CITY LINE

world wide seals

General Catalog

INDEX

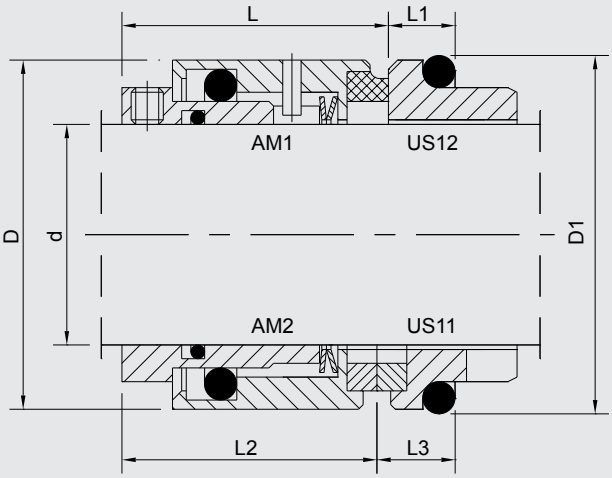
Table of Materials DIN 24960

Primary Rings		Mating Rings		Secondary seals		Springs		Metal parts	
Sintered silicon carbide	Q	Ceramic	V1	NBR	P	Stainless 304	F1	Stainless 304	F1
Reaction bonded silicon carbide	Q1	Sintered silicon carbide	Q	Viton	V	Stainless 316	G	Stainless 316	G
Tungsten carbide	U	Reaction bonded silicon carbide	Q1	EPDM	E	Hastelloy	M	Hastelloy	M
Phenolic graphite	B	Tungsten carbide	U	PTFE	T	Stainless Steel	F	Stainless Steel	F
Carbon - double resin impreg	B1	Carbon - double resin impreg	B1	Aflas	K				
Carbon - Furan resin impreg	B2	Carbon - Furan resin impreg	B2						
Carbon - Antimony impreg	A	Carbon - Antimony impreg	A						
Graphite filled silicon carbide	Q4	Graphite filled silicon carbide	Q4						

Example

Q	B1	V	M	F1
Primary Rings	Mating Rings	Secondary seals	Springs	Metal parts
Sintered silicon carbide	Carbon - double resin impreg	Viton	Hastelloy	Stainless 304

Amsterdam
Wave spring seals



Technical features

- Single seal
- Balanced
- Wave spring
- Bi-directional
- To DIN 24960

Operating limits

P = 348 PSI
T = -95 to 320°F
V = 65 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite
Mating rings	silicon carbide, carbon graphite, tungsten carbide, ceramic
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

- Amsterdam 1 (AM1)
- Amsterdam 2 (AM2)

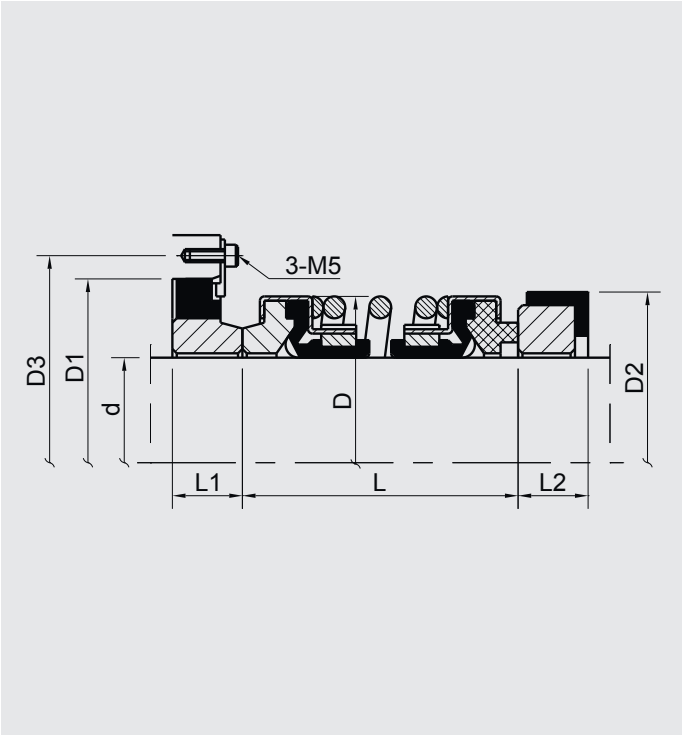
Mating rings

- For AM1: US12 (to DIN 24960)
- For AM2: US11 (to DIN 24960)

		AM1	AM2		US12	US11
d	D	L	L2	D1	L1	L3
18	32	30.5	28.5	33.0	7.0	9.0
20	34	30.5	28.5	35.0	7.0	9.0
22	36	30.5	28.5	37.0	7.0	9.0
24	38	33.0	31.0	39.0	7.0	9.0
25	39	33.0	31.0	40.0	7.0	9.0
28	42	35.5	33.0	43.0	7.0	9.5
30	44	35.5	33.0	45.0	7.0	9.5
32	47	35.5	33.0	48.0	7.0	9.5
33	47	35.5	33.0	48.0	7.0	9.5
35	49	35.5	33.0	50.0	7.0	9.5
38	54	37.0	34.5	56.0	8.0	10.5
40	56	37.0	34.5	58.0	8.0	10.5
43	59	37.0	34.5	61.0	8.0	10.5
45	61	37.0	34.5	63.0	8.0	10.5
48	64	37.0	34.5	66.0	8.0	10.5
50	66	38.0	35.5	70.0	9.5	12.0
53	69	38.0	35.5	73.0	9.5	12.0
55	71	38.0	35.5	75.0	9.5	12.0
58	78	42.0	39.5	78.0	10.5	13.0
60	80	42.0	39.5	80.0	10.5	13.0
63	83	42.0	39.5	83.0	10.5	13.0
65	85	42.0	39.5	85.0	10.5	13.0
68	88	41.5	39.0	90.0	11.0	13.5
70	90	48.5	46.0	92.0	11.5	14.0
75	99	48.5	46.0	97.0	11.5	14.0
80	104	48.5	46.0	105.0	11.5	14.0
85	109	48.5	46.0	110.0	11.5	14.0
90	114	52.0	49.5	115.0	13.0	15.5
95	119	52.0	49.5	120.0	13.0	15.5
100	124	52.0	49.5	125.0	13.0	15.5

*Athens

Elastomer bellows double seals



	*AT		Type 1		Type 2		
d	D	L	D1	L1	D2	L2	D3
15**	27.0	26.0	30	5.0	30	5.0	-
16**	27.0	26.0	30	5.0	30	5.0	-
20	34.0	32.5	44	8.5	38	8.0	60
25	39.5	34.5	50	8.0	44	9.0	60
30	48.0	40.2	57	9.8	50	9.0	70
35	51.5	41.0	65	10.5	58	9.5	80
40	57.0	42.5	70	12.0	64	10.0	85
45	62.9	43.0	70	12.0	66	10.0	90
50	68.0	45.4	80	13.0	72	11.1	95

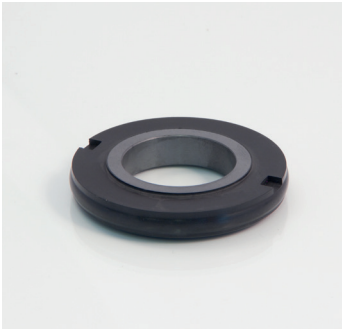
Technical features

- Double seal
- Single spring
- Unbalanced
- Bi-directional
- Elastomer bellows

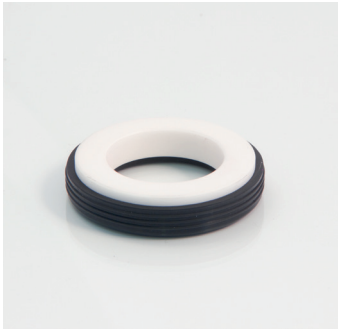
Operating limits

P = 72 PSI
T = -95 to 320°F
V = 52 ft/s

Type 1



Type 2



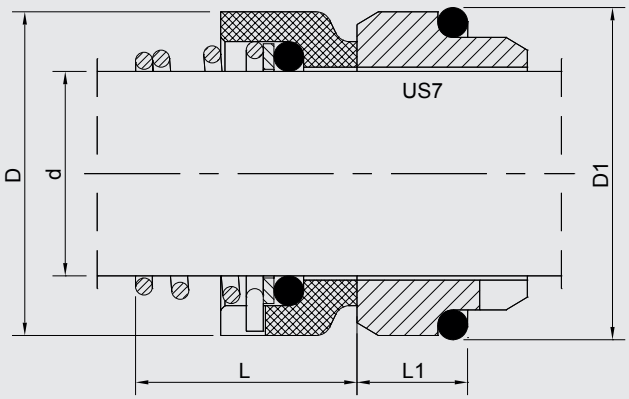
Description	Materials
Primary rings	silicon carbide, carbon graphite, tungsten carbide
Mating rings	silicon carbide, ceramic, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

*** Retaining plate unavailable for 15 and 16 mm size*

Buenos Aires

Conical spring o-ring mounted seals



Technical features

- Single seal
- Unbalanced
- Conical spring
- Uni-directional
- To DIN 24960

Operating limits

P = 145 PSI
T = -95 to 320°F
V = 49 ft/s

Description	Materials
Primary rings	carbon graphite
Mating rings	silicon carbide, staninless, ceramic
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

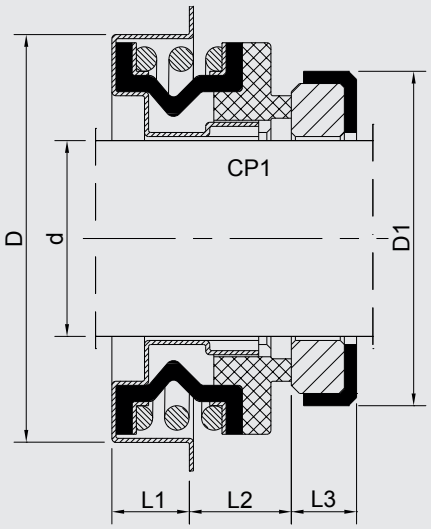
Mating rings

- US7 (standard, to DIN 24960)
- US5 (to DIN 24960)
- US3

For more details on mating rings see page 29

	BA		US7	
d	D	L	D1	L1
10	20	17.5	21	10.0
12	22	17.5	23	10.0
14	25	17.5	25	10.0
15	27	18.0	27	10.0
16	27	19.5	27	10.0
18	30	20.5	33	11.5
20	32	22.0	35	11.5
22	35	23.5	37	11.5
24	38	25.0	39	11.5
25	40	26.5	40	11.5
26	41	26.5	-	-
28	43	26.5	43	11.5
30	47	26.5	45	11.5
32	48	28.5	48	11.5
35	53	28.5	50	11.5
38	56	33.5	56	14.0

Campello
Elastomer bellows seals



Technical features

- Single spring
- Unbalanced
- Bi-directional
- Elastomer bellows

Operating limits

P = 72 PSI
T = -95 to 320°F
V = 32 ft/s

Description	Materials
Primary rings	carbon graphite, silicon carbide, tugsten carbide
Mating rings	silicon carbide, tugsten carbide, ceramic
Secondary seals	NBR, EPDM
Metal parts	Stainless 304 / Stainless 316*

** upon request*

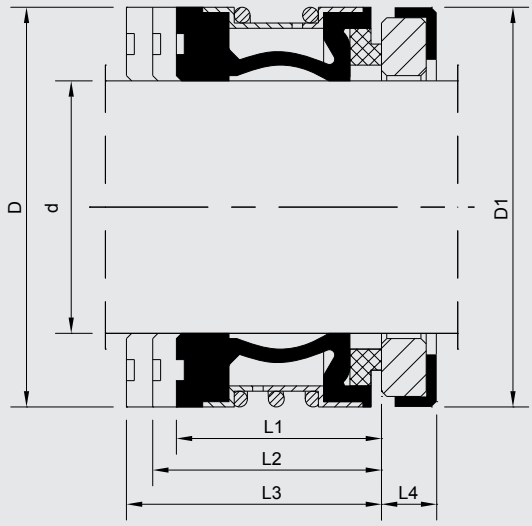
Mating rings

- BR2 (standard)

	CP			BR2	
d	D	L1	L2	D1	L3
.500	1.125	0.340	.203	1.000	.312
.625	1.437	0.340	.265	1.250	.406
.750	1.575	0.370	.235	1.375	.406
1.000	1.850	0.394	.315	1.625	.437

	CP				
d	D	L1	L2	D1	L3
20	40.0	9.5	12.0	35.0	5.0
30	52.0	10.0	12.0	48.0	8.0

Chicago
Elastomer bellows seals



Technical features

- Single seal
- Unbalanced
- Single spring
- Elastomer bellows
- Bayonet drive
- To DIN 24960

Operating limits

P = 261 PSI
T = -95 to 320°F
V = 49 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite, graphite filled sic.
Mating rings	silicon carbide, ceramic, tungsten carbide
Secondary seals	Neoprene, NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

Metric size
- Chicago 1 (CG1)
- Chicago 2 (CG2)
- Chicago 3 (CG3)

Imperial size
- Chicago 4 (CG4)
- Chicago 5 (CG5)
- Chicago 6 (CG6)

Mating rings

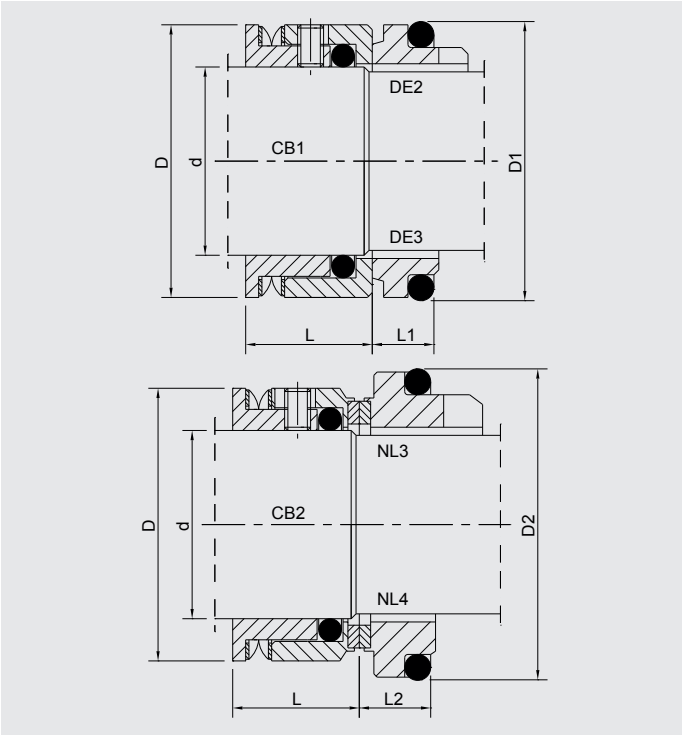
- BR2 (standard)
- BR4 (for CG1, CG2, CG3)
- FR1 (for CG4, CG5, CG6)

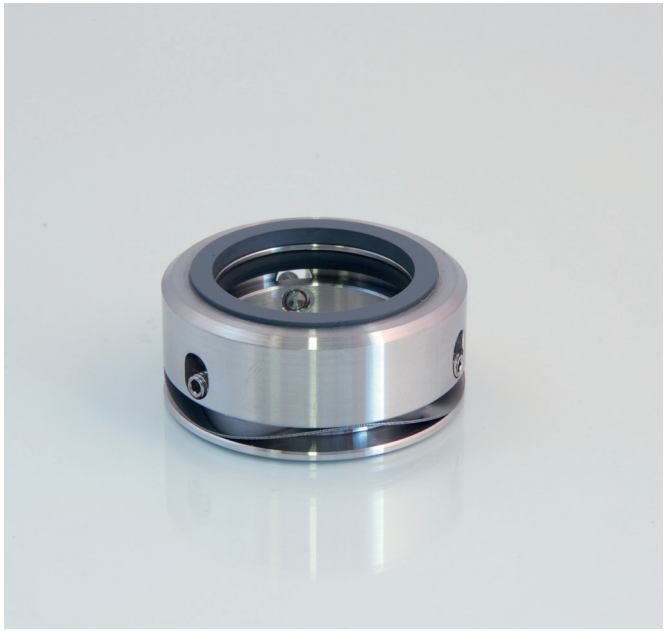
For more details on mating rings see page 29

		CG1	CG2	CG3	BR4				*CG4	*CG5	CG6
d	D	L1	L2	L3	D1	L4	d	D	L1	L2	L3
10	20	15	27.5	35	21	5	.500	.945	.591	.812	.656
12	22	15	26.5	34	23	6	.625	1.024	.591	.875	.718
14	24	15	29	34	25	6	.750	1.260	.787	.875	.718
15	25	15	29	34	26	6	.875	1.417	.787	.937	-
16	26	15	29	34	27	6	1.000	1.535	.787	1.000	.812
18	32	20	31.5	39	33	6	1.125	1.654	1.024	1.062	-
20	34	20	31.5	39	35	6	1.250	1.811	1.024	1.062	-
22	36	20	31.5	39	37	6	1.375	1.929	1.024	1.125	-
24	38	20	34	44	39	6	1.500	2.126	1.181	1.187	-
25	39	20	34	44	40	6	1.625	2.205	1.181	1.375	-
28	42	26	36.5	44	43	6	1.750	2.402	1.181	1.375	-
30	44	26	35.5	43	45	7	1.875	2.520	1.181	1.500	-
32	46	26	35.5	48	48	7	2.000	2.598	1.181	1.500	-
33	47	26	35.5	48	48	7	2.125	2.717	1.181	1.687	-
35	49	26	34.5	47	50	8	2.250	3.031	1.299	1.687	-
38	54	30	37	47	56	8	2.375	3.150	1.299	1.812	-
40	56	30	37	47	58	8	2.500	3.268	1.299	1.812	-
43	59	30	37	52	61	8	2.625	3.465	1.299	1.937	-
45	61	30	37	52	63	8	2.750	3.504	1.299	1.937	-
48	64	30	35	50	66	10	2.875	3.780	1.299	2.062	-
50	66	30	37.5	50	70	10	3.000	3.898	1.575	2.062	-
53	69	30	37.5	60	73	10					
55	71	30	37.5	60	75	10					
58	78	33	42.5	60	78	10					
60	80	33	4.5	58	80	12					
63	83	33	4.5	58	83	12					
65	85	33	4.5	68	85	12					
68	88	33	4.5	68	90	12					
70	90	33	48	68	92	12					
75	99	40	48	68	97	12					
80	104	40	47.5	77.5	105	12.5					
85	109	40	47.5	77.5	110	12.5					
90	114	40	52.5	77.5	115	12.5					
95	119	40	52.5	77.5	120	12.5					
100	124	40	52.5	77.5	125	12.5					

Curitiba

Compact wave spring seals





CB1-2			DE2 - DE3		NL3 - NL4	
d	D	L	D1	L1	D2	L2
10	21	18.0	18.1	5.5	21	7
12	23	18.0	20.6	5.5	23	7
14	25	18.0	23.1	6.0	25	7
15	26	19.1	26.9	7.0	27	7
16	29	19.1	26.9	7.0	27	7
18	29	19.1	30.9	8.0	33	10
19	32	19.1	30.9	8.0	35	10
20	32	19.1	30.9	8.0	35	10
22	35	19.1	35.4	8.0	37	10
24	37	19.1	35.4	8.0	39	10
25	41	19.1	38.2	8.5	40	10
28	41	19.1	43.3	9.0	43	10
30	47	19.1	43.3	9.0	45	10
32	47	19.1	43.3	9.0	48	10
33	48	19.1	53.5	11.5	48	10
35	49	19.1	53.5	11.5	50	10
38	53	21.1	60.5	11.5	56	13
40	55	21.1	60.5	11.5	58	13
43	60	21.1	60.5	11.5	61	13
45	60	21.1	65.5	11.5	63	13
48	65	21.1	65.5	11.5	66	13
50	65	21.1	72.5	11.5	70	14
53	74	22.1	72.5	11.5	73	14
55	74	22.1	72.5	11.5	75	14
58	79	25.8	79.3	11.5	78	14
60	79	25.8	79.3	11.5	80	14
63	87	25.8	84.5	11.5	83	14
65	87	25.8	84.5	11.5	85	14
68	93	25.8	89.5	11.5	90	16
70	93	25.8	89.5	11.5	92	16
75	98	25.8	94.5	11.5	97	16
80	104	25.8	99.5	11.5	105	18
85	108	25.8	105.5	13.5	110	18
90	113	25.8	111.5	13.5	115	18
95	118	25.8	116.5	13.5	120	18
100	123	25.8	119.5	13.5	125	18

Technical features

- Single seal
- Unbalanced
- Spring enclosed
- Bi-directional
- Elastomer bellows

Operating limits

P = 87 PSI
T = -95 to 320°F
V = 32 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite, phenolic graphite
Mating rings	silicon carbide, ceramic, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

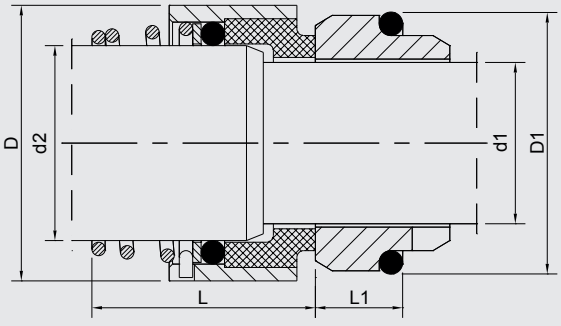
- Curitiba 1 (CB1)
- Curitiba 2 (CB2) - with face shrink fitted

Mating rings

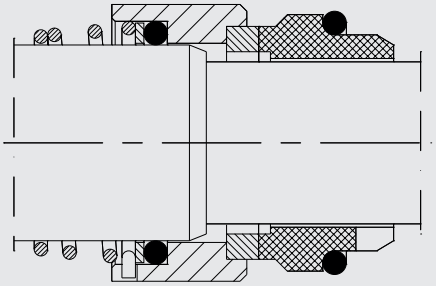
- DE3 (monolithic short seat)
- DE2 (monolithic long seat, anti-rotation pin slot)
- NL3 (face shrink fitted, anti-rotation pin slot, to DIN24960)
- NL4 (short seat, face shrink fitted, anti-rotation pin slot, to DIN24960)
- DE1 (face shrink fitted, anti-rotation pin slot)
- NL2 (monolithic short seat, to DIN24960)
- NL1 (monolithic long seat, anti-rotation pin slot, to DIN24960)

For more details on mating rings see page 29

Dallas
Conical spring balanced seals



Dallas1 with US7



Dallas2 with US9

Technical features

- Single seal
- Balanced
- Conical spring
- Uni-directional
- To DIN 24960

Operating limits

P = 348 PSI
T = -95 to 320°F
V = 49 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite
Mating rings	silicon carbide, ceramic, carbon graphite, stainless
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

- Dallas 1 (DA1)
- Dallas 2 (DA2)

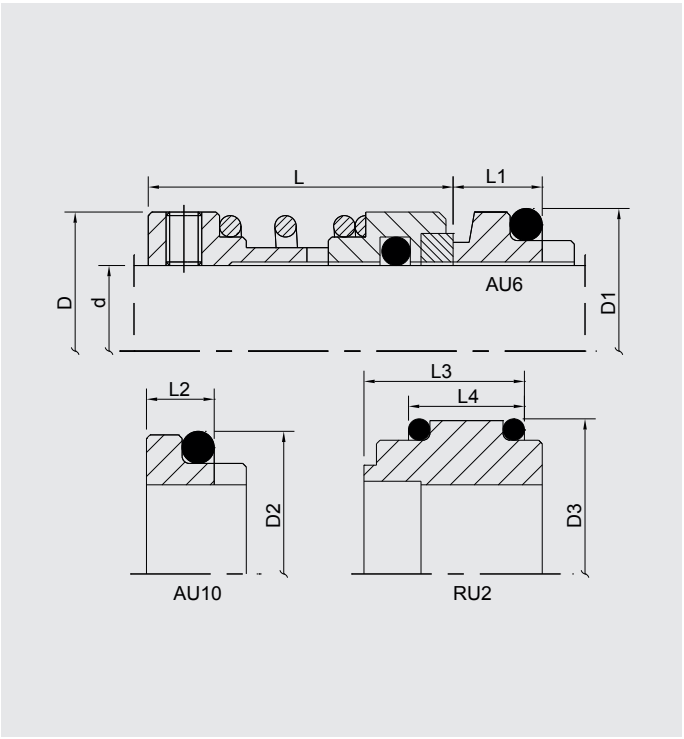
Mating rings

- US7
- US9 (to DIN 24960)

		DA1 - DA2		US7 - US9	
d1	d2	D	L	D1	L1
10	14	24	25.5	21	10.0
12	16	26	26.5	23	10.0
14	18	31	29.5	25	10.0
16	20	34	31.0	27	10.0
18	22	36	32.5	33	11.5
20	24	38	32.5	35	11.5
22	26	40	32.5	37	11.5
24	28	42	32.5	39	11.5
25	30	44	33.5	40	11.5
28	33	47	35.5	43	11.5
30	35	49	35.5	45	11.5
32	38	54	39.5	48	11.5
33	38	54	39.5	48	11.5
35	40	56	43.5	50	11.5
38	43	59	46.0	56	14.0
40	45	61	48.0	58	14.0
43	48	64	51.0	61	14.0
45	50	66	55.0	63	14.0
48	53	69	55.0	66	14.0
50	55	71	58.0	70	15.0
53	58	78	60.0	73	15.0
55	60	79	60.0	75	15.0
58	63	83	60.0	78	15.0
60	65	85	60.0	80	15.0
63	68	88	60.0	83	15.0
65	70	90	61.0	85	15.0
70	75	98	63.0	92	18.0
75	80	105	68.0	97	18.0
80	85	109	68.0	105	18.2

Detroit

Single coil spring seals



		DT		AU6*		AU10*		RU2*		
d (mm)	d (inc)	D	L	D1	L1	D2	L2	D3	L3	L4
20	-	34	41	35	13	33.32	6.2	42	23	18
22	-	36	41	37	13	34.93	6.2	44	23	18
24	-	38	43	39	13	-	-	46	23	18
25	-	39	43	40	13	39.67	7.2	47	23	18
28	-	42	45	43	13	42.88	9.2	50	23	18
30	-	44	45	45	13	44.45	9.2	52	23	18
32	-	46	45	48	13	46.02	9.2	54	23	18
33	-	47	45	48	13	46.02	9.2	55	23	18
35	-	49	49	50	13	49.20	9.2	57	23	18
38	-	54	53	56	13	52.37	9.2	64	25	20
40	-	56	55	58	13	53.98	9.2	66	25	20
42	-	58	55	61	13	55.58	9.2	69	25	20
43	-	59	55	61	13	55.58	9.2	69	25	20
45	-	61	55	63	13	58.72	9.2	71	25	20
48	-	64	55	66	13	63.50	9.2	74	25	20
50	2.000	66	60	70	13	65.07	9.2	76	25	20
53	-	69	61	73	13	66.68	9.2	79	25	20
55	-	71	61	75	13	69.85	9.2	81	25	20
58	-	76	63	78	16	73.03	9.2	89	28	22
60	-	78	63	80	16	76.20	9.2	91	28	22
63	-	81	63	84	16	79.38	9.2	94	28	22
65	-	84	67	85	16	80.98	9.2	96	28	22
68	-	87	67	90	16	82.55	9.2	99	30	24
70	-	90	68	92	16	85.73	9.2	101	30	24
75	3.000	95	72	97	16	90.47	9.2	110	30	24
80	-	100	72	105	16	98.43	9.2	115	31	25
-	3.250	103	77	-	-	-	-	-	-	-
85	-	107	77	110	16	104.77	9.2	120	31	25
90	3.500	112	77	115	16	109.52	9.2	125	31	25
95	-	119	82	120	16	114.30	9.2	130	31	25
100	4.000	124	82	125	16	119.07	9.2	135	31	25

Technical features

- Single seal
- Unbalanced
- Bi-directional
- Bayonet drive
- To DIN 24960

Operating limits

P = 174 PSI
T = -95 to 320°F
V = 65 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide,
Mating rings	silicon carbide, carbon graphite, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

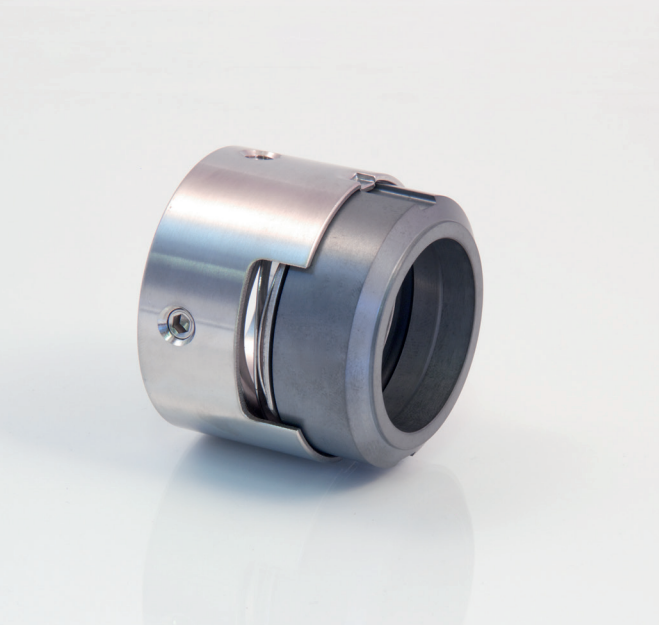
** upon request*

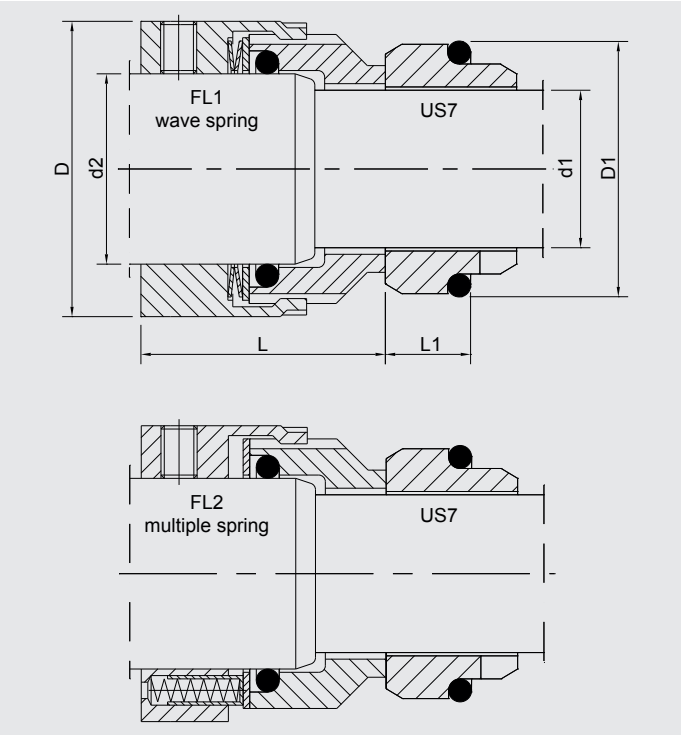
Mating rings

- AU6* (Monolithic)
- AU10* (Monolithic) for metric shaft size
- RU2* (Monolithic)
- AU7* (Insert) for metric shaft size
- RU3 (Insert) for metric shaft size
- FR1 for imperial shaft size

For more details on mating rings see page 29

Florence
O-ring mounted balance seals





Technical features

- Single seal
- Multiple or wave spring
- Balanced
- Bi-directional
- To DIN 24960

Operating limits

P = 348 PSI
T = -95 to 320°F
V = 65 ft/s

Description	Materials
Primary rings	silicon carbide, ceramic, carbon graphite, stainless
Mating rings	silicon carbide, carbon graphite
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

- Florence 1 (FL1)
- Florence 2 (FL2)

Mating rings

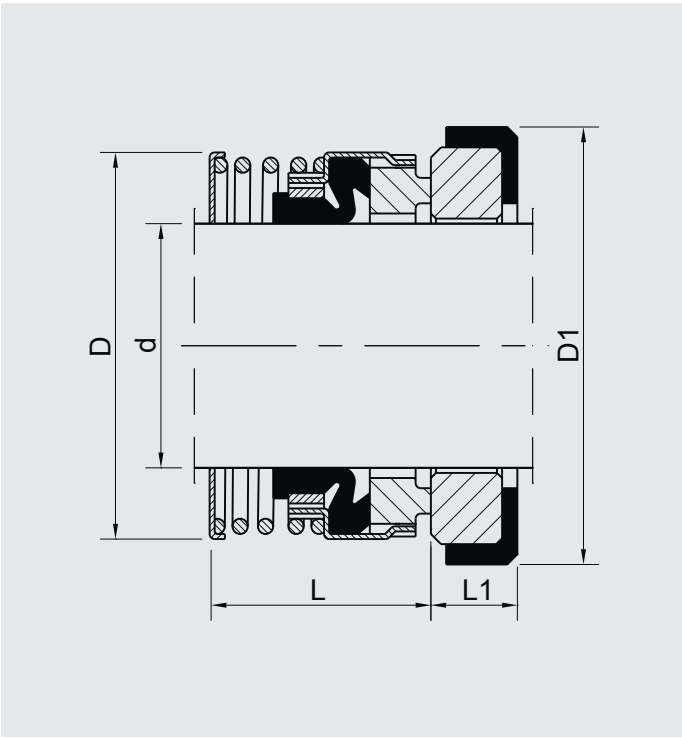
- US7 (standard)
- US9 (carbon only)
- US8 (carbide face shrink-fitted)
- US3, US5, US10 (carbon only)

For more details on mating rings see page 29

FL1 - FL2				US7 - US9	
d1	d2	D	L	D1	L1
14	18	33	32.5	25.0	10.0
16	20	35	32.5	27.0	10.0
18	22	37	33.5	33.0	11.5
20	24	39	33.5	35.0	11.5
22	26	41	33.5	37.0	11.5
24	28	43	36.0	39.0	11.5
25	30	45	36.0	40.0	11.5
28	33	48	38.5	43.0	11.5
30	35	50	38.5	45.0	11.5
32	38	55	38.5	48.0	11.5
33	38	55	38.5	48.0	11.5
35	40	57	38.5	50.0	11.5
38	43	60	38.5	56.0	14.0
40	45	62	38.5	58.0	14.0
43	48	65	38.5	61.0	14.0
45	50	67	38.5	63.0	14.0
48	53	70	38.5	66.0	14.0
50	55	72	42.5	70.0	15.0
53	58	79	42.5	73.0	15.0
55	60	81	42.5	75.0	15.0
58	63	84	47.5	78.0	15.0
60	65	86	47.5	80.0	15.0
63	68	89	47.5	83.0	15.0
65	70	91	47.5	85.0	15.0
70	75	99	52.0	92.0	18.0
75	80	104	52.0	97.0	18.0
80	85	109	51.8	105.0	18.2
85	90	114	56.8	110.0	18.2
90	95	119	56.8	115.0	18.2
95	100	124	57.8	120.0	17.2
100	105	129	57.8	125.0	17.2

*London

Compact Elastomer bellows seals



	*LO		BR5	
d	D	L	D1	L1
10	20.6	16	24	7
11	21.8	16	24	7
12	21.8	17	26	7
13	26.4	17	26	7
14	26.4	18	28	7
15	26.4	18	28	7
16	29.5	19	32	8
17	29.5	19	32	8
18	29.5	18	35	8
19	29.5	18	35	8
20	31.6	20	38	8
22	33.6	20	40	8
25	39.6	20	44	9
28	45.0	21	46	9
30	46.6	22	50	9
32	46.6	24	54	9
35	50.8	26	58	10
38	54.3	27	60	10
40	57.3	28	64	10
45	61.3	30	66	10
50	67.8	32	72	10

Technical features

- Single seal
- Unbalanced
- Single spring
- Bi-directional
- Elastomer bellows
- With captive primary ring

Operating limits

P = 72 PSI
T = -95 to 320°F
V = 52 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite
Mating rings	silicon carbide, tungsten carbide, ceramic
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

