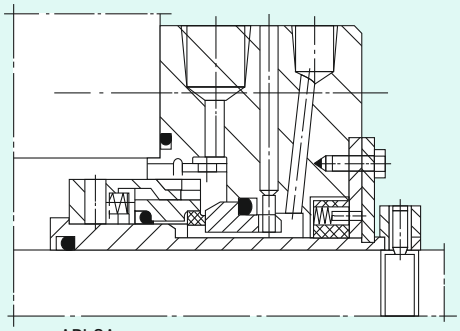
TYPE C Bellows seal

- Stationary metal bellows seal with graphite secondary seals
- Sliding faces: reaction-bonded silicon carbide against blistering-resistant carbon
- Graphite secondary seals
- Inconel® 718 bellows
- Metallic components (cover, shaft sleeve etc.) made of stainless steel (316 SS)

Type ENG

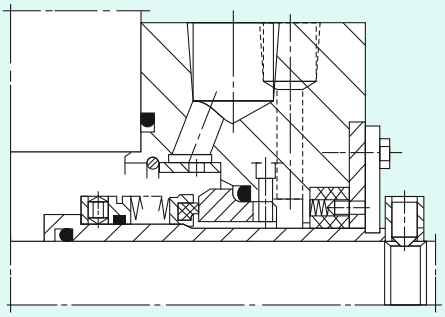
- Special engineered seal design outside of normal API spec.

API 682 ISO 21049

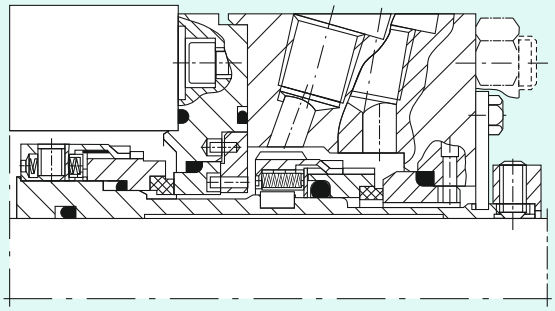


API-SA
t = -40 to +500°F
Pt = 0 to 600 psig
v = 82 ft/s

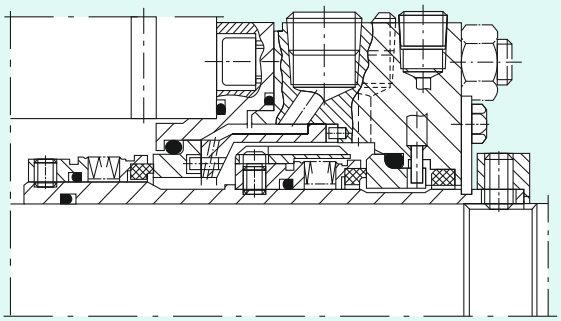
Single seal Type A/B
Arrangement 1



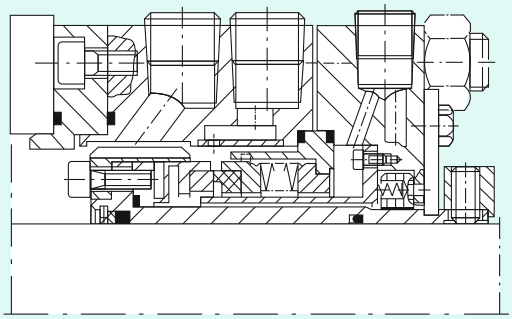
API-SB
t = -40 to +530 °F
Pi = 0 to 360 psig



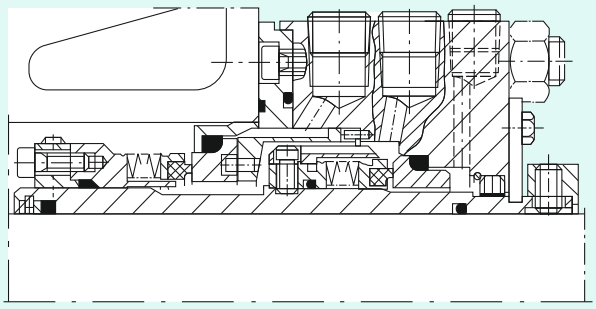
Dual seal Type A
Arrangement 2 or 3
API-DA
t = -40 to +500°F
p_1 = 0 to 600 psig
$\triangle p\ (p_3\text{-}p_1) \leq$ 150 psig
v = 82 ft/s



Dual Seal Type B
t = -50 to +530 °F
Arrangement 2
API-DB
p_1 = 0 to 360 psig
Arrangement 3
API-DB3
p_3 = max. 390 psig



Single seal Type C
Arrangement 1
API-SC
t = -40 to +750°F
p_1 = 0 to 360 psig
v = 165 ft/s



Dual Seal Type ENG
t = -40 to +750°F
v_g = 82 ft/s
Arrangement 2
API-DB-ENG
p_1 = 0 to 360 psig
Arrangement 3
API-DB3-ENG
p_3 = max. 390 psig