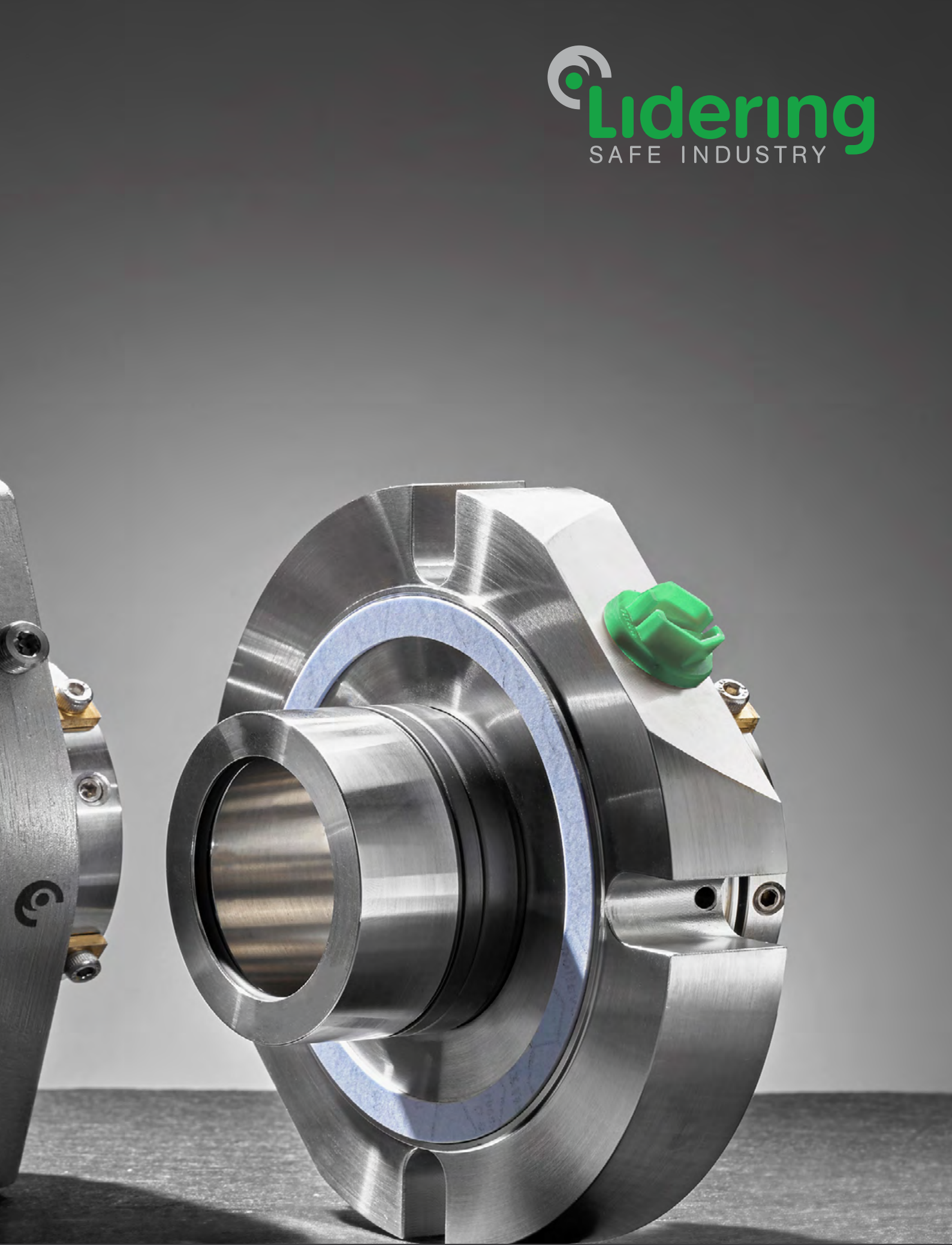
Lidering
SAFE INDUSTRY



CARTRIDGES

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We are close to you...

As time goes by, we feel extremely satisfied and proud to be able to contribute to and form part of a responsible, safe industry which is striving to build a better world and a safer future. We are convinced we can offer you a solution that will meet your expectations.

Who we are

History:

Lidering was established in 1975 and specialises in designing, manufacturing, repairing and selling mechanical seals. We provide effective solutions worldwide.

Estrategy:

Our aim is to be recognised in the market for our **accessibility** and **adaptability** to the needs of our customers and the **availability** and **reliability** of our products, solutions and services.

Vision:

We aim to be experts in mechanical seals and associated products for industry.

Accessibility

Contact us using traditional methods or new communication technologies. We are always ready to provide you with the most suitable response.

Availability

Our wide range and efficient processes make it possible to deliver the requested product when it is required.

Adaptability

We provide our customers with advice and guidance. Our design and manufacturing capacity means we are able to customise products and services to their needs.

Reliability

Our customers see us as a trusted partner because we always meet our commitments.

Our values:

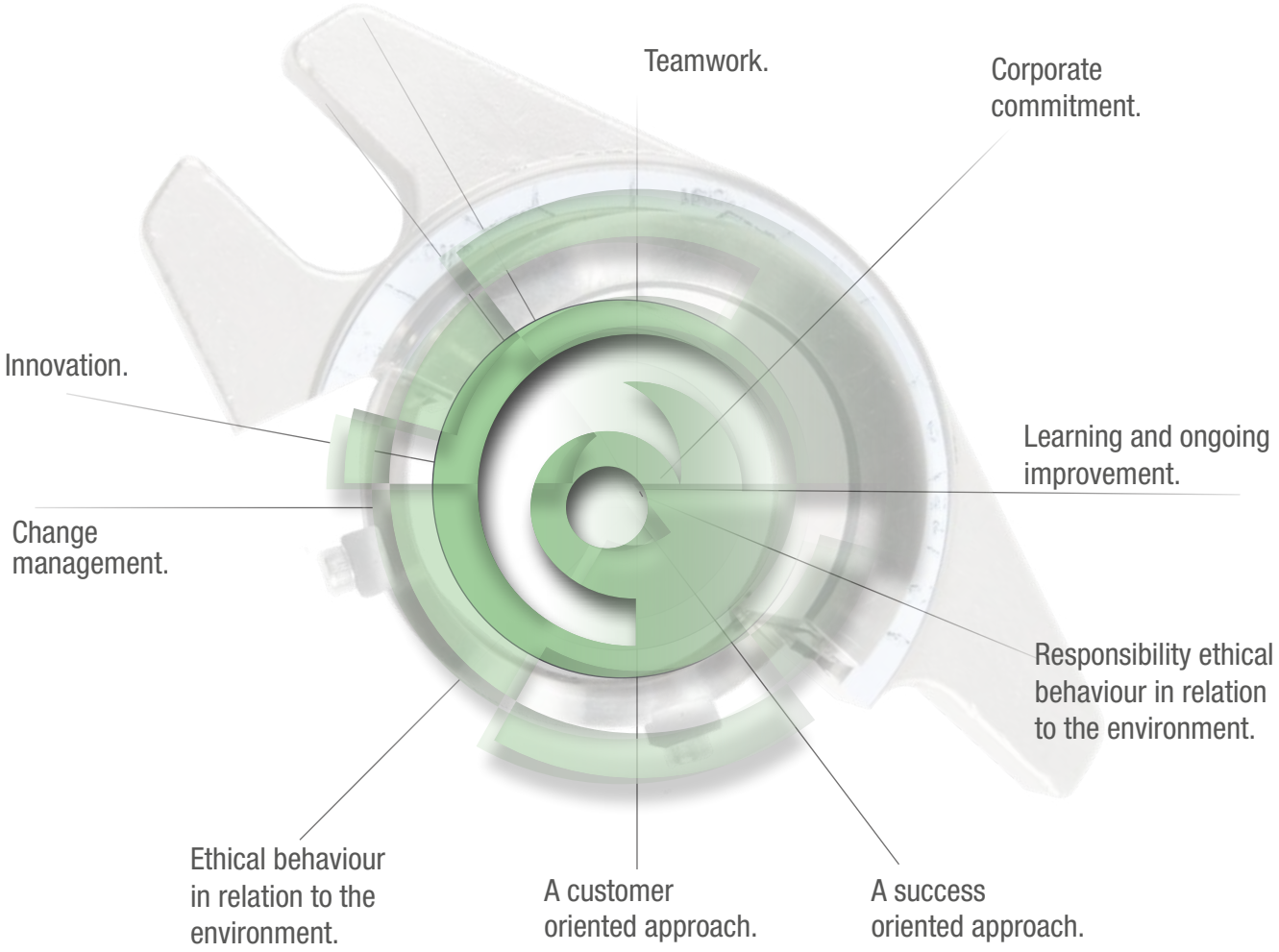
The personality of a business is created by the attitude of each member.

Lidering team is a passionate, demanding, responsible and dynamic company. Our goal is to efficiently provide a response to your needs.

Sectors:

We contribute to the success of strategic sectors.

We belive in :



We are part of the businesses and sectors that make our lives safer and simpler.

Our products help protect and take care of the environment.

Sectors

Today, many demanding industrial sectors need sealing systems that guarantee safety for both people and facilities. It is very important to offer quality products that are resistant to extreme conditions such as high pressures and temperatures and that also guarantee impeccable sealing.

This safety is ensured by using single and double cartridge seals for sealing corrosive and/or abrasive fluids containing heavy solids or sticky fluids with scant lubrication. The correct selection of the cartridge seal design and its materials, the use of flush, quench, ring and pumping connections, among others, and their auxiliary elements such as tanks and cyclones considerably extend the useful life of the cartridge seals.

It is just as important to use a product that is technically suitable for the application as it is to be able to install it easily and safely. With this objective in mind, the cartridge seals shown in this catalogue have been designed to reduce all possibilities of error to a minimum during the installation process and also prevent damage to other pump components.

Relevant Characteristics

Some of their most important features are:

•The use of solid contact surfaces to prevent possible deformations, with the ensuing loss of flatness.

•The O-ring that seals the shaft is static. It avoids the fretting effect on the shaft and its subsequent repair.

• Contact surfaces with an anti-rotation pin to prevent them from sticking together (sticky fluids, dry start-ups) and turning in their housings.

•The springs for compressing the contact surfaces are isolated from the product, which prevents them from becoming blocked by products containing particles, pastes, etc. They are made of Hastelloy material and have great chemical resistance and mechanical properties superior to those of stainless steel.

• A flat self-adhesive seal that facilitates the positioning and prevents failures during the installation process.

•Contact surfaces made of sintered silicon carbide (Q1), suitable for working with the most aggressive products in the chemical industry.

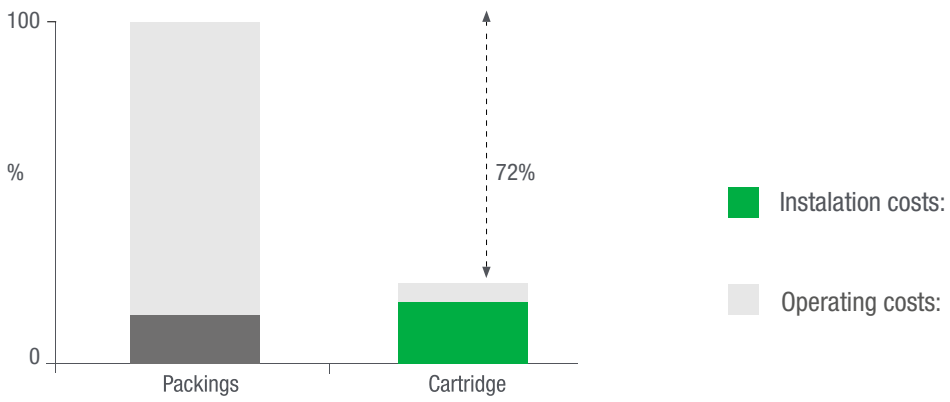
• Self-centering clips that assure the cartridge is installed correctly.

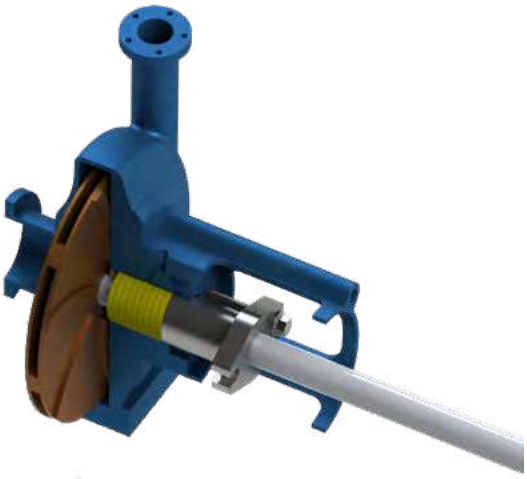
Advantages

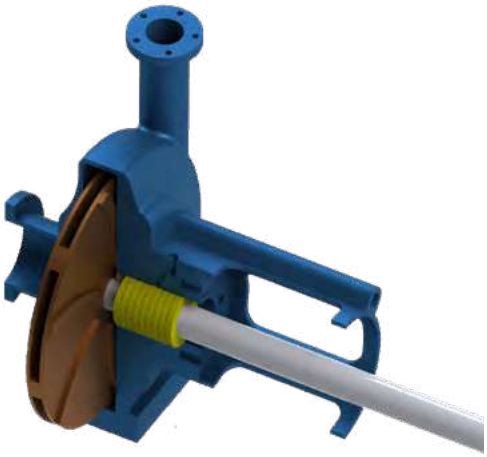
Benefits of cartridge seals as opposed to other more traditional sealing systems, such as packing:

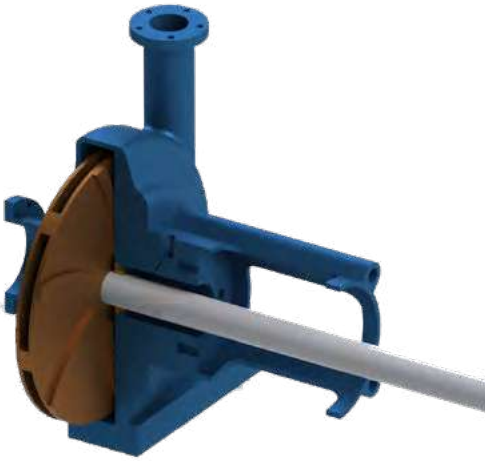
- All of our cartridge seals are factory-tested to guarantee they function correctly.

- They are easy and quick to install.
- Their sealing system does not damage the shaft surface.
- They provide complete sealing with no drips.
- They are cleaner in environmental terms.
- They require no maintenance; unlike braided packing, the cartridge requires no re-tigh tening.



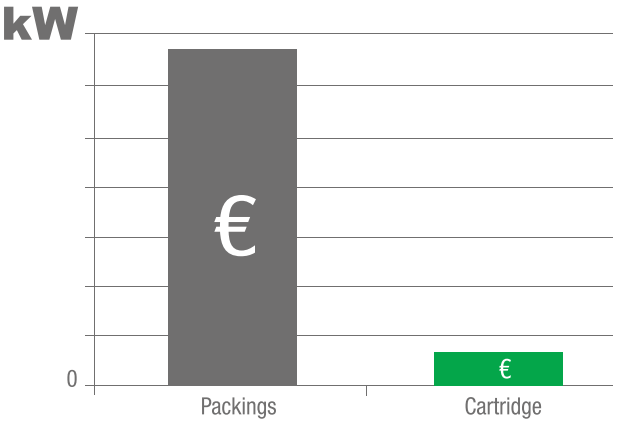






• They reduce the pump power consumption.

• There are no product leaks.



LSC10

SECTORS:

CHARACTERISTICS:

- Unbalanced
- Not dependent on the rotation direction.
- Wave spring

OPERATING LIMITS:

d_1= 24 ÷ 95 mm p= 10 kg/cm²

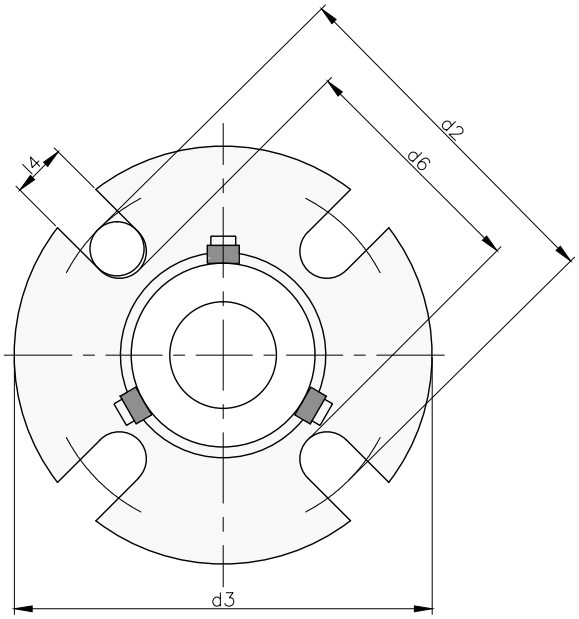
v= 20 m/s t= -15÷ +200ºC (*)

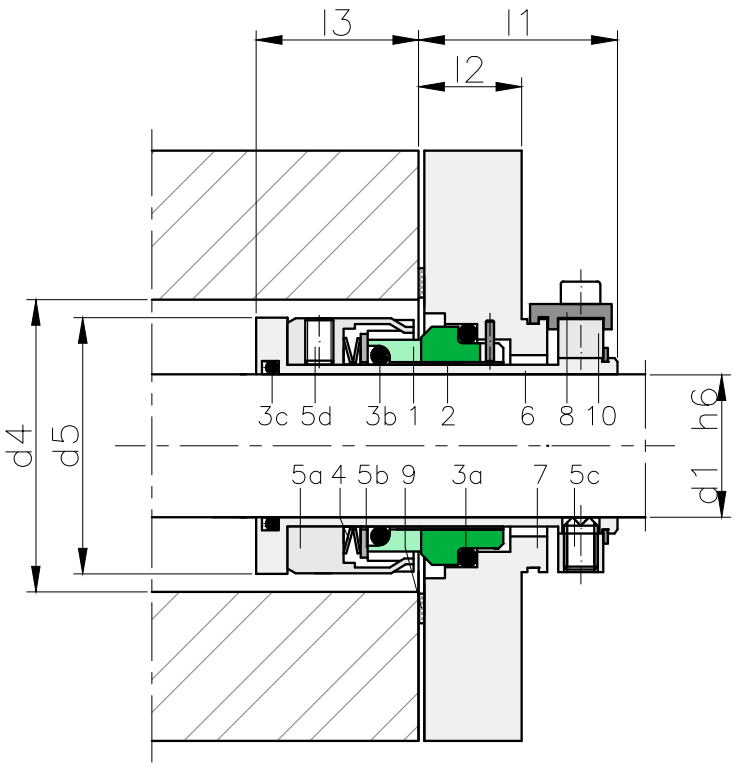
(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

Single cartridge in which due to its geometry, the rotating part has a wave spring to prevent it from blocking when in contact with viscous fluids or fibres.





COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3 O-rings
4 Metal bellows
5a Metal frame
5b Ring
5c Set screws
5d Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring

DIMENSIONS CHART

Dimensions in mm

Shaft											
mm	d_2 min.	d_2 max.	d_3	d_4 min.	d_4 max.	d_5	d_6	l_1	l_2	l_3	l_4
24	72	93	105	44	52	43	60	32	21	41	12
25	72	93	105	44	52	43	60	32	21	41	12
28	72	93	105	49	52	47	60	32	21	41	12
30	76	98	110	49	56	48	64	32	21	41	12
32	77	98	110	51	57	50	65	32	21	41	12
33	81.5	103	115	57	61.5	55	69.5	32	21	43,5	12
35	81.5	103	115	57	61.5	55	69.5	32	21	43,5	12
38	86	108	120	62	66	60	74	32	21	42	12
40	88	108	120	62	68	60	76	32	21	42	12
43	90.5	123	135	67	70.5	65	78.5	32	21	42	12
45	93	123	135	67	73	65	81	32	21	42	12
48	98	123	135	74	78	70	86	32	21	45,5	12
50	100	123	135	74	78	70	88	32	21	45,5	12
55	111	134	150	82	85	81	95	32	21	50,5	16
60	121	130	150	87	91	86	101	32	21	50,5	20
65	128.5	140	160	93	98.5	91	108.5	32	21	57	20
70	138	155	175	100	108	99	118	32	21	57	20
75	148	170	190	105	118	104	128	32	21	57	20
80	154	170	190	111	124	109	134	32	21	57	20
85	158	170	190	116	128	114	138	32	21	62	20
90	165	195	215	121	135	119	145	32	21	63	20
95	168	195	215	126	138	124	148	32	21	63	20

Dimensions subject to changes or modifications.

LSC10B-FQ

SECTORS:

CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.
- Flush and drain connections.
- API 682 / ISO 21049.
- Categories 2 and 3, Type A, Arrangement 1.

OPERATION LIMITS:

d_1= 19,05 ÷ 110 mm p= 40 kg/cm²

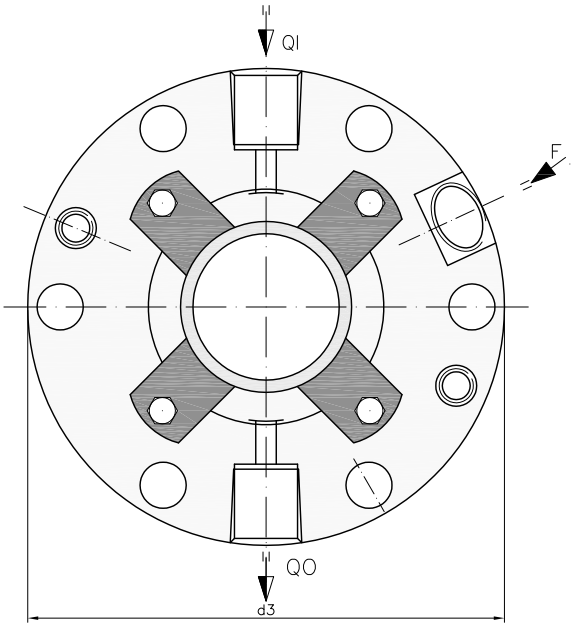
v= 23 m/s t= -40÷ +220ºC (*)

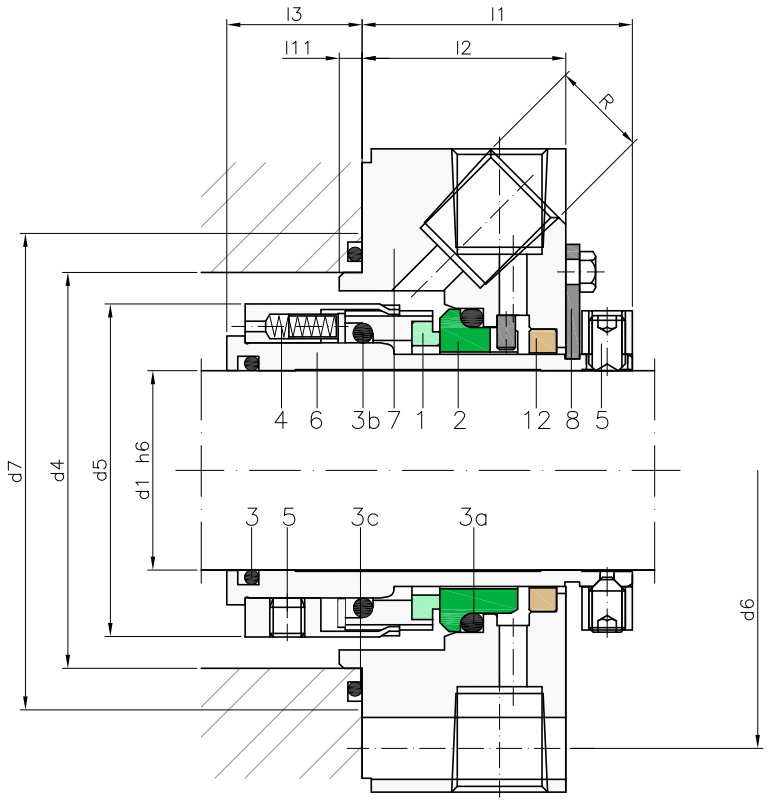
(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

Simple cartridge with connections for washing between the friction faces and the Quench system with unpressurized fluid for cooling. For applications where high pressure is required.
The special characteristics of the cartridge provide great robustness and reliability.
Its design allows axial movement of up to ± 2.0 mm, depending on the diameter and mounting.





COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3 O-ring
4 Springs
5 Drive ring
6 Sleeve
7 Flange
8 Setting clips
12 PTFE ring for quench.

DIMENSIONS CHART

Dimensions in mm

Shaft									
mm	d_3	d_4	d_5	d_6	d_7	l_1	l_2	l_3	l_{11}
20	138,0	70,0	50,0	105,0	85,0	94,0	76,0	1,0	6,0
30	148,0	80,0	62,0	115,0	95,0	98,0	77,0	2,5	6,0
40	158,0	90,0	72,0	125,0	105,0	98,5	77,5	7,0	6,0
50	168,0	100,0	86,0	140,0	115,0	99,5	78,5	12,0	6,0
60	188,0	120,0	99,0	160,0	135,0	102,0	81,0	18,5	6,0
70	198,0	130,0	109,0	170,0	145,0	106,0	81,0	18,0	6,0
80	208,0	140,0	119,0	180,0	155,0	106,0	81,0	23,0	6,0
90	238,0	160,0	129,0	205,0	175,0	106,0	81,0	23,0	6,0
100	248,0	170,0	153,0	215,0	185,0	109,0	81,0	24,0	6,0
110	258,0	180,0	168,0	225,0	195,0	109,0	81,0	24,0	6,0

Dimensions in inches

Shaft										
(")	mm	d_3	d_4	d_5	d_6	d_7	l_1	l_2	l_3	l_{11}
0,750	19,05	138,0	70,0	50,0	105,0	85,0	94,0	76,0	1,0	6,0
1,125	28,575	148,0	80,0	62,0	115,0	95,0	98,0	77,0	2,5	6,0
1,500	38,10	158,0	90,0	72,0	125,0	105,0	98,5	77,5	7,0	6,0
2,000	50,80	168,0	100,0	86,0	140,0	115,0	99,5	78,5	12,0	6,0
2,250	57,15	188,0	120,0	99,0	160,0	135,0	102,0	81,0	18,5	6,0
2,750	69,85	198,0	130,0	109,0	170,0	145,0	106,0	81,0	18,0	6,0
3,125	79,38	208,0	140,0	119,0	180,0	155,0	106,0	81,0	23,0	6,0
3,500	88,90	238,0	160,0	129,0	205,0	175,0	106,0	81,0	23,0	6,0
3,750	95,25	248,0	170,0	153,0	215,0	185,0	109,0	81,0	24,0	6,0
4,250	107,95	258,0	180,0	168,0	225,0	195,0	109,0	81,0	24,0	6,0

Dimensions subject to changes or modifications.