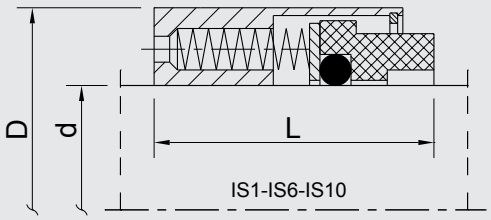
** upon request*

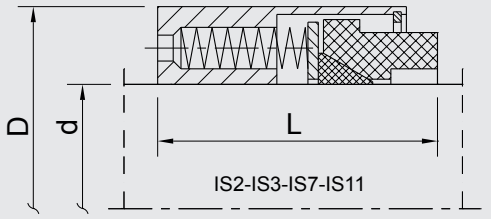
Mating rings

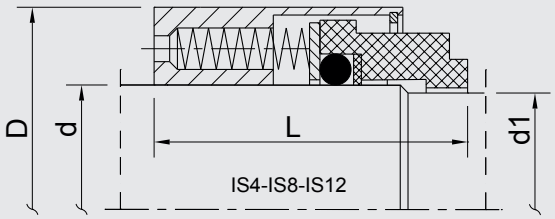
- BR 5

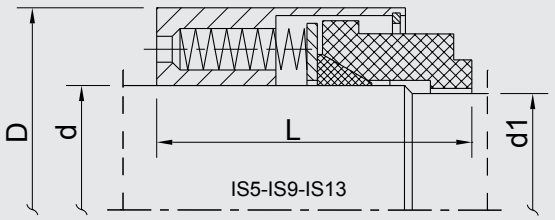
Istanbul

Multiple springs o-ring/wedge seals









Technical features

- Single seal
- Balanced/Unbalanced
- Multiple springs
- Bi-directional

Operating limits

P = 348 to 580 PSI
T = -95 to 320°F
V = 82 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite
Mating rings	silicon carbide, tungsten carbide, ceramic
Secondary seals	NBR, EPDM, PTFE, Viton
Metal parts	Stainless 304 / Stainless 316*, Hastelloy

** upon request*

Available products:

Metric size
- Istanbul 1 (IS1)
- Istanbul 2 (IS2)
- Istanbul 3 (IS3)
- Istanbul 4 (IS4)
- Istanbul 5 (IS5)

Imperial size
- Istanbul 6 (IS6)
- Istanbul 7 (IS7)
- Istanbul 8 (IS8)
- Istanbul 9 (IS9)
- Istanbul 10 (IS10)

Imperial size
- Istanbul 11 (IS11)
- Istanbul 12 (IS12)
- Istanbul 13 (IS13)

Mating rings

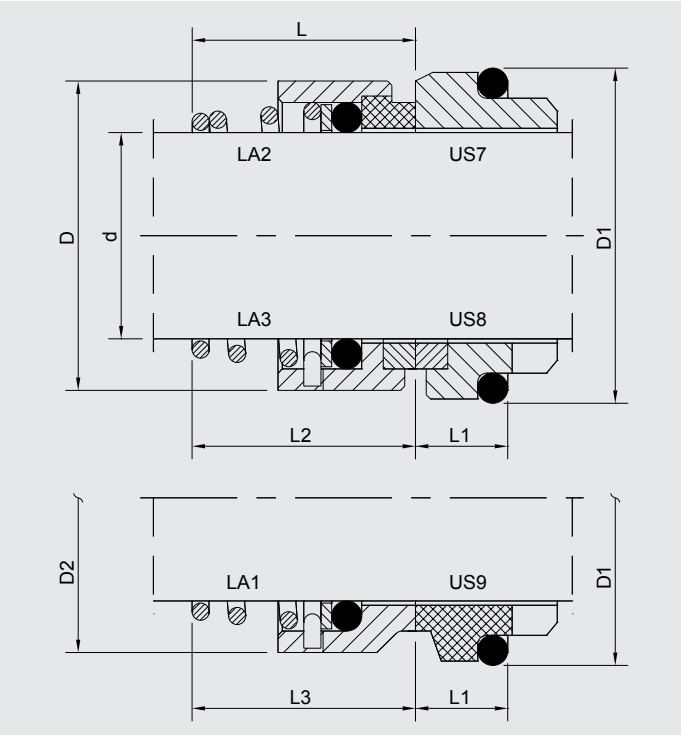
- For IS1: ES1, ES3 (O-ring), ES2 (O-ring standard)
- For IS2, IS3: ES3 (PTFE), ES2 (PTFE)
- For IS6, IS8, IS10, IS12: ES4*, ES5*, FR1 (standard), FR2, FR3
- For IS7, IS9, IS11, IS13: AU1*, AU5*, TR1*, TR2*, TR3*, TR4*

For more details on mating rings see page 29

IS1 - IS2			IS3		IS4 - IS5				IS8 - IS9				IS12 - IS13		IS6 - IS7			IS10 - IS11	
d	D	L	D	L	d	d1	D	L	d	d1	D	L	D	L	d	D	L	D	L
14	24	23.0	28.4	21	**18**	**14**	32	30.5	-	-	-	-	-	-	**.500**	1.031	.812	.937	.937
16	26	23.0	30.8	19	**20**	**16**	34	30.5	**.625**	**.500**	1.187	1.062	-	-	**.625**	1.187	.750	1.062	.937
18	32	24.0	33.8	22	**22**	**18**	36	31.5	**.75**	**.625**	1.312	1.181	-	-	**.750**	1.312	.875	1.187	.937
20	34	24.0	34.8	24	**24**	**20**	38	31.5	**.875**	**.750**	1.437	1.260	-	-	**.875**	1.437	.937	1.312	.937
22	36	24.0	35.6	24	**26**	**22**	40	31.5	**1.000**	**.875**	1.562	1.312	1.437	1.312	**1.000**	1.562	1.000	1.437	1.000
24	38	26.7	38.8	25	**28**	**24**	42	34.2	**1.125**	**1.000**	1.687	1.375	1.562	1.375	**1.125**	1.687	1.062	1.562	1.000
25	39	27.0	39.8	25	**30**	**25**	44	34.5	**1.250**	**1.125**	1.875	1.375	1.687	1.375	**1.250**	1.875	1.062	1.687	1.000
28	42	30.0	43.4	27	**33**	**28**	47	37.5	**1.375**	**1.125**	2.000	1.437	1.937	1.687	**1.375**	2.000	1.125	1.937	1.375
30	44	30.5	46.4	27	**35**	**30**	49	38.0	**1.500**	**1.250**	2.125	1.437	1.937	1.437	**1.500**	2.125	1.125	1.937	1.125
32	46	30.5	49.7	29	**38**	**33**	54	38.0	**1.625**	**1.375**	2.375	1.750	2.250	1.593	**1.625**	2.375	1.375	2.250	1.156
33	47	30.5	-	-	**40**	**35**	56	38.0	**1.750**	**1.500**	2.500	1.750	2.312	1.750	**1.750**	2.500	1.375	2.312	1.375
35	49	30.5	51.3	29	**43**	**38**	59	39.5	**1.875**	**1.625**	2.625	1.750	2.500	1.750	**1.875**	2.625	1.375	2.500	1.375
38	54	32.0	54.5	29	**45**	**40**	61	39.5	**2.000**	**1.750**	2.750	1.750	2.625	1.750	**2.000**	2.750	1.375	2.625	1.375
40	56	32.0	59.6	35	**48**	**43**	64	39.5	**2.125**	**1.875**	3.000	2.062	2.812	2.062	**2.125**	3.000	1.687	2.812	1.687
43	59	32.0	64.0	35	**50**	**45**	66	39.5	**2.250**	**2.000**	3.125	2.062	2.843	1.750	**2.250**	3.125	1.687	2.843	1.375
45	61	32.0	64.7	35	**53**	**48**	69	39.5	**2.375**	**2.125**	3.250	2.062	3.000	2.062	**2.375**	3.250	1.687	3.000	1.687
48	64	32.0	67.2	35	**55**	**50**	71	44.0	**2.500**	**2.250**	3.375	2.062	3.125	1.750	**2.500**	3.375	1.687	3.125	1.375
50	66	34.0	69.6	35	**58**	**53**	78	44.0	**2.625**	**2.375**	3.500	2.062	3.250	2.062	**2.625**	3.500	1.687	3.250	1.687
53	69	34.0	-	-	**60**	**55**	80	44.0	**2.750**	**2.500**	3.625	2.062	3.375	2.062	**2.750**	3.625	1.687	3.375	1.687
55	71	34.0	77.7	43	**63**	**58**	83	49.0	**2.875**	**2.625**	3.750	2.062	3.500	2.062	**2.875**	3.750	1.687	3.500	1.687
58	78	39.0	-	-	**65**	**60**	85	49.0	**3.000**	**2.750**	3.812	2.062	3.625	2.062	**3.000**	3.812	1.687	3.625	1.687
60	80	39.0	82.7	43	**68**	**63**	88	49.0	**3.125**	**2.875**	3.937	2.062	3.750	2.062	**3.125**	3.937	1.687	3.750	1.687
63	83	39.0	-	-	**70**	**65**	90	49.0	**3.250**	**3.000**	4.125	2.062	3.875	2.062	**3.250**	4.125	1.687	3.875	1.687
65	85	39.0	87.7	43	**75**	**70**	95	55.5	**3.375**	**3.125**	4.250	2.062	4.000	2.062	**3.375**	4.250	1.687	4.000	1.687
68	88	39.0	-	-	**80**	**75**	104	55.5	**3.500**	**3.250**	4.375	2.062	4.125	2.062	**3.500**	4.375	1.687	4.125	1.687
70	90	45.5	92.6	43	**85**	**80**	109	55.0	**3.625**	**3.375**	4.500	2.062	4.250	2.062	**3.625**	4.500	1.687	4.250	1.687
75	95	45.5	96.3	43	**90**	**85**	114	60.0	**3.750**	**3.500**	4.625	2.062	4.375	2.062	**3.750**	4.625	1.687	4.375	1.687
80	104	45.0	101.1	43	**95**	**90**	119	60.0	**3.875**	**3.625**	4.750	2.062	4.500	2.062	**3.875**	4.750	1.687	4.500	1.687
85	109	45.0	107.7	43	**100**	**95**	124	60.0	**4.000**	**3.750**	4.875	2.062	4.625	2.062	**4.000**	4.875	1.687	4.625	1.687
90	114	50.0	112.7	43	**105**	**100**	129	60.0											
95	119	50.0	117.7	43															
100	124	50.0	122.7	43															

Los Angeles

Conical spring o-ring mounted seals



Technical features

- Single seal
- Unbalanced
- Conical spring
- Uni-directional
- To DIN 24960

Operating limits

P = 145 PSI
T = -95 to 320°F
V = 32 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite, stainless
Mating rings	silicon carbide, ceramic, carbon graphite, stainless
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

- Los Angeles 1 (LA1)
- Los Angeles 2 (LA2)
- Los Angeles 3 (LA3)

Mating rings

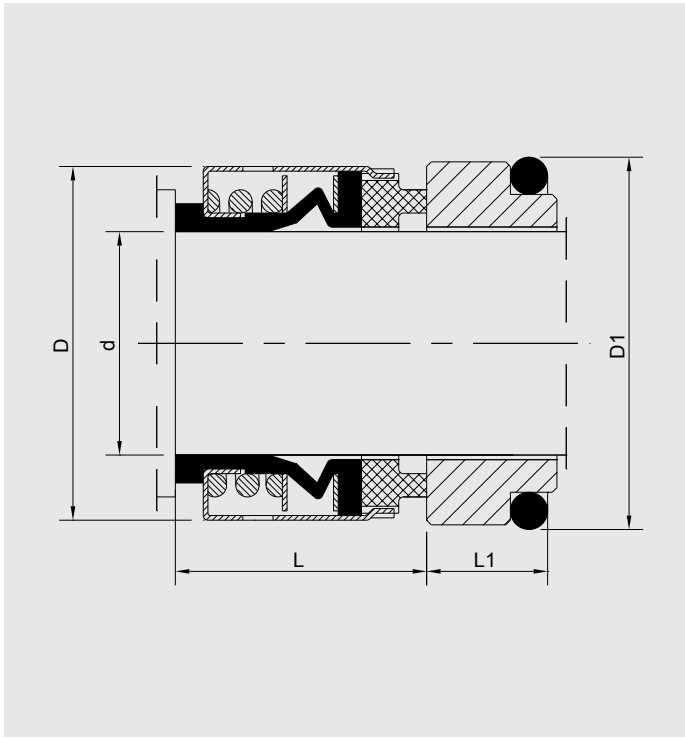
- For LA1: US9 (standard, carbon only), US10 (carbon only)
- For LA2: US5, US7 (standard), US8 (carbide face shrink-fitted), US3
- For LA3: US5, US7 (standard), US8 (carbide face shrink-fitted), US9 (carbon only), US3, US10 (carbon only)

For more details on mating rings see page 29

		LA2	LA3	LA1		US7 - US9		US8	
d	D	L	L2	D2	L3	D1	L1	D1	L1
10	20	16.9	16.5	19.0	15.5	21.0	10.0	21.0	10.0
12	22	17.4	16.5	21.0	16.0	23.0	10.0	23.0	10.0
14	24	17.4	16.5	23.0	16.5	25.0	10.0	25.0	10.0
15	25	17.4	16.5	24.0	18.0	27.0	10.0	27.0	10.0
16	26	19.5	16.5	26.0	18.0	27.0	10.0	27.0	10.0
18	31	20.5	18.0	29.0	19.5	33.0	11.5	33.0	11.5
20	34	22.0	19.0	31.0	22.0	35.0	11.5	35.0	11.5
22	36	23.5	20.5	33.0	21.5	37.0	11.5	37.0	11.5
24	38	25.0	22.0	35.0	23.5	39.0	11.5	39.0	11.5
25	39	26.5	23.5	36.0	26.5	40.0	11.5	40.0	11.5
28	42	26.5	24.5	40.0	26.5	43.0	11.5	43.0	11.5
30	44	25.0	24.5	43.0	26.5	45.0	11.5	45.0	11.5
32	46	28.5	28.0	46.0	28.5	48.0	11.5	48.0	11.5
33	47	28.5	28.0	47.0	28.5	48.0	11.5	48.0	11.5
35	49	28.5	28.0	49.0	28.5	50.0	11.5	50.0	11.5
38	54	32.2	31.0	53.0	33.5	56.0	14.0	56.0	14.0
40	56	34.7	34.0	56.0	36.0	58.0	14.0	58.0	14.0
42	58	37.3	35.0	59.0	37.5	61.0	14.0	61.0	14.0
43	59	37.3	36.0	59.0	38.5	61.0	14.0	61.0	14.0
45	61	39.2	36.5	61.0	39.5	63.0	14.0	63.0	14.0
48	64	44.7	42.0	64.0	46.0	66.0	14.0	66.0	14.0
50	66	45.7	43.0	66.0	45.0	70.0	15.0	70.0	15.0
53	69	49.0	43.0	69.0	47.0	73.0	15.0	73.0	15.0
55	71	49.0	47.0	71.0	49.0	75.0	15.0	75.0	15.0
58	78	52.0	50.0	76.0	55.0	78.0	15.0	78.0	15.0
60	79	53.0	51.0	78.0	55.0	80.0	15.0	80.0	15.0
63	83	54.0	51.0	83.0	55.0	83.0	15.0	83.0	15.0
65	85	54.3	52.0	84.0	55.0	85.0	15.0	85.0	15.0
68	88	55.3	52.7	88.0	55.0	90.0	18.0	90.0	18.0
70	90	56.3	54.0	90.0	57.0	92.0	18.0	92.0	18.0
75	98	56.3	54.0	98.0	62.0	97.0	18.0	97.0	18.0
80	103	59.3	58.0	100.0	61.8	105.0	18.2	105.0	18.2

Madrid

Elastomer bellows seals



	MD		ES1	
d	D	L	D1	L1
14	24	23.0	25.0	12.0
16	26	23.0	27.0	12.0
18	32	24.0	33.0	13.5
20	34	24.0	35.0	13.5
22	36	24.0	37.0	13.5
24	38	26.7	39.0	13.5
25	39	27.0	40.0	13.0
28	42	30.0	43.0	12.5
30	44	30.5	45.0	12.0
32	46	30.5	48.0	12.0
33	47	30.5	48.0	12.0
35	49	30.5	50.0	12.0
38	54	32.0	56.0	13.0
40	56	32.0	58.0	13.0
43	59	32.0	61.0	13.0
45	61	32.0	63.0	13.0
48	64	32.0	66.0	13.0
50	66	34.0	70.0	13.5
53	69	34.0	73.0	13.5
55	71	34.0	75.0	13.5
58	78	39.0	78.0	13.5
60	80	39.0	80.0	13.5
63	83	39.0	83.0	13.5
65	85	39.0	85.0	13.5
68	88	39.0	90.0	13.5
70	90	45.5	92.0	14.5
75	95	45.5	97.0	14.5
80	104	45.0	105.0	15.0
85	109	45.0	110.0	15.0
90	110	50.0	115.0	15.0
95	119	50.0	120.0	15.0
100	124	50.0	125.0	15.0

Technical features

- Single seal
- Single spring
- Unbalanced
- Bi-directional
- Elastomer bellows
- To DIN 24960

Operating limits

P = 580 PSI
T = -95 to 320°F
V = 49 ft/s

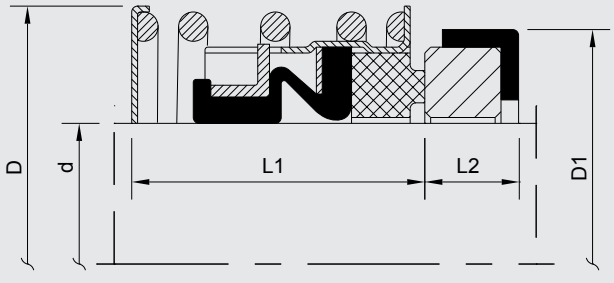
Description	Materials
Primary rings	silicon carbide, carbon graphite, tungsten carbide
Mating rings	silicon carbide, ceramic, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

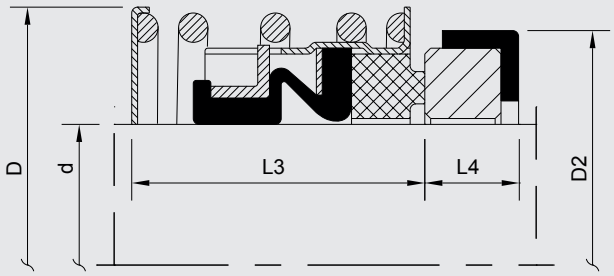
Mating rings

- ES1 (to DIN 24960)

Melbourne
Elastomer bellows seals



MB1/BR3



MB2/BR2

Technical features

- Single spring
- Unbalanced
- Bi-directional
- Elastomer bellows

Operating limits

P = 290 PSI
T = -95 to 320°F
V = 65 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite
Mating rings	silicon carbide, tungsten carbide, ceramic
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

- Melbourne 1 (MB1)
- Melbourne 2 (MB2)

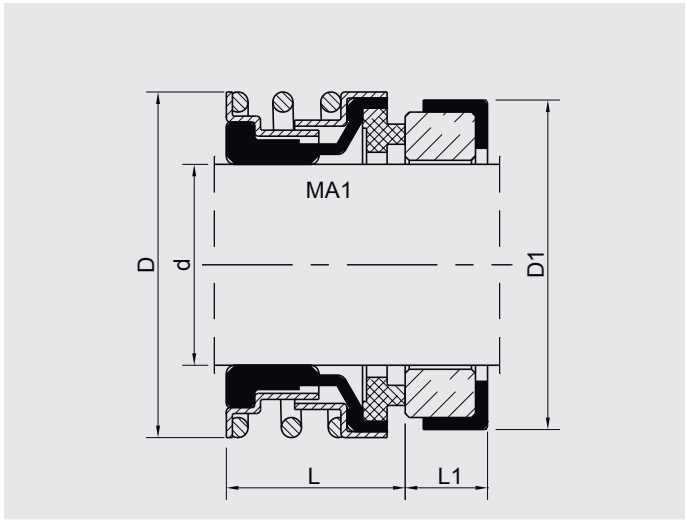
Mating rings

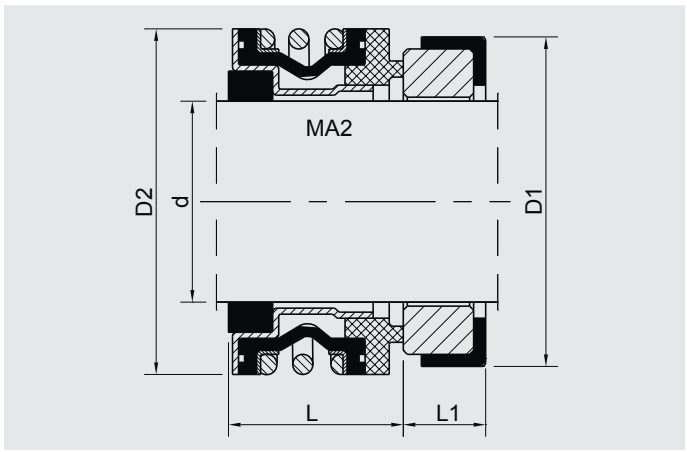
- For MB1: BR3 (standard)
- For MB2: BR2 (standard), FR1

			MB1	MB2	BR3		BR2	
d (inc)	d (mm)	D	L1	L3	D1	L2	D2	L4
.500	12	1.187	1.000	.813	1.094	.344	1.000	.312
.625	14-16	1.312	1.000	.875	1.219	.406	1.250	.406
.750	18	1.437	1.000	.875	1.344	.406	1.375	.406
.875	20-22	1.562	1.000	.937	1.469	.406	1.500	.406
1.000	24-25	1.791	1.000	1.000	1.594	.406	1.625	.437
1.125	28	1.910	1.312	1.062	1.875	.472	1.750	.437
1.250	30-32	2.061	1.312	1.062	2.000	.472	1.875	.437
1.375	33-35	2.250	1.312	1.125	2.125	.472	2.000	.437
1.500	38	2.375	1.312	1.125	2.250	.472	2.125	.437
1.625	40	2.718	1.312	1.375	2.375	.472	2.375	.500
1.750	43-45	2.750	1.594	1.375	2.500	.472	2.500	.500
1.875	48	2.875	1.594	1.500	2.625	.472	2.625	.500
2.000	50	3.000	1.594	1.500	2.750	.531	2.750	.500
2.125	53	3.250	1.615	1.687	2.875	.531	3.000	.562
2.250	55	3.375	1.615	1.687	3.000	.531	3.125	.562
2.375	60	3.500	1.615	1.812	3.125	.531	3.250	.562
2.500	63	3.625	1.615	1.812	3.250	.531	3.375	.562
2.625	65	3.875	1.929	1.937	3.625	.625	3.375	.625
2.750	70	4.000	1.929	1.937	3.750	.625	3.500	.625
2.875	73	4.125	2.047	2.062	3.875	.625	3.750	.625
3.000	75	4.250	2.047	2.062	4.000	.625	3.875	.625
3.125	80	4.562	2.208	2.187	4.375	.781	-	-
3.250	-	4.687	2.208	2.187	4.500	.781	-	-
3.375	85	4.812	2.208	2.187	4.625	.781	-	-
3.500	-	4.937	2.208	2.187	4.750	.781	-	-
3.625	90	5.125	2.323	2.312	4.875	.781	-	-
3.750	95	5.250	2.323	2.312	5.000	.781	-	-
3.875	-	5.437	2.441	2.312	5.125	.781	-	-
4.000	100	5.562	2.441	2.312	5.250	.781	-	-
4.500	110	5.315	-	2.312	-	-	-	-
4.750	120	5.709	-	2.835	-	-	-	-

Miami

Elastomer bellows seals





	MA1	MA2		BR2		BR7	
d	D	D2	L	D1	L1	D1	L1
.500	.917	1.062	.656	1.000	.312	-	-
.625a	1.185	1.218	.718	1.250	.406	1.187	.343
.750a	1.302	1.343	.718	1.375	.406	-	-
1.000	1.552	1.687	.812	1.625	.437	-	-

Technical features

- Single seal
- Unbalanced
- Bi-directional
- Elastomer bellows

Operating limits

P = 72 PSI (MA1) - 150 PSI (MA2)
T = -95 to 320°F
V = 32 ft/s

Available products:

- Miami 1 (MA1)
- Miami 2 (MA2)

Mating rings

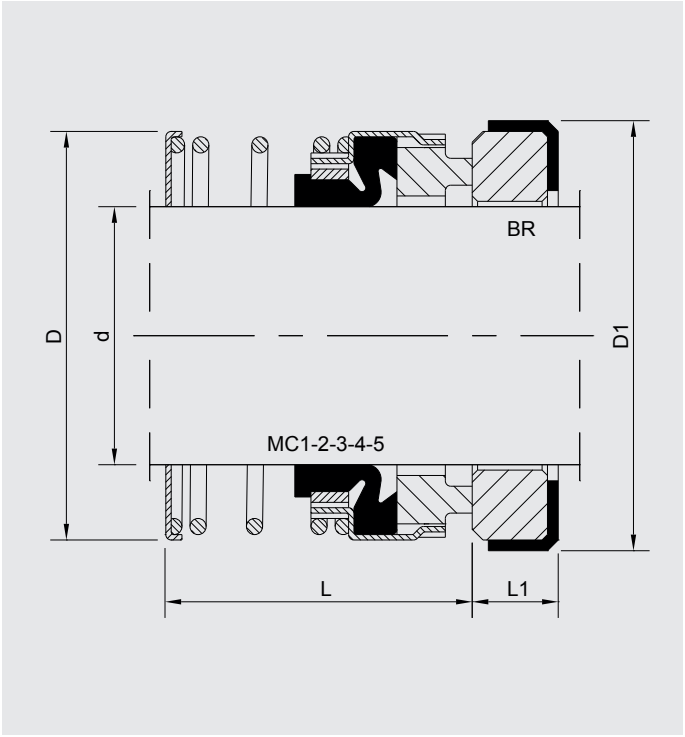
- BR2 (standard)
- BR7*

Description	Materials
Primary rings	silicon carbide, carbon graphite, phenolic graphite, tungsten carbide
Mating rings	silicon carbide, ceramic, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Munich

Elastomer bellows seals



Technical features

- Unbalanced
- Single spring
- Bi-directional
- Elastomer bellows

Operating limits

P = 232 PSI
T = -95 to 320°F
V = 49 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite
Mating rings	silicon carbide, tungsten carbide, ceramic
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

Imperial size
- Munich 1 (MC1)
- Munich 2 (MC2)
- Munich 3 (MC3)

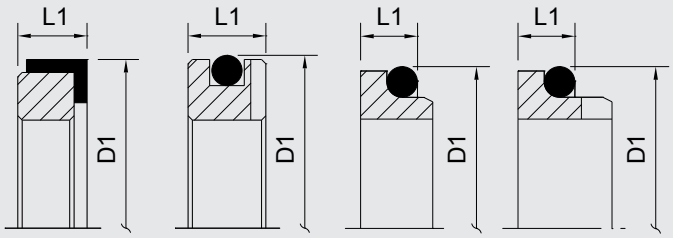
Metric size
- Munich 4 (MC4)
- Munich 5 (MC5)

Mating rings

- For MC1: BR3 (standard)
- For MC2, MC3: BR2 (standard), FR1
- For MC5: BR1 (standard), AU2*, AU3*

For more details on mating rings see page 29

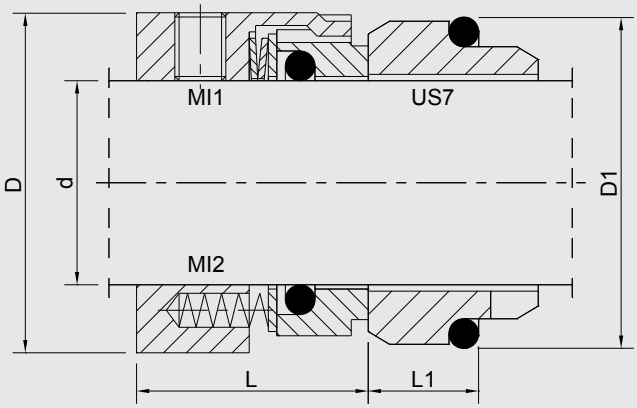
	MC1		BR2 - FR1		AU4*	MC2		MC3	
d (inc)	D	L	D1	L1	L1	D	L	D	L
.375	.858	1.000	.875	.312	.261	.812	.812	.791	.812
.500	.898	1.000	1.000	.312	.261	.937	.812	.898	.812
.625	1.039	1.000	1.250	.406	.297	1.062	.875	1.039	.875
.750	1.161	1.000	1.375	.406	.297	1.187	.875	1.161	.875
.813	1.323	1.000	1.375	.406	.297	1.312	.937	1.323	.937
.875	1.323	1.000	1.500	.406	.297	1.312	.937	1.323	.937
1.000	1.677	1.000	1.625	.437	.297	1.687	1.000	1.539	1.000
1.125	1.803	1.312	1.750	.437	.297	1.812	1.062	1.673	1.062
1.250	1.890	1.312	1.875	.437	.297	1.937	1.062	1.795	1.062
1.375	2.063	1.312	2.000	.437	.297	2.062	1.125	1.929	1.125
1.437	2.063	1.312	2.125	.437	.297	2.187	1.125	2.047	1.125
1.500	2.189	1.312	2.125	.437	.297	2.187	1.125	2.047	1.125
1.625	2.252	1.312	2.375	.500	.335	2.500	1.375	2.252	1.375
1.750	2.559	1.594	2.500	.500	.335	2.625	1.375	2.386	1.375
1.875	2.614	1.594	2.625	.500	.335	2.750	1.500	2.512	1.500
2.000	2.701	1.594	2.750	.500	.335	2.875	1.500	2.583	1.500
2.125	2.886	1.615	3.000	.562	.375	3.000	1.687	2.819	1.687
2.250	3.079	1.615	3.125	.562	.375	3.125	1.687	3.028	1.687
2.375	3.213	1.615	3.250	.562	.375	3.250	1.812	3.087	1.812
2.500	3.319	1.615	3.375	.562	.375	3.343	1.812	3.197	1.812
2.625	3.449	1.929	3.375	.625	.375	3.500	1.937	3.327	1.937
2.750	3.630	1.929	3.500	.625	.375	3.594	1.937	3.528	1.937
2.875	3.724	2.047	3.750	.625	.473	3.875	2.062	3.701	2.062
3.000	4.031	2.047	3.875	.625	.473	4.000	2.062	3.803	2.062



BR FR AU2-AU12 AU3-AU4

	*MC1		BR3 - AU12*			MC5		MC4	BR1 - AU2* - AU3*	
d (mm)	D	L	D1	L1	d (mm)	D	L	L	D1	L1
10	21.8	25.4	24.6	8.7	10	20.1	23.9	16.0	21.0	8.6
12	22.8	25.4	27.8	8.7	12	22.8	23.9	16.5	23.0	8.6
14-16	26.4	25.4	31.0	10.3	14	22.8	26.4	16.5	25.0	8.6
18-19	29.5	25.4	34.2	10.3	16	26.4	26.4	17.6	27.0	8.6
20	33.6	25.4	35.7	10.3	18	29.5	27.5	19.6	33.0	10.0
22	33.6	25.4	37.3	10.3	19	29.5	27.5	-	35.0	10.0
24-25	42.6	25.4	40.5	10.3	20	33.6	27.5	20.6	35.0	10.0
28	45.8	33.3	47.6	12.0	22	33.6	27.5	22.1	37.0	10.0
30-32	48.0	33.3	50.8	12.0	24	38.0	30.0	23.6	39.0	10.0
33	52.4	33.3	53.9	12.0	25	39.1	30.0	25.1	40.0	10.0
35	52.4	33.3	53.9	12.0	28	42.5	32.5	26.6	43.0	10.0
38	55.6	33.3	57.2	12.0	30	44.0	32.5	26.6	45.0	10.0
40	57.2	33.3	60.3	12.0	32	45.6	32.5	30.1	48.0	10.0
42-45	65.0	40.5	63.5	12.0	33	45.6	32.5	30.1	48.0	10.0
48	66.4	40.5	66.7	12.0	35	49.0	34.0	30.4	50.0	10.0
50	68.6	40.5	69.8	13.5	38	52.0	34.0	33.6	56.0	11.0
53	73.3	41.0	73.0	13.5	40	55.8	34.0	36.6	58.0	11.0
55	78.2	41.0	76.2	13.5	42	60.6	34.0	-	61.0	11.0
58-60	81.6	41.0	79.4	13.5	43	60.6	34.0	-	61.0	11.0
63	84.3	41.0	82.5	13.5	45	60.6	34.0	41.4	63.0	11.0
65	87.6	49.0	92.1	15.9	48	63.8	34.0	46.9	66.0	11.0
70	92.2	49.0	95.2	15.9	50	65.6	34.5	47.9	70.0	13.0
73	94.6	52.0	98.4	15.9	53	71.6	34.5	52.8	73.0	13.0
75	102.4	52.0	101.6	15.9	55	71.6	34.5	55.8	75.0	13.0
-	104.0	56.1	111.1	19.8	58	78.4	39.5	-	78.0	13.0
80	104.0	56.1	114.3	19.8	60	78.4	39.5	56.8	80.0	13.0
85	108.0	56.1	117.5	19.8	63	81.2	39.5	-	83.0	13.0
					65	84.5	39.5	57.8	85.0	13.0
					68	89.6	37.2	59.5	90.0	15.3
					70	89.6	44.7	59.8	92.0	15.3
					75	96.6	44.7	60.8	97.0	15.3
					80	104.0	44.3	-	105.0	15.7
					85	107.7	44.3	-	110.0	15.7
					90	111.0	49.3	-	115.0	15.7
					95	119.0	49.3	-	120.0	15.7
					100	124.0	49.3	-	125.0	15.7

Milan
O-ring mounted seals



Technical features

- Single seal
- Unbalanced
- Bi-directional
- To DIN 24960

Operating limits

P = 217 PSI
T = -95 to 320°F
V = 65 ft/s

Description	Materials
Primary rings	silicon carbide, ceramic, carbon graphite, stainless
Mating rings	silicon carbide, carbon graphite
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

- Milan 1 (MI1)
- Milan 2 (MI2)

Mating rings

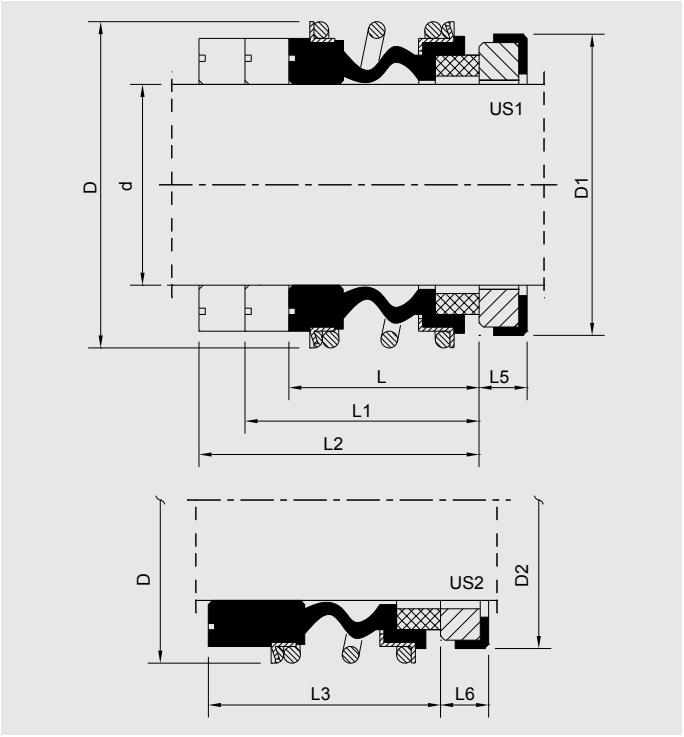
- US7 (standard)
- US9 (carbon only)
- US8 (carbide face shrink-fitted)
- US3, US5, US10 (carbon only)

For more details on mating rings see page 29

MI1 - MI2			US7 - US9 - US8	
d	D	L	D1	L1
14	25	25.0	25.0	10.0
16	27	25.0	27.0	10.0
18	33	26.0	33.0	11.5
20	35	26.0	35.0	11.5
22	37	26.0	37.0	11.5
24	39	28.5	39.0	11.5
25	40	28.5	40.0	11.5
28	43	31.0	43.0	11.5
30	45	31.0	45.0	11.5
32	47	31.0	48.0	11.5
33	48	31.0	48.0	11.5
35	50	31.0	50.0	11.5
38	55	31.0	56.0	14.0
40	57	31.0	58.0	14.0
43	60	31.0	61.0	14.0
45	62	31.0	63.0	14.0
48	65	31.0	66.0	14.0
50	67	32.5	70.0	15.0
53	70	32.5	73.0	15.0
55	72	32.5	75.0	15.0
58	79	37.5	78.0	15.0
60	81	37.5	80.0	15.0
63	84	37.5	83.0	15.0
65	86	37.5	85.0	15.0
68	89	34.5	90.0	18.0
70	91	42.0	92.0	18.0
75	99	42.0	97.0	18.0
80	104	41.8	105.0	18.2
85	109	41.8	110.0	18.2
90	114	46.8	115.0	18.2
95	119	47.8	120.0	17.2
100	124	47.8	125.0	17.2

New York

Elastomer bellows seals



		NY1	NY2	NY3	NY4	US1		US2	
d	D	L	L1	L2	L3	D1	L5	D2	L6
10	22.5	14.5	25.9	33.4	25.0	21.0	6.6	24.6	9.0
12	25.0	15.0	25.9	33.4	25.0	23.0	6.6	27.8	9.0
14	28.5	17.0	28.4	33.4	25.0	25.0	6.6	31.0	10.5
15	28.5	17.0	28.4	33.4	25.0	27.0	6.6	31.0	10.5
16	28.5	17.0	28.4	33.4	25.0	27.0	6.6	31.0	10.5
18	32.0	19.5	30.0	37.5	25.0	33.0	7.5	34.2	10.5
20	37.0	21.5	30.0	37.5	25.0	35.0	7.5	35.7	10.5
22	37.0	21.5	30.0	37.5	25.0	37.0	7.5	37.3	10.5
24	42.5	22.5	32.5	42.5	25.0	39.0	7.5	40.5	10.5
25	42.5	23.0	32.5	42.5	25.0	40.0	7.5	40.5	10.5
28	49.0	26.5	35.0	42.5	33.0	43.0	7.5	47.7	12.0
30	49.0	26.5	35.0	42.5	33.0	45.0	7.5	50.8	12.0
32	53.5	27.5	35.0	47.5	33.0	48.0	7.5	50.8	12.0
33	53.5	27.5	35.0	47.5	33.0	48.0	7.5	54.0	12.0
35	57.0	28.5	35.0	47.5	33.0	50.0	7.5	54.0	12.0
38	59.0	30.0	36.0	46.0	33.0	56.0	9.0	57.2	12.0
40	62.0	30.0	36.0	46.0	33.0	58.0	9.0	60.4	12.0
42	65.5	30.0	36.0	51.0	41.0	61.0	9.0	63.5	12.0
43	65.5	30.0	36.0	51.0	41.0	61.0	9.0	63.5	12.0
45	68.0	30.0	36.0	51.0	41.0	63.0	9.0	63.5	12.0
48	70.5	30.5	36.0	51.0	41.0	66.0	9.0	66.7	12.0
50	74.0	30.5	38.0	50.5	41.0	70.0	9.5	69.9	13.5
53	78.5	33.0	36.5	59.0	41.0	73.0	11.0	73.1	13.5
55	81.0	35.0	36.5	59.0	41.0	75.0	11.0	76.2	13.5
58	85.5	37.0	41.5	59.0	41.0	78.0	11.0	79.4	13.5
60	88.5	38.0	41.5	59.0	41.0	80.0	11.0	79.4	13.5
65	93.5	40.0	41.5	69.0	49.0	85.0	11.0	92.1	16.0
68	96.5	40.0	41.5	68.7	49.0	90.0	11.3	95.3	16.0
70	99.5	40.0	48.7	68.7	49.0	92.0	11.3	95.3	16.0
75	107.0	40.0	48.7	68.7	52.0	97.0	11.3	101.6	16.0
80	112.0	40.0	48.0	78.0	56.0	105.0	12.0	114.3	20.0
85	120.0	41.0	46.0	76.0	56.0	110.0	14.0	117.5	20.0
90	127.0	45.0	51.0	76.0	59.0	115.0	14.0	123.9	20.0
95	132.0	46.0	51.0	76.0	59.0	120.0	14.0	127.0	20.0
100	137.0	47.0	51.0	76.0	62.0	125.0	14.0	133.4	20.0

Technical features

- Single seal
- Unbalanced
- Spring enclosed
- Elastomer bellows

Operating limits

P = 174 PSI
T = -95 to 320°F
V = 32 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite
Mating rings	silicon carbide, ceramic, carbon graphite, stainless
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

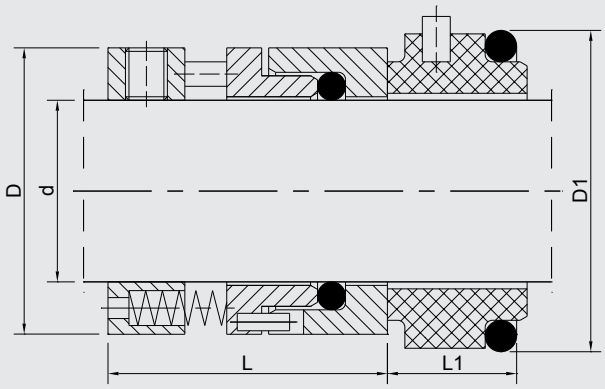
- New York 1 (NY1)
- New York 2 (NY2)
- New York 3 (NY3)
- New York 4 (NY4)

Mating rings

- US1 (to DIN 24960, standard for NY1, NY2, NY3)
- US2 (standard for NY4)
- US5, US6, US7 (to DIN 24960)
- US3

For more details on mating rings see page 29

Paris
Multiple springs seals



Technical features

- Single seal
- Unbalanced
- Bi-directional
- Multiple srpings

Operating limits

P = 174 PSI
T = -95 to 320°F
V = 82 ft/s

Description	Materials
Primary rings	silicon carbide, ceramic, tungsten carbide
Mating rings	silicon carbide, carbon graphite, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

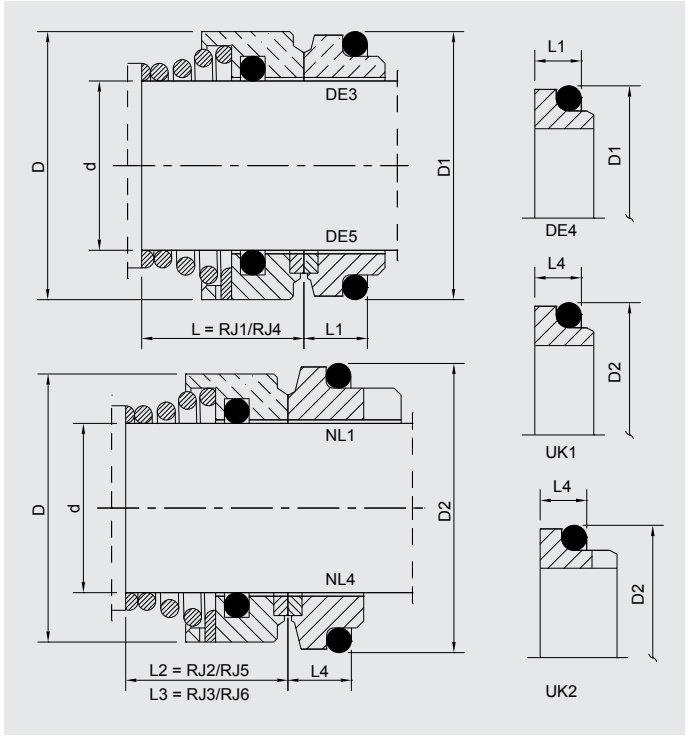
Mating rings

- RU1* (standard)

	PS		RU1*	
d	D	L	D1	L1
1.000	1.563	1.625	1.500	.81
1.125	1.687	1.625	1.875	.81
1.187	1.750	1.625	1.937	.81
1.250	1.812	1.625	2.000	.81
1.375	1.937	1.625	2.125	.81
1.437	2.000	1.625	2.187	.81
1.500	2.062	1.625	2.250	.81
1.625	2.312	1.750	2.375	.81
1.750	2.375	1.750	2.500	.81
1.875	2.562	1.750	2.625	.81
2.000	2.687	1.750	2.750	.81
2.125	2.812	1.750	2.875	.81
2.250	2.937	1.750	3.000	.81
2.375	3.062	1.750	3.125	.81
2.500	3.187	1.750	3.250	.81
2.625	3.312	1.750	3.375	.81
2.750	3.437	1.750	3.500	.81
2.875	3.562	1.750	3.625	.81
3.000	3.687	1.750	3.750	.81
3.125	4.000	1.750	4.062	.81
3.250	4.125	1.750	4.187	.81
3.375	4.250	1.750	4.312	.81
3.500	4.375	1.750	4.437	.81
3.625	4.500	1.750	4.562	.81
3.750	4.625	1.812	4.687	.81
3.875	4.750	1.812	4.812	.81
4.000	4.875	1.812	4.937	.81
4.250	5.125	2.062	5.187	.81
4.500	5.375	2.062	5.437	.81

Rio

Conical spring o-ring mounted seals



		RJ1 - RJ4	RJ2 - RJ5	RJ3 - RJ6	DE3 - DE4 - DE5		UK* - NL	
d	D	L	L2	L3	D1	L1	D2	L4
8	16	15	-	-	17.1	5.5	-	-
10	20	15	15	25.5	18.1	5.5	21	7
12	22	18	18	25.5	20.6	5.5	23	7
14	24	22	22	28.0	23.1	6.0	25	7
15	24	22	-	-	26.9	7.0	-	-
16	26	23	23	28.0	26.9	7.0	27	7
17	26	23	-	-	26.9	7.0	-	-
18	32	24	24	27.5	30.9	8.0	33	10
19	32	25	-	-	30.9	8.0	-	-
20	34	25	25	27.5	30.9	8.0	35	10
22	36	25	25	27.5	35.4	8.0	37	10
24	38	27	27	30.0	35.4	8.0	39	10
25	39	27	27	30.0	38.2	8.5	40	10
26	39	27	-	-	38.2	8.5	-	-
28	42	29	29	32.5	43.3	9.0	43	10
30	44	30	30	32.5	43.3	9.0	45	10
32	46	30	30	32.5	43.3	9.0	48	10
33	47	39	39	32.5	53.5	11.5	48	10
35	49	39	39	32.5	53.5	11.5	50	10
38	54	39	42	32.0	60.5	11.5	56	13
40	56	39	42	32.0	60.5	11.5	58	13
42	57	39	-	-	60.5	11.5	-	-
43	57	39	47	32.0	60.5	11.5	61	13
45	61	41	47	32.0	65.5	11.5	63	13
48	64	41	47	32.0	65.5	11.5	66	13
50	66	45	46	33.5	72.5	11.5	70	14
53	69	45	56	33.5	72.5	11.5	73	14
55	71	47	56	33.5	72.5	11.5	75	14
58	76	47	56	38.5	-	11.5	78	14
60	80	49	56	38.5	79.3	11.5	80	14
63	81	49	56	38.5	-	11.5	83	14
65	85	51	66	38.5	84.5	11.5	85	14
68	87	51	64	36.5	-	11.5	90	16
70	90	51	64	44.0	89.5	11.5	92	16
75	99	57	64	44.0	94.5	11.5	97	16
80	104	59	72	44.0	99.5	11.5	105	18
85	109	59	72	44.0	105.5	13.5	110	18
90	114	62	72	47.0	111.5	13.5	115	18
95	119	62	72	47.0	116.5	13.5	120	18
100	124	75	72	47.0	119.5	13.5	125	18

Technical features

- Single seal
- Unbalanced
- Uni-directional

Operating limits

P = 145 PSI
T = -95 to 320°F
V = 65 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, stainless
Mating rings	silicon carbide, carbon graphite, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

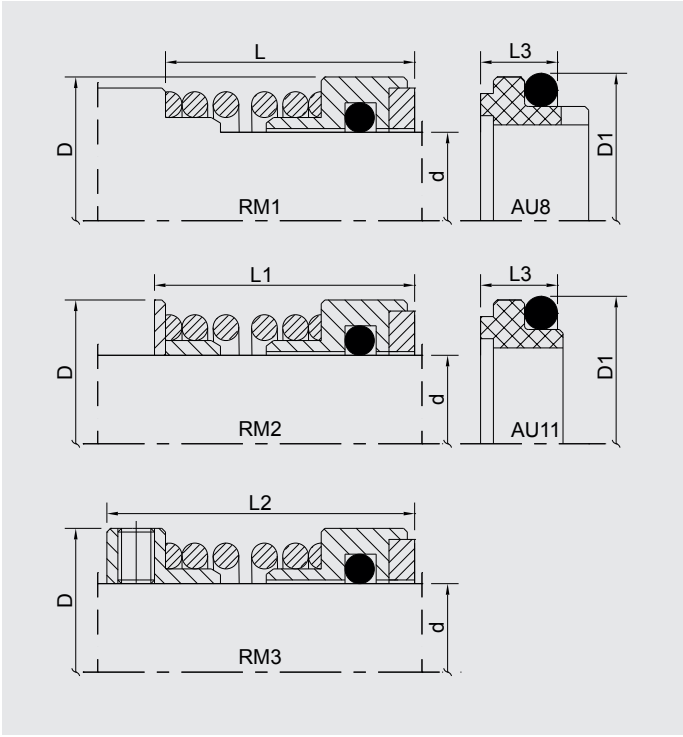
- Rio 1 (RJ1)
- Rio 2 (RJ2)
- Rio 3 (RJ3)
- Rio 4 (RJ4) - with face shrink fitted
- Rio 5 (RJ5) - with face shrink fitted
- Rio 6 (RJ6) - with face shrink fitted

Mating rings

- UK1* (monolithic short seat, wide face, to DIN24960)
- UK2* (monolithic long seat, wide face, anti-rotation pin slot, to DIN24960)
- DE3 (monolithic short seat)
- DE4 (monolithic short seat, wide face)
- DE5 (short seat, face shrink fitted)
- DE2 (monolithic long seat, anti-rotation pin slot)
- DE1 (face shrink fitted, anti-rotation pin slot)
- NL2 (monolithic short seat, to DIN24960)
- NL1 (monolithic long seat, anti-rotation pin slot, to DIN24960)
- NL4 (short seat, face shrink fitted, anti-rotation pin slot, to DIN24960)
- NL3 (face shrink fitted, anti-rotation pin slot, to DIN24960)

For more details on mating rings see page 29

Rome
Single coil spring o-ring mounted seals



Technical features

- Single coil spring seal
- Unbalanced
- Uni-directional

Operating limits

P = 145 PSI
T = -95 to 320°F
V = 52 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, stainless
Mating rings	silicon carbide, tungsten carbide, carbon graphite
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

- Rome 1 (RM1)
- Rome 2 (RM2)
- Rome 3 (RM3)

Mating rings

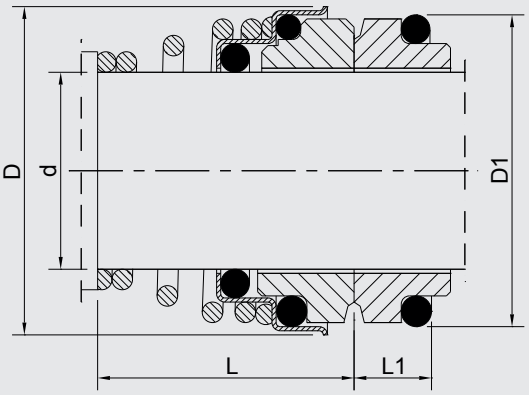
- For RM1, RM2, RM3 : AU8 (standard), AU11*
- AU9 (carbide face shrink-fitted)

For more details on mating rings see page 29

			RM1	RM2	RM3	AU8 - AU11*	
d	d (inc)	D	L	L1	L2	D1	L3
16	-	29.0	24.5	26.0	32.5	28.6	9.0
18	-	32.5	24.5	26.0	32.5	31.8	9.0
20	-	34.5	27.5	29.0	35.5	33.3	9.0
22	-	35.0	26.0	27.5	35.5	34.9	9.0
25	-	38.1	30.0	31.5	39.0	39.7	10.0
28	-	42.9	31.5	33.0	41.0	42.9	10.0
30	-	45.5	31.5	33.0	41.0	44.4	10.0
32	-	47.0	34.5	36.0	44.0	46.0	10.0
33	-	49.0	34.5	36.0	44.0	46.0	10.0
35	-	50.0	37.5	39.0	47.0	49.2	10.0
38	-	53.0	37.5	39.0	47.0	52.4	10.0
40	-	55.0	37.5	39.0	47.0	54.0	10.0
42	-	55.5	37.5	39.0	47.0	55.6	10.0
43	-	55.5	37.5	39.0	47.0	55.6	10.0
45	-	60.0	37.5	39.0	47.0	58.7	10.0
48	-	62.0	42.5	44.0	55.0	63.5	10.0
50	-	66.0	45.5	47.0	58.5	65.1	10.0
-	2.000	66.7	45.5	47.0	58.5	66.7	10.0
55	-	71.0	47.0	48.5	60.0	69.9	10.0
58	-	73.0	47.0	48.5	60.0	73.0	10.0
60	-	77.0	50.5	52.0	63.0	76.2	10.0
63	-	79.4	50.5	52.0	63.0	79.4	10.0
65	-	82.0	53.5	55.0	66.0	81.0	10.0
68	-	82.6	53.5	55.0	66.0	82.6	10.0
70	-	87.0	53.5	55.0	66.0	85.7	10.0
73	-	90.0	56.5	60.0	71.0	88.9	10.0
75	-	91.5	56.5	60.0	71.0	90.5	10.0
-	3.000	95.3	63.0	66.0	77.5	95.3	10.0
80	-	99.5	63.0	66.0	77.5	98.4	10.0
-	3.250	101.6	63.0	66.0	77.5	101.6	10.0
85	-	105.5	63.0	66.0	77.5	104.8	10.0
-	3.500	108.0	63.0	66.0	77.5	108.0	10.0
90	-	110.5	68.0	71.0	82.0	109.5	10.0
95	-	115.5	68.0	71.0	82.0	114.3	10.0
100	-	120.0	68.0	71.0	82.0	119.0	10.0
-	4.000	124.5	72.5	75.5	88.5	123.8	10.0

Salvador

Conical spring o-ring mounted seals



	SA1		DE3	
d	D	L	D1	L1
10	20	15	18.1	5.5
11	22	18	20.6	5.5
12	22	18	20.6	5.5
13	25	22	23.1	6.0
14	25	22	23.1	6.0
15	29	22	26.9	7.0
16	29	23	26.9	7.0
17	29	23	26.9	7.0
18	33	24	30.9	8.0
19	33	25	30.9	8.0
20	33	25	30.9	8.0
22	38	25	35.4	8.0
24	38	27	35.4	8.0
25	40	27	38.2	8.5
28	46	29	43.3	9.0
30	46	30	43.3	9.0
32	46	30	43.3	9.0
33	48	39	53.5	11.5
35	50	39	53.5	11.5
38	55	39	60.5	11.5
40	55	39	60.5	11.5

Technical features

- Single seal
- Unbalanced
- Conical spring
- Uni-directional

Operating limits

P = 145 PSI
T = -95 to 320°F
V = 65 ft/s

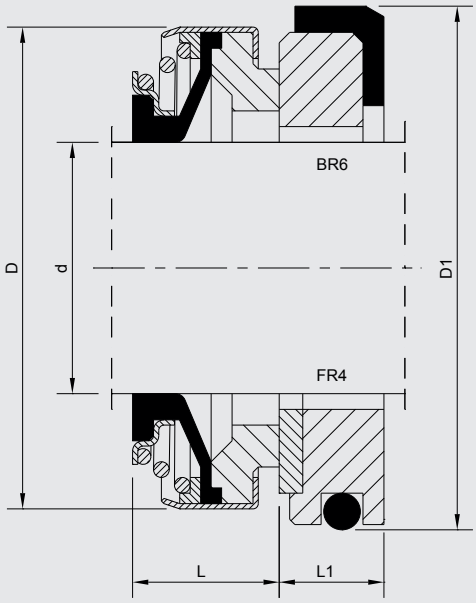
Description	Materials
Primary rings	silicon carbide, tungsten carbide, Alluminium oxide, stainless
Mating rings	silicon carbide, carbon graphite, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304

Mating rings

- DE3 (monolithic short seat)
- DE2 (monolithic long seat, anti-rotation pin slot)
- DE1 (face shrink fitted, anti-rotation pin slot)
- NL2 (monolithic short seat, anti-rotation pin slot, to DIN24960)
- NL1 (monolithic long seat, anti-rotation pin slot, to DIN24960)
- NL3 (face shrink fitted, anti-rotation pin slot, to DIN24960)

For more details on mating rings see page 29

San Francisco
Compact elastomer bellows seals



Technical features

- Single seal
- Unbalanced
- Spring enclosed
- Bi-directional
- Elastomer bellows

Operating limits

P = 87 PSI
T = -95 to 320°F
V = 32 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, carbon graphite, phenolic graphite
Mating rings	silicon carbide, ceramic, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

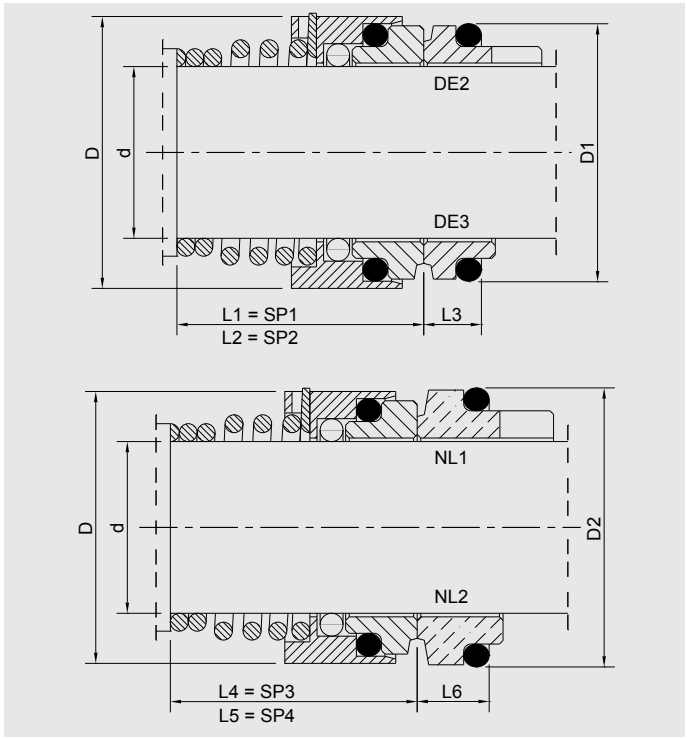
Mating rings

- BR6 (standard)
- FR4 (monolithic)
- FR5 (insert)

For more details on mating rings see page 29

	SF		BR6-FR4	
d	D	L	D1	L1
8a	20	11	26.0	4.0
8b	20	11	22.0	4.0
8c	24	11	26.0	8.0
9	24	11	26.0	8.0
10	24	11	26.0	8.0
11	24	11	26.0	8.0
12a	24	13	26.0	5.5
12b	24	13	26.0	8.0
12c	32	13	35.0	8.0
13	24	13	26.0	8.0
14a	28	13	25.0	7.0
14b	28	13	28.5	8.0
14c	32	13	29.5	8.0
14d	32	13	35.0	8.0
14e	32	13	30.0	8.0
15a	32	13	29.5	8.0
15b	32	13	38.0	8.0
15c	35	13	38.0	8.0
16a	32	13	29.5	8.0
16b	35	13	38.0	8.0
16c	39	13	38.0	8.0
16d	39	13	42.0	8.0
17	39	13	42.0	8.0
18	39	13	42.0	8.0
19	39	13	42.0	8.0
20a	39	13	42.0	8.0
20b	42	13	45.0	10.0
22	42	13	45.0	10.0
23	47	14	50.0	10.0
24	47	14	50.0	10.0
25a	42	14	50.0	10.0
25b	47	14	50.0	10.0
26	47	14	50.0	10.0
28	54	15	57.0	10.0
30	54	15	57.0	10.0
32	54	15	57.0	10.0
35	60	16	63.0	10.0
38	65	18	68.0	12.0
40	65	18	68.0	12.0
45	70	20	73.0	12.0
50	85	23	88.0	15.0
55	85	23	88.0	15.0
60	105	30	110.0	15.0
65	105	30	110.0	15.0
70	105	32	110.0	15.0

São Paulo
Conical spring seals



		SP1	SP2	SP3	SP4	DE2 - DE3		NL1 - NL2	
d	D	L1	L2	L4	L5	D1	L3	D2	L6
10	19.3	20	15	15	25.5	18.1	5.5	21	7
12	21.8	22	18	18	25.5	20.6	5.5	23	7
14	24.4	27	22	22	28.0	23.1	6.0	25	7
15	28.5	27	22	23	28.0	26.9	7.0	27	7
16	28.5	28	23	23	28.0	26.9	7.0	27	7
18	32.5	30	24	24	27.5	30.9	8.0	33	10
19	32.5	30	25	25	27.5	30.9	8.0	35	10
20	32.5	30	25	25	27.5	30.9	8.0	35	10
22	37.0	30	25	25	27.5	35.4	8.0	37	10
24	37.0	32	27	27	30.0	35.4	8.0	39	10
25	40.6	33	27	27	30.0	38.2	8.5	40	10
28	46.5	36	29	29	32.5	43.3	9.0	43	10
30	46.5	37	30	30	32.5	43.3	9.0	45	10
32	46.5	37	30	30	32.5	43.3	9.0	48	10
33	56.5	48	39	39	32.5	53.5	11.5	48	10
35	56.5	48	39	39	32.5	53.5	11.5	50	10
38	56.5	48	39	42	32.0	60.5	11.5	56	13
40	63.5	48	39	42	32.0	60.5	11.5	58	13
43	63.5	48	39	47	32.0	60.5	11.5	61	13
45	68.5	51	41	47	32.0	65.5	11.5	63	13
48	68.5	51	41	47	32.0	65.5	11.5	66	13
50	74.5	55	45	46	33.5	72.5	11.5	70	14
53	74.5	57	47	56	33.5	72.5	11.5	73	14
55	74.5	57	47	56	33.5	72.5	11.5	75	14
58	82.9	61	49	56	38.5	79.3	11.5	78	14
60	82.9	61	49	56	38.5	79.3	11.5	80	14
63	88.1	63	51	56	38.5	84.5	11.5	83	14
65	88.1	63	51	66	38.5	84.5	11.5	85	14
68	93.1	63	51	64	36.5	89.5	11.5	90	16
70	93.1	63	51	64	44.0	89.5	11.5	92	16
75	98.1	68	57	64	44.0	94.5	11.5	97	16
80	103.5	70	59	72	42.0	99.5	11.5	105	18
85	109.5	72	59	72	42.0	105.5	13.5	110	18
90	115.5	75	62	72	47.0	111.5	13.5	115	18
95	123.0	75	62	72	47.0	116.5	13.5	120	18
100	129.0	85	75	72	47.0	119.5	13.5	125	18

Technical features

- Single seal
- Unbalanced
- Uni-directional
- Conical spring

Operating limits

P = 232 PSI
T = -95 to 320°F
V = 49 ft/s

Description	Materials
Primary rings	silicon carbide, tungsten carbide, ceramic, stainless
Mating rings	silicon carbide, carbon graphite, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

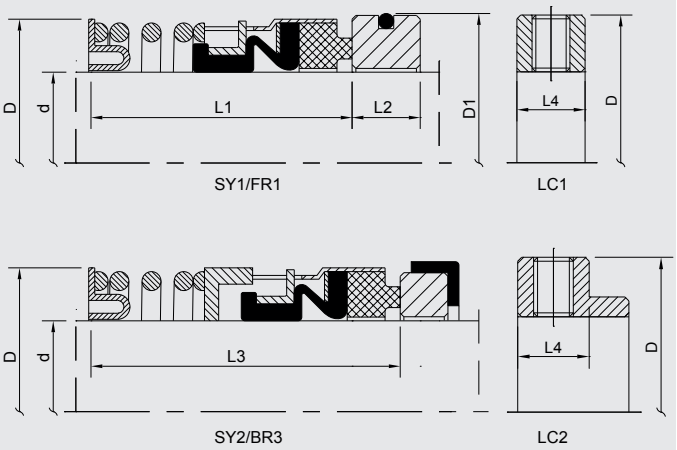
- São Paulo 1 (SP1)
- São Paulo 2 (SP2)
- São Paulo 3 (SP3)
- São Paulo 4 (SP4)

Mating rings

- DE3 (monolithic short seat) standard for SP1, SP2
- DE2 (monolithic long seat, anti-rotation pin slot)
- NL2 (monolithic short seat, to DIN24960) standard for SP3, SP4.
- NL1 (monolithic long seat, anti-rotation pin slot, to DIN24960)
- DE1 (face shrink fitted, anti-rotation pin slot)
- NL3 (face shrink fitted, anti-rotation pin slot, to DIN24960)

For more details on mating rings see page 29

Sydney
Elastomer bellows seals



Technical features

- Single spring
- Unbalanced
- Bi-directional
- Elastomer bellows

Operating limits

P = 290 PSI
T = -95 to 320 °F
V = 65 ft/s

Description	Materials
Primary rings	silicon carbide, carbon graphite, tungsten carbide
Mating rings	silicon carbide, ceramic, tungsten carbide
Secondary seals	NBR, EPDM, Viton
Metal parts	Stainless 304 / Stainless 316*

** upon request*

Available products:

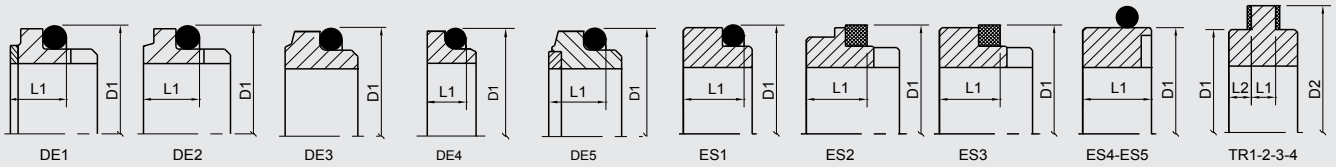
- Sydney 1 (SY1)
- Sydney 2 (SY2)

Mating rings

- For SY1: FR1 (standard), BR2
- For SY2: BR3 (standard), BR1, BR2
- LC1 - LC2: Lock Collar (Stainless 304 / Stainless 316*)

For more details on mating rings see page 29

			SY1	SY2	FR1		LC1 - LC2
d (inc)	d (mm)	D	L1	L3	D1	L2	L4
.625	14-16	1.093	1.312	1.719	1.250	.406	.312
.750	18	1.218	1.312	1.719	1.375	.406	.312
.875	20-22	1.343	1.375	1.719	1.500	.406	.312
1.000	24-25	1.500	1.562	1.719	1.625	.437	.375
1.125	28	1.625	1.625	2.375	1.750	.437	.375
1.250	30-32	1.812	1.625	2.375	1.875	.437	.375
1.375	33-35	1.875	1.687	2.375	2.000	.437	.375
1.500	38	2.000	1.687	2.375	2.125	.437	.375
1.625	40	2.250	2.000	2.375	2.375	.500	.375
1.750	43-45	2.375	2.000	2.781	2.500	.500	.375
1.875	48	2.500	2.125	2.781	2.625	.500	.375
2.000	50	2.625	2.125	2.781	2.750	.500	.375
2.125	53	2.812	2.375	2.795	3.000	.562	.375
2.250	55	2.937	2.375	2.795	3.125	.562	.500
2.375	60	3.062	2.500	2.795	3.250	.562	.500
2.500	63	3.187	2.500	2.795	3.375	.562	.500
2.625	65	3.375	2.750	2.750	3.375	.625	.500
2.750	70	3.500	2.750	2.750	3.500	.625	.500
2.875	73	3.625	2.875	2.875	3.750	.625	.500
3.000	75	3.750	2.875	2.875	3.875	.625	.500



DE1 - DE2 - DE3 - DE4 - DE5

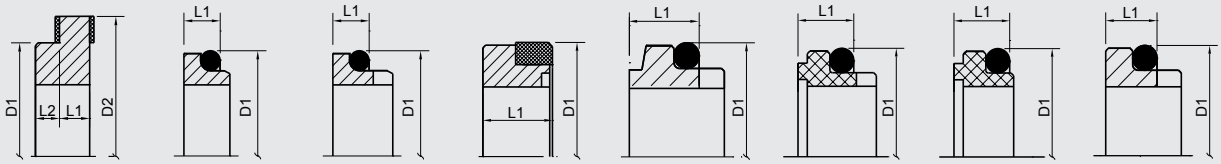
d	D1	L1
10	18.1	5.5
12	20.6	5.5
14	23.1	6.0
15	26.9	7.0
16	26.9	7.0
17	26.9	7.0
18	30.9	8.0
19	30.9	8.0
20	30.9	8.0
22	35.4	8.0
24	35.4	8.0
25	38.2	8.5
26	38.2	8.5
28	43.3	9.0
30	43.3	9.0
32	43.3	9.0
33	53.5	11.5
35	53.5	11.5
38	60.5	11.5
40	60.5	11.5
42	60.5	11.5
43	60.5	11.5
45	65.5	11.5
48	65.5	11.5
50	72.5	11.5
53	72.5	11.5
55	72.5	11.5
58	79.3	11.5
60	79.3	11.5
63	84.5	11.5
65	84.5	11.5
68	89.5	11.5
70	89.5	11.5
75	94.5	11.5
80	99.5	11.5
85	105.5	13.5
90	111.5	13.5
95	116.5	13.5
100	119.5	13.5

ES1 - ES2 - ES3			ES4*			ES5*	
d	D1	L1	d	D1	L1	D1	L1
14	25	12.0	.500	1.000	.406	1.000	.312
16	27	12.0	.625	1.125	.406	1.250	.406
18	33	13.5	.750	1.250	.437	1.375	.406
20	35	13.5	.875	1.375	.437	1.500	.406
22	37	13.5	1.000	1.500	.500	1.625	.437
24	39	13.3	1.125	1.625	.500	1.750	.437
25	40	13.0	1.250	1.875	.500	1.875	.437
28	43	12.5	1.375	2.000	.500	2.000	.437
30	45	12.0	1.500	2.125	.500	2.125	.437
32	48	12.0	1.625	2.250	.500	2.375	.500
33	48	12.0	1.750	2.375	.500	2.500	.500
35	50	12.0	1.875	2.500	.500	2.625	.500
38	56	13.0	2.000	2.625	.500	2.750	.500
40	58	13.0	2.125	2.750	.562	3.000	.562
43	61	13.0	2.250	2.875	.562	3.125	.562
45	63	13.0	2.375	3.000	.562	3.250	.562
48	66	13.0	2.500	3.125	.562	3.375	.562
50	70	13.5	2.625	3.250	.625	3.375	.625
53	73	13.5	2.750	3.375	.625	3.500	.625
55	75	13.5	2.875	3.500	.625	3.750	.625
58	78	13.5	3.000	3.625	.625	3.875	.625
60	80	13.5	3.125	3.750	.625	4.000	.781
63	83	13.5	3.250	3.875	.625	4.125	.781
65	85	13.5	3.375	4.000	.625	4.250	.781
68	90	13.5	3.500	4.125	.625	4.375	.781
70	92	14.5	3.625	4.250	.687	4.500	.781
75	97	14.5	3.750	4.500	.687	4.625	.781
80	105	15.0	3.875	4.625	.687	4.750	.781
85	110	15.0	4.000	4.750	.687	4.875	.781
90	115	15.0					
95	120	15.0					
100	125	15.0					

*upon request

		*TR1				*TR2				*TR3				*TR4			
d (inc)	d (mm)	D1	D2	L1	L2	D1	D2	L1	L2	D1	D2	L1	L2	D1	D2	L1	L2
.750	18	1.370	1.750	.250	.250	1.307	1.718	.406	.203	1.426	1.850	.315	.189	-	-	-	-
.875	20-22	1.494	1.875	.250	.250	1.432	1.843	.406	.203	1.551	1.948	.315	.189	-	-	-	-
1.000	24-25	1.620	2.000	.375	.250	1.557	1.968	.406	.203	1.676	2.067	.315	.189	-	-	-	-
1.125	28	1.745	2.125	.375	.250	1.683	2.093	.406	.203	1.990	2.480	.437	.313	1.801	2.303	.437	.313
1.250	30-32	1.870	2.250	.375	.250	1.807	2.218	.406	.203	2.115	2.598	.437	.313	1.990	2.500	.437	.313
1.375	33-35	1.995	2.375	.375	.250	2.057	2.593	.437	.218	2.240	2.717	.437	.313	2.115	2.579	.437	.313
1.500	38	2.245	2.625	.375	.250	2.057	2.593	.437	.218	2.490	2.992	.437	.313	2.240	2.736	.437	.313
1.625	40	2.370	2.750	.375	.250	2.370	2.906	.437	.218	2.615	3.110	.437	.313	2.490	3.011	.437	.313
1.750	43-45	2.495	3.000	.375	.250	2.432	2.968	.437	.218	2.740	3.228	.437	.313	2.615	3.130	.437	.313
1.875	-	2.620	3.125	.375	.250	2.620	3.156	.437	.218	2.865	3.386	.437	.313	2.740	3.248	.437	.313
2.000	48-50	2.745	3.250	.375	.250	2.744	3.406	.500	.250	3.115	3.740	.563	.374	2.865	3.366	.437	.313
2.125	53	2.870	3.500	.375	.250	2.930	3.593	.500	.250	3.240	3.858	.563	.374	3.115	3.760	.563	.374
2.250	55	2.995	3.625	.375	.250	2.961	3.625	.500	.250	3.365	3.976	.563	.374	3.240	3.878	.563	.374
2.375	58-60	3.120	3.750	.375	.250	3.118	3.781	.500	.250	3.490	4.173	.563	.374	3.365	3.996	.563	.374
2.500	63	3.245	4.000	.375	.250	3.243	3.906	.500	.250	3.610	4.252	.563	.374	3.490	4.114	.563	.374
2.625	65	3.370	4.125	.375	.250	3.368	4.031	.500	.250	3.740	4.370	.563	.374	3.615	4.272	.563	.374
2.750	68-70	3.615	4.250	.750	.250	3.493	4.156	.500	.250	3.865	4.488	.563	.374	3.740	4.370	.563	.374
2.875	73	3.740	4.375	.750	.250	3.617	4.281	.500	.250	3.927	4.526	.563	.374	3.865	4.488	.563	.374
3.000	75	3.865	4.500	.750	.250	3.740	4.406	.500	.250	4.053	4.685	.563	.374	3.927	4.547	.563	.374
3.125	-	3.990	4.625	.750	.250	3.865	4.531	.500	.250	4.240	4.921	.563	.374	4.053	4.705	.563	.374
3.250	80	4.115	4.750	.750	.250	3.990	4.656	.500	.250	4.490	5.118	.563	.374	4.240	4.870	.563	.374
3.375	-	4.240	4.875	.750	.250	4.114	4.781	.500	.250	4.615	5.276	.563	.374	4.490	5.000	.563	.374
3.500	85	4.365	5.000	.750	.250	4.238	4.906	.500	.250	4.740	5.354	.563	.374	4.490	5.138	.563	.374
3.625	-	4.490	5.125	.750	.250	4.363	5.031	.500	.250	4.865	5.511	.563	.374	4.740	5.250	.563	.374
3.750	90-95	4.615	5.250	.750	.250	4.487	5.156	.500	.250	4.990	5.591	.563	.374	4.740	5.374	.563	.374
3.875	-	4.740	5.375	.750	.250	4.612	5.281	.500	.250	5.115	5.767	.563	.374	4.865	5.500	.563	.374
4.000	100	4.865	5.500	.750	.250	4.735	5.406	.500	.250	5.240	5.866	.563	.374	4.990	5.610	.563	.374

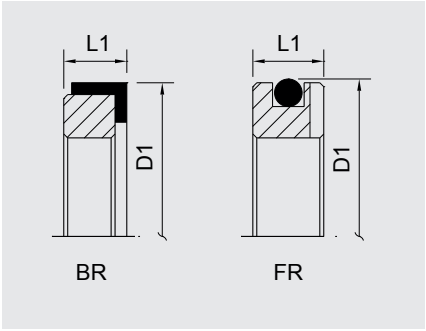
AU
Mating rings



AU1 | AU2-AU12 | AU3-AU4 | AU5 | AU6 - AU7 | AU8 - AU9 | AU11 | AU10

AU1*					AU4*		AU5*		AU2* - AU3*			AU6* - AU7* - AU10*				AU8 - AU9 - AU11*				AU12*		
d (inc)	D1	D2	L1	L2	d (inc)	L1	D1	L1	d (mm)	D1	L1	d (mm)	d (inc)	D1	L1	d	d (inc)	D1	L3	d (mm)	D1	L1
.375	-	-	-	-	.375	.261			10	21.0	8.6	20	.750	35	13	16	-	28.6	9.0	10	24.6	8.7
.500	-	-	-	-	.500	.261	1.000	.312	12	23.0	8.6	22	-	37	13	18	-	31.8	9.0	12	27.8	8.7
.625	-	-	-	-	.625	.297	1.250	.406	14	25.0	8.6	24	.875	39	13	20	-	33.3	9.0	14-16	31.0	10.3
.750	1.370	1.750	.250	.250	.750	.297	1.375	.406	16	27.0	8.6	25	1.000	40	13	22	-	34.9	9.0	18-19	34.2	10.3
.875	1.494	1.875	.250	.250	.813	.297	1.500	.406	18	33.0	10.0	28	1.125	43	13	25	-	39.7	10.0	20	35.7	10.3
1.000	1.620	2.000	.375	.250	.875	.297	1.625	.437	19	35.0	10.0	30	-	45	13	28	-	42.9	10.0	22	37.3	10.3
1.125	1.745	2.125	.375	.250	1.000	.297	1.750	.437	20	35.0	10.0	32	1.250	48	13	30	-	44.4	10.0	24-25	40.5	10.3
1.250	1.870	2.250	.375	.250	1.125	.297	1.875	.437	22	37.0	10.0	33	-	48	13	32	-	46.0	10.0	28	47.6	12.0
1.375	1.995	2.375	.375	.250	1.250	.297	2.000	.437	24	39.0	10.0	35	1.375	50	13	33	-	46.0	10.0	30-32	50.8	12.0
1.500	2.245	2.625	.375	.250	1.375	.297	2.125	.437	25	40.0	10.0	38	1.500	56	13	35	-	49.2	10.0	33	53.9	12.0
1.625	2.370	2.750	.375	.250	1.437	.297	2.375	.500	28	43.0	10.0	40	-	58	13	38	-	52.4	10.0	35	53.9	12.0
1.750	2.495	3.000	.375	.250	1.500	.297	2.500	.500	30	45.0	10.0	42	-	61	13	40	-	54.0	10.0	38	57.2	12.0
1.875	2.620	3.125	.375	.250	1.625	.335	2.625	.500	32	48.0	10.0	43	1.625	61	13	42	-	55.6	10.0	40	60.3	12.0
2.000	2.745	3.250	.375	.250	1.750	.335	2.750	.500	33	48.0	10.0	45	1.750	63	13	43	-	55.6	10.0	42-45	63.5	12.0
2.125	2.870	3.500	.375	.250	1.875	.335	3.000	.562	35	50.0	10.0	48	1.875	66	13	45	-	58.7	10.0	48	66.7	12.0
2.250	2.995	3.625	.375	.250	2.000	.335	3.125	.562	38	56.0	11.0	50	2.000	70	13	48	-	63.5	10.0	50	69.8	13.5
2.375	3.120	3.750	.375	.250	2.125	.375	3.250	.562	40	58.0	11.0	53	2.125	73	13	50	-	65.1	10.0	53	73.0	13.5
2.500	3.245	4.000	.375	.250	2.250	.375	3.375	.562	42	61.0	11.0	55	-	75	13	-	2.000	66.7	10.0	55	76.2	13.5
2.625	3.370	4.125	.375	.250	2.375	.375	3.375	.625	43	61.0	11.0	58	2.250	78	16	55	-	69.9	10.0	58-60	79.4	13.5
2.750	3.615	4.250	.750	.250	2.500	.375	3.500	.625	45	63.0	11.0	60	2.375	80	16	58	-	73.0	10.0	63	82.5	13.5
2.875	3.740	4.375	.750	.250	2.625	.375	3.750	.625	48	66.0	11.0	63	2.500	84	16	60	-	76.2	10.0	65	92.1	15.9
3.000	3.865	4.500	.750	.250	2.750	.375	3.875	.625	50	70.0	13.0	65	-	85	16	63	-	79.4	10.0	70	95.2	15.9
3.125	3.990	4.625	.750	.250	2.875	.473	4.000	.781	53	73.0	13.0	-	2.625	-	-	65	-	81.0	10.0	73	98.4	15.9
3.250	4.115	4.750	.750	.250	3.000	.473	4.125	.781	55	75.0	13.0	68	-	90	16	68	-	82.6	10.0	75	101.6	15.9
3.375	4.240	4.875	.750	.250	3.125	.473	4.250	.781	58	78.0	13.0	70	2.750	92	16	70	-	85.7	10.0	-	111.1	19.8
3.500	4.365	5.000	.750	.250	3.250	.473	4.375	.781	60	80.0	13.0	-	2.875	-	-	73	-	88.9	10.0	80	114.3	19.8
3.625	4.490	5.125	.750	.250	3.375	.473	4.500	.781	63	83.0	13.0	75	3.000	97	16	75	-	90.5	10.0	85	117.5	19.8
3.750	4.615	5.250	.750	.250	3.500	.473	4.625	.781	65	85.0	13.0	80	3.125	105	16	-	3.000	95.3	10.0	-	120.7	19.8
3.875	4.740	5.375	.750	.250	3.625	.513	4.750	.781	68	90.0	15.3	-	3.250	-	-	80	-	98.4	10.0	90	123.8	19.8
4.000	4.865	5.500	.750	.250	3.750	.513	4.875	.781	70	92.0	15.3	85	3.375	110	16	-	3.250	101.6	10.0	95	127.0	19.8
									75	97.0	15.3	90	3.500	115	16	85	-	104.8	10.0	-	130.2	19.8
									80	105.0	15.7	-	3.625	-	-	-	3.500	108.0	10.0	100	133.4	19.8
									85	110.0	15.7	95	3.750	120	16	90	-	109.5	10.0			
									90	115.0	15.7	-	3.875	-	-	95	-	114.3	10.0			
									95	120.0	15.7	100	4.000	125	16	100	-	119.0	10.0			
									100	125.0	15.7					-	4.000	123.8	10.0			

** upon request*



** upon request*

Seat	d	D1	L1
BR1	12	23.0	8.6
BR1	14	25.0	8.6
BR1	16	27.0	8.6
BR1	18	33.0	10.0
BR1	19	35.0	10.0
BR1	20	35.0	10.0
BR1	22	37.0	10.0
BR1	24	39.0	10.0
BR1	25	40.0	10.0
BR1	28	43.0	10.0
BR1	30	45.0	10.0
BR1	32	48.0	10.0
BR1	33	48.0	10.0
BR1	35	50.0	10.0
BR1	38	56.0	11.0
BR1	40	58.0	11.0
BR1	42	61.0	11.0
BR1	43	61.0	11.0
BR1	45	63.0	11.0
BR1	48	66.0	11.0
BR1	50	70.0	13.0
BR1	53	73.0	13.0
BR1	55	75.0	13.0
BR1	58	78.0	13.0
BR1	60	80.0	13.0
BR1	63	83.0	13.0
BR1	65	85.0	13.0
BR1	68	90.0	15.3
BR1	70	92.0	15.3
BR1	75	97.0	15.3
BR1	80	105.0	15.7
BR1	85	110.0	15.7
BR1	90	115.0	15.7
BR1	95	120.0	15.7
BR1	100	125.0	15.7
BR1	70	.875	.312
BR1	75	1.000	.312
BR1	80	1.250	.406
BR1	85	1.375	.406
BR2	.375	.875	.312
BR2	.500	1.000	.312
BR2	.625	1.250	.406
BR2	.750	1.375	.406
BR2	.812	1.375	.406
BR2	.875	1.500	.406
BR2	1.000	1.625	.437
BR2	1.125	1.750	.437
BR2	1.187	1.875	.437
BR2	1.250	1.875	.437
BR2	1.375	2.000	.437
BR2	1.437	2.125	.437
BR2	1.500	2.125	.437
BR2	1.625	2.375	.500
BR2	1.750	2.500	.500
BR2	1.875	2.625	.500
BR2	2.000	2.750	.500
BR2	2.125	3.000	.562
BR2	2.250	3.125	.562
BR2	2.375	3.250	.562
BR2	2.500	3.375	.562
BR2	2.625	3.375	.625
BR2	2.750	3.500	.625
BR2	2.875	3.750	.625
BR2	3.000	3.875	.625
BR3	.375	.968	.344
BR3	.500	1.094	.343
BR3	.625	1.219	.406
BR3	.750	1.344	.406
BR3	.813	1.406	.406
BR3	.875	1.469	.406
BR3	1.000	1.594	.406
BR3	1.125	1.875	.472
BR3	1.250	2.000	.472
BR3	1.375	2.125	.472
BR3	1.500	2.250	.472
BR3	1.625	2.375	.472
BR3	1.750	2.500	.472
BR3	1.875	2.625	.472
BR3	2.000	2.750	.531
BR3	2.125	2.875	.531
BR3	2.250	3.000	.531
BR3	2.375	3.125	.531
BR3	2.500	3.250	.531
BR3	2.625	3.625	.625
BR3	2.750	3.750	.625
BR3	2.875	3.875	.625
BR3	3.000	4.000	.625
BR4	10	21	5
BR4	12	23	6
BR4	14	25	6
BR4	15	26	6
BR4	16	27	6
BR4	18	33	6
BR4	20	35	6
BR4	22	37	6
BR4	24	39	6
BR4	25	40	6
BR4	28	43	6
BR4	30	45	7
BR4	32	48	7
BR4	33	48	7
BR4	35	50	8
BR4	38	56	8
BR4	40	58	8
BR4	43	61	8
BR4	45	63	8
BR4	48	66	10
BR4	50	70	10
BR4	53	73	10
BR4	55	75	10
BR4	58	78	10
BR4	60	80	12
BR4	63	83	12
BR4	65	85	12
BR4	68	90	12
BR4	70	92	12
BR4	75	97	12
BR5*	10	24	7
BR5*	11	24	7
BR5*	12	26	7
BR5*	13	26	7
BR5*	14	28	7
BR5*	15	28	7
BR5*	16	32	8
BR5*	17	32	8
BR5*	18	35	8
BR5*	19	35	8
BR5*	20	38	8
BR5*	22	40	8
BR5*	25	44	9
BR5*	28	46	9
BR5*	30	50	9
BR5*	32	54	9
BR5*	35	58	10
BR5*	38	60	10
BR5*	40	64	10
BR5*	45	66	10
BR5*	50	72	10
BR6	8a	26.0	4.0
BR6	8b	22.0	4.0
BR6	8c	26.0	8.0
BR6	9	26.0	8.0
BR6	10	26.0	8.0
BR6	11	26.0	8.0
BR6	12a	26.0	5.5
BR6	12b	26.0	8.0
BR6	12c	35.0	8.0
BR6	13	26.0	8.0
BR6	14a	25.0	7.0
BR6	14b	28.5	8.0
BR6	14c	29.5	8.0
BR6	14d	35.0	8.0
BR6	14e	30.0	8.0
BR6	15a	29.5	8.0
BR6	15b	38.0	8.0
BR6	15c	38.0	8.0
BR6	16a	29.5	8.0
BR6	16b	38.0	8.0
BR6	16c	38.0	8.0
BR6	16d	42.0	8.0
BR6	17	42.0	8.0
BR6	18	42.0	8.0
BR6	19	42.0	8.0
BR6	20a	42.0	8.0
BR6	20b	45.0	10.0
BR6	22	45.0	10.0
BR6	23	50.0	10.0
BR6	24	50.0	10.0
BR6	25a	50.0	10.0
BR6	25b	50.0	10.0
BR6	26	50.0	10.0
BR6	28	57.0	10.0
BR6	30	57.0	10.0
BR6	32	57.0	10.0
BR6	35	63.0	10.0
BR6	38	68.0	12.0
BR6	40	68.0	12.0
BR6	45	73.0	12.0
BR6	50	88.0	15.0
BR6	55	88.0	15.0
BR6	60	110.0	15.0
BR6	65	110.0	15.0
BR6	70	110.0	15.0
BR7*	.437	1.175	.250
BR7*	.625	1.187	.343
BR7*	.750	1.312	.281
BR7*	.875	1.437	.265
BR7*	1.000	1.625	.406
BR7*	1.125	1.875	.437
BR7*	1.187	1.750	.437
BR7*	1.250	2.000	.437
BR7*	1.375	2.125	.437
BR7*	1.500	2.250	.437
BR7*	1.625	2.625	.500
BR7*	2.000	2.625	.500

BR - FR
Mating rings

Seat	d	D1	L1
BR7*	2.125	3.000	.625
BR8*	.625	1.375	.406
BR8*	.750	1.275	.281
BR8*	.875	1.562	.406
BR8*	1.000	1.750	.437
BR8*	1.125	1.875	.437
BR8*	1.250	1.762	.365
BR8*	1.500	2.156	.437
BR8*	1.625	2.312	.500
BR8*	1.750	2.625	.500
BR9*	.500	.938	.225
BR9*	.500	1.000	.187
BR9*	.500	1.000	.218
BR9*	.500	1.000	.290
BR9*	.625	1.187	.288
BR9*	.625	1.250	.250
BR9*	.625	1.250	.281
BR9*	.625	1.250	.343
BR9*	.625	1.270	.406
BR9*	.625	1.375	.562
BR9*	.750	1.375	.250
BR9*	.750	1.375	.281
BR9*	.750	1.437	.406
BR9*	.750	1.500	.250
BR9*	1.000	1.625	.385
BR9*	1.250	1.750	.365

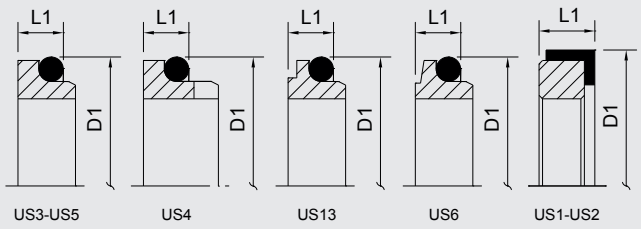
** upon request*

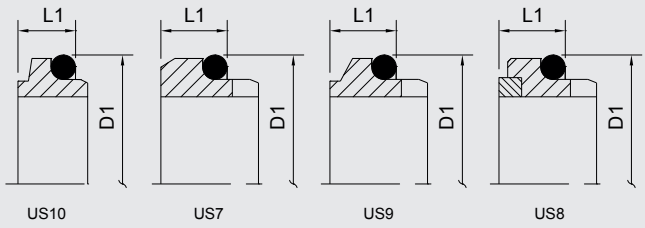
Seat	d	D1	L1
FR1	.375	.875	.312
FR1	.500	1.000	.312
FR1	.625	1.250	.406
FR1	.750	1.375	.406
FR1	.875	1.500	.406
FR1	.937	1.562	.437
FR1	1.000	1.625	.437
FR1	1.125	1.750	.437
FR1	1.250	1.875	.437
FR1	1.375	2.000	.437
FR1	1.437	2.125	.437
FR1	1.500	2.125	.437
FR1	1.625	2.375	.500
FR1	1.750	2.500	.500
FR1	1.875	2.625	.500
FR1	2.000	2.750	.500
FR1	2.125	3.000	.562
FR1	2.250	3.125	.562
FR1	2.375	3.250	.562
FR1	2.500	3.375	.562
FR1	2.625	3.375	.625
FR1	2.750	3.500	.625
FR1	2.875	3.750	.625
FR1	3.000	3.875	.625
FR1	3.125	4.000	.781
FR1	3.250	4.125	.781
FR1	3.375	4.250	.781
FR1	3.500	4.375	.781
FR1	3.625	4.500	.781
FR1	3.750	4.625	.781
FR1	3.875	4.750	.781
FR1	4.000	4.875	.781
FR2	.375	.968	.343
FR2	.500	1.094	.343
FR2	.625	1.219	.406
FR2	.750	1.344	.406
FR2	.813	1.406	.406
FR2	.875	1.469	.406

Seat	d	D1	L1
FR2	1.000	1.594	.406
FR2	1.125	1.875	.472
FR2	1.250	2.000	.472
FR2	1.375	2.125	.472
FR2	1.500	2.250	.472
FR2	1.625	2.375	.472
FR2	1.750	2.500	.472
FR2	1.875	2.625	.472
FR2	2.000	2.750	.531
FR2	2.125	2.875	.531
FR2	2.250	3.000	.531
FR2	2.375	3.125	.531
FR2	2.500	3.250	.531
FR2	2.625	3.625	.625
FR2	2.750	3.750	.625
FR2	2.875	3.875	.625
FR2	3.000	4.000	.625
FR2	3.125	4.375	.781
FR2	3.250	4.500	.781
FR2	3.375	4.625	.781
FR2	3.500	4.750	.781
FR2	3.625	4.875	.781
FR2	3.750	5.000	.781
FR2	3.875	5.125	.781
FR2	4.000	5.250	.781
FR3	1.125	1.875	.437
FR3	1.250	2.000	.437
FR3	1.375	2.125	.437
FR3	1.437	2.250	.437
FR3	2.125	2.875	.562
FR3	2.500	3.250	.562
FR4 - 5	12a	26.0	5.5
FR4 - 5	12b	26.0	8.0
FR4 - 5	12c	35.0	8.0
FR4 - 5	13	26.0	8.0
FR4 - 5	14a	25.0	7.0
FR4 - 5	14b	28.5	8.0
FR4 - 5	14c	29.5	8.0
FR4 - 5	14d	35.0	8.0
FR4 - 5	14e	30.0	8.0
FR4 - 5	15a	29.5	8.0
FR4 - 5	15b	38.0	8.0
FR4 - 5	15c	38.0	8.0
FR4 - 5	16a	29.5	8.0
FR4 - 5	16b	38.0	8.0
FR4 - 5	16c	38.0	8.0
FR4 - 5	16d	42.0	8.0
FR4 - 5	17	42.0	8.0
FR4 - 5	18	42.0	8.0
FR4 - 5	19	42.0	8.0
FR4 - 5	20a	42.0	8.0
FR4 - 5	20b	45.0	10.0
FR4 - 5	22	45.0	10.0
FR4 - 5	23	50.0	10.0
FR4 - 5	24	50.0	10.0
FR4 - 5	25a	50.0	10.0
FR4 - 5	25b	50.0	10.0
FR4 - 5	26	50.0	10.0
FR4 - 5	28	57.0	10.0
FR4 - 5	30	57.0	10.0
FR4 - 5	32	57.0	10.0
FR4 - 5	35	63.0	10.0
FR4 - 5	38	68.0	12.0
FR4 - 5	40	68.0	12.0
FR4 - 5	45	73.0	12.0
FR4 - 5	50	88.0	15.0
FR4 - 5	55	88.0	15.0
FR4 - 5	60	110.0	15.0
FR4 - 5	65	110.0	15.0
FR4 - 5	70	110.0	15.0

Seat	d	D1	L1
FR6	.437	1.175	.250
FR6	.625	1.187	.343
FR6	.750	1.187	.406
FR6	1.125	1.812	.437
FR6	1.437	2.063	.437
FR6	1.500	2.312	.437
FR6	1.625	2.625	.500
FR6	1.750	2.312	.500
FR6	1.875	2.687	.500
FR6	2.000	3.000	.500
FR6	2.500	3.250	.437
FR6	2.875	3.750	.562
FR6	3.125	4.000	.625
FR6	3.250	4.125	.625
FR6	3.375	4.250	.625
FR6	3.500	4.375	.625
FR6	3.625	4.500	.687
FR6	3.750	4.625	.687
FR6	3.875	4.750	.687
FR6	4.000	4.875	.687
FR7	1.000	1.750	.437
FR7	1.375	2.000	.687
FR7	1.437	2.250	.375
FR7	1.500	2.125	.500
FR7	1.750	2.625	.500
FR7	2.500	3.000	.562
FR7	2.750	3.625	.625
FR7	3.000	4.000	.500
FR8	1.437	2.250	.625
FR8	1.500	2.063	.437
FR8	1.750	2.750	.625
FR9	1.437	2.312	.357

** upon request*





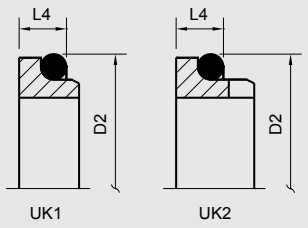
Technical features

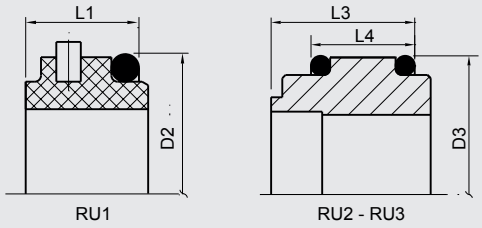
- Mating rings for metric shaft sizes
- US3, US4, US5, US13, US7, US2, US1
  available in: ceramic, stainless steel, silicon carbide, tugsten carbide.
- US6, US10, US9
  available in: carbon graphite.

** upon request*

	US3 - US4* - US13*		US5 - US1 - US6		US10		US7 - US9 - US8		US2			US12	US11
d	D1	L1	D1	L1	D1	L1	D1	L1	D1	L1	D1	L1	L1
10	19.2	6.6	21.0	6.6	19.2	7.1	21.0	10.0	24.6	9.0	-	-	-
12	21.6	5.6	23.0	6.6	21.6	7.6	23.0	10.0	27.8	9.0	-	-	-
14	24.6	5.6	25.0	6.6	24.6	7.6	25.0	10.0	31.0	10.5	-	-	-
15	24.6	6.6	27.0	6.6	24.6	9.0	27.0	10.0	31.0	10.5	-	-	-
16	28.0	7.5	27.0	6.6	28.0	9.0	27.0	10.0	31.0	10.5	-	-	-
18	30.0	8.0	33.0	7.5	30.0	10.0	33.0	11.5	34.2	10.5	33.0	7.0	9.0
20	35.0	7.5	35.0	7.5	35.0	9.5	35.0	11.5	35.7	10.5	35.0	7.0	9.0
22	35.0	7.5	37.0	7.5	35.0	9.5	37.0	11.5	37.3	10.5	37.0	7.0	9.0
24	38.0	7.5	39.0	7.5	38.0	9.5	39.0	11.5	40.5	10.5	39.0	7.0	9.0
25	38.0	7.5	40.0	7.5	38.0	11.0	40.0	11.5	40.5	10.5	40.0	7.0	9.0
28	42.0	9.0	43.0	7.5	42.0	11.0	43.0	11.5	47.7	12.0	43.0	7.0	9.5
30	45.0	10.5	45.0	7.5	45.0	11.0	45.0	11.5	50.8	12.0	45.0	7.0	9.5
32	48.0	10.5	48.0	7.5	48.0	11.0	48.0	11.5	50.8	12.0	48.0	7.0	9.5
33	50.0	11.0	48.0	7.5	50.0	11.5	48.0	11.5	54.0	12.0	48.0	7.0	9.5
35	52.0	11.0	50.0	7.5	52.0	11.5	50.0	11.5	54.0	12.0	50.0	7.0	9.5
38	55.0	10.3	56.0	9.0	55.0	11.5	56.0	14.0	57.2	12.0	56.0	8.0	10.5
40	58.0	10.8	58.0	9.0	58.0	11.5	58.0	14.0	60.4	12.0	58.0	8.0	10.5
42	62.0	12.0	61.0	9.0	60.0	14.3	61.0	14.0	63.5	12.0	-	-	-
43	62.0	12.0	61.0	9.0	62.0	14.3	61.0	14.0	63.5	12.0	61.0	8.0	10.5
45	64.0	11.6	63.0	9.0	64.0	14.3	63.0	14.0	63.5	12.0	63.0	8.0	10.5
48	68.4	11.6	66.0	9.0	68.4	14.3	66.0	14.0	66.7	12.0	66.0	8.0	10.5
50	69.3	11.6	70.0	9.5	69.3	14.3	70.0	15.0	69.9	13.5	70.0	9.5	12.0
53	72.3	12.3	73.0	11.0	72.3	14.3	73.0	15.0	73.1	13.5	73.0	9.5	12.0
55	75.4	13.3	75.0	11.0	75.4	15.3	75.0	15.0	76.2	13.5	75.0	9.5	12.0
58	78.4	13.3	78.0	11.0	78.4	15.3	78.0	15.0	79.4	13.5	78.0	10.5	13.0
60	80.4	13.3	80.0	11.0	80.4	15.3	80.0	15.0	79.4	13.5	80.0	10.5	13.0
63	83.4	13.3	83.0	11.0	83.4	15.3	83.0	15.0	82.5	13.5	83.0	10.5	13.0
65	85.4	13.0	85.0	11.0	85.4	15.3	85.0	15.0	92.1	16.0	85.0	10.5	13.0
68	91.5	13.7	90.0	11.3	91.5	16.0	90.0	18.0	95.3	16.0	90.0	11.0	13.5
70	92.0	13.0	92.0	11.3	92.0	15.3	92.0	18.0	95.3	16.0	92.0	11.5	14.0
75	99.0	14.0	97.0	11.3	99.0	15.3	97.0	18.0	101.6	16.0	97.0	11.5	14.0
80	104.0	15.0	105.0	12.0	104.0	16.3	105.0	18.2	114.3	20.0	105.0	11.5	14.0
85	109.0	14.8	110.0	14.0	109.0	16.3	110.0	18.2	117.5	20.0	110.0	11.5	14.0
90	114.0	14.8	115.0	14.0	114.0	16.3	115.0	18.2	123.9	20.0	115.0	13.0	15.5
95	120.3	15.8	120.0	14.0	120.3	17.3	120.0	17.2	127.0	20.0	120.0	13.0	15.5
100	123.3	15.8	125.0	14.0	123.3	17.3	125.0	17.2	133.4	20.0	125.0	13.0	15.5

UK - RU - NL
Mating rings





UK1* - UK2*

d	D2	L4
8	-	-
10	21	7
12	23	7
14	25	7
15	-	-
16	27	7
17	-	-
18	33	10
19	-	-
20	35	10
22	37	10
24	39	10
25	40	10
26	-	-
28	43	10
30	45	10
32	48	10
33	48	10
35	50	10
38	56	13
40	58	13
42	-	-
43	61	13
45	63	13
48	66	13
50	70	14
53	73	14
55	75	14
58	78	14
60	80	14
63	83	14
65	85	14
68	90	16
70	92	16
75	97	16
80	105	18
85	110	18
90	115	18
95	120	18
100	125	18

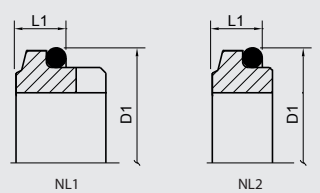
RU1*

d	D1	L1
1.000	1.500	.81
1.125	1.875	.81
1.187	1.937	.81
1.250	2.000	.81
1.375	2.125	.81
1.437	2.187	.81
1.500	2.250	.81
1.625	2.375	.81
1.750	2.500	.81
1.875	2.625	.81
2.000	2.750	.81
2.125	2.875	.81
2.250	3.000	.81
2.375	3.125	.81
2.500	3.250	.81
2.625	3.375	.81
2.750	3.500	.81
2.875	3.625	.81
3.000	3.750	.81
3.125	4.062	.81
3.250	4.187	.81
3.375	4.312	.81
3.500	4.437	.81
3.625	4.562	.81
3.750	4.687	.81
3.875	4.812	.81
4.000	4.937	.81
4.250	5.187	.81
4.500	5.437	.81

RU2* - RU3*

d (mm)	d (inc)	D3	L3	L4
20	.750	42	23	18
22	-	44	23	18
24	.875	46	23	18
25	1.000	47	23	18
28	1.125	50	23	18
30	-	52	23	18
32	1.250	54	23	18
33	-	55	23	18
35	1.375	57	23	18
38	1.500	64	25	20
40	-	66	25	20
42	-	69	25	20
43	1.625	69	25	20
45	1.750	71	25	20
48	1.875	74	25	20
50	2.000	76	25	20
53	2.125	79	25	20
55	-	81	25	20
58	2.250	89	28	22
60	2.375	91	28	22
63	2.500	94	28	22
65	-	96	28	22
-	2.625	-	-	-
68	-	99	30	24
70	2.750	101	30	24
-	2.875	-	-	-
75	3.000	110	30	24
80	3.125	115	31	25
-	3.250	-	-	-
85	3.375	120	31	25
90	3.500	125	31	25
-	3.625	-	-	-
95	3.750	130	31	25
-	3.875	-	-	-
100	4.000	135	31	25

** upon request*



NL1 - NL2 - NL3 - NL4

d	D2	L2	d	D2	L2
10	21	7	43	61	13
12	23	7	45	63	13
14	25	7	48	66	13
15	27	7	50	70	14
16	27	7	53	73	14
18	33	10	55	75	14
19	35	10	58	78	14
20	35	10	60	80	14
22	37	10	63	83	14
24	39	10	65	85	14
25	40	10	68	90	16
28	43	10	70	92	16
30	45	10	75	97	16
32	48	10	80	105	18
33	48	10	85	110	18
35	50	10	90	115	18
38	56	13	95	120	18
40	58	13	100	125	18

Cross Reference Table

CityLine	MeccanotecnicaUmbra	Aesseal	Burgmann	Eagle	Flowserve (Pac-Seal)	John Crane	Roten	Sealol	Vulcan	US Seal
Amsterdam 1	DR2-S		HJ92N							
Amsterdam 2	DR2-S		HJ977N							
Athens				ED560						
Buenos Aires		T07	M2				22			VGMD
Campello						6A		7	75	BV
Chicago 1						2100S				
Chicago 2						2100K				
Chicago 3						2100N				
Chicago 4						2100 (imp. size)				
Chicago 5						2100 (inter.with Type21 std.seal)				
Chicago 6						2106				
Curitiba 1	DPS						7K			
Curitiba 2	DPS						7K			
Dallas 1	DRM1-HS	T01DB	H12							
Dallas 2	DRM1-HS		H17							
Detroit				H2E						
Florence 1	DR1-HS		H75							
Florence 2	DR1-HS		H7N							
Istanbul 1		M03S	BT-C5.KU			59U			1659S	
Istanbul 2		M03	BT-C56.KU			58U			1659	
Istanbul 3		M01					90	T	1609	
Istanbul 4		M04S	BT-C5.KB			59B			1659BS	
Istanbul 5		M04	BT-C56.KB			58B			1659B	
Istanbul 6		M01S				109			1609S	
Istanbul 7		M01				8-1			1609	
Istanbul 8		M02S				109B			1609BS	
Istanbul 9		M02							1609B	
Istanbul 10		M05S				9T			1645S	
Istanbul 11		M05				8-1T			1645	
Istanbul 12		M06S				9BT			1645BS	
Istanbul 13		M06				8B1T			1645B	
London	FP/D			EA560						
Los Angeles 1	DRM1-S		M3							VGME-1
Los Angeles 2	DRM1-S	T01	M32		38		L4B		8	VGME-2
Los Angeles 3	DRM1-S	T01	M37		38		L4B		8	VGME-3
Madrid		B07				502			1724	
Melbourne 1	FP/D	P04U			52	2 (UK)			A4	
Melbourne 2	FP/D					2 (US)				D
Miami 1					16					AV
Miami 2		B04/B04U	BT-PNT		160	6	16		60	A
Milan 1	DR1-S		M7N							
Milan 2	DR1-S		M74							
Munich 1	FP/D	P02			100		21 4	3 CE Shor	20	
Munich 2	FP/D	P04			110	21	21A			C
Munich 3	FP/D	P04T			110	21	43 CU Shor		11	HV
Munich 4	FP/D	P01			200		51	43 CE Long	10	
Munich 5	FP/D	P03			240	521	52	43 DIN	24	VGMH
New York 1	FG	B02	MG1		190		L3		19	VGMC-1
New York 2	FG	B012	MG12		192				192	VGMC-12
New York 3	FG	B013	MG13		193				193	
New York 4	FG	BP02	MG1S20						1520	
Paris			M7D							
Rio 1 - 4	Europa	T03	BT-RN		42		2		12	
Rio 2 - 5	Europa	T03D	BT-RN.RU		42D		Uniten 2		12.DIN	
Rio 3 - 6	Europa						Uniten 2K			
Rome 1		P08							95	
Rome 2		P08+C02							96	
Rome 3		P08+C03							97	
Salvador 1	Simplex	T04	BT-FN		43		3		13	VGMB
San Francisco	FA	B01	BT-AR		118		37B		18	VGMA
Sao Paulo 1							5			
Sao Paulo 2							5H2			
Sao Paulo 3							Uniten 5			
Sao Paulo 4		T06D	BT-FH				Uniten 5K			
Sydney 1		P05U			51	1 (US)			A5	E
Sydney 2						1 (US)				
AU 1										
AU 2		S06			4S				24.DINS	
AU 3		S05			4L			DIN	24.DINL	
AU 4										
AU 5		S09				AG			23	
AU 6				LA						
AU 7				LA						

Cross Reference Table

AU 8										
CityLine	MeccanotecnicaUmbra	Aesseal	Burgmann	Eagle	Flowserve (Pac-