LSC25

SECTORS:

CHARACTERISTICS:

- Balanced.
- Not dependent on the rotation direction.
- Single cylindrical spring.

OPERATING LIMITS:

d_1= 24 ÷ 95 mm p= 20 kg/cm²

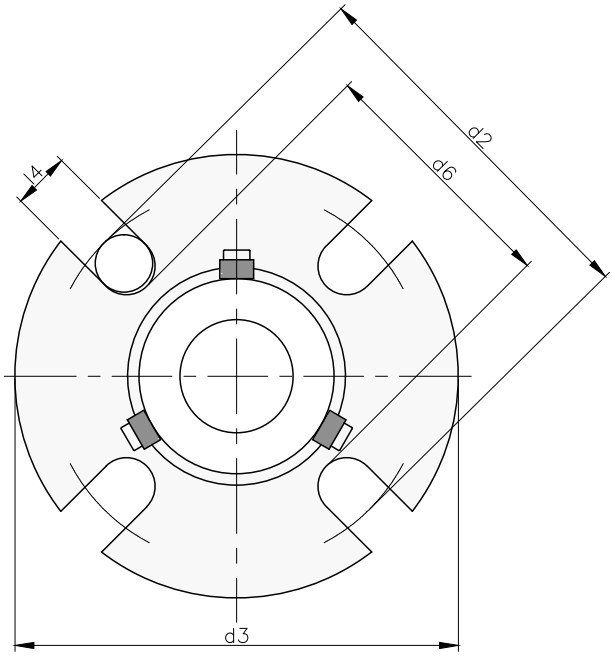
v= 15 m/s t= -15÷ +200ºC (*)

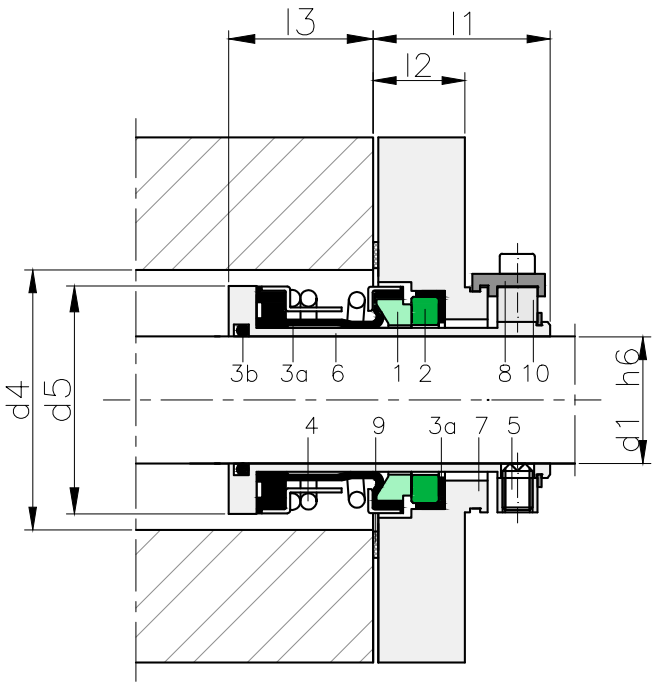
(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

Single cartridge in which the rotating part has metal tabs that reduce fatigue and tension in the rubber bellow when in the working position.





COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3a Rubber bellows
3b O-ring
4 Spring
5 Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring

DIMENSIONS CHART

Dimensions in mm

Shaft											
mm	d_2 min.	d_2 max.	d_3	d_4 min.	d_4 max.	d_5	d_6	l_1	l_2	l_3	l_4
24	72	93	105	44	52	43	60	32	21	41	12
25	72	93	105	44	52	43	60	32	21	41	12
28	72	93	105	49	52	47	60	32	21	41	12
30	76	98	110	49	56	48	64	32	21	41	12
32	77	98	110	51	57	50	65	32	21	41	12
33	81.5	103	115	57	61.5	55	69.5	32	21	43,5	12
35	81.5	103	115	57	61.5	55	69.5	32	21	43,5	12
38	86	108	120	62	66	60	74	32	21	42	12
40	88	108	120	62	68	60	76	32	21	42	12
43	90.5	123	135	67	70.5	65	78.5	32	21	42	12
45	93	123	135	67	73	65	81	32	21	42	12
48	98	123	135	74	78	70	86	32	21	45,5	12
50	100	123	135	74	78	70	88	32	21	45,5	12
55	111	134	150	82	85	81	95	32	21	50,5	16
60	121	130	150	87	91	86	101	32	21	50,5	20
65	128.5	140	160	93	98.5	91	108.5	32	21	57	20
70	138	155	175	100	108	99	118	32	21	57	20
75	148	170	190	105	118	104	128	32	21	57	20
80	154	170	190	111	124	109	134	32	21	57	20
85	158	170	190	116	128	114	138	32	21	62	20
90	165	195	215	121	135	119	145	32	21	63	20
95	168	195	215	126	138	124	148	32	21	63	20

Dimensions subject to changes or modifications.

LSC38-FQ

SECTORS:

CHARACTERISTICS:

- Balanced.
- Welded Metal bellows.
- Not dependent on the rotation direction.
- Flushing and quenching connections.

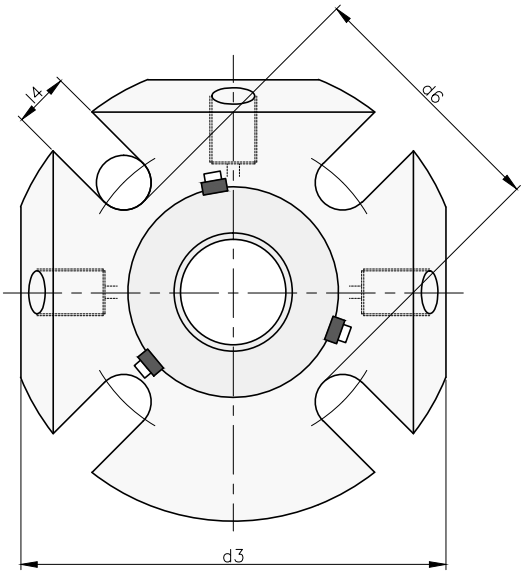
OPERATING LIMITS:

d_1= 25 ÷ 80 mm p= 20 kg/cm²

v= 25 m/s t= -15÷ +200ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.



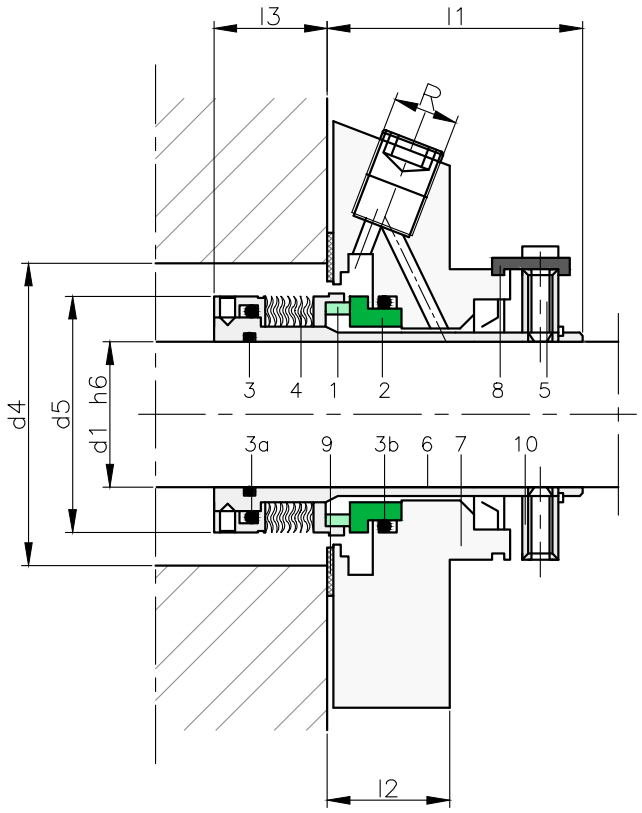
DESCRIPTION:

A single cartridge seal that permits the injection of external fluids (quenching and flushing) and the recirculation of internal fluids (flushing).
The rotating part of the seal has a self-cleaning metal bellows structure.
Suitable for applications with extremely viscous, sticky fluids laden with particles that run a risk of freezing, solidification or sedimentation.

CONECTIONS (R):

From 25 mm to 65 mm: 1/4" NPT.

From 70 mm to 80 mm: 3/8" NPT.



COMPONENTS:

1 Rotating contact surface.
2 Stationary contact surface
3 O-rings
4 Metal bellows
5 Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring

DIMENSIONS CHART

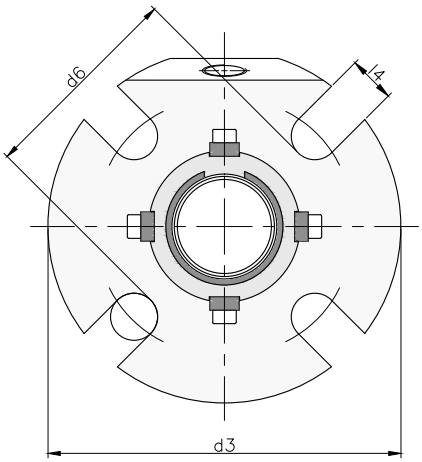
Dimensions in mm

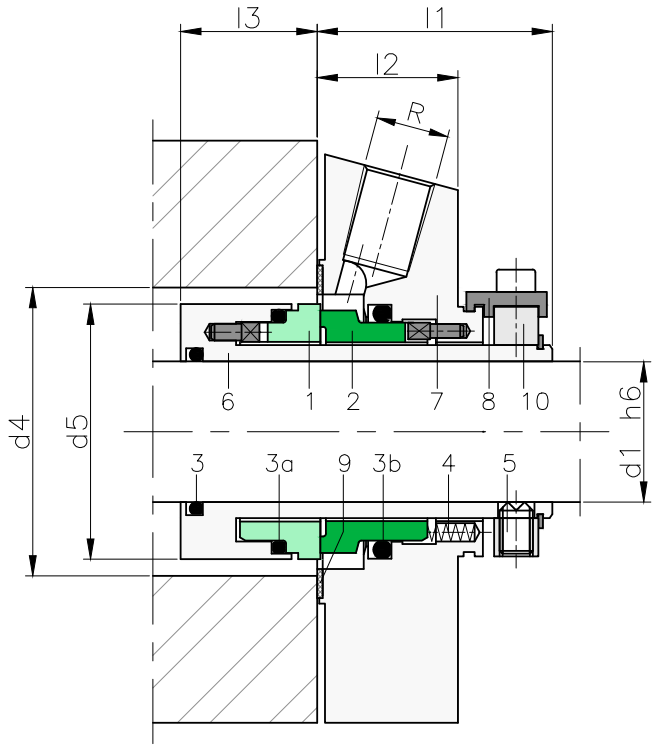
Shaft									
mm	d_3	$d_{4\ min.}$	$d_{4\ mx.}$	d_5	d_6	l_1	l_2	l_3	l_4
25	105,0	47,0	51,0	45,0	62,0	53,4	25,4	26,1	13,2
30	105,0	52,0	56,0	49,4	67,0	53,4	25,4	25,0	13,2
32	108,0	54,5	57,0	52,3	70,0	53,4	25,4	25,0	13,2
33	108,0	54,5	57,0	52,3	70,0	53,4	25,4	25,0	13,2
35	113,0	58,0	61,5	54,8	72,0	53,4	25,4	25,0	13,2
38	123,0	60,0	66,0	57,5	75,0	53,4	25,4	25,0	14,0
40	123,0	62,0	68,0	58,8	77,0	53,4	25,4	24,8	14,2
43	133,0	64,5	70,5	61,9	80,0	53,4	25,4	25,0	14,2
45	138,0	68,5	73,0	65,0	82,0	53,4	25,4	25,0	14,2
48	138,0	71,0	75,0	68,4	85,0	53,4	25,4	25,3	14,2
50	148,0	73,0	78,0	70,0	87,0	53,4	25,4	25,7	14,2
53	148,0	75,0	87,0	71,9	97,0	53,4	25,4	24,4	18,0
55	148,0	77,0	83,0	74,6	92,0	53,4	25,4	25,5	18,0
60	157,0	87,0	91,0	83,9	102,0	53,4	25,4	26,7	18,0
65	163,0	90,0	98,5	87,5	109,3	53,4	25,4	26,6	18,0
70	178,0	98,0	108,0	93,0	118,3	53,4	25,4	28,1	18,0
75	190,0	101,6	118,0	96,8	129,0	63,9	28,0	30,5	18,0
80	195,0	108,0	124,0	104,7	135,0	64,0	28,0	30,4	18,0

Dimensions subject to changes or modifications.

LSC40-F

SECTORS:





LSC40-F

CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.
- Flushing connections.

OPERATION LIMITS:

d_1= 25 ÷ 100 mm p= 25 kg/cm²

v= 16 m/s t= -15÷ +200ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

A single cartridge with connections for flushing the seal contact faces. The springs are portected from the product to prevent blocking in applications with particle-laden fluids. The standard flange has a connection for flushing to clean and cool the faces (LSC40-F)

COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3 O-rings
4 Springs
5 Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring
11 Lip seal quench
12 Throttle ring PTFE carbon -graphite reinforced quench

CONNECTIONS (R):

From 25 mm to 35 mm: 1/4" NPT.
From 38 mm to 100 mm: 3/8" NPT.

DIMENSIONS CHART

Dimensions in inches

Shaft (")	mm	d_3	d_4 mín.	d_4 máx.	d_5	d_6	l_1	l_2	l_3	l_4	l_{12}	l_{13}	l_{14}	l_{15}	l_{16}	l_{17}
1,000	25,4	105,0	44,5	50,8	43,0	62,0	42,4	25,4	24,6	13,2	35,0	32,0	17,5	79,5	53,4	26,1
1,125	28,6	105,0	47,6	52,1	46,0	62,0	42,4	25,4	24,6	13,2	35,0	32,0	17,5	79,5	53,4	26,1
1,250	31,8	110,0	50,8	57,2	49,8	67,1	42,4	25,4	24,6	13,2	35,0	32,0	17,5	79,5	53,4	26,1
1,375	34,9	113,0	54,0	61,5	53,0	69,9	42,4	25,4	24,6	13,2	35,0	32,0	17,5	79,5	53,4	26,1
1,500	38,1	123,0	57,2	66,7	55,9	74,9	42,4	25,4	24,6	13,2	35,0	32,0	17,5	79,5	53,4	26,1
1,625	41,3	123,0	60,3	68,6	59,4	77,0	42,4	25,4	24,6	15,2	35,0	32,0	17,5	79,5	53,4	26,1
1,750	44,5	138,0	63,5	71,4	62,5	81,0	42,4	25,4	24,6	15,2	35,0	32,0	17,5	79,5	53,4	26,1
1,875	47,6	138,0	66,7	74,7	65,6	81,0	42,4	25,4	24,6	15,2	35,0	32,0	17,5	79,5	53,4	26,1
2,000	50,8	148,0	69,9	81,0	68,0	87,1	42,4	25,4	24,6	15,2	35,0	32,0	17,5	79,5	53,4	26,1
2,125	53,98	148,0	73,0	87,3	72,0	97,0	42,4	25,4	24,6	18,0	35,0	32,0	17,5	79,5	53,4	26,1
2,250	57,2	157,0	76,2	90,4	75,2	100,1	42,4	25,4	24,6	18,0	35,0	32,0	17,5	79,5	53,4	26,1
2,375	60,3	157,0	79,4	91,2	78,0	102,1	42,4	25,4	24,6	18,0	35,0	32,0	17,5	79,5	53,4	26,1
2,500	63,5	163,0	82,6	96,5	81,6	105,9	42,4	25,4	24,6	18,0	35,0	32,0	17,5	79,5	53,4	26,1
2,625	66,7	163,0	85,7	100,0	84,8	109,0	42,4	25,4	24,6	18,0	35,0	32,0	17,5	79,5	53,4	26,1
2,750	69,9	178,0	95,3	108,0	93,0	118,1	42,4	25,4	24,6	18,0	35,0	37,9	22,0	79,5	53,4	26,1
2,875	73,0	190,0	101,6	118,0	100,0	129,0	57,4	25,4	26,6	18,0	46,1	37,9	22,0	--	--	--
3,000	76,2	190,0	101,6	118,0	100,0	129,0	57,4	25,4	26,6	18,0	46,1	37,9	22,0	98,0	63,9	34,1
3,125	79,4	195,0	104,8	121,0	106,4	135,0	57,4	25,4	26,6	18,0	46,1	37,9	22,0	98,0	63,9	34,1
3,250	82,6	195,0	108,0	124,0	106,4	135,0	57,4	28	26,6	18,0	46,1	37,9	22,0	98,0	63,9	34,1
3,375	85,7	198,0	111,1	128,0	109,5	139,0	57,4	28	26,6	22,0	46,1	37,9	22,0	98,0	63,9	34,1
3,500	88,9	198,0	114,3	131,0	112,7	142,0	57,4	28	26,6	22,0	46,1	37,9	22,0	98,0	63,9	34,1
3,625	92,1	205,0	117,5	135,0	115,9	145,0	57,4	28	26,6	22,0	46,1	37,9	22,0	98,0	63,9	34,1
3,750	95,3	208,0	120,7	138,0	119,1	148,0	57,4	28	26,6	22,0	46,1	37,9	22,0	98,0	63,9	34,1
4,000	101,6	218,0	127,0	144,0	125,4	154,0	57,4	28	26,6	22,0	46,1	37,9	22,0	--	--	--

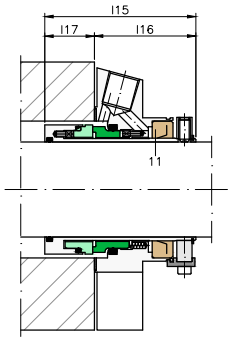
Dimensions subject to changes or modifications.

DIMENSIONS CHART

Dimensions in mm

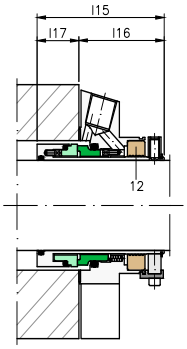
Shaft mm	l_1	l_2	l_3	l_4	l_{12}	l_{13}	l_{14}	l_{15}	l_{16}	l_{17}	d_3	d_4 mín.	d_4 máx.	d_5	d_6
25	42,4	25,4	24,6	13,2	35.0	32.0	17.5	79.5	53.4	26.1	105	44	51,5	43	62
28	42,4	25,4	24,6	13,2	35.0	32.0	17.5	79.5	53.4	26.1	105	47	52	46	62
30	42,4	25,4	24,6	13,2	35.0	32.0	17.5	79.5	53.4	26.1	110	49	56	48	65
32	42,4	25,4	24,6	13,2	35.0	32.0	17.5	79.5	53.4	26.1	110	51	57	49,8	67
33	42,4	25,4	24,6	13,2	35.0	32.0	17.5	79.5	53.4	26.1	113	51	57	49,8	67
35	42,4	25,4	24,6	13,2	35.0	32.0	17.5	79.5	53.4	26.1	123	54	61,5	53	70
38	42,4	25,4	24,6	14,2	35.0	32.0	17.5	79.5	53.4	26.1	123	57	66	56	75
40	42,4	25,4	24,6	14,2	35.0	32.0	17.5	79.5	53.4	26.1	133	59	68	58	75
42	42,4	25,4	24,6	14,2	35.0	32.0	17.5	79.5	53.4	26.1	133	61,5	69,5	60,5	80
43	42,4	25,4	24,6	14,2	35.0	32.0	17.5	79.5	53.4	26.1	138	61,5	70,5	60,5	80
45	42,4	25,4	24,6	14,2	35.0	32.0	17.5	79.5	53.4	26.1	138	64	73	62,5	81
48	42,4	25,4	24,6	14,2	35.0	32.0	17.5	79.5	53.4	26.1	138	67	75	65,6	84
50	42,4	25,4	24,6	18	35.0	32.0	17.5	79.5	53.4	26.1	148	69	78	68	87
53	42,4	25,4	24,6	18	35.0	32.0	17.5	79.5	53.4	26.1	148	73	87	72	97
55	42,4	25,4	24,6	18	35.0	32.0	17.5	79.5	53.4	26.1	148	74	83	73	90
60	42,4	25,4	24,6	18	35.0	32.0	17.5	79.5	53.4	26.1	157	79	91	78	102
65	42,4	25,4	24,6	18	35.0	32.0	17.5	79.5	53.4	26.1	163	85,7	98,5	84,8	109
70	42,4	25,4	24,6	18	35.0	32.0	17.5	79.5	53.4	26.1	178	95	108	93	118
75	57,4	28	26,6	18	46.1	37.9	22.0	98.0	63.9	34.1	190	101,6	118	100	129
80	57,4	28	26,6	18	46.1	37.9	22.0	98.0	63.9	34.1	195	108	124	106,4	135
85	57,4	28	26,6	22	46.1	37.9	22.0	98.0	63.9	34.1	198	111,1	128	109,5	139
90	57,4	28	26,6	22	46.1	37.9	22.0	98.0	63.9	34.1	205	117,5	135	115,9	145
95	57,4	28	26,6	22	46.1	37.9	22.0	98.0	63.9	34.1	208	120,7	138	119,1	148
100	57,4	28	26,6	22	46.1	37.9	22.0	98.0	63.9	34.1	218	127	144	125,4	154

Dimensions subject to changes or modifications.



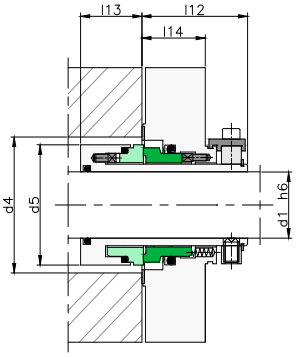
LSC40-FQO

Single cartridge with connections for quench and flush between the faces, with a non-pressurised fluid. The quench fluid sealing is done through an oil seal.
For applications using fluids with scant lubrication.



LSC40-FQG

Single cartridge with connections for quench and flush between the faces, with a non-pressurised fluid. The quench fluid sealing is done through a throttle ring PTFE carbon-graphite reinforced.

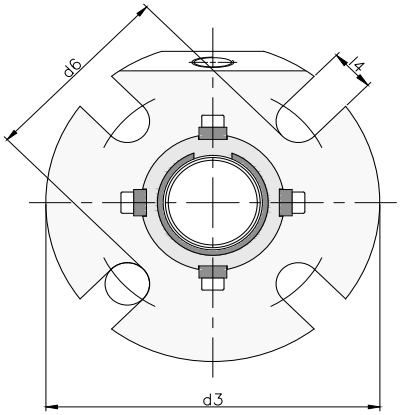


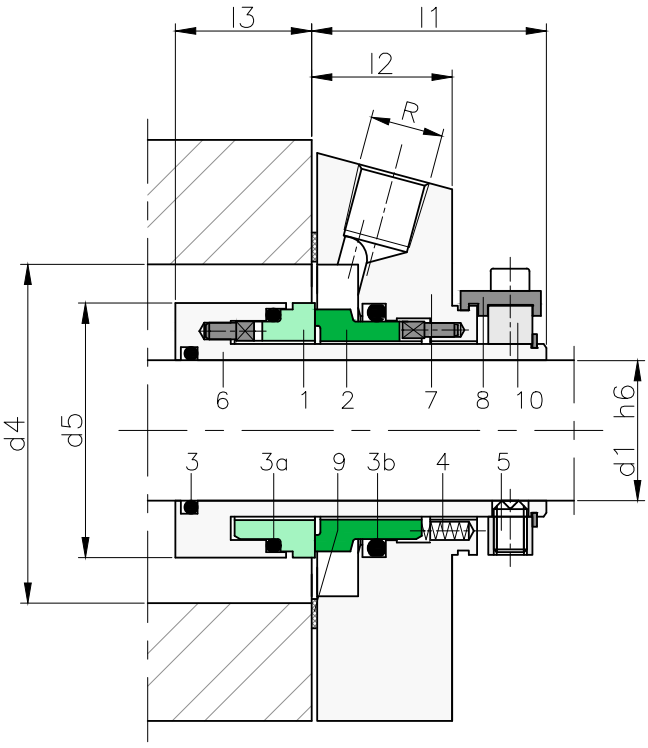
LSC40

Single cartridge with no connections, for closed chamber applications in which no water recirculation is necessary.
Applications: Clean fluids

LSC40-F ANSI

SECTORS:





CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.
- Flushing connections.

OPERATING LIMITS:

d_1= 25,4 ÷ 95,3 mm p= 25 kg/cm²

v= 16 m/s t= -15÷ +200ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

A single cartridge with connections for flushing the seal contact faces. The springs are portected from the product to prevent blocking in applications with particle-laden fluids. The standard flange has a connection for flushing to clean and cool the faces.

Recomended for flange pumps ANSI Standard bore and ansi big bore

COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3 O-rings
4 Springs
5 Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring
11 Lip seal quench
12 Throttle ring PTFE carbon -graphite reinforced quench

CONNECTIONS (R):

From 25,4 mm to 34,9 mm: 1/4" NPT.

From 38,1 mm to 95,3 mm: 3/8" NPT.

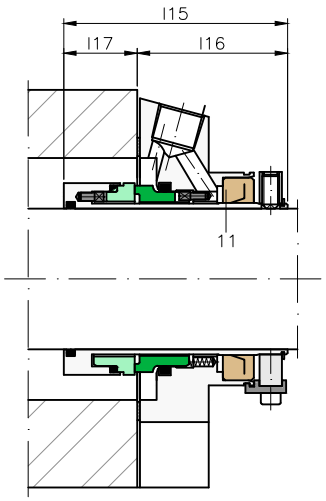
DIMENSIONS CHART ANSI BIG BORE

Dimensions in inches

LSC40-FQOAB LSC40-FQGAB LSC40-FAB

Shaft													
(")	mm	d_3	d_4 min.	d_4 max.	d_5	d_6	l_1	l_2	l_3	l_4	l_{15}	l_{16}	l_{17}
1,000	25,4	--	--	--	--	--	--	--	--	--	--	--	--
1,125	28,5	114,3	44,5	71	43,5	84,1	42,3	25,4	24,6	11,1	74,6	48,4	26,1
1,250	31,7	--	--	--	--	--	--	--	--	--	--	--	--
1,375	35	130	50,8	81	49,7	90	42,3	25,4	24,6	11,1	74,8	48,7	26,1
1,500	38,1	--	--	--	--	--	--	--	--	--	--	--	--
1,625	41,2	--	--	--	--	--	--	--	--	--	--	--	--
1,750	44,4	165	63,5	103	62,5	116	42,3	25,4	24,6	14,2	76,5	50,3	26,1
1,875	47,6	152	67,5	100	65,6	112	42,3	25,4	24,6	14	78	52,3	25,7
2,000	50,8	160	70	116	68	124	42,3	32	18	14	79,5	53,3	26,1
2,125	54	175	74	115	72	134	42,3	25,4	24,6	18	76,5	50,3	26,1
2,250	57,1	163	78,5	112	75,1	119	48,7	32,4	17,6	18	79,5	53,8	26,1
2,500	63,5	198	83,7	134	81,5	140	48,7	31,7	18,2	18	79,5	53,8	26,1
2,625	66,6	175	80,5	130	84,7	136	48,7	31,7	18,2	18	79,5	53,8	26,1
2,750	69,8	190	95	133	93	140	49,4	32,4	17,6	16	79,5	53,8	26,1
3,000	76,2	209	102	140	100	150	57,8	32,4	26,1	16,5	98	64	34,1
3,250	82,5	--	--	--	--	--	--	--	--	--	--	--	--

Dimensions subject to changes or modifications.



LSC40-FQOAB : ANSI BIG BORE
LSC40-FQOAS : ANSI STANDARD BORE

Single cartridge with connections for quench and flush between the faces, with a non-pressurised fluid. The quench fluid sealing is done through a lip seal.
For applications using fluids with scant lubrication.

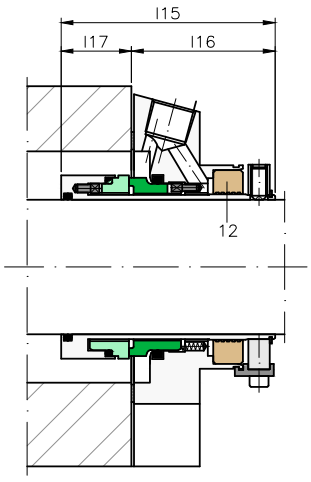
DIMENSIONS CHART ANSI STANDARD BORE

Dimensions in inches

LSC40-FQOAS LSC40-FQGAS LSC40-FAS

Shaft													
(")	mm	d_3	d_4 min	d_4 max	d_5	d_6	l_1	l_2	l_3	l_4	l_{15}	l_{16}	l_{17}
1,000	25,4	100	44	56	43	70	42,3	25,4	24,6	11	74,6	48,4	26,1
1,125	28,6	105	44,5	67	43,5	62	42,3	25,4	24,6	11,1	74,6	48,4	26,1
1,250	31,8	108	51	61	50	67	42,3	25,4	24,6	11	79,5	53,3	26,1
1,375	34,9	107	50,8	61	49,8	70,1	42,3	25,4	24,6	11,1	74,8	48,7	26,1
1,500	38,1	114	57	69	55,8	75	42,3	25,4	24,6	14	79,5	53,3	26,1
1,625	41,3	125	61,4	71	59,4	77	42,3	25,4	24,6	14	79,5	53,3	26,1
1,750	44,5	130	63,5	75	62,5	82	42,3	25,4	24,6	14,2	76,5	50,3	26,1
1,875	47,6	130	67,5	78	65,6	81	42,3	25,4	24,6	14	78	51,8	26,1
2,000	50,8	139	70	81	68	87,1	42,3	25,4	24,6	16	79,5	53,3	26,1
2,125	54,0	140	74	91	71,9	97	42,3	25,4	24,6	16,5	76,5	50,3	26,1
2,250	57,2	149	77,1	91	75,1	98	42,3	25,4	24,6	16,5	79,5	53,3	26,1
2,375	60,3	157	79,3	91,1	77,9	102,1	42,3	25,4	24,6	18	25,4	25,4	25,4
2,500	63,5	170	83,5	100	81,5	115	42,3	28,5	24,6	18	79,5	53,3	26,1
2,625	66,7	162	86,7	102	84,7	115	42,3	31,7	24,6	16	79,5	53,3	26,1
2,750	69,9	189	95	111	92,9	118	49	32	18	18	79,5	53,3	26,1
3,000	76,2	199	102	120	100	127	57,4	32	26,5	18	98	64	34,1
3,250	82,6	198,8	108,4	125	106,4	135	57,4	32	26,5	18	98	64	34,1
3,750	95,3	208	120,6	138	119,1	148	57,4	25,4	26,5	22	25,4	25,4	25,4

Dimensions subject to changes or modifications.



LSC40-FQGAB : ANSI BIG BORE
LSC40-FQGAS : ANSI STANDARD BORE

Single cartridge with connections for quench and flush between the faces, with a non-pressurised fluid. The quench fluid sealing is done through a throttle ring PTFE carbon-graphite reinforced.
For applications using fluids with scant lubrication.

LSC50-F

SECTORS:

CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.
- Flushing connections.

OPERATING LIMITS:

d_1= 50 ÷ 150 mm p= 10 kg/cm²

v= 10 m/s t= -40 ÷ +150ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

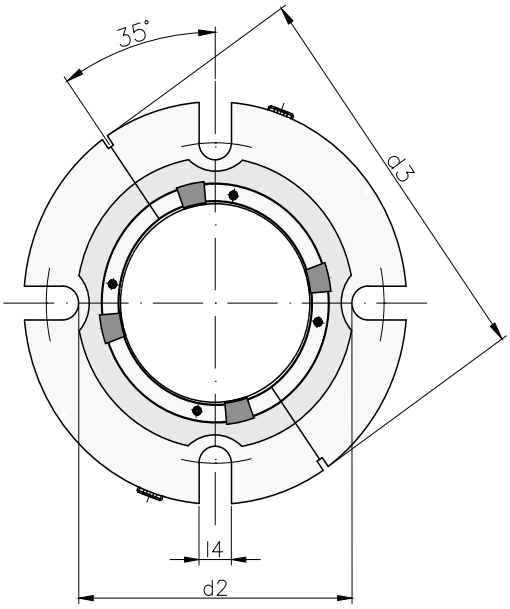
The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

A Split single cartridge with connection for flushing.

For applications where is necessary to replace braided packing and there is enough space in the installation or the removal of the pump is very complex and requires a large investment of time.

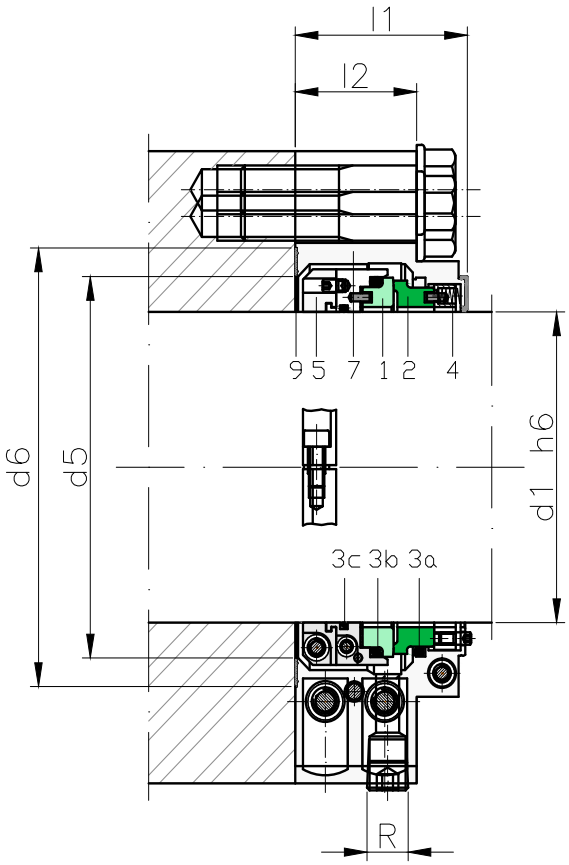
Each half is placed around the shaft. They are joined by screws, without dismantling the pump.



CONNECTIONS (R):

From 50 mm to 82,55 mm: 3/8" NPT.

From 88,9 mm to 150 mm: 1/2" NPT.



COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3a O-ring
3b O-ring
3c O-ring
4 Springs
5 Metal frame
7 Flange
9 Flat gasket

DIMENSIONS CHART

Dimensions in inches

Shaft								
(")	mm	d_2	d_3	d_5	d_6	l_1	l_2	l_4
2,00	50,8	87,7	138	75	84	62,9	45	15
2,15	54	92	147	79	88	62,9	45	15
2,375	60,3	105	149	89	101	64	46	17,5
2,50	63,5	108,5	157	92,5	104,5	64	46	17,5
2,75	69,8	118	176	98	113	64	46	20
3,00	76,2	127	192	107	122	65	47	20
3,25	82,5	135	191	110	132	65	47	20
3,50	89	145	203	121	140	72,4	50,5	22
3,75	95,2	148	206	125	143	72,4	50,5	22
4,00	101,6	155	216	131	150	72,4	50,5	22
4,25	108	170	230	142	165	72,4	50,5	22
4,50	114,3	180	240	152	175	72,4	50,5	22
4,75	120,6	180	240	152	175	72,4	50,5	22
5,00	127	190	268	162	185	89,5	62,5	26
5,50	139,7	205	303	175	200	89,5	62,5	26
6,00	152,4	220	308	188	215	89,5	62,5	26

Dimensions subject to changes or modifications.

DIMENSIONS CHART

Dimensions in mm

Shaft							
mm	d_2	d_3	d_5	d_6	l_1	l_2	l_4
50	88	138	75	84	63	45	15
60	105	149	89	101	64	46	17,5
70	118	176	98	113	64	46	20
80	135	191	110	132	65	47	20
90	145	203	121	140	72,5	50,5	22
100	155	216	131	150	72,5	50,5	22
110	170	230	142	165	72,5	50,5	22
120	180	240	152	175	72,5	50,5	22
125	190	268	162	185	89,5	62,5	26
140	205	303	175	200	89,5	62,5	26
150	220	308	188	215	89,5	62,5	26

Dimensions subject to changes or modifications.

LSC85

SECTORS:

CHARACTERISTICS:

- Balanced.
- Welded metal bellows.
- Not dependent on the rotation direction.

OPERATING LIMITS:

d_1= 24 ÷ 95 mm p= 20 kg/cm²

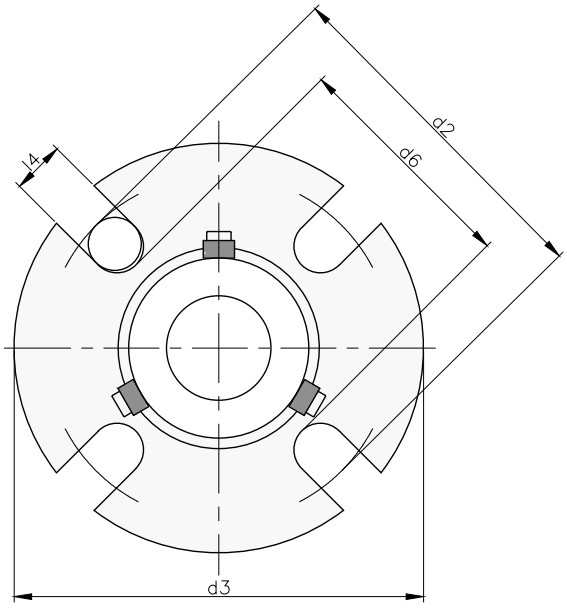
v= 25 m/s t= -40 ÷ +200ºC (*)

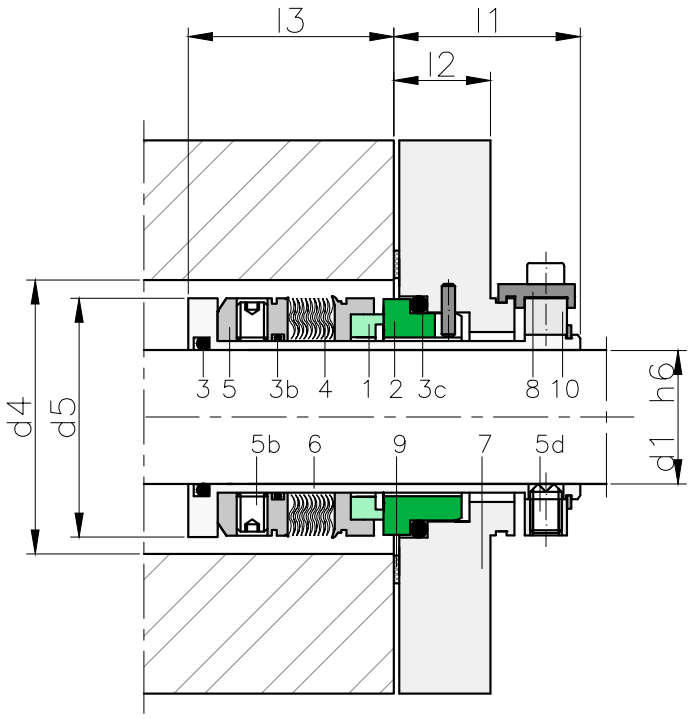
(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

Single cartridge in which the rotating part has a metal bellow. Adequate for applications with extremely viscous, sticky, particle-laden fluids.





COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3 O-rings
4 Metal bellows
5 Metal frame
5b Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring

DIMENSIONS CHART

Dimensions in mm

Shaft											
mm	d_2 mín.	d_2 máx.	d_3	d_4 mín.	d_4 máx.	d_5	d_6	l_1	l_2	l_3	l_4
24	72	93	105	44	52	43	60	32	21	41	12
25	72	93	105	44	52	43	60	32	21	41	12
28	72	93	105	49	52	47	60	32	21	41	12
30	76	98	110	49	56	48	64	32	21	41	12
32	77	98	110	51	57	50	65	32	21	41	12
33	81.5	103	115	57	61.5	55	69.5	32	21	43.5	12
35	81.5	103	115	57	61.5	55	69.5	32	21	43.5	12
38	86	108	120	62	66	60	74	32	21	42	12
40	88	108	120	62	68	60	76	32	21	42	12
43	90.5	123	135	67	70.5	65	78.5	32	21	42	12
45	93	123	135	67	73	65	81	32	21	42	12
48	98	123	135	74	78	70	86	32	21	45.5	12
50	100	123	135	74	78	70	88	32	21	45.5	12
55	111	134	150	82	85	81	95	32	21	50.5	16
60	121	130	150	87	91	86	101	32	21	50.5	20
65	128.5	140	160	93	98.5	91	108.5	32	21	57	20
70	138	155	175	100	108	99	118	32	21	57	20
75	148	170	190	105	118	104	128	32	21	57	20
80	154	170	190	111	124	109	134	32	21	57	20
85	158	170	190	116	128	114	138	32	21	62	20
90	165	195	215	121	135	119	145	32	21	63	20
95	168	195	215	126	138	124	148	32	21	63	20

Dimensions subject to changes or modifications.

LSC211A-FD

SECTORS:

CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.
- Stuffing box gland shape.
- Flush and drain connections.

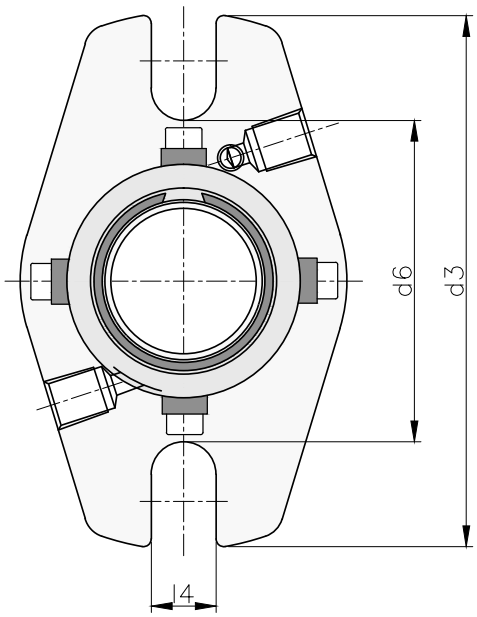
OPERATING LIMITS:

d_1= 25 ÷ 70 mm p= 20 kg/cm²

v= 11.2 m/s t= -15÷ +200ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

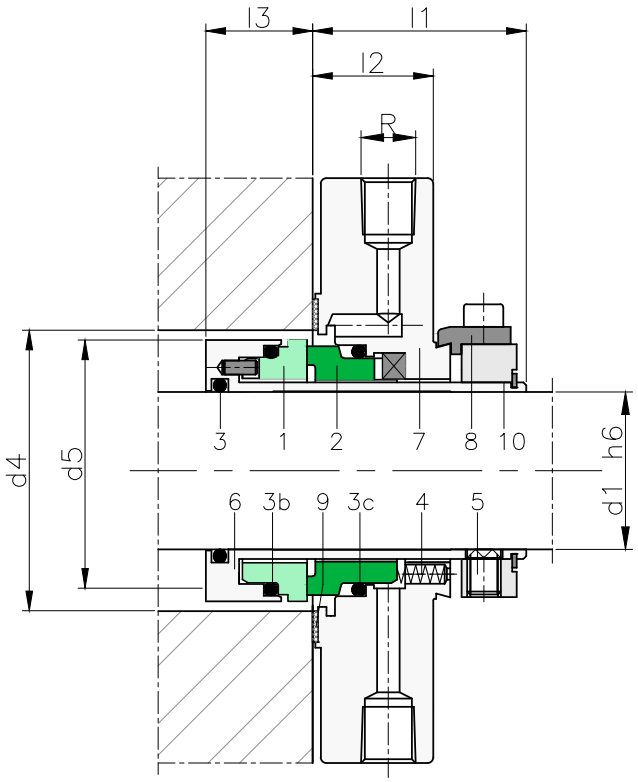


DESCRIPTION:

Cartridge cast flange with a stuffing box gland shape for replacing packing in pumps.
The springs are protected from the product to prevent the blocking in applications with particle-laden fluids. The flange has two connections, one for flushing and cleaning the faces, and the another is a drain to clean the springs and also to control the small leaks.

CONNECTIONS (R):

From 25 mm to 70 mm: 1/8" NPT.



COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3 O-rings
4 Springs
5 Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring

DIMENSIONS CHART

Dimensions in mm

Shaft									
mm	d_3	d_4 min.	d_4 max.	d_5	d_6	l_1	l_2	l_3	l_4
25	104	49	60	43,5	62	38	21,5	19	12,5
28	104	50	61	46,5	63	38	21,5	19	12,5
30	104	52	63	48,5	65	38	21,5	19	12,5
32	102	54	59	51,5	67	38	21,5	19	12,5
33	104	54	65	51,5	67	38	21,5	19	12,5
35	115	57	68	53,5	70	38	21,5	19	12,5
38	125	62	73	56,5	75	38	21,5	19	14,7
40	125	62	73	58,5	75	38	21,5	19	14,7
42	133	66	77	60,5	79	38	21,5	19	14,7
43	133	67	78	61,5	80	38	21,5	19	14,7
45	140	68	79	63,5	81	38	21,5	19	14,7
48	140	71	82	66,5	84	38	21,5	19	14,7
50	140	74	85	68,5	87	38	21,5	19	14,7
53	150	77	88	71,5	90	38	21,5	19	17,5
55	150	79	90	73,5	92	38	21,5	19	17,5
58	155	82	93	76,5	95	38	21,5	19	17,5
60	160	87	98	78,5	100	38	21,5	19	17,5
63	165	90	101	81,5	103	38	21,5	19	17,5
65	165	92	103	83,5	105	38	21,5	19	17,5
68	170	97	108	86,5	110	38	21,5	19	17,5
70	180	107	118	88,5	120	38	21,5	19	17,5

Dimensions subject to changes or modifications.

Dimensions in inches

Shaft										
(")	mm	d_3	d_4 min	d_4 max	d_5	d_6	l_1	l_2	l_3	l_4
1,000	25,40	104	49	61	46,5	62	38	21,5	19	12,5
1,125	28,58	104	52	63	48,5	62	38	21,5	19	12,5
1,250	31,75	104	54	65	51,5	67	38	21,5	19	12,5
1,375	34,93	115	57	68	53,5	70	38	21,5	19	12,5
1,500	38,10	125	62	73	56,5	75	38	21,5	19	14,7
1,625	41,28	133	66	77	60,5	79	38	21,5	19	14,7
1,750	44,45	140	68	79	63,5	81	38	21,5	19	14,7
1,875	47,63	140	71	82	66,5	84	38	21,5	19	14,7
2,000	50,80	150	77	88	71,5	92	38	21,5	19	17,5
2,125	53,98	150	79	90	73,5	92	38	21,5	19	17,5
2,250	57,15	155	82	93	76,5	95	38	21,5	19	17,5
2,375	60,33	160	87	98	78,5	100	38	21,5	19	17,5
2,500	63,50	165	90	101	81,5	103	38	21,5	19	17,5
2,625	66,68	170	97	108	86,5	110	38	21,5	19	17,5
2,750	69,85	180	107	118	88,5	120	38	21,5	19	17,5

LSC90

SECTORS:

CHARACTERISTICS:

- Balanced.
- Not dependent on the rotation direction.

OPERATING LIMITS:

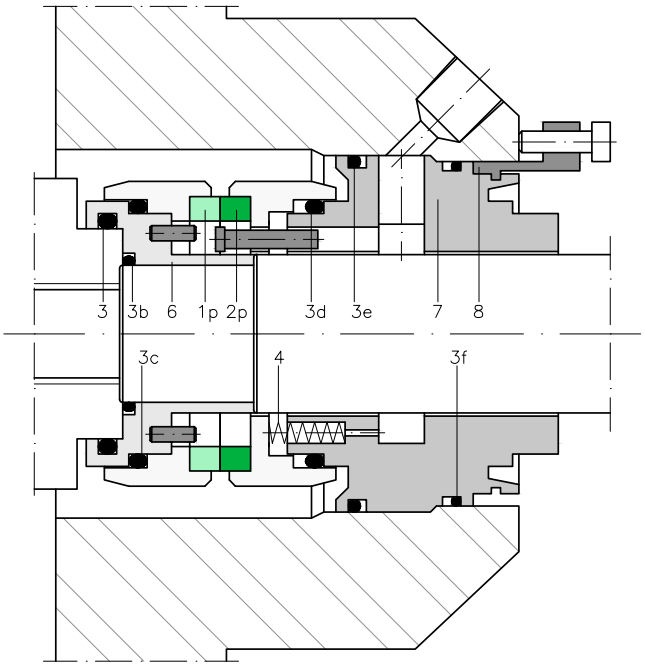
p= 25 kg/cm²

v= 20 m/s

t= -20÷ +140ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.



DESCRIPTION:

A compact single cartridge that is fixed to the shaft and to the flange, with no additional elements. Designed to prevent changes in pressure from opening the contact surfaces.

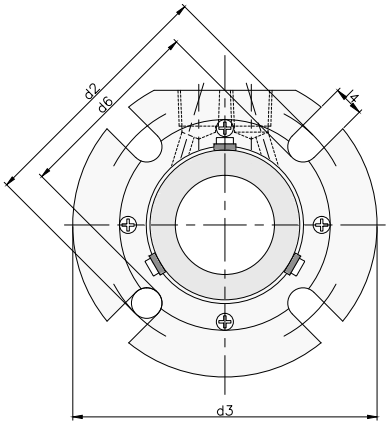
COMPONENTS:

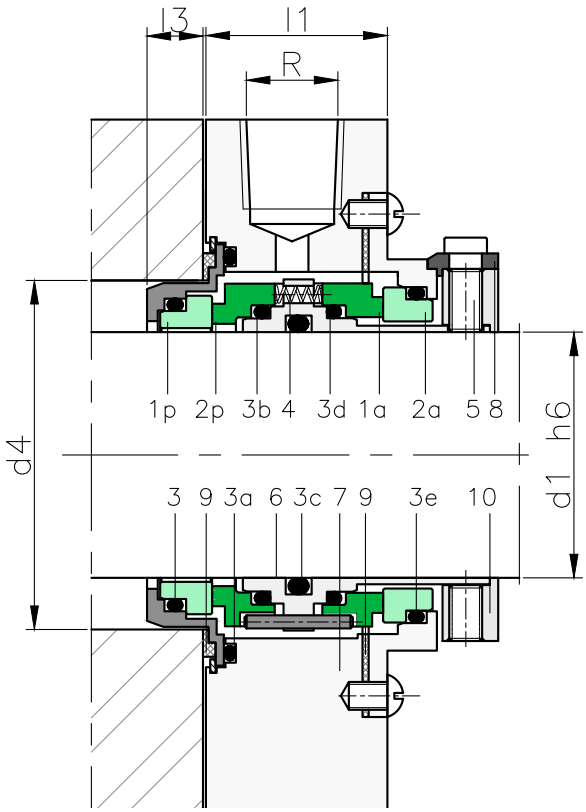
1p Rotating contact surface
2p Stationary contact surface
3 O-rings
4 Springs
6 Sleeve
7 Housing Stationary part
8 Locking fixture

DOUBLE CARTRIDGE...

LDC21

SECTORS:





CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.
- Barrier fluid connections.

OPERATING LIMITS:

d_1= 25 ÷ 120 mm p= 20 kg/cm²

v= 20 m/s t= -15÷ +200ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

A double cartridge seal with a “back to back” arrangement which permits operation with barrier fluids in excessive pressure conditions with respect to the working fluid (P1 + 1.5 ~ 2 kg/cm2).
For this reason it is advisable to install it in applications with toxic, contaminant or potentially dangerous fluids in where safety is an important factor.

COMPONENTS:

1p Stationary contact surface product side
2p Rotating contact surface product side
1a Rotating contact surface atmospheric side
2a Stationary contact surface atmospheric side
3 O-rings
4 Springs
5 Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring

CONNECTIONS (R):

3/8" NPT.
For 25, 28 and 30 mm shafts the connections are at opposite sides of the flange.

DIMENSIONS CHART

Dimensions in mm

Shaft								
mm	d_2	d_3	d_4 mín	d_4 máx	d_6	l_1	l_3	l_4
25	79,5	116,1	44,5	50,8	67,2	58,0	10	16
28	80,5	119,1	47,6	54,0	68,2	58,0	10	16
30	85,9	122,4	50,8	57,2	73,5	58,0	10	16
35	89,4	125,5	54,0	60,3	77,1	58,0	10	16
38	94,2	128,8	57,2	63,5	81,9	58,0	10	16
40	95,8	131,8	60,3	66,7	83,4	58,0	10	16
45	98,8	135,1	63,5	69,9	82,5	58,0	10	16
48	101,9	138,2	66,7	73,0	85,5	58,0	10	16
50	107,2	141,5	69,9	76,2	90,8	58,0	10	16
53	115,1	144,5	73,0	79,4	98,5	58,0	10	16
55	115,1	144,5	73,0	79,4	98,5	58,0	10	16
58	117,6	147,8	76,2	82,6	101,3	58,0	10	16
60	121,2	150,9	82,6	85,7	104,8	58,0	10	16
63	124,5	154,2	85,7	88,9	--	58,0	10	16
65	139,2	164,9	92,1	95,3	120,3	67,6	10	20
68	142,2	168,2	95,3	98,4	--	67,6	10	20
70	146,1	171,5	98,4	101,6	127,1	67,6	10	20
75	148,6	174,5	101,6	104,8	129,6	67,6	10	20
80	151,9	177,6	104,8	108,0	132,9	67,6	10	20
85	158,2	183,9	111,1	114,3	139,2	67,6	10	20
90	161,3	187,2	114,3	117,5	142,3	67,6	10	20
95	167,6	193,6	120,7	123,8	148,6	67,6	10	20
100	174,0	199,9	127,0	130,2	155,0	67,6	10	20
105	177,3	203,0	130,2	133,4	--	67,6	10	20
110	181,4	209,3	136,5	139,7	--	67,6	10	20
115	184,7	212,6	139,7	142,9	--	67,6	10	20
120	193,0	219,0	146,1	149,2	--	67,6	10	20

Dimensions in inches

Shaft								
(")	mm	d_2	d_3	d_4 mín	d_4 máx	l_1	l_3	l_4
1,000	25,4	79,5	116,1	44,5	50,8	49,3	11,4	15,9
1,125	28,6	80,5	119,1	47,6	54,0	49,3	11,4	15,9
1,250	31,8	85,9	122,4	50,8	57,2	49,3	11,4	15,9
1,375	34,9	89,4	125,5	54,0	60,3	62,0	11,4	15,9
1,500	38,1	94,2	128,8	57,2	63,5	62,0	11,4	15,9
1,625	41,3	95,8	131,8	60,3	66,7	62,0	11,4	15,9
1,750	44,5	98,8	135,1	63,5	69,9	62,0	11,4	15,9
1,875	47,6	101,9	138,2	66,7	73,0	62,0	11,4	15,9
2,000	50,8	107,2	141,5	69,9	76,2	62,0	11,4	15,9
2,125	54,0	115,1	144,5	73,0	79,4	62,0	11,4	15,9
2,250	57,2	117,6	147,8	76,2	82,6	62,0	11,4	15,9
2,375	60,3	121,2	150,9	82,6	85,7	62,0	11,4	15,9
2,500	63,5	124,5	154,2	85,7	88,9	62,0	11,4	15,9
2,625	66,7	142,2	164,8	92,1	95,3	67,6	11,4	19,1
2,750	69,9	145,5	168,1	95,3	98,4	67,6	11,4	19,1
2,875	73,0	148,6	171,2	98,4	101,6	67,6	11,4	19,1
3,000	76,2	151,9	174,5	101,6	104,8	67,6	11,4	19,1
3,125	79,4	154,9	177,5	104,8	108,0	67,6	11,4	19,1
3,250	82,6	158,2	180,8	108,0	111,1	67,6	11,4	19,1
3,375	85,7	161,3	183,9	111,1	114,3	67,6	11,4	19,1
3,500	88,9	164,6	187,2	114,3	117,5	67,6	11,4	19,1
3,625	92,1	167,6	190,2	117,5	120,7	67,6	11,4	19,1
3,750	95,3	170,9	193,5	120,7	123,8	67,6	11,4	19,1
3,875	98,4	174,0	196,6	123,8	127,0	67,6	11,4	19,1
4,000	101,6	177,3	199,9	127,0	130,2	67,6	11,4	19,1
4,125	104,8	180,3	202,9	130,2	133,4	67,6	11,4	19,1
4,250	108,0	181,4	206,2	133,4	136,5	67,6	11,4	19,1
4,375	111,1	184,7	209,3	136,5	139,7	67,6	11,4	19,1
4,500	114,3	187,7	212,6	139,7	142,9	67,6	11,4	19,1
4,625	117,5	191,0	215,6	142,9	146,1	67,6	11,4	19,1
4,750	120,7	196,1	218,9	146,1	149,2	67,6	11,4	19,1

Dimensions subject to changes or modifications.

LDC38

SECTORS:

CHARACTERISTICS:

- Balanced.
- Welded metal bellows.
- Not dependent on the rotation direction.
- Barrier fluid connections.

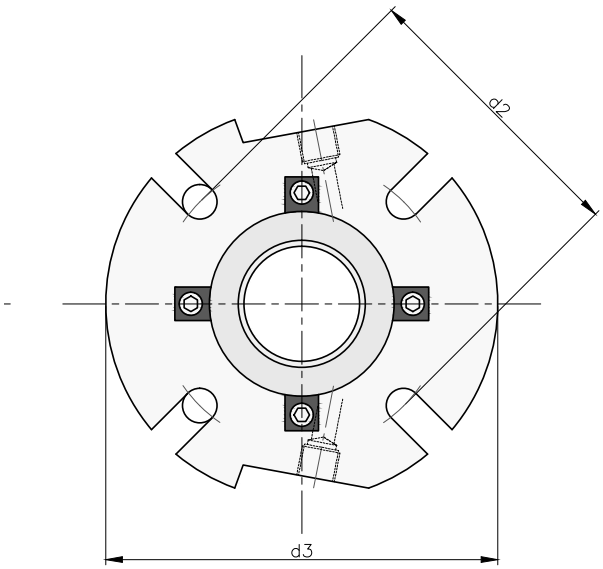
OPERATING LÍMITS:

d_1= 25 ÷ 85 mm p= 20 kg/cm²

v= 20 m/s t= -15÷ +200ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

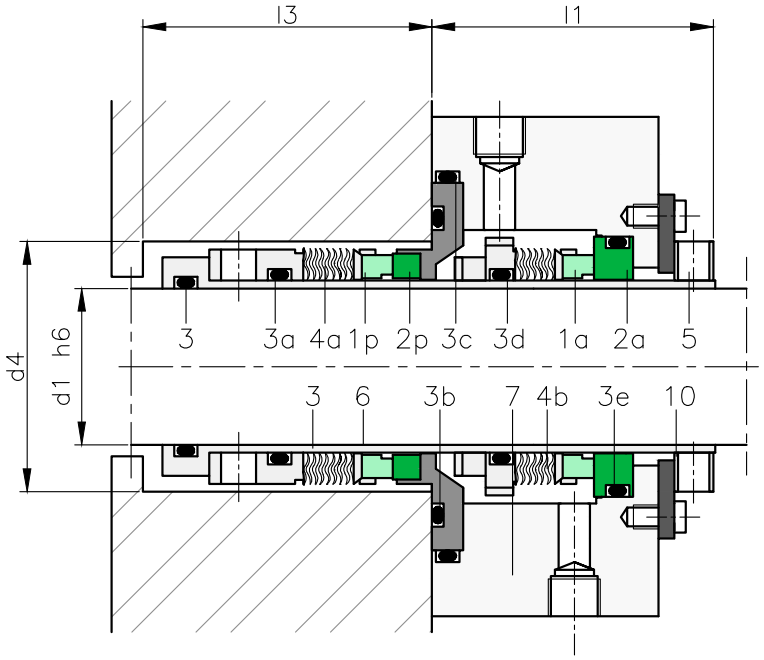


DESCRIPTION:

Double cartridge seal with a “tandem” arrangement suitable for working with pressurised or non-pressurised barrier fluids.
The metal bellows design has a self-cleaning effect that prevents particles from building up inside it.
This model is recommended in extremely demanding applications: with high-viscosity fluids, sticky fluids, particle-laden fluids, fluids with few lubricating and/or pollutant properties and in high temperature applications.
Highly reliable cartridge.

CONNECTIONS (R):

From 25 mm to 65 mm: 1/4” NPT.
From 70 mm to 85 mm: 3/8” NPT.



COMPONENTS:

1p Rotating contact surface product side
2p Stationary contact surface product side
1a Rotating contact surface atmospheric side
2a Stationary contact surface atmospheric side
3 O-rings
4 Metal bellows
5 Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring

DIMENSIONS CHART

Dimensions in mm

Shaft							
mm	d_3	d_4 min	d_4 max.	d_6	l_1	l_3	l_4
25	105	44,5	47,8	64	52,3	51,6	12,7
28	108	44,5	47,8	64	52,3	51,6	12,7
32	108	50,8	54,1	67	54,1	52,3	12,7
35	108	50,8	55,6	73	51,6	52,3	12,7
38	114,3	57,2	60,5	79,3	54,1	57,2	14,3
45	139,7	63,5	65	82,6	54,1	59,4	14,3
48	139,7	66,8	68,3	85,7	54,1	59,4	14,3
50	139,7	69,9	74,7	92,3	54,1	59,4	14,3
55	152,4	76,2	81	98,4	54,1	61	18
58	158,8	79,5	81	98,4	54,1	61	18
60	158,8	82,6	87,4	101,7	57,2	58,7	18
63	165,1	85,9	87,4	106	55,6	61	18
65	165	89	92	106	57,2	58	18
85	203	113	116	135	64	61	22

Dimensions in inches

Shaft								
(")	mm	d_3 mm	d_4 min	d_4 max.	d_6 mm	l_1 mm	l_3 mm	l_4 mm
1,000	25,40	104,9	44,5	47,8	64,0	52,3	51,6	12,7
1,130	28,58	108,0	44,5	47,8	64,0	52,3	51,6	12,7
1,250	31,75	108,0	50,8	54,1	67,0	54,1	52,3	12,7
1,380	34,93	108,0	50,8	55,6	73,0	51,6	52,3	12,7
1,500	38,10	114,3	57,2	60,5	79,3	54,1	57,2	14,3
1,630	41,28	127,0	60,5	63,5	80,9	54,1	56,1	14,3
1,750	44,45	139,7	63,5	65,0	82,6	54,1	59,4	14,3
1,880	47,63	139,7	66,8	68,3	95,7	54,1	59,4	14,3
2,000	50,80	139,7	69,9	74,7	92,3	54,1	59,4	14,3
2,130	53,98	152,4	76,2	81,0	98,4	54,1	61,0	18,0
2,250	57,15	158,8	79,5	81,0	98,4	54,1	61,0	18,0
2,380	60,33	158,8	82,6	87,4	101,7	57,2	58,7	18,0
2,500	63,50	165,1	85,9	87,4	106,0	55,6	61,2	18,0

Dimensions subject to changes or modifications.

LDC39-D

SECTORS:

CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.
- Barrier fluid, purge and drain connections.

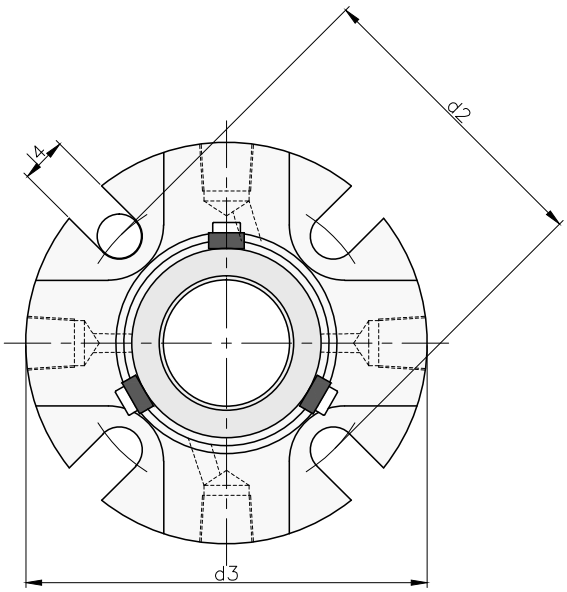
OPERATING LIMITS:

d_1= 25 ÷ 140 mm p= 20 kg/cm²

v= 25 m/s t= -15÷ +200ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

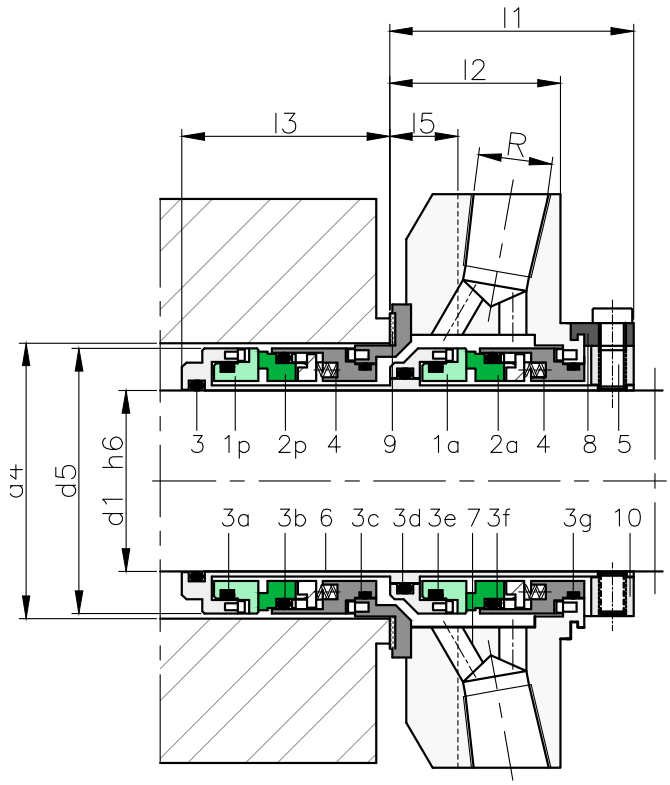


DESCRIPTION:

Double cartridge seal with a “tandem” arrangement suitable for working with pressurised or non-pressurised barrier fluids. Recommended in applications in which a high level of safety is required.
Possibility of incorporating a pumping ring to reduce the temperature gradient between the mechanical seal contact surfaces.

CONNECTIONS (R):

From 25 mm to 60 mm: 1/4” NPT.
From 63 mm to 110 mm: 3/8” NPT.



COMPONENTS:

1p Rotating contact surface product side
2p Stationary contact surface product side
1a Rotating contact surface atmospheric side
2a Stationary contact surface atmospheric side
3 O-rings
4 Springs
5 Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring

DIMENSIONS CHART

Dimensions in mm

Shaft										
mm	d_2	d_3	$d_{4\,min}$	$d_{4\,max}$	d_5	l_1	l_2	l_3	l_4	l_5
25	71.2	101.6	41.3	48.0	39.7	49.6	34.4	44.5	13.3	13.5
28	74.5	104.8	44.5	51.2	42.9	52.4	36.7	45.4	13.3	13.5
30	79.9	108.0	46.1	56.5	44.5	52.4	36.7	45.4	13.3	13.5
32	81.6	108.0	47.6	58.3	46.0	52.4	36.7	45.4	13.3	13.5
33	84.8	111.1	50.8	61.5	49.3	52.4	36.7	45.4	13.3	13.5
35	84.8	111.1	50.8	61.5	49.3	52.4	36.7	45.4	13.3	13.5
38	91.4	123.8	57.2	68.1	55.5	54.0	37.8	47.5	13.3	15.1
40	95.7	127.0	60.3	71.4	58.7	54.0	37.8	47.5	14.3	15.1
43	98.4	133.4	63.0	74.1	61.1	54.0	37.8	47.5	14.3	15.1
45	98.4	133.4	63.0	74.1	61.1	54.0	37.8	47.5	14.3	15.1
48	98.4	133.4	66.7	74.1	64.7	54.0	37.8	47.5	14.3	15.1
50	101.6	139.7	70.0	76.6	67.9	58.7	40.7	51.9	14.3	27.0
53	113.5	148.8	73.0	85.3	71.1	58.7	40.7	51.9	17.4	15.1
55	113.5	148.8	75.0	85.3	72.9	58.7	40.7	51.9	17.4	15.1
58	116.0	165.1	76.2	88.5	74.2	58.7	40.7	51.9	17.4	15.1
60	119.9	165.1	79.4	91.7	77.4	62.6	43.6	52.8	17.4	15.9
63	127.0	171.5	85.7	98.8	83.8	65.1	43.6	50.3	17.4	15.9
65	127.0	171.5	85.7	98.8	83.8	65.1	43.6	50.3	17.4	15.9
68	131.3	171.5	92.1	103.2	90.2	63.5	41.3	53.2	17.4	15.9
70	131.3	171.5	92.1	103.2	90.2	63.5	41.3	53.2	17.4	15.9
75	145.3	196.9	101.6	113.5	98.1	65.1	45.4	51.6	20.6	17.4
80	148.5	188.9	105.0	116.8	102.2	63.8	40.5	55.3	20.6	40.5
85	154.8	206.4	111.1	123.2	107.9	65.1	40.5	54.0	20.6	40.5
90	158.6	212.7	117.5	129.5	114.3	65.1	40.5	54.0	17.5	40.5
95	172.0	222.3	120.0	132.1	117.5	65.1	40.5	54.0	17.5	40.5
100	171.7	228.6	127.0	139.7	123.8	65.1	40.5	54.0	20.6	40.5
105	174.9	228.6	130.2	142.9	127.0	65.1	40.5	54.0	20.6	40.5
110	184.4	241.3	139.7	152.4	136.5	65.1	40.5	54.0	20.6	40.5
115	184.4	241.3	146.1	152.4	136.5	65.1	40.5	54.0	20.6	40.5
120	192.4	263.5	146.1	160.4	142.9	65.1	40.5	54.0	20.6	40.5
125	254.0	304.8	171.7	184.4	155.6	77.3	44.4	62.8	20.6	44.4
130	260.4	311.2	178.1	190.8	161.9	77.3	44.4	62.8	20.6	44.4
135	266.7	322.3	190.5	203.2	168.3	77.3	44.4	62.8	20.8	44.4
140	266.7	322.3	190.5	203.2	168.3	77.3	44.4	62.8	20.8	44.4

Dimensions subject to changes or modifications.

LDC40

SECTORS:

CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.
- Barrier fluid connections.

OPERATING LIMITS:

d_1= 25 ÷ 100 mm p= 25 kg/cm²

v= 16 m/s t= -15÷ +200ºC (*)

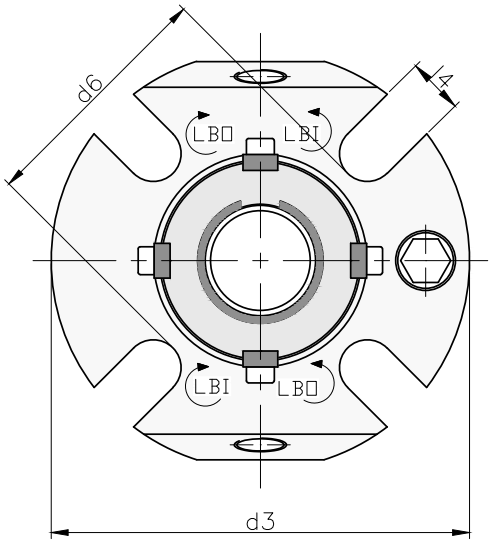
(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

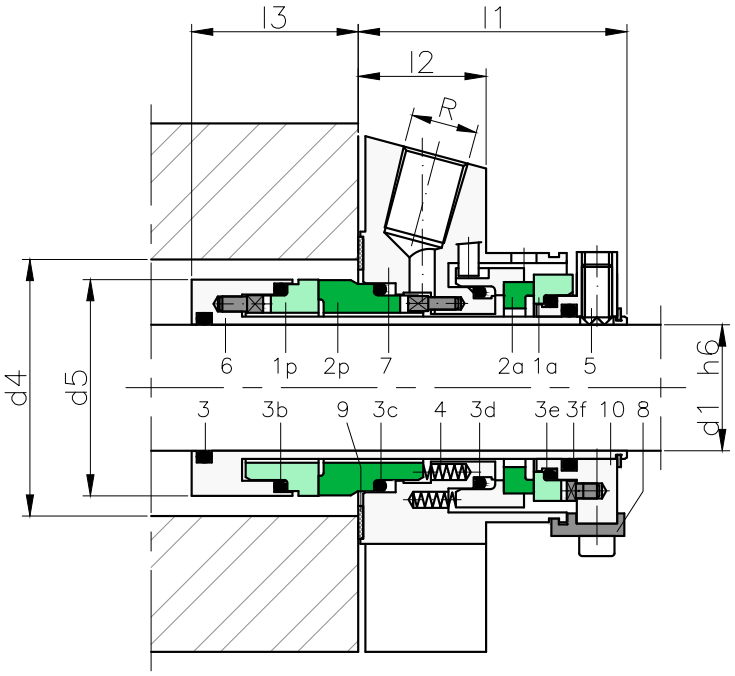
A double cartridge with a "face to face" arrangement which permits operation with barrier fluid in excessive pressure with respect to the working fluid (P1+1.5-2 Kgr/cm2)

The sleeve includes a pumping ring that facilite the barrier fluid movement. The connections of Liquid barreir IN and OUT have to be connected according the rotation direction.



CONNECTIONS (R):

From 25 mm to 35 mm: 1/4" NPT.
From 38 mm to 100 mm: 3/8" NPT.



COMPONENTS:

1p Rotating contact surface product side
2p Stationary contact surface product side
1a Rotating contact surface atmospheric side
2a Stationary contact surface atmospheric side
3 O-rings
4 Springs
5 Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring

DIMENSIONS CHART

Dimensions in mm

Shaft									
mm	d_3	d_4 mín.	d_4 máx.	d_5	d_6	l_1	l_2	l_3	l_4
25	105	44	51,5	43	62	53,4	25,4	33,1	13,2
28	105	47	52	46	61	53,4	25,4	33,1	13,2
30	105	49	56	48	67	53,4	25,4	33,1	13,2
32	108	51	57	49,8	70	53,4	25,4	33,1	13,2
33	108	51	57	49,8	70	53,4	25,4	33,1	13,2
35	113	54	61,5	53	72	53,4	25,4	33,1	13,2
38	123	57	66	56	75	53,4	25,4	33,1	13,2
40	123	59	68	58	77	53,4	25,4	33,1	14,2
42	133	62	69,5	60,5	80	53,4	25,4	33,1	14,2
43	133	62	70,5	61	80	53,4	25,4	33,1	14,2
45	138	64	73	61	82	53,4	25,4	33,1	14,2
48	138	67	75	65,6	85	53,4	25,4	33,1	14,2
50	148	69	78	68	87	53,4	25,4	33,1	14,2
53	148	73	87	72	97	53,4	25,4	33,1	18
55	148	74	83	73	92	53,4	25,4	33,1	18
60	157	79	91	78	102	53,4	25,4	33,1	18
65	163	85,7	98,5	84,8	109	53,4	25,4	33,1	18
70	178	95	108	93	118	53,4	25,4	33,1	18
75	190	101,6	118	100	129	63,9	28	44,1	18
80	195	108	124	106,4	135	63,9	28	44,1	18
85	198	111,1	128	109,5	139	63,9	28	44,1	22
90	205	117,5	135	115,9	145	63,9	28	44,1	22
95	208	120,7	138	119,1	148	63,9	28	44,1	22
100	218	127	144	125,4	154	63,9	28	44,1	22

Dimensions in inches

Shaft										
(")	mm	d_3	d_4 mín	d_4 máx	d_5	d_6	l_1	l_2	l_3	l_4
1,000	25,4	105,0	44,0	51,0	43,0	62,0	53,4	25,4	33,1	13,2
1,125	28,6	105,0	47,6	52,1	46,0	61,0	53,4	25,4	33,1	13,2
1,250	31,8	110,0	51,0	57,0	49,8	70,1	53,4	25,4	33,1	13,2
1,375	34,9	113,0	56,3	61,5	53,0	72,1	53,4	25,4	33,1	13,2
1,500	38,1	123,0	57,0	66,0	56,0	74,9	53,4	25,4	33,1	13,2
1,625	41,3	123,0	60,3	68,6	59,5	78,5	53,4	25,4	33,1	14,2
1,750	44,5	138,0	64,0	73,0	62,5	82,0	53,4	25,4	33,1	14,2
1,875	47,6	138,0	67,0	75,0	65,6	85,1	53,4	25,4	33,1	14,2
2,000	50,8	148,0	69,0	78,0	68,0	87,1	53,4	25,4	33,1	14,2
2,125	53,98	148,0	73,0	87,0	72,0	97,0	53,4	25,4	33,1	18,0
2,250	57,2	157,0	76,2	90,4	75,2	100,1	53,4	25,4	33,1	18,0
2,375	60,3	157,0	79,4	91,0	78,0	102,1	53,4	25,4	33,1	18,0
2,500	63,5	163,0	83,8	96,5	81,6	106,2	53,4	25,4	33,1	18,0
2,625	66,7	163,0	85,7	100,0	84,8	109,3	53,4	25,4	33,1	18,0
2,750	69,9	178,0	95,0	108,0	93,0	118,4	53,4	25,4	33,1	18,0
2,875	73,0	190,0	101,6	118,0	100,0	129,0	108,0	25,4	44,1	18,0
3,000	76,2	190,0	101,6	118,0	100,0	129,0	108,0	28,0	44,1	18,0
3,125	79,4	195,0	108,0	124,0	106,4	135,0	108,0	28,0	44,1	18,0
3,250	82,6	195,0	108,0	124,0	106,4	135,0	108,0	28,0	44,1	18,0
3,375	85,7	198,0	111,1	128,0	109,5	139,0	108,0	28,0	44,1	22,0
3,500	88,9	198,0	114,3	140,1	112,7	142,0	108,0	28,0	44,1	22,0
3,625	92,1	205,0	117,5	135,0	115,9	145,0	108,0	28,0	44,1	22,0
3,750	95,3	208,0	120,7	138,0	119,1	148,0	108,0	28,0	44,1	22,0
4,000	101,6	218,0	127,0	144,0	125,4	154,0	108,0	28,0	44,1	22,0

Dimensions subject to changes or modifications.

LDC40-ANSI

SECTORS:

CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.
- Barrier fluid connections.

OPERATING LIMITS:

d_1= 25,4 ÷ 95,3 mm p= 25 kg/cm²

v= 16 m/s t= -15÷ +200ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

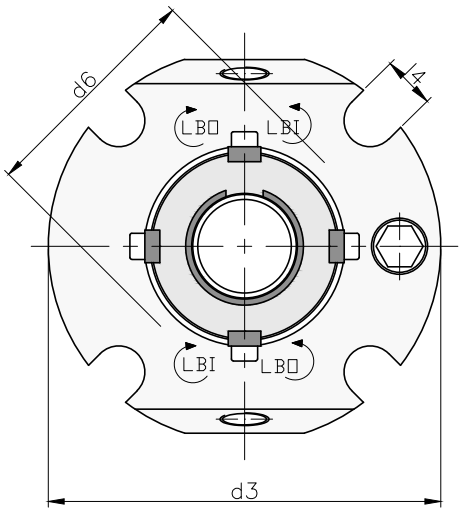
The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

A double cartridge with a "face to face" arrangement which permits operation with barrier fluid in excessive pressure with respect to the working fluid (P1+1.5-2 Kgr/cm2)

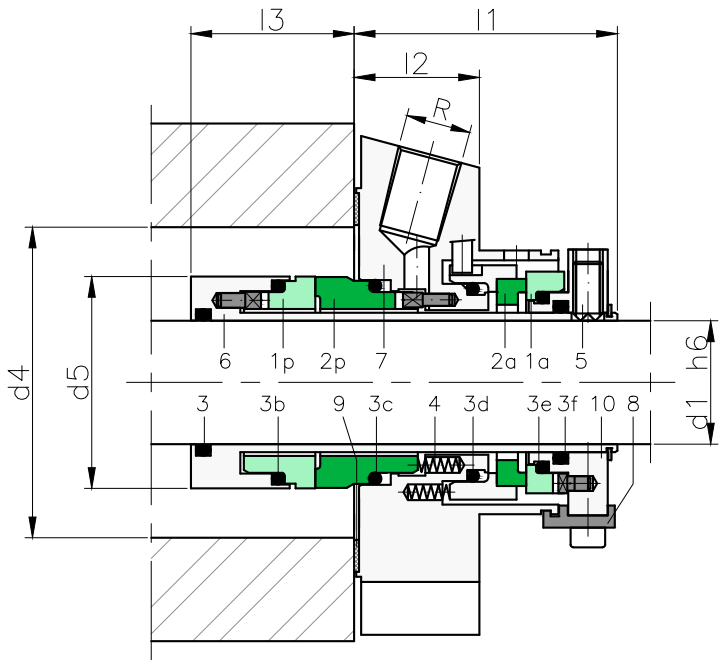
The sleeve, include a pumping ring that facilite the barrier fluid movement. The connections of Liquid barreir IN and OUT have to be connected according the rotation direction.

Recomended for flange pumps ANSI BIG BORE
ANSI STANDARD BORE



CONNECTIONS (R):

From 25,4 mm to 34,9 mm: 1/4" NPT.
From 38,1 mm to 95,3 mm: 3/8" NPT.



COMPONENTS:

1p Rotating contact surface product side
2p Stationary contact surface product side
1a Rotating contact surface atmospheric side
2a Stationary contact surface atmospheric side
3 O-rings
4 Springs
5 Set screws
6 Sleeve
7 Flange
8 Setting clips
9 Flat gasket
10 Drive ring

DIMENSIONS CHART ANSI STANDARD BORE

LDC40-AS Dimmensions in mm

Shaft										
(")	mm	d_3	d_4 min.	d_4 max.	d_5	d_6	l_1	l_2	l_3	l_4
1,000	25,4	100	44	56	43	62	53,4	25,4	33,1	11
1,125	28,6	105,0	44,5	56	43,5	62	82	25,4	34,1	11,1
1,250	31,8	108,0	51	61	50	70	53,4	25,4	33,1	11
1,375	34,9	107,0	50,8	61	49,8	70	52,9	25,4	33,1	11,1
1,500	38,1	114,0	57	69	55,9	75	53,4	25,4	33,1	14
1,625	41,3	125,0	61,5	71	59,4	78,5	53,4	25,4	33,1	14
1,750	44,5	130,0	63,5	75	62,5	82	53,4	25,4	33,1	14,2
1,875	47,6	130,0	67,6	78	65,6	84	53,4	25,4	33,1	14
2,000	50,8	139,0	70	81	68	87	53,4	25,4	33,1	16
2,125	54,0	140,0	74	91	72	97	53,4	25,4	33,1	16,5
2,250	57,2	149,0	77,2	91	75,2	98	53,4	25,4	33,1	16,5
2,375	60,3	157,0	79,4	91,2	78	25,4	53,4	25,4	25,4	18
2,500	63,5	170,0	83,6	100	81,6	115	53,4	28,5	33,1	18
2,625	66,7	162,0	86,8	102	84,8	115	53,4	31,8	33,1	16
2,750	69,9	189,0	95	111	93	118	53,4	32	33,1	18
3,000	76,2	199,0	102	120	100	127	63,9	32	44,1	18
3,250	82,6	198,9	108,4	125	106,4	135	63,9	32	44,1	18
3,750	95,3	208	120,7	138	119,1	25,4	25,4	25,4	25,4	22

Dimensions subject to changes or modifications.

DIMENSIONS CHART ANSI BIG BORE

LDC40-AB Dimmensions in inches

Shaft										
(")	mm	d_3	d_4 min.	d_4 max.	d_5	d_6	l_1	l_2	l_3	l_4
1,000	25,4	--	--	--	--	--	--	--	--	--
1,125	28,6	114,3	44,5	71	43,5	84,1	47,9	25,4	34,1	11,1
1,250	31,8	--	--	--	--	--	--	--	--	--
1,375	34,9	130	50,8	81	49,8	90	52,9	25,4	33,6	11,1
1,500	38,1	--	--	--	--	--	--	--	--	--
1,625	41,3	--	--	--	--	--	--	--	--	--
1,750	44,5	165	63,5	103	62,5	116	52,9	25,4	33,6	14,2
1,875	47,6	152	67,6	100	65,6	112	52,9	25,4	33,6	14
2,000	50,8	159	70	116	68	124	53,4	32	33,1	14
2,125	54,0	175	74	115	72	134	53,4	25,4	33,1	18
2,250	57,2	163	78,6	112	75,2	119	53,4	32,4	33,1	18
2,500	63,5	198	83,8	134	81,6	140	53,4	31,8	33,1	18
2,625	66,7	175	80,5	130	84,8	136	53,4	31,8	33,1	18
2,750	69,9	190	95	133	93	140	53,4	32,4	33,1	16
3,000	76,2	209	102	140	100	150	63,9	32,4	33,1	16
3,250	82,6	--	--	--	--	--	--	--	--	--

LDC90

SECTORS:

CHARACTERISTICS:

- Balanced.
- Not dependent on the rotation direction.
- Barrier fluid connections.

OPERATION LIMITS:

p= 25 kg/cm²

v= 16 m/s

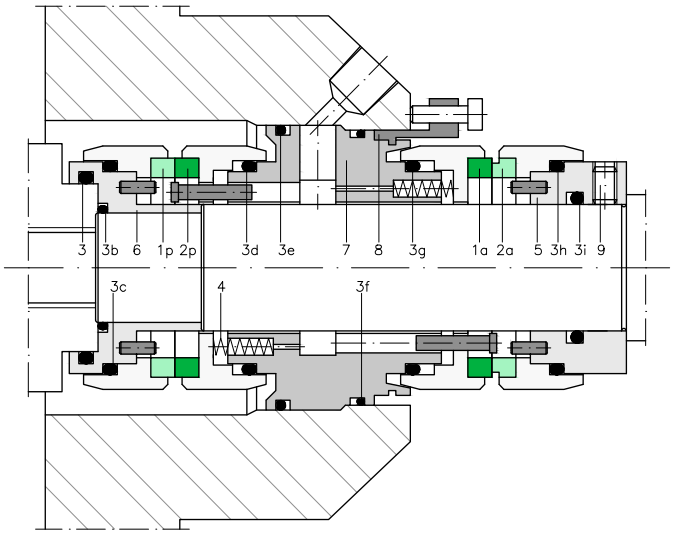
t= -15÷ +200ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

Double cartridge in which the contact surfaces are lubricated by an external, non-pressurised fluid (quench) or a pressurised fluid (barrier fluid). For clean or slightly contaminated and sticky fluids with fibres or large solid particles.



COMPONENTS:

1a Stationary contact surface atmospheric side
1p Rotating contact surface product side
2a Rotating contact surface atmospheric side
2p Stationary contact surface product side
3 O-rings
4 Springs
5 Sleeve
6 Sleeve
7 Housing Stationary part
8 Locking fixture

AGITATORS AND REACTORS...

LMS26

SECTORS:

CHARACTERISTICS:

- Balanced.
- Not dependent on the rotation direction.
- Multispring.

OPERATING LIMITS:

p= 50 kg/cm^2

v= 50 m/s

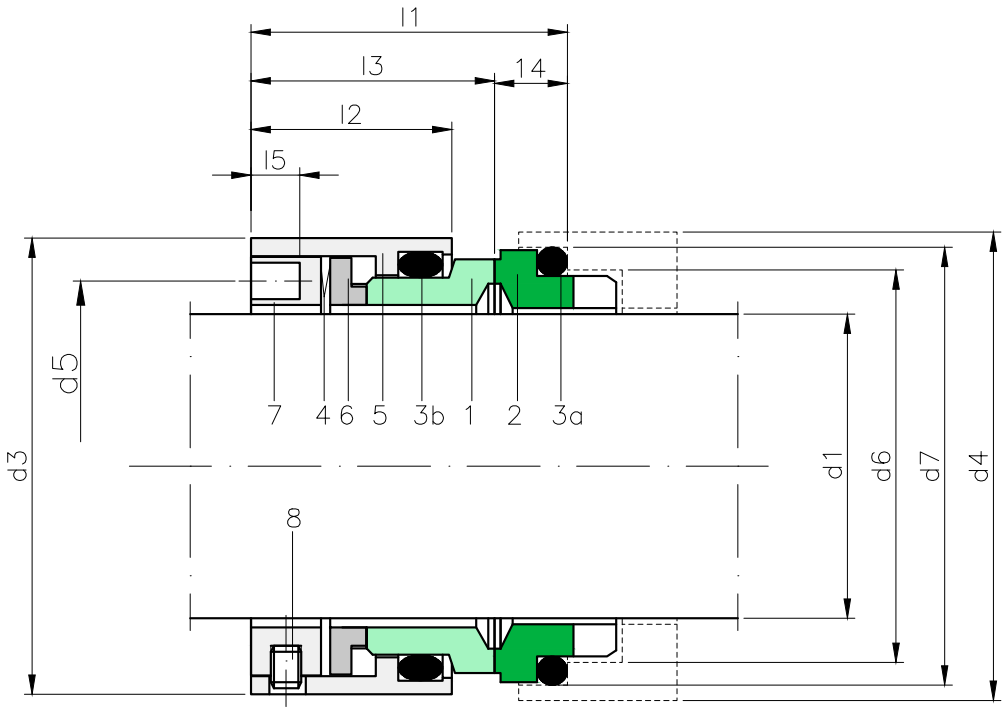
t= -20 ÷ +140ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

Balanced mechanical seal with protected springs to prevent them from blocking when in contact with sticky or viscous fluids.



DIMENSIONS CHART

Dimensions in mm

Shaft mm	d_3	d_4	d_5	d_6	d_7	l_1	l_2	l_3	l_4	l_5
40	65	64	52	53.5	59	48.5	30	39	9.5	5
50	75	77	61	63.5	72	54.5	33	42.2	12.3	5
53	80	80	64	66.5	75	55	33.5	42.7	12.3	5
55	85	85	68	71.5	80	60	36.5	47.2	12.8	5
60	90	90	74	76.5	85	61.5	38	48.7	12.8	5
65	95	95	78	81.5	90	62	38	49.2	12.8	5
80	115	119	98	102	110.5	63.5	38	50	13.5	5

Dimensions subject to changes or modifications.

COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3a O-ring
4 Spring
5 Metal frame
6 Ring
7 Metal frame
8 Setting clips

CHARACTERISTICS:

- Balanced.
- System attached to the shaft by allen screws
- Not dependent on the rotation direction.
- External mounting.

OPERATING LIMITS:

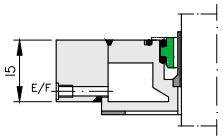
d_1= 25 ÷ 160 mm p= vacuum to 6 kg/cm²

v= 2 m/s t= -20÷ +150ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

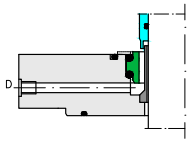
The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

A



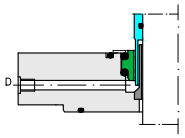
A Type A: Cooling flange. It can also be used as a heating flange (Tmax= + 350 °C)

C

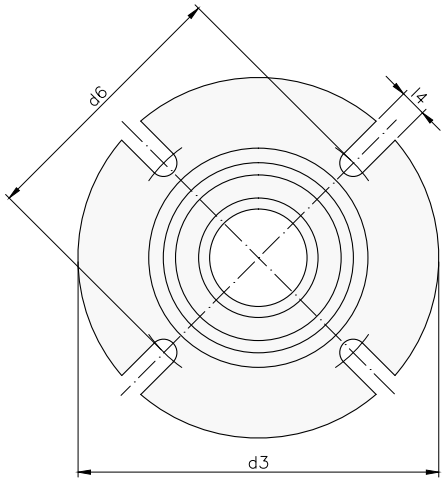


C Leakage drain. It can also be used alternatively as a flush.

D

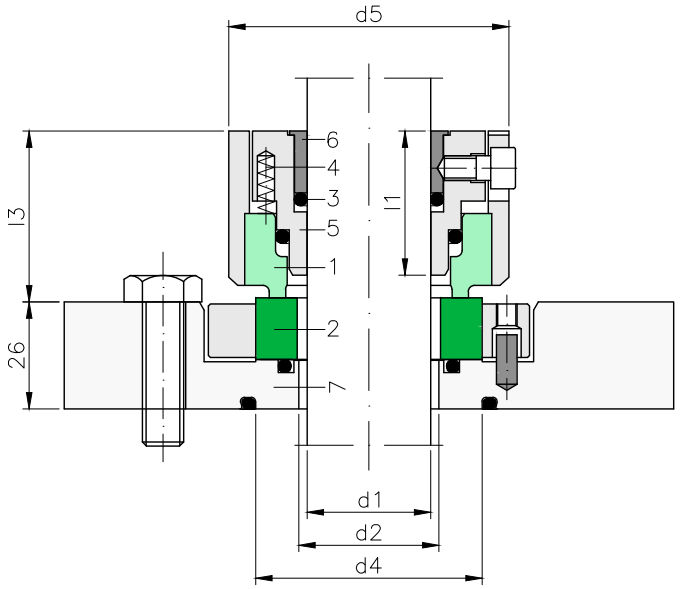


D Polymerisation barrier. It can also be used alternatively as a leakage drain or a flush.



DESCRIPTION:

Multispring mechanical seal for vertical agitators with moderate speeds. The stationary part can use lubrications systems: flush connection or/and refrigeration flange.



COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3 O-ring
4 Muelles
5 Metal frame
6 Flange
7 Drive ring

DIMENSIONS CHART

Dimensions in mm and inches

Shaft		Rotatory part			Stationary part					
(")	mm	l_1	l_3	d_5	d_2	d_3	d_4	$d_{6\,min}$	$d_{6\,max}$	l_4
1,000	25	40,5	41,5	68	34	148	-	100	132	11
1,125	28	40,5	41,5	68	34	148	55	100	132	11
-	30	40,5	41,5	68	34	148	55	100	132	11
1,250	32	40,5	41,5	73	39	153	60	105	137	11
1,375	35	40,5	41,5	73	39	153	60	105	137	11
1,500	38	40,5	41,5	78	44	158	65	110	142	11
-	40	40,5	41,5	78	44	158	65	110	142	11
1,625	45	40,5	41,5	83	49	163	68	115	152	11
1,750	-	40,5	41,5	83	49	163	68	115	152	11
1,875	48	40,5	41,5	88	54	178	73	125	160	14
1,125	50	40,5	41,5	88	54	178	73	125	160	14
2,000	55	40,5	41,5	93	59	183	78	130	165	14
2,125	-	40,5	41,5	93	59	183	78	130	165	14
2,250	60	40,5	41,5	98	64	188	85	135	170	14
2,375	65	40,5	44,5	103	69	193	90	140	175	14
2,500	-	40,5	44,5	103	69	193	90	140	175	14
6,625	70	43,5	44,5	108	74	198	95	145	180	14
2,750	-	43,5	44,5	108	74	198	95	145	180	14
2.875	75	43,5	44,5	113	79	203	100	150	185	14
3,000	80	43,5	44,5	118	84	208	105	155	190	14
3,250	85	43,5	44,5	123	89	213	110	160	195	14
3,500	90	43,5	44,5	128	94	218	115	165	200	14
3,750	95	43,5	44,5	133	99	223	120	170	205	14
-	100	43,5	44,5	138	104	228	125	175	210	14
4,000	105	43,5	44,5	143	109	233	130	180	215	14
4,250	110	43,5	44,5	148	114	238	135	185	220	14
4,500	115	43,5	44,5	153	119	267	140	196	243	18
4,750	125	43,5	44,5	163	129	277	150	206	253	18
5,000	140	43,5	44,5	178	144	297	165	221	273	18
5,250	-	43,5	44,5	178	144	297	165	221	273	18
5,500	-	43,5	44,5	178	144	297	165	221	273	18
5,750	150	43,5	44,5	188	154	307	175	231	283	18
6,000	160	43,5	44,5	198	164	317	185	241	283	18
6,250	-	43,5	44,5	198	164	317	185	241	293	18

Dimensions subject to changes or modifications.

LMS28

SECTORS:

CHARACTERISTICS:

- Balanced.
- System attached to the shaft by allen screws
- Not dependent on the rotation direction.
- External mounting.

OPERATING LIMITS:

d_1= 25 ÷ 175 mm p= 15 kg/cm²

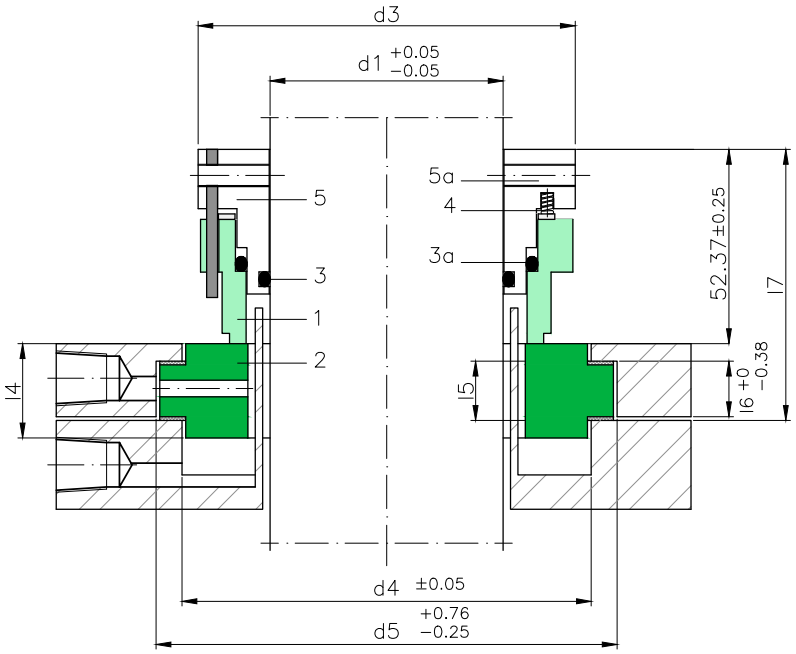
v= 2 m/s t= -20÷ +200ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

DESCRIPTION:

It can be used in vertical agitators with moderate speeds without the need to apply auxiliary lubrication systems. Adapted to DEBRIS cleaning systems.



COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3 O-ring
3a O-ring
4 Spring
5 Metal frame
5a Drive ring

DIMENSIONS CHART

Dimensions in mm

Shaft	Rotatory part	Stationary part					
mm	d_3	d_4	d_5	l_4	l_5	l_6	l_7
25	63,5	47,6	57,9	20,6	12,7	11,9	69,0
28	66,6	50,8	61,1	20,6	12,7	11,9	69,0
30	69,8	53,9	67,5	22,2	12,7	11,9	69,0
32	69,8	53,9	67,5	22,2	12,7	11,9	69,0
33	73,0	57,1	70,6	22,2	12,7	11,9	69,0
35	73,0	57,1	70,6	22,2	12,7	11,9	69,0
38	76,2	63,5	77,0	22,2	12,7	11,9	69,0
40	79,3	66,6	80,2	22,2	12,7	11,9	69,0
43	82,5	69,8	83,3	22,2	12,7	11,9	69,0
45	85,7	73,0	89,7	25,4	15,9	15,1	73,0
50	88,9	79,3	96,0	25,4	15,9	15,1	73,0
53	92,0	79,3	99,2	25,4	15,9	15,1	73,0
55	95,2	85,7	102,4	25,4	15,9	15,1	73,0
58	98,4	88,9	105,6	25,4	15,9	15,1	73,0
60	98,4	88,9	105,6	25,4	15,9	15,1	73,0
63	101,6	92,0	108,7	25,4	15,9	15,1	73,0
65	104,7	95,2	111,9	25,4	15,9	15,1	73,0
68	107,9	98,4	115,1	25,4	15,9	15,1	73,0
70	107,9	98,4	115,1	25,4	15,9	15,1	73,0
75	114,3	103,3	119,8	25,4	15,9	15,1	73,0
80	120,6	111,1	127,8	25,4	15,9	15,1	73,0
85	123,9	114,3	131,1	25,4	15,9	15,1	73,0
90	130,2	120,7	137,3	25,4	15,9	15,1	73,0
95	133,3	123,8	140,5	25,4	15,9	15,1	73,0
100	139,7	133,3	150,0	25,4	15,9	15,1	73,0
105	142,9	136,5	153,2	25,4	15,9	15,1	73,0
110	149,2	142,8	159,5	25,4	15,9	15,1	73,0
115	155,5	149,2	165,9	25,4	15,9	15,1	73,0

Dimensions subject to changes or modifications.

Dimensions in inches

Shaft		Rotatory part	Stationary part					
(“)	mm	d_3	d_4	d_5	l_4	l_5	l_6	l_7
1.00	25.40	63.50	47.63	57.94	20.62	12.70	11.89	69.04
1.13	28.58	66.68	50.80	61.11	20.62	12.70	11.89	69.04
1.25	31.75	69.85	53.98	67.46	20.62	12.70	11.89	69.85
1.38	34.93	73.03	57.15	70.64	20.62	12.70	11.89	69.85
1.50	38.10	76.20	63.50	76.99	20.62	12.70	11.89	69.85
1.63	41.28	79.38	66.68	80.16	20.62	12.70	11.89	69.85
1.75	44.45	82.55	69.85	83.34	20.62	12.70	11.89	73.03
1.88	47.63	85.73	73.03	89.69	25.40	15.88	11.89	73.03
2.00	50.80	88.90	79.38	98.32	25.40	15.88	11.89	73.03
2.13	53.98	92.08	79.38	99.21	25.40	15.88	15.06	73.03
2.25	57.15	95.25	85.73	102.39	25.40	15.88	15.06	73.03
2.38	60.33	98.43	88.90	105.56	25.40	15.88	15.06	73.03
2.50	63.50	101.60	92.08	108.74	25.40	15.88	15.06	73.03
2.63	66.68	104.78	95.25	111.91	25.40	15.88	15.06	73.03
2.75	69.85	107.95	98.43	115.09	25.40	15.88	15.06	73.03
2.88	73.03	111.13	101.60	118.26	25.40	15.88	15.06	73.03
3.00	76.20	114.30	104.78	119.84	25.40	15.88	15.06	73.03
3.13	79.38	117.48	107.95	124.61	25.40	15.88	15.06	73.03
3.25	82.55	120.65	111.13	127.79	25.40	15.88	15.06	73.03
3.38	85.73	123.83	114.30	130.96	25.40	15.88	15.06	73.03
3.50	88.90	127.00	117.48	134.14	25.40	15.88	15.06	73.03
3.63	92.08	130.18	120.65	137.31	25.40	15.88	15.06	73.03
3.75	95.25	133.35	123.83	140.49	25.40	15.88	15.06	73.03
3.88	98.43	136.53	127.00	143.66	25.40	15.88	15.06	73.03
4.00	101.60	139.70	130.18	150.01	25.40	15.88	15.06	73.03
4.13	104.78	142.88	133.35	153.19	25.40	15.88	15.06	73.03
4.25	107.95	146.05	136.53	156.36	25.40	15.88	15.06	73.03
4.38	111.13	149.23	139.70	159.54	25.40	15.88	15.06	73.03
4.50	114.30	152.40	142.88	162.71	25.40	15.88	15.06	73.03

LSC80

SECTORS:

CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.

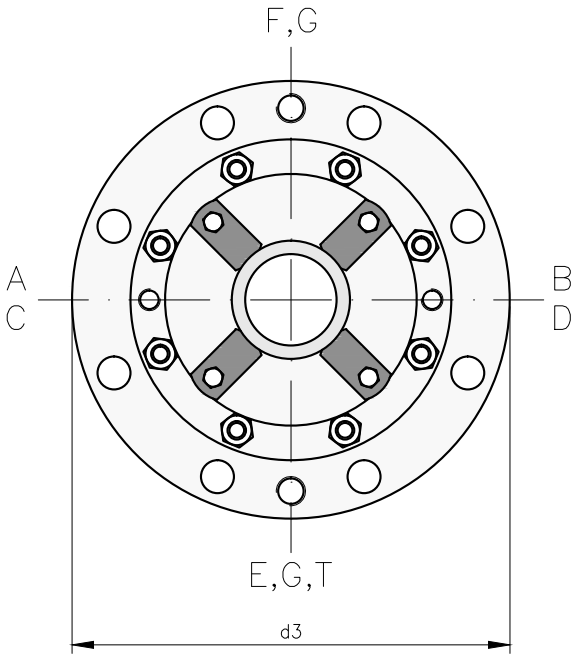
OPERATING LIMITS:

d_1= 40 ÷ 220 mm p= 16 kg/cm²

v= 5 m/s t= -40÷ +300ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

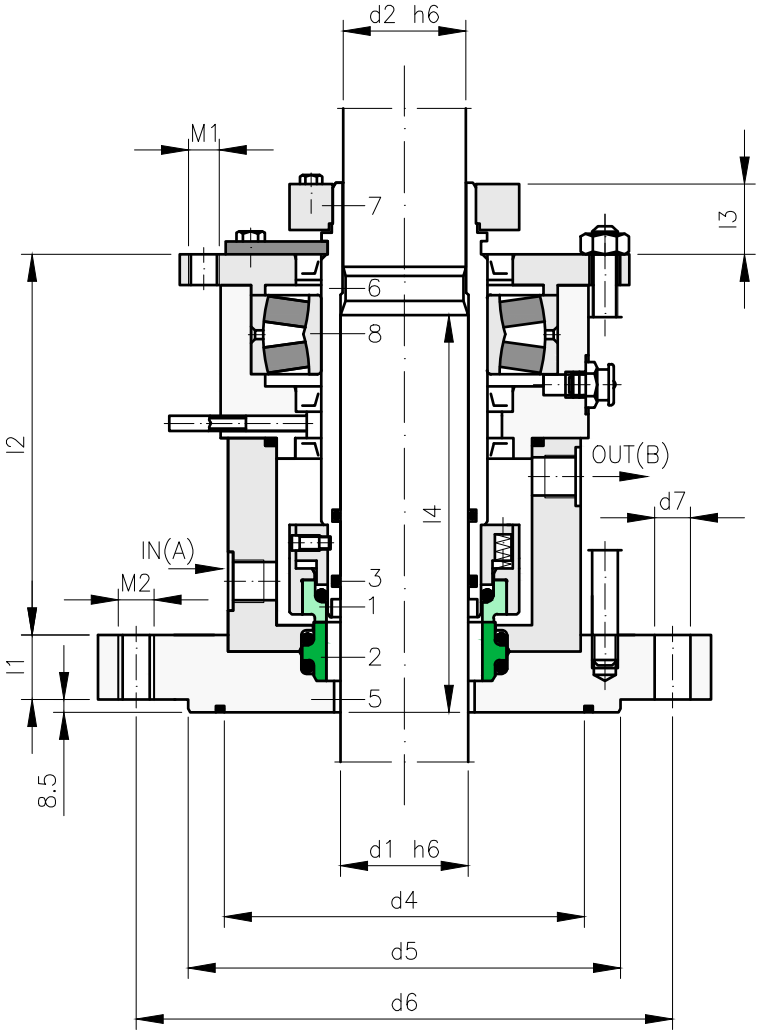


DESCRIPTION:

Single cartridge for a wide range of applications. It can be used with non-pressurised fluids (quench) or pressurised fluids (LST reservoir). This type of mount prevents leakage to the exterior.
Available with floating bearing. Dimensions in accordance with the DIN 28154 standard.

FLANGE COMPONENTS

A: Barrier fluid quench IN
B: Barrier fluid quench OUT
C: Drainage
D: Leakage drain G 1/8”
E : Cooling IN G 3/8”
F: Cooling OUT G 3/8”
G: Grease
T: Temperature metering



COMPONENTS:

1 Rotating contact surface
2 Stationary contact surface
3 O- ring
5 Flange
6 Sleeve
7 Drive rings
8 Bearings

DIMENSIONS CHART

Dimensions in mm

Shaft d_1	mm	d_2	d_3	d_4	d_5	d_6	nxd_7	l_1	l_2	l_3	M_1	M_2	A,B
40		38	175	90	110	145	4 x 18	15	136	28	M12	M16	G3/8
50		48	240	135	176	210	8 x 18	17	149	28	M12	M16	G3/8
60		58	240	135	176	210	8 x 18	17	156	28	M12	M16	G3/8
80		78	275	155	204	240	8 x 22	20	189	34	M16	M20	G1/2
100		98	305	19	234	270	8 x 22	20	190	34	M16	M20	G1/2
125		120	330	215	260	295	8 x 22	20	205	40	M20	M20	G1/2
140		135	395	250	313	350	12 x 22	20	222	40	M20	M20	G1/2
160		150	395	265	313	350	12 x 22	25	219,5	40	M20	M20	G1/2
180		170	445	310	364	400	12 x 22	25	230	45	M24	M20	G1/2
200		190	445	310	364	400	12 x 22	25	237,5	45	M24	M20	G1/2
220		210	505	340	422	460	16 x 22	25	249,5	50	M24	M20	G1/2

Dimensions subject to changes or modifications.

LDC80

SECTORS:

CHARACTERISTICS:

- Balanced.
- Multispring.
- Not dependent on the rotation direction.
- Barrier fluid connections.

OPERATING LIMITS:

d_1= 40 ÷ 220 mm p= 16 kg/cm^2

v= 5 m/s t= -40÷ +300ºC (*)

(*) The temperature resistance depends on the material of the secondary seals used.

The operating limits are defined by the PV factor which is determined for the sealing system characteristics and those of the application.

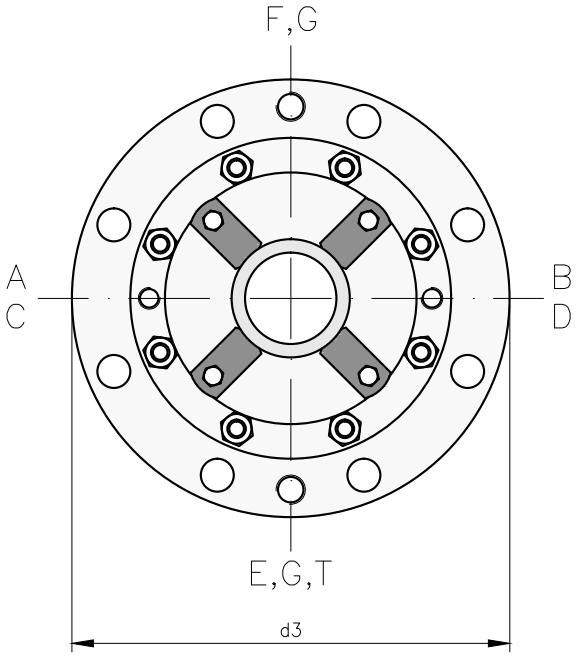
DESCRIPTION:

Special double cartridge for reactors and agitators.

The internal structure "Back to Back" is continuously lubricated by a liquid barrier, which must be pressurized between 1.5 and 2 kg / cm2 above the working fluid.

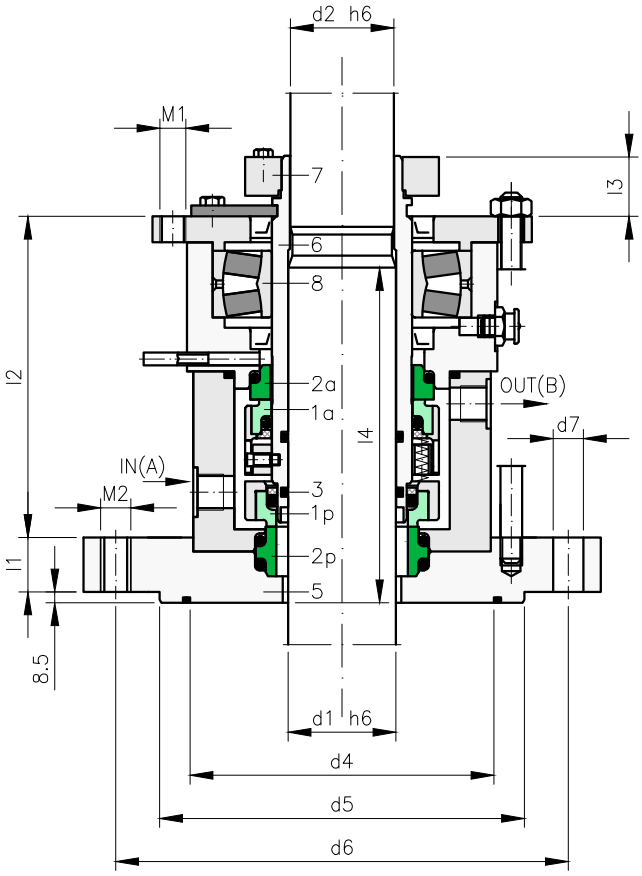
Flange connection for steel vessels DIN 28141, shaft end for steel vessels DIN 28154 and DIN 28136 glass-lined vessels.

Floating bearing included.
All LDC80 models are for unstopped shafts based on (DIN 28154). For stepless shafts, use the reference LDC81.



FLANGE COMPONENTS

A: Barrier fluid quench IN
B: Barrier fluid quench OUT
C: Drainage
D: Leakage drain G 1/8”
E : Cooling IN G 3/8”
F: Cooling OUT G 3/8”
G: Grease
T: Temperature metering



COMPONENTS:

1p Rotating contact surface product side
2p Stationary contact surface product side
1a Rotating contact surface atmospheric side
2a Stationary contact surface atmospheric side
3 O- ring
5 Flange
6 Sleeve
7 Drive rings
8 Bearings

DIMENSIONS CHART

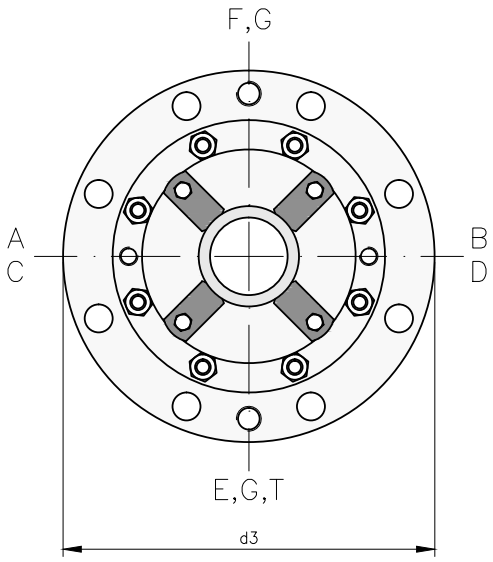
Dimensions in mm

Shaft d_1 mm d_2	d_3	d_4	d_5	d_6	nxd_7	l_1	l_2	l_3	M_1	M_2	A,B
40 38	175	90	110	145	4 x 18	15	136	28	M12	M16	G3/8
50 48	240	135	176	210	8 x 18	17	149	28	M12	M16	G3/8
60 58	240	135	176	210	8 x 18	17	156	28	M12	M16	G3/8
80 78	275	155	204	240	8 x 22	20	189	34	M16	M20	G1/2
100 98	305	190	234	270	8 x 22	20	190	34	M16	M20	G1/2
125 120	330	215	260	295	8 x 22	20	205	40	M20	M20	G1/2
140 135	395	250	313	350	12 x 22	20	222	40	M20	M20	G1/2
160 150	395	265	313	350	12 x 22	25	219,5	40	M20	M20	G1/2
180 170	445	310	364	400	12 x 22	25	230	45	M24	M20	G1/2
200 190	445	310	364	400	12 x 22	25	237,5	45	M24	M20	G1/2
220 210	505	340	422	460	16 x 22	25	249,5	50	M24	M20	G1/2

Dimensions subject to changes or modifications.

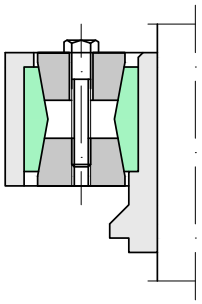
LDC80 FLANGE accessories

SECTORS:

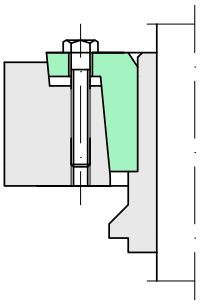


FLANGE COMPONENTS

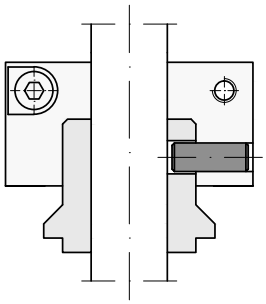
A: Barrier fluid quench IN
B: Barrier fluid quench OUT
C: Drainage
D: Leakage drain G 1/8”
E : Cooling IN G 3/8”
F: Cooling OUT G 3/8”
G: Grease
T: Temperature metering



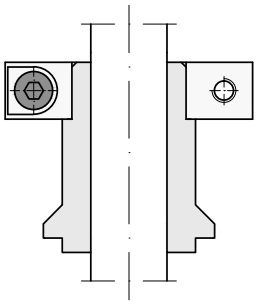
Clamping set (CS)



Shrink disk (SD)

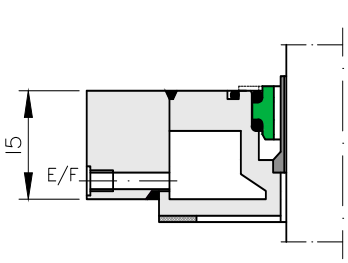


Clamping ring with pin (CRP)

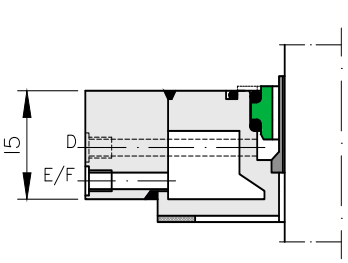


Clamping ring (CR)

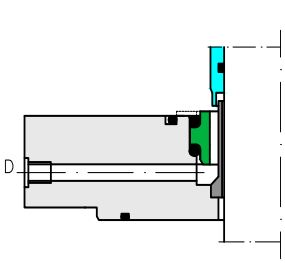
FLANGE OF COOLING OR HEATING:



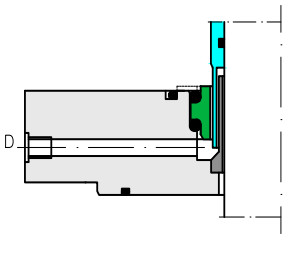
A: Cooling flange. It can also be used as a heating flange (Tmax= +350 °C)



B: Leakage drain. It can also be used as a flush or as a heating flange.



C: Leakage drain. It can also be used alternatively as a flush.

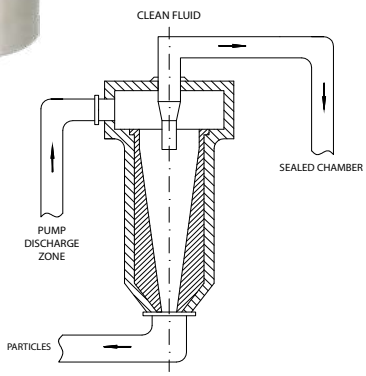


D: Polymerisation barrier. It can also be used alternatively as a leakage drain or a flush.

AUXILIARY PRODUCTS...

LC

SECTORS:



CHARACTERISTICS:

- Working pressure: 64 bar.
- Temperature: up to 125 ºC .
- Materials: Stainless steel

DESCRIPTION:

Working fluids often contain sand particles, incrusted residue from boilers and pipes etc. which can damage the mechanical seal and reduce its durability. Situations of this type can be avoided by installing a cyclone.

This type of element is installed outside the pump, between the discharge zone and the mechanical seal chamber. A current or vortex of pressurised fluid is generated inside it and the effect of the centrifugal force separates the particles suspended in the fluid. The particles that are heavier than the fluid are thrown towards the walls and dragged to the lower part of the LC, while the clean fluid emerges from the top and is returned to the chamber where the mechanical seal is located.

API31 and API41 configuration.

These elements require no maintenance and do not become blocked over time.

LHP

SECTORS:

CHARACTERISTICS:

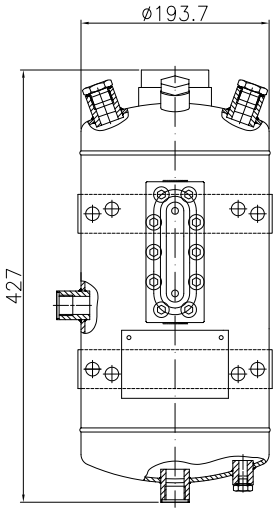
- Temperature: -30ºC to +110 ºC.
- Working pressure: 30 bar.
- Volume (L) : 2 l.
- Flow rate : 15 ml / run-out
- Materials: Stainless steel / polyethylene.

DESCRIPTION:

LHP with a built-in tank for placing on the reservoir. Installed directly in the LTS reservoir.

LST

SECTORS:



CHARACTERISTICS:

- Temperature: -60ºC to +200 ºC.
- Working pressure: up to 25 bar.
- Volume: 9L
- Materials: Stainless steel.

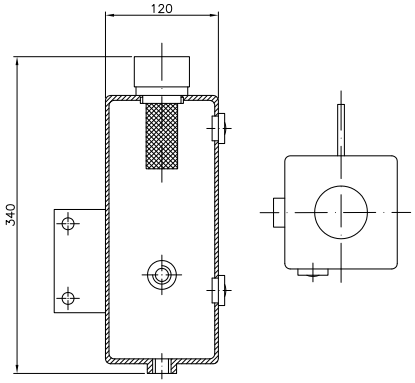
DESCRIPTION:

LST for supplying barrier fluid with or without pressure in double cartridge or mechanical seal installations which enables the circulation of the barrier fluid due to the thermosyphon effect or the pumping ring (mechanical seal). API52, API53 and API53A configuration.

It may be supplied with instruments for automatic level, pressure and temperature control and verification and a cooling coil to regulate the fluid barrier temperature.

LQT

SECTORS:



CHARACTERISTICS:

- Temperature: -30ºC up to +200 ºC.
- Working pressure : no pressure
- Volume (L) : 3.2 l.
- Materials: Stainless steel / polyethylene.

DESCRIPTION:

LQT for supplying fluid in installing mechanical seals with a quenching or tandem system. The fluid movement is the result of the thermosyphon effect or the pumping ring (mechanical seal). API51 and API52 configuration (no pressure).

Kitting

We supply spare parts for all our cartridges and can adapt to different combinations of materials for the contact surfaces and O-rings, springs, gaskets etc. and can make faster and more flexible deliveries. All our operations are guaranteed by static operating tests after manipulation.

Faces for cartridges and seals with detachable surfaces:
-Silicon carbide.
-Tungsten carbide.
-Impregnated carbon.

Metal plugs
1/8",1/4" NPT and 3/8"NPT.

Self-centering
Setting clips.

Springs for cartridges and multispring seals:
-AISI 316 steel (G).
-Hastelloy® C.

Drive screws and set screws:

Flange gaskets
-Basic.
-Special materials Frenzelit range.
-Elastomer materials.
-PTFE.

O-rings
High-performance materials
-Aflas®, FFKM.
Certified materials
-FDA, CE 1935/2004, KTW.

Production center

Lidering's modern, adequate equipment enables it to execute repair and transformation operations on mechanical seals and cartridges.

The process commences by diagnosing the condition of the part, and after this, we execute the necessary processes for cleaning, polishing and lapping the contact surfaces, grinding parts and replacing components, etc.

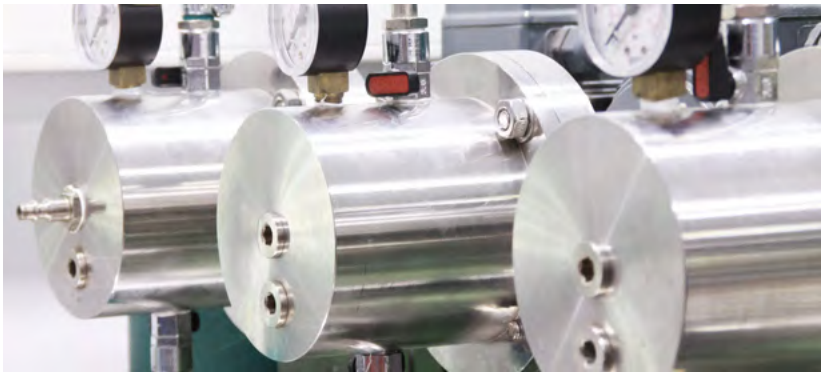
After carrying out these operations, the sealing of the repaired parts is checked by pressure test, to ensure that the part is ready for operation in any application that requires sealing of the highest standard.

We also offer additional services such as a diagnostic report on the sample received and a detailed analysis of the faults observed or laser marking of parts to facilitate their identification and traceability.

Quality control, checking and testing

All the mechanical seals manufactured or repaired by Lidering are subject to the strictest quality controls. We guarantee their operation in the most demanding applications.

Furthermore, if the customer wishes, we can provide other services such as sealing controls in static or dynamic conditions and at different pressures before delivering the product. Working along this line we perform static sealing controls on all our cartridges before delivering them to the customer.



Compatibility Chart

LIDERING	BURGMANN	CHESTERTON
SINGLE CARTRIDGE		
LSC10	-	-
LSC10B-FQ	H75VN	
LSC25	UNITEX	-
LSC38-FQ	MTEX-QNM/TNM	153
LSC39-FQ	-	-
LSC40	CARTEX-SNO	150
LSC40-F	CARTEX-SN	-
LSC40-FAS	CARTEX ANSI STANDARD BORE	-
LSC40-FAB	CARTEX ANSI BIG BORE	-
LSC40-FABQ	CARTEX-ABTN/ABQN	-
LSC40-FASQ	CARTEX-ASTN/ASQN	-
LSC40-FQO	CARTEX-QN/TN	-
LSC40-FQG	CARTEX-QN/TN	-
LSC40-FQOAB	CARTEX-QN/TN ANSI BIG BORE	-
LSC40-F QOAS	CARTEX-QN/TN ANSI STANDARD BORE	-
LSC40-FQGAB	CARTEX-QN/TN ANSI BIG BORE	-
LSC40-FQGAS	CARTEX-QN/TN ANSI STANDARD BORE	-
LSC50-F	SPLITEX	442
LSC80	M481KL	-
LSC85	-	-
LSC90	-	-
LSC211A-F	UNITEX	155
DOUBLE CARTRIDGE		
LDC21	-	-
LDC38	-	255
LDC39-D	-	-
LDC40	CARTEX-DN	255
LDC40-AB	CARTEX DUAL ANSI BIG BORE	-
LDC40-AS	CARTEX DUAL ANSI STANDARD BORE	-
LDC80	M451 M481KD	-
LDC90	-	-
MULTISPRING SEALS		
LMS26	-	-
LMS27	SECCOMIX	-
LMS28	-	-
ACCESSORIES		
LST	TS2000	-
LC	ZY	-
LHP	-	-
LQT	QTF	

AESEAL	FLOWSERVE	CRANE	ROTEN
-	-	-	-
-	-	-	-
-	ISC1BX	5615	-
CURC/CRCO	-	5610	-
SMSS/CSSN	-	-	-
SMSS/CSSN	ISC1PX	-	902
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
CURC/CRCO	-	4610/5610	-
CURC/CRCO	-	4610/5610	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
RDS	PSII	3710	-
-	-	-	-
-	-	-	-
-	-	-	-
CONVERTOR II	-	-	942
-	-	-	-
	ISC2BB	5625	-
	-	5620	-
DMSF	ISC2PP	4620 / 5620	922
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	ALLPAC 480	-	-
-	VRA	-	-
-	-	32	-
-	-	-	-
-	-	-	-
-	-	-	-

SINGLE SEALING PLANS

SINGLE FLUIDS, Lubrication

Various parameters exist that determine the durability of a mechanical seal. Temperature, pressure, speed, fluid type (sticky, laden with particles, etc.) which all have a decisive effect on wear and damage of the mechanical seal materials.

To reduce these effects and improve the seal durability, API plans can be used. Below are some of the ones applicable to our products.

PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 01	Fluid recirculation from the pump discharge. This is applied as a flushing/washing operation on the seal chamber.	To ensure the lubrication of the seal and reduce the temperature in the seal chamber.	In general for clean fluids that do not polymerise at moderate temperatures. Particle-laden fluids may block the flushing/washing connection.

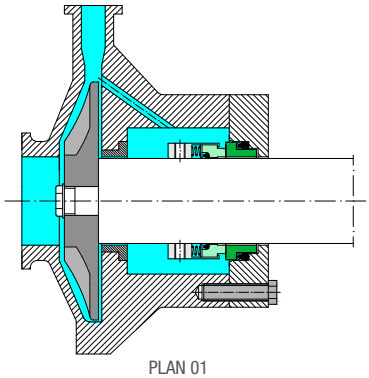
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 11	Circulation of the fluid from the pump discharge to the seal chamber, passing through a flow rate controller.	To ensure the lubrication of the seal and control the temperature.	In general for clean fluids that do not polymerise at moderate temperatures.

PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 12	Circulation of the fluids from the discharge to the seal chamber, passing through a filter/cyclone and through a flow rate controller.	To ensure the lubrication of the seal and prevent the mechanical seal from abrasion by particles.	Clean liquids which may contain particles. The filters may become blocked and so it is best to use cyclones in the presence of solids.

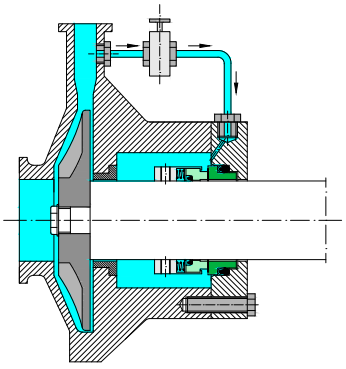
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 13	Circulation from the seal chamber to the suction area, passing through a flow rate controller.	To guarantee the fluid circulation. To ventilate the seal cavity in vertical pumps. To reduce the seal cavity pressure.	Vertical pumps. Clean fluids in vertical pumps.

PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 14	Circulation from the pump discharge zone to the seal chamber, passing through a flow rate controller and from the seal chamber to the suction area.	To ventilate the seal cavity in vertical pumps. -To control the temperature. To provide the appropriate pressure in the seal chamber, thereby preventing fluid vaporisation.	vertical pumps.

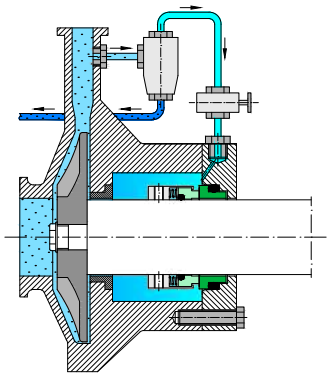
DRAWING



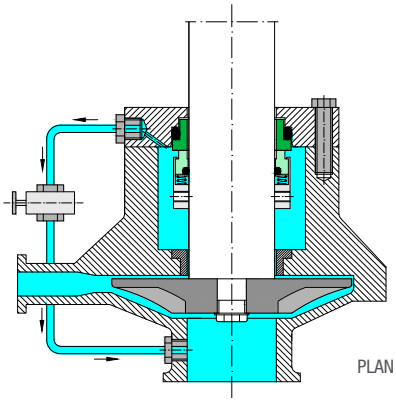
PLAN 01



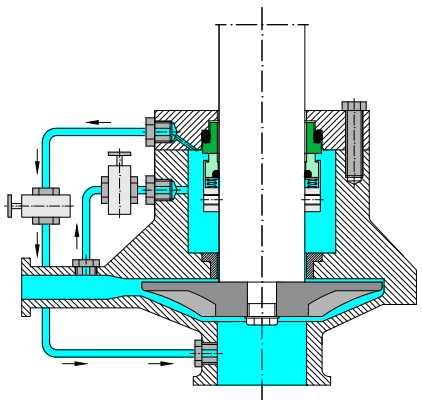
PLAN 11



PLAN 12



PLAN 13



PLAN 14

SINGLE SEALING PLANS

HOT FLUIDS, COOLING

Fluids at high temperatures tend to evaporate when they reach the seal contact surfaces, provoking a lack of lubrication that causes damage to the seal. To reduce these effects the following API plans can be applied:

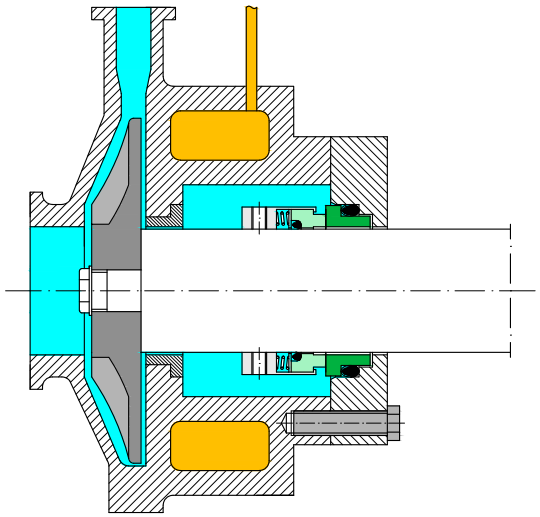
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 02	Closed chamber, with no external fluid circulation. Cooling or heating chamber. There is no direct flow entry or exit in the seal chamber.	To reduce or increase the seal chamber temperature, depending on the nature of the fluid.	Horizontal pumps (not recommended in vertical pumps). For fluids that solidify when the temperature is reduced or to control high fluids temperatures.

PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 21	Circulation of pumped fluids from the discharge to the seal chamber, passing through a flow rate controller and a heat exchanger.	To control the fluid temperature in the seal chamber. This prevents the vaporisation of the fluid between the seal faces.	Horizontal pumps. Clean fluids at high temperatures. Sticky products may block the connections and pipes. In such cases, use Plan 23.

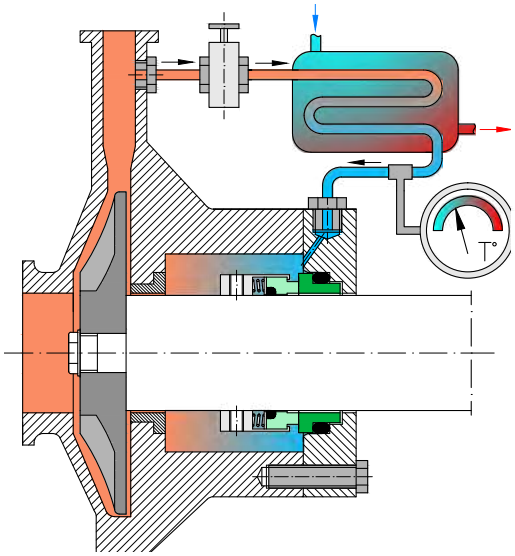
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 22	Circulation of pumped fluids from the discharge to the seal chamber, passing through a flow rate controller, a filter/cyclone and a heat exchanger.	To control the seal chamber temperature and prevent the mechanical seal from abrasion by particles.	Horizontal pumps. Clean fluids at high temperatures that may be laden with particles.

PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 23	Circulation of pumped fluids from the discharge to the seal flush connection, passing through a flow rate controller and a heat exchanger.	To control the fluid temperature in the seal chamber. This prevents the vaporisation of the fluid between the seal faces.	Horizontal or vertical pumps. Clean fluids at high temperatures. Hot water, boiler food products. Hot oils.

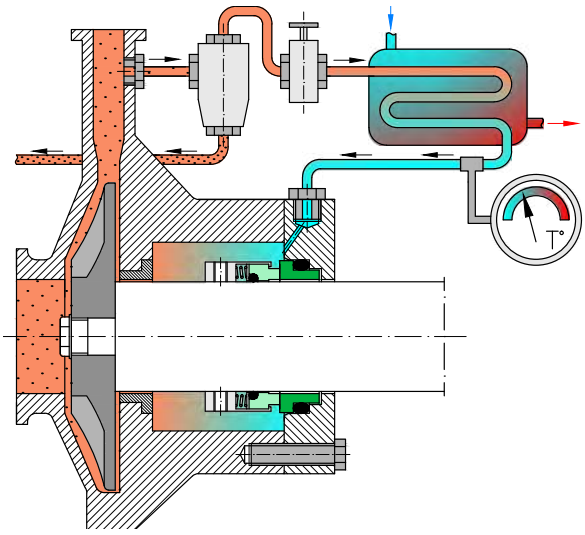
DRAWING



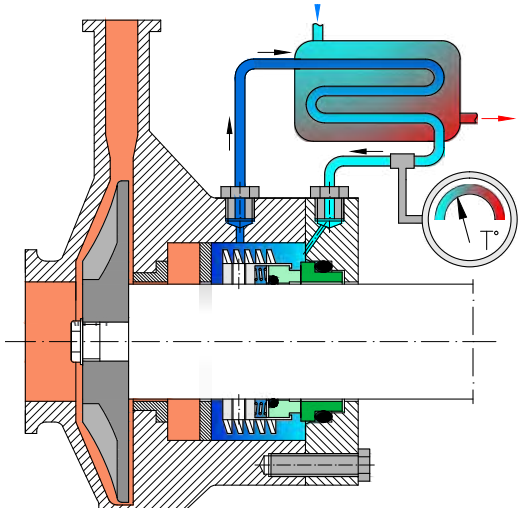
PLAN 02



PLAN 21



PLAN 22



PLAN 23

SINGLE SEALING PLANS

ABRASIVE FLUIDS OR FLUIDS WITH SUSPENDED SOLIDS

Fluids laden with particles that accelerate wear in mechanical seal materials.
To reduce this effect the following API plans can be applied:

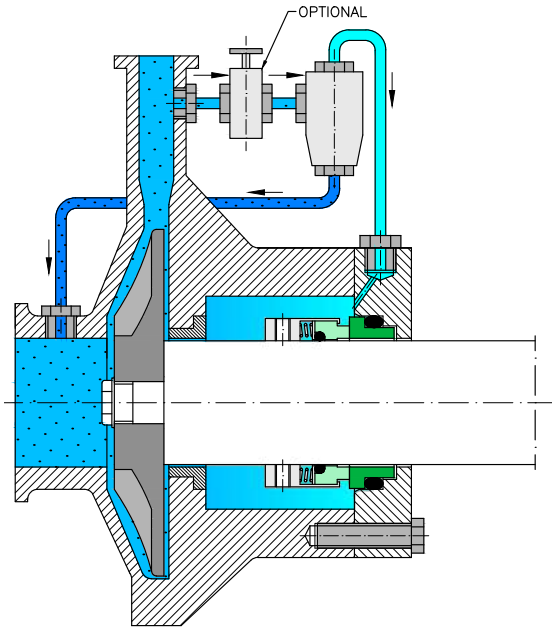
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 31	Circulation of the pumped fluid from the pump discharge to the seal chamber, passing through a cyclone. Fluids with solids are returned to the suction area.	To prevent the abrasion of the mechanical seal by particles.	Horizontal or vertical pumps. Fluids with suspended solids whose specific gravity is twice that of the fluid. In vertical pumps, a shaft bushing must be included at the base of the compartment.

PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 32	External injection of clean fluid to the mechanical seal chamber. The fluid must have a pressure 2 bar higher than that of the seal chamber and be compatible with the pumped product.	To reduce the heat in the seal chamber. To eliminate deposits from the chamber. To increase the margin between the seal chamber pressure and the fluid vapour pressure. To reduce the formation of air bubbles between the seal faces.	Horizontal or vertical pumps. Dirty, contaminated fluids or fluids that could crystallise on the air side of the seal when there is a leak. Environments with little lubricating properties.

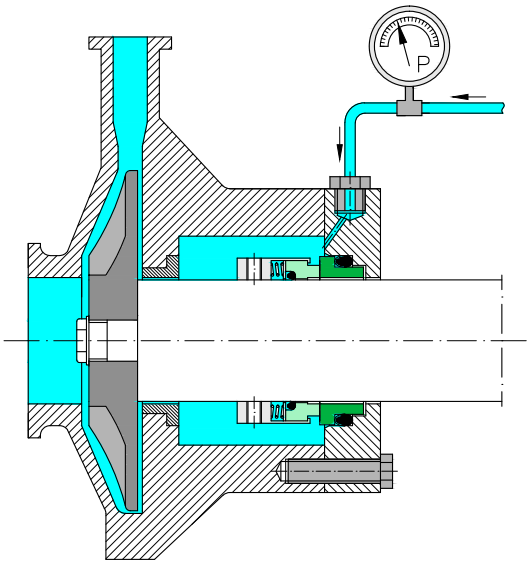
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 41	Circulation of the pumped fluid from the pump discharge to the seal chamber, passing through a cyclone and sending the clean fluid to a heat exchanger. There must be a difference in pressure between the pump discharge and suction area (at least 1 bar and no more than 11 bar).	To control the seal chamber temperature and improve the mechanical seal lubrication.	Horizontal or vertical pumps. Fluids with suspended solids whose specific gravity is twice that of the fluid.

DRAWING

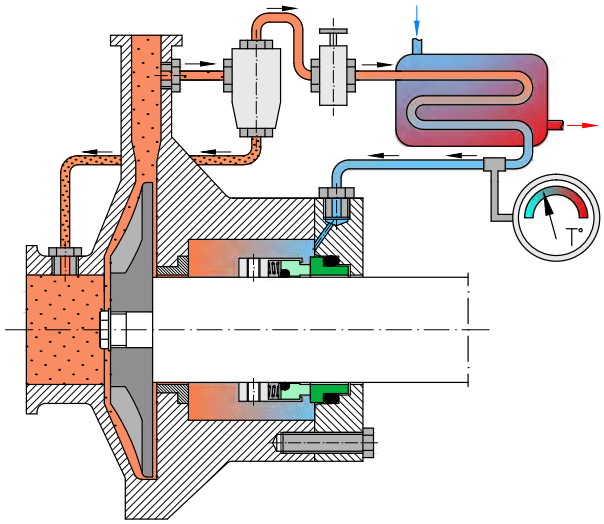
PLAN 31



PLAN 32



PLAN 41



SINGLE AND DOUBLE SEALING PLANS

DANGEROUS FLUIDS

Dangerous fluids are those which, because of their characteristics, may cause harm to elements and/or people in the event of a leak.

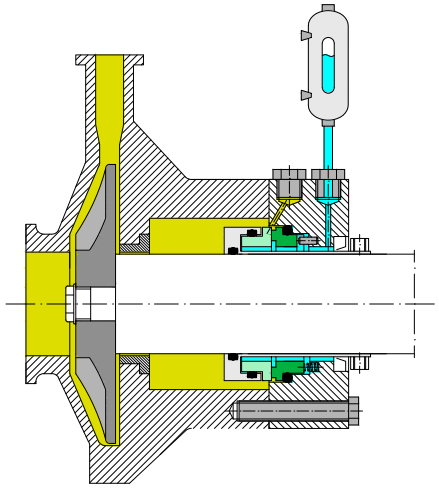
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 51	Static column of non-pressurised fluid inside a tank, through the quench connection.	To prevent potential leaks from being emitted into the atmosphere.	Horizontal or vertical pumps. Fluids that crystallise when in contact with the atmosphere. Dangerous fluids with low concentrations.

PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 52	Forced circulation of an external non-pressurised fluid used as a barrier fluid. This fluid is circulated through a pumping ring due to the thermo-siphon effect.	To prevent atmospheric contamination in the event of leaks, using the external seal (atmospheric side) as a safety seal. Zero or very low emissions.	Horizontal or vertical pumps. Non-pressurised, double seal layout (tandem).Fluids that crystallise or vaporise when in contact with the atmosphere. Dangerous fluids with low concentrations, explosive or flammable fluids.

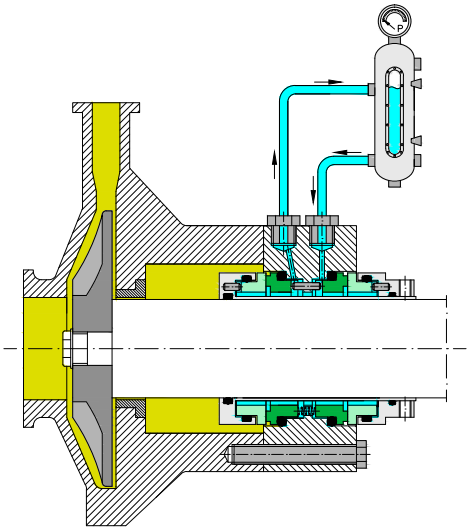
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 54	Injection of a pressurised barrier fluid from an external source (pressure of 2 bar above the seal chamber).	To prevent atmospheric contamination in the event of leaks, using the external seal (atmospheric side) as a safety seal. Zero or very low emissions.	Horizontal or vertical pumps. Pressurised double seal layout at a high pressure. Fluids that crystallise or vaporise when in contact with the atmosphere. Dangerous fluids with high concentrations. Explosive or flammable fluids.

DRAWING

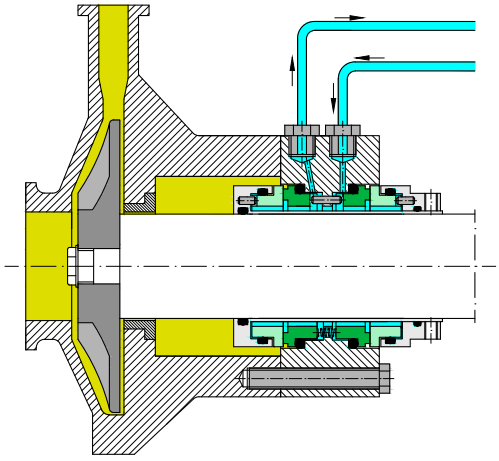
PLAN 51



PLAN 52



PLAN 54



DOUBLE SEALING PLANS

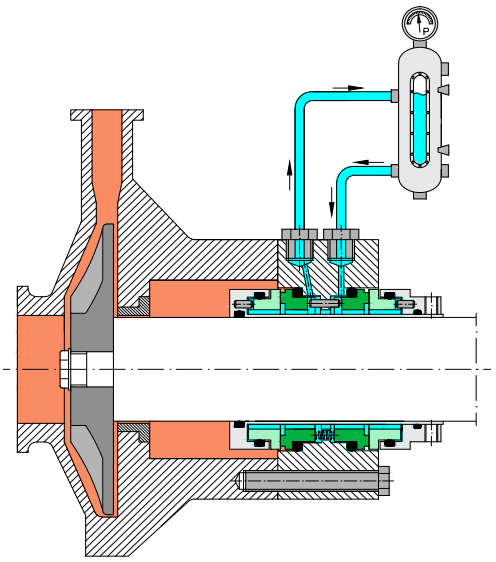
DANGEROUS FLUIDS

Dangerous fluids are those which, because of their characteristics, may cause harm to elements and/or people in the event of a leak. API plans can be used to reduce such risks:

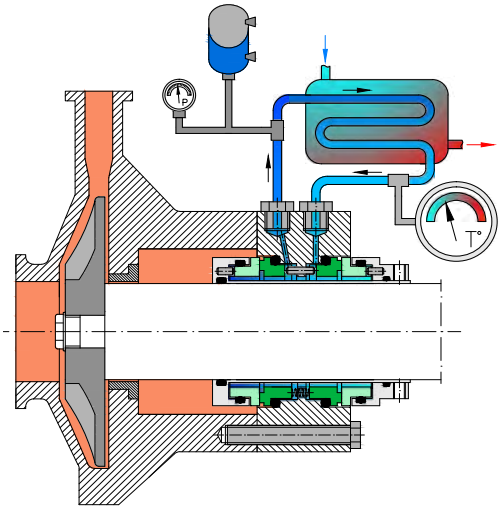
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 53 A	Forced circulation through a pumping ring of a barrier fluid in a pressurised tank with a pressure that is 2 bar higher than the product fluid.	To prevent atmospheric contamination in the event of leaks, using the external seal (atmospheric side) as a safety seal. Zero or very low emissions.	Horizontal or vertical pumps. Fluids that crystallise or vaporise when in contact with the atmosphere. Dangerous fluids with high concentrations, explosive or flammable fluids.
PLAN 53 B	Forced circulation through a pumping ring of a barrier fluid in a closed pressurised circuit. A storage tank provides and maintains the pressure in the circulation system. The heat is eliminated through a heat exchanger.	To prevent atmospheric contamination in the event of leaks, using the external seal (atmospheric side) as a safety seal. Zero or very low emissions, maintaining a constant pressure difference with respect to the process. Same as Plan 53A. It prevents the entry of pressurised gas. It provides additional cooling, by air or water, depending on the heat load.	Horizontal or vertical pumps. Double pressurised seal layout (back to back or face to face). The barrier fluid must be 2 bar above the product fluid. Fluids that crystallise or vaporise when in contact with the atmosphere. Dangerous fluids with high concentrations, explosive or flammable fluids.
PLAN 53 C	Forced circulation through a pumping ring of a barrier fluid in a closed pressurised circuit. A piston storage tank provides and adjusts the pressure in the circulation system, comparing it with the seal cavity pressure. The heat is eliminated through a heat exchanger, cooled by air or water.	To prevent atmospheric contamination in the event of leaks, using the external seal (atmospheric side) as a safety seal. Zero or very low emissions.	Horizontal or vertical pumps. Installation of pressurised double seals (back to back or face to face) with a variable barrier pressure greater than 10 bar. Fluids that crystallise or vaporise when in contact with the atmosphere.Dangerous fluids with low concentrations. Explosive or flammable fluids. The same as with Plan 53A, but for higher pressures, preventing reverse pressures and providing additional seal stability.

DRAWING

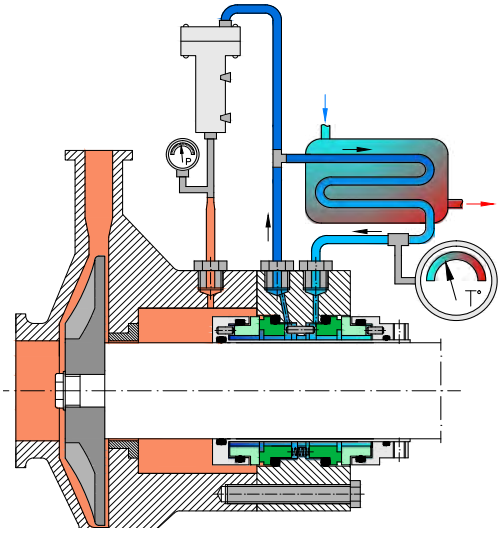
PLAN 53A



PLAN 53B



PLAN 53C



SINGLE SEALING PLANS

FLUIDS IN GENERAL

The following API plans are used in conjunction with other plans.

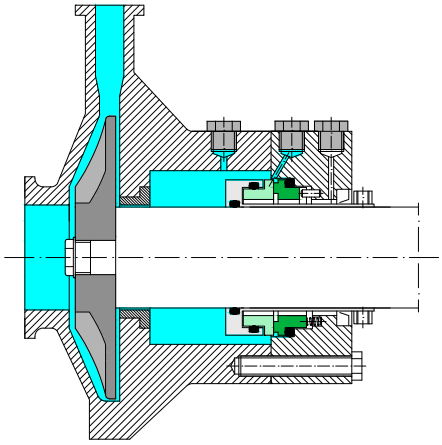
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 61	Blocked vent and drainage connections, for use as needed.	To ensure that these connections are available in the event of need and also to prevent particles passing through to the seal chamber.	Horizontal or vertical pumps. Single seal layout.

PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 62	Injection of an external fluid to be used for quenching and flushing/ washing. The quench lubricates the seal contact surfaces on the air side, with vapour or water. The flushing/ washing operation has a lubricating function.	To guarantee seal lubrication, reducing the formation of particles between the contact surfaces due to carbonisation, oxidation or crystallisation.	Horizontal or vertical pumps. Single seal layout. Fluids that crystallise when in contact with the atmosphere or generate solid deposit that block or stick to the seal faces.

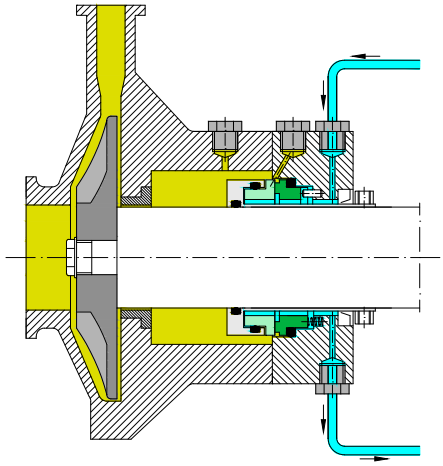
PLAN	DESCRIPTION	OBJETIVE	APLICATIONS
PLAN 65	Leak collector plan for single seals, used for the automatic detection of leaks through a level switch that triggers an alarm when a leak occurs. It has a bypass around the opening to prevent the build-up of pressure.	To have a safe system for controlling and detecting leaks, while also having a drainage system for them in fluids that may condensate.	Horizontal or vertical pumps. Single seal layout. Systems in which an excessive leak indication is required without the need for a physical inspection. Remote sites or sites that are difficult to access. Systems in which it is necessary to stop the equipment automatically in the event of a massive leak.

DRAWING

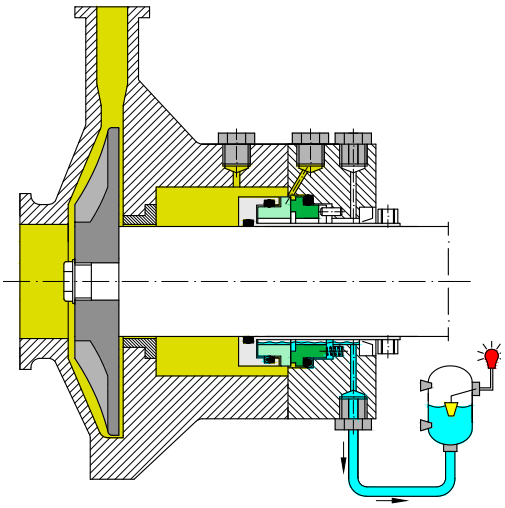
PLAN 61



PLAN 62



PLAN 65



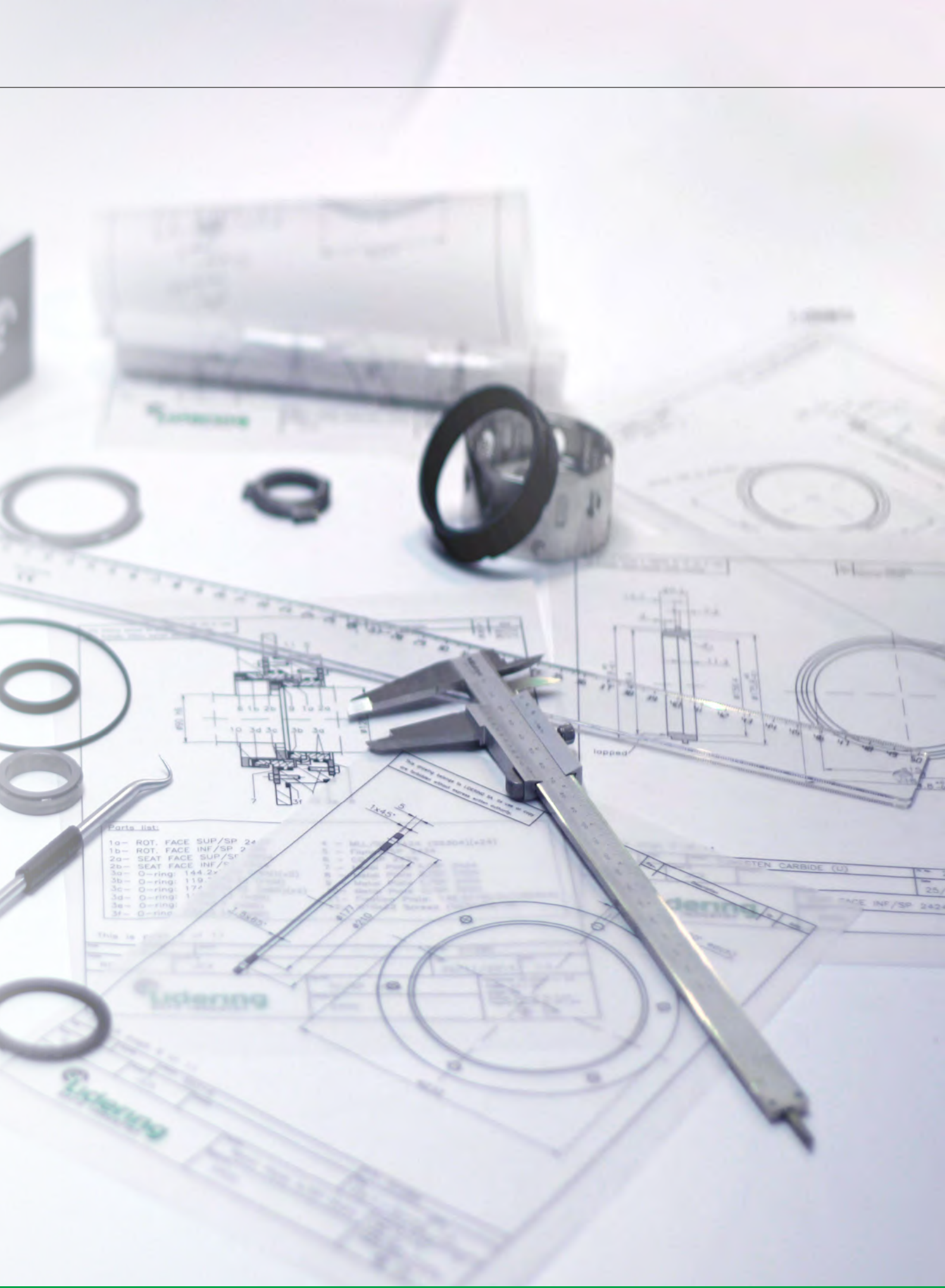
SUMARY

FLUIDS IN GENERAL

The following API plans are used in conjunction with other plans.

PUMPED FLUID	ACTION REQUIRED	API PLANS
CLEAN FLUIDS	CIRCULACTION (LUBRICATION)	PLAN 01 PLAN 11 PLAN 12 PLAN 13 PLAN 14
HOT FLUIDS	COOLING	PLAN 02 PLAN 21 PLAN 22 PLAN 23
ABRASIVE FLUIDS OR FLUIDS WITH SUSPENDED SOLIDS	LUBRICATION	PLAN 31 PLAN 32
ABRASIVE FLUIDS AT HIGH TEMPERATURES	COOLING AND LUBRICATION	PLAN 41
DANGEROUS FLUIDS	SAFETY	PLAN 51 PLAN 53 PLAN 52 PLAN 54
FLUIDS IN GENERAL	EMISSIONS CONTROL	PLAN 61 PLAN 62 PLAN 65

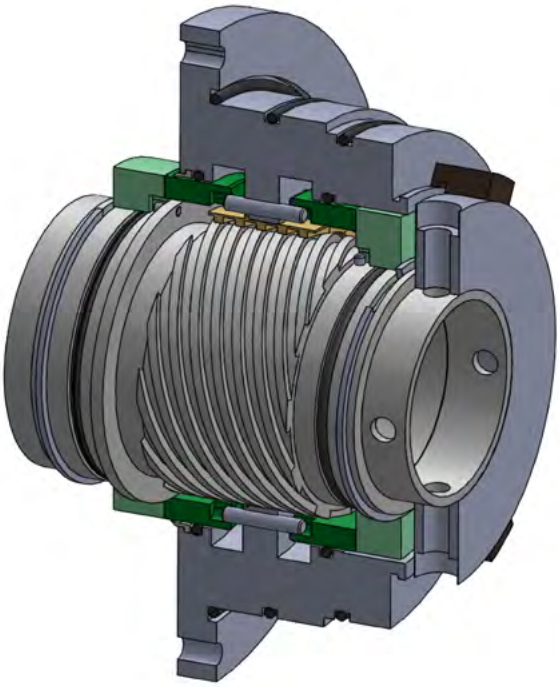
TYPE MECHANICAL SEALS	RECOMENDADED API PLANS
SINGLE MECHANICAL SEALS	01,02,11,12,13,14,21,22,23,31,32,41
DOUBLE MECHANICAL SEALS	52,53A,53B,53C,54
QUENCH MECHANICAL SEALS SEALS	51,61,62

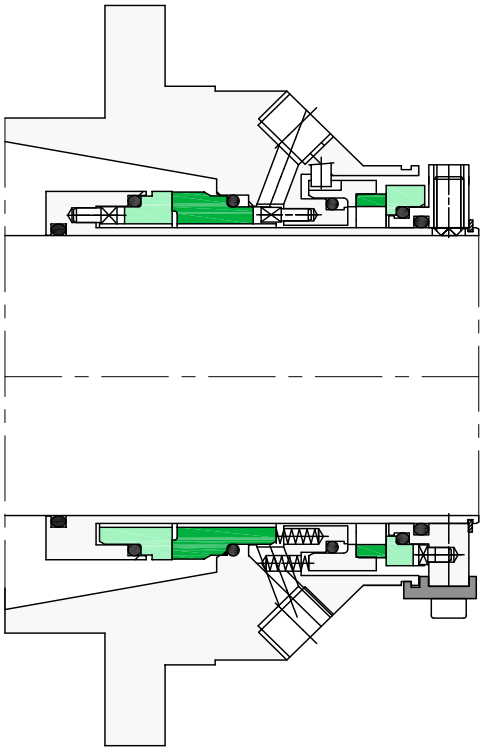

Parts list:
1a– ROT. FACE SUP/SP
1b– ROT. FACE INF/SP
2a– SEAT FACE SUP/S
2b– SEAT FACE INF/S
3a– O-ring: 144.2
3b– O-ring: 119.
3c– O-ring: 17
3d– O-ring:
3e– O-ring:
3f– O-ring
1x45°
lapped
TEN CARBIDE (U)
Lidering

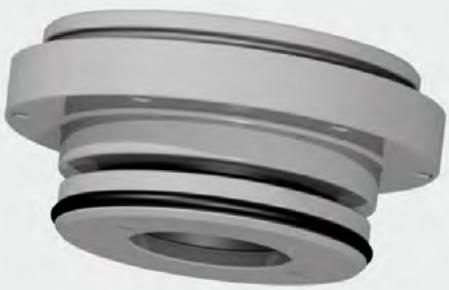
Special designs

It is not always possible to use a conventional mechanical seal. Complex applications with special requirements and pumps with small housings need mechanical seals with non-standard profiles.

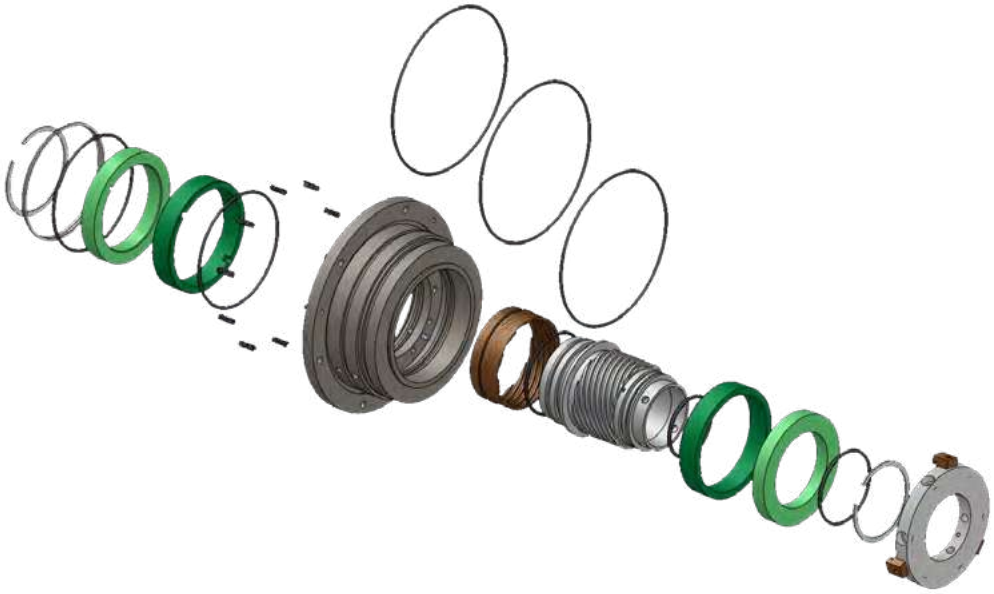
Our engineering centre designs and manufactures customised solutions adapted to the specific needs of our customers, in large or small production runs.







Specific models for agitators or reactors that work with simple mixtures, solid dissolutions or suspended fluids. In which gases or residual products may be released as a result of the chemical reactions generated inside the agitator. The double internal seal is permanently lubricated by the barrier fluid. This type of cartridge seal is often used in the food, pharmaceutical and chemical industries.



Materials Codes EN 12756)

Contact surfaces (position I and II)

SYNTHETIC CARBONS

A: Antimony-impregnated carbon
B: Resin-impregnated carbon
B_2: Resin-impregnated carbon
B_3: Pure non-impregnated carbon
B_4: Self-lubricating carbon
B_5: Hot pressed carbon

METALS

E: Chromium steel; AISI 420 (1.4021 ; 1.4028)
F_1: Nickel-chromium steel; AISI 431 (1.4057)
G: Nickel-chromium-molybdenum steel; AISI 316 (1.4401)
D: Duplex stainless steel (1.4462 ; 1.4162)
Z : Nickel-chromium-molybdenum steel with chrome oxide
Z_2: Nickel-chromium-molybdenum steatite steel
C: Brass
C_2: Bronce

CARBIDES

U: Tungsten carbide with welded / inserted nickel
U_1: Solid tungsten carbide with nickel
Q_1: Sintered silicon carbide with no free silicon
Q_2: Sintered silicon carbide
Q_6: Sintered silicon carbide with carbon

CERAMIC MATERIALS

V: Alumina oxide 99,5%
V_2: Alumina oxide 95%
X: Steatite

SYNTHETIC MATERIALS

Y: Glass-filled PTFE
Y_1: PTFE-graphite

Secondary seals (position III)

ELASTOMERS

P: Nitrile rubber (NBR)
H: Hydrogenated nitrile (HNBR).
N: Chloroprene rubber®(CR)
E: Ethylene-propylene diene monomer (EPDM)
X: Ethylene-propylene diene monomer peroxide (EPDMPX)
S: Silicon rubber (MVQ)
V: Fluorocarbon (FKM)
K: Perfluorocarbon rubber (FFKM)
M: Rubber coated with PTFE (FEP-FKM / FEP-MVQ)
A: Tetrafluoro-ethylene Propylene Rubber (TFE/P or Aflas®)

NON-ELASTOMERS

G: Graphite
T: PTFE

Springs and other metal parts (position IV and V)

E: Chromium steel; AISI 420 (1.4021; 1.4028)
F: Nickel-chromium steel; AISI 304 (1.4301)
F_1: Nickel-chromium steel; AISI 431 (1.4057)
G: Nickel-chromium-molybdenum steel; AISI 316 (1.4401)
G_2: AM350 nickel-chromium-molybdenum steel. AM350
G_3: AISI 904L (1.4539)
G_4: 316Ti (1.4571)
L: NIckel-chromium-molybdenum steel; AISI 316L (1.4404)
L_2: NIckel-chromium-molybdenum steel; AISI 316L (1.4435)
D: Nickel-chromium-molybdenum duplex stainless steel (1.4462)
D_2: Super Duplex (1.4410)
M: Hastelloy® C4
M_2: Inconel® 718 (2.4668)
M_3: Alloy® 20 (2.4668)
M_4: Monel®400
M_5: Hastelloy® C276 (2.4819)
B: Brass
R: AISI 316 + PTFE coverage

Synthetic carbons

Synthetic carbons are the materials most often used due to their intrinsic characteristics: they are self-lubricating, economical and have good chemical resistance. There are several types:

Code A: Antimony-impregnated carbon.
It has less chemical resistance than resin-impregnated carbon but is used due to its resistance to high temperatures (350ºC). It is recommended for high pressure applications with hydrocarbons, thermal oils or gases.

Code B: Resin-impregnated carbon.
The most standard and economical. It can withstand temperatures of up to 180ºC.

Code B_2: Resin-impregnated carbon.
A mechanised carbon with a more compact internal structure which gives it greater chemical resistance than type B graphite.

Code B_3: Non-impregnated carbon.
A carbon with no resin or metal content with a very high resistance to temperature (3000º C) and chemicals.

Ceramic materials

Ceramic materials have extremely high purity, are very resistant to wear and have high chemical resistance. However, they become fragile in the presence of sudden changes in temperature (thermal shock).

- **Code X: Stéatite.**

Its composition is silica oxide (SiO2) 52%, magnesium oxide (MgO) 23%, alumina oxide (Al2O3) 5.1%. It is ochre in colour and used in clean water applications. An economical material. Has low chemical resistance and low thermal conductivity, for which reason it does not dissipate heat well. Low resistance to thermal shock.

- **Code V: Alumina oxide with a purity of 99.5%.**

It is chemically inert and has excellent resistance to wear. Due to its purity, it can withstand a higher degree of thermal shock than other types of ceramic. It is recommended in clean water operations, in combination with graphite (B).
Low thermal conductivity and poor heat dissipation. Low resistance to thermal shock.

Metal carbides

Metal carbides are extremely hard materials manufactured by sintering. They have high chemical and wear resistance and are used in environments with solids or particles which can attack soft materials such as carbon.

• Code U: Inserted / welded tugsten carbide.
An extremely hard and tenacious material. It is appropriate for applications with a pH of more than 6 (in the case of welded parts).
Good behaviour with respect to wear under severe conditions. Good thermal conductivity. High elastic modulus, meaning it is not likely to become deformed, especially in high pressure applications. Limited chemical resistance, especially to acid products. A very high density material, which can be critical in high speed rotating operations.
Limited capacity to withstand dry operation conditions or extremely limited lubrication conditions, especially when working with the same material.

• Códe U_1: Solid tungsten carbide with nickel.
An extremely hard and tenacious material. Limited chemical resistance, especially to acid products. Suitable for applications with pH values above 2. Good behaviour with respect to wear under severe conditions. Good thermal conductivity. High elastic modulus, meaning it is not likely to become deformed in comparison with metal materials. A very high density material, which can be critical in high speed rotating operations.
Limited capacity to withstand dry operation conditions or extremely limited lubrication conditions, especially when working with the same material.

• Code Q: Silicon carbide.
Good resistance to wear and to friction in heavy duty work. It is the perfect material for working in contact with abrasive and corrosive fluids, and at high pressures. Its main characteristics are as follows:
-High thermal conductivity, comparable to tungsten carbide.
-Low resistance to thermal shock.
-High elasticity modulus.
-Good chemical resistance.
-Lower density than tungsten carbide.
May be subject to chemical attack by certain strong alkaline products. For that reason it is important to choose the most appropriate silicon carbide grade:
Q_1: Contains no free silicon. It has the best chemical resistance of all carbides, but low tenacity. Its friction characteristics are poorer than grade Q2, but higher than those of tungsten carbide.
Q_2: Contains free silicon. It has the best friction characteristics of all silicon carbides. Some acid or alkaline substances may cause lixiviation in free silicon but in general, it is more inert than tungsten carbide.
Q_6: Has a silicon and graphite carbide base. This mixture combines the high resistance to wear of silicon carbide and the lubricant properties of graphite.
Silicon carbide normally runs against resin-impregnated graphite (B), but metal carbons may also be used for high performance (hot water applications).

The silicon carbide and carbon combination is frequently used, providing long life in a wide range of conditions due to its excellent resistance to thermal shock.
In applications with abrasives, it is advisable to use silicon carbide against tungsten carbide, which is the most effective combination due to its resistance to wear and friction.
Silicon carbide may work against itself in very abrasive conditions but the friction characteristics are not as good as silicon carbide against tungsten carbide.

When silicon carbide is used against itself, the best results are obtained using different types, for instance Q_1 against Q_2 or Q_2 against Q_6.

When hard material is worked against hard, the limited conditions of the application may give rise to sudden changes in surface temperature and dry operation. Although this occurs with a short space of time, it is best to use silicon carbide with graphite-impregnated silicon carbide (Q_6). Due to its graphite content, this combination is resistant to the absence of lubrication for a limited time.

Metals

• Code E: AISI 420 chromium steel.
This is tempered stainless steel with a surface hardness of less than 50 HRc. It is used with fluids such as water or oils.
• Code F: Nickel-chromium steel AISI 304.
Stainless steel used to manufacture springs and auxiliary parts.
• Code F_1: Nickel-chromium steel.
Stainless steel with good chemical resistance, used for fluids such as water, oils, chemicals, etc.
• Code G: AISI 316 nickel-chromium-molybdenum steel.
Stainless steel with very good chemical resistance used with water, oils, hydrocarbons and chemicals.
• Code G_2: AM350 nickel-chromium-molybdenum steel.
Specifically for metal bellows that must work at high temperatures up to +300ºC.
• Code L: Nickel-chromium-molybdenum steel; AISI 316L.
Stainless steel with excellent chemical resistance. It provides a homogeneous surface with no pores and is recommended for hygienic applications.
• Code Z: Nickel-chromium-molybdenum steel with chrome oxide.
It is a coating of Chromium Oxide deposited on the steel by means of plasma. The hardness is superior to that of stellite steel.
• Code Z_2: Nickel-chromium-molybdenum stellite steel.
To obtain it, the steel surface is treated with plasma, leaving a thickness of 0.2 to 0.3 mm. with considerable surface hardness and increased resistance to wear.

• **Code D:**
Nickel-molydenum duplex stainless steel, used for highly corrosive environments: marine, industrial, etc.
• **Code M: Hastelloy® C4**
A nickel, chromium and molybdenum alloy with great mechanical resistance and excellent chemical resistance for general use. It is used to make springs or auxiliary parts.
• **Code M_2: Inconel®718 (2.4668)**
A nickel (53%), chromium (18%), tantalum-niobium (5%) and molybdenum (3%) alloy. Good resistance to corrosion and excellent resistance to extreme temperatures, both high (600ºC) and low (-250ºC).
• **Code M_4: Monel®400.**
A nickel (63%) and copper (23%) alloy. High resistance to corrosion in saline, caustic and acid environments (hydrochloric acid, hydrofluoric acid, sulphuric acid) and at high and low temperatures. Good mechanical properties. Due to its copper content, it has low resistance to nitric acid and ammonia. Very often used in the naval sector.

Synthetic or plastic materials

These materials are widely recommended for cases in which carbon lacks the adequate chemical resistance. They are manufactured with a PTFE base mixed with different additives and have very high chemical resistance. They withstand temperatures of up to +240ºC. Their use is limited to low pressures and speeds (PV factor).
• **Code Y:** Glass-filled
• **Code Y_1:** Graphite-filled PTFE

Secondary seals

• **Code P: Nitrile butadiene rubber NBR.**
For working with water, oil, grease, etc. Temperature resistance from -30ºC to +100ºC.
• **Code H: Hydrogenated NBR.**
Excellent resistance to lubricants and products refrigerants at temperatures of up to + 150ºC .
• **Code N: Chlorobutadiene rubber Neoprene® or CR.**
For fluids such as refrigerants, ozone, glycols, etc. Temperature resistance of from -40ºC to +100ºC.
• **Code E: Ethylene-propylene diene monomer EPDM.**
Good behaviour in the presence of hot water, steam, acetone, alcohol, etc. Temperature resistance from -40ºC to +120ºC.
• **Code X: Cethylene-propylene rubberhardened with peroxide (EPDMPX).** Good behaviour in the presence of hot water, steam, acetone, alcohol, etc. In contact with steam up to +130ºC in continuous operation and peaks of +150ºC.
• **Code S: Methyl-vinyl silicon rubber MVQ.**
Indicated for applications at low temperatures from -60ºC to +200ºC.
• **Code V: Fluorocarbon (FKM)**
High chemical and temperature resistance. Withstands temperatures of -15ºC to +200ºC except in hot water applications, in which case the temperature should not exceed 120ºC.
• **Code K: Perfluorelastomer rubber FFKM.**
Excellent chemical resistance to a wide range of working fluids. Withstands temperatures ranging from -30 to +250 or +320ºC depending on the type.
• **Code M: FEP encapsulated seals.**
Their chemical resistance is similar to that of PTFE. They are suitable for working at high temperatures ranging from -15ºC to +200ºC. Their main problem is the plastic behaviour of their surface, which makes them difficult to assemble in closed housings and they have a greater risk of being damaged.
• **Code A: Tetrafluoroethylene rubber, Aflas® or TPE/P.**
A material with high chemical resistance to most products and suitable for working with steam at temperatures up to +170ºC and lubricants at temperatures up to +200º C.
• **Code G:**
Non-elastomer material with a graphite base used for high temperature applications. Withstands temperatures up to +400º C
• **Code T: Polytetrafluorethylene PTFE.**
High chemical resistance to practically all substances. Withstands temperatures ranging from -200ºC to +260ºC.

Cartridges identification guide

Working Conditions:

Speed (rpm):

Temperature (°C):

Pressure (bar):

Media:

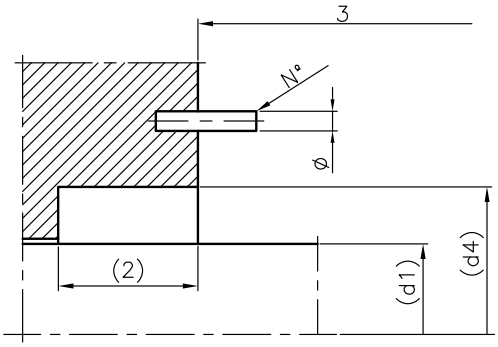
Solid particles in suspension YES ☐ NO ☐

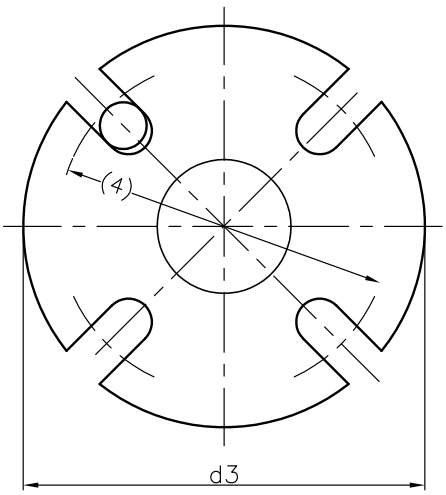
New application: YES ☐ NO ☐

Current Product:

Explanation of application:

Dimensions:





(1) Shaft diameter:

(2) Stuffing box diameter:

(3) Number of bolts and diameter:

N°

Ø

(4) Stuffing box length:

(5) Maximum installation length:

(6) Maximum diameter of gland:

(7) External diameter between bolts:

Seals Identification guide

Company: Work fluids:

Contact person: Solid particles in suspension: YES NO

Pump brand: Model:

Working Conditions:

Temperature: Cleaning: YES NO

Pressure: Conditions:

Speed:

Rotary Part / Face:

Spring:

- Single spring
- Multi-spring
- Wave spring
- Others

Specify

Direction of rotation:

- Right
- Left
- Independent

Example:

Set screw

Spring Seals Conical

Spring Seals Cylindrical

Bellows

Stationary Part:

Example:

With oring

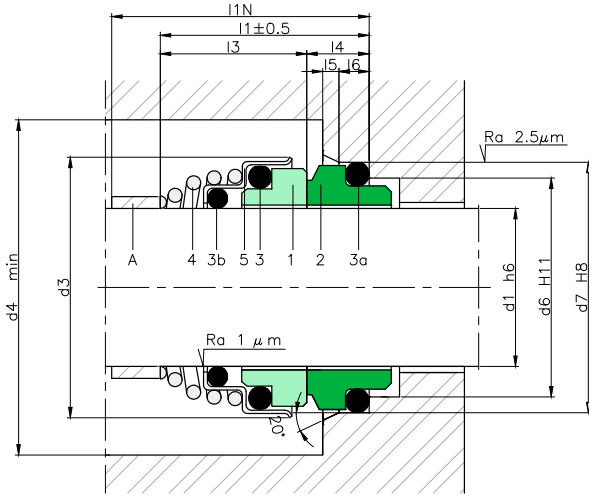
Rubber joint

Anti-rotation slot

Others

Dimensions (Sketch):

- Shaft diameter (d1): _____
- Exterior diameter of the rotary part (d3): _____
- Length of the rotary part, relaxed (without movement): _____
- Length of the rotary part, totally pressed: _____
- Length of the rotary part in working position (l3): _____
- Exterior diameter of the stationary part, oring includes (d7): _____
- High of the stationary part, from the rotating seal face till the end of the oring (l4):_____



Naming Codes:

Single Cartridge:

L	SC	Type	-	Shaft	-

D: Drainaje
F: Flush
QO: quench whith lip seal
QG: quench with trough a throttle ring
AB: ANSI Big Bore
AS: ANSI Standard Bore

Double Cartridge:

L	DC	Type	-	Shaft	-

D: Drainaje
AB: ANSI Big Bore
AS: ANSI Standard

Single Seals:

L	MS	Type	-	Shaft	-	D

Notes

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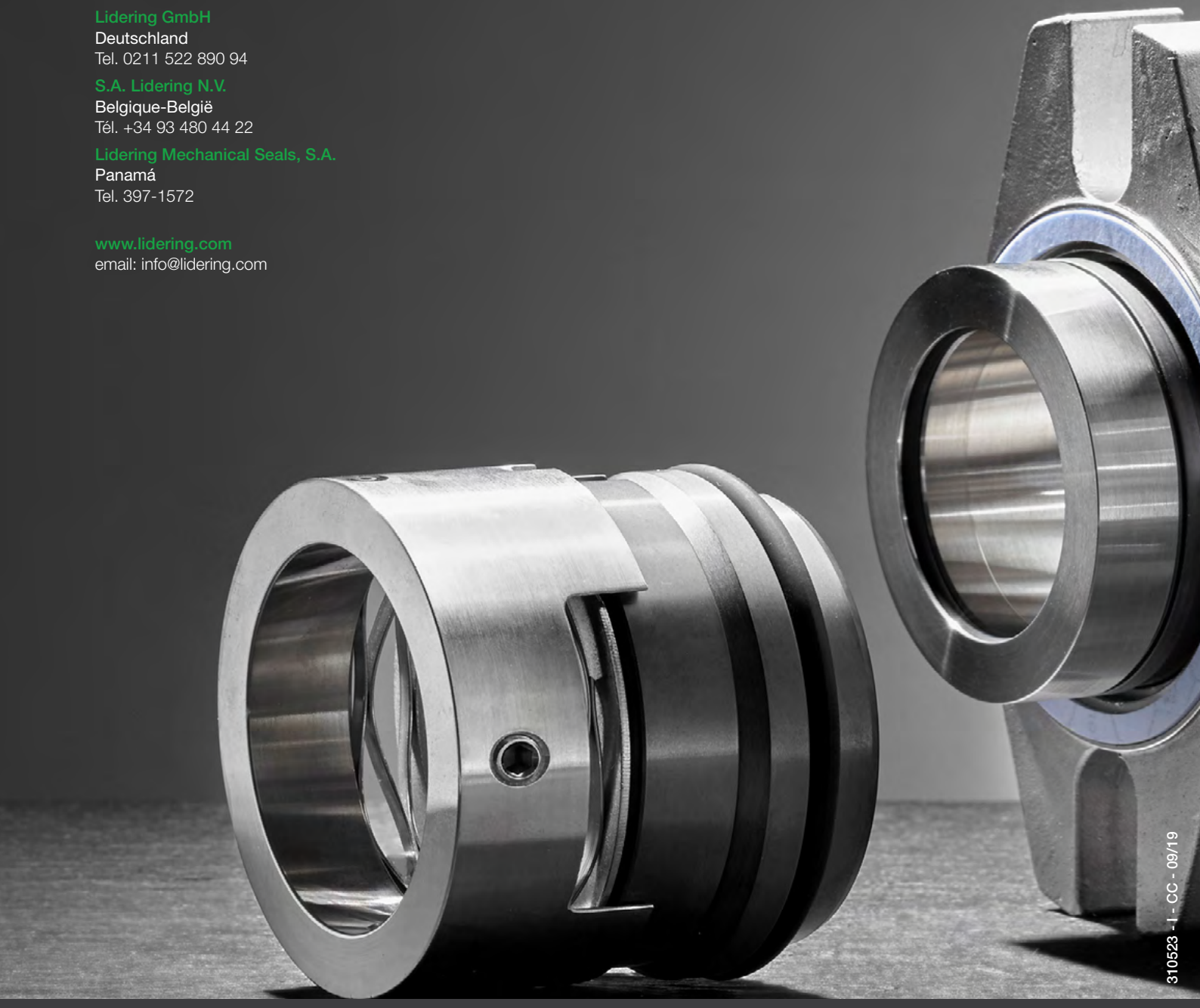

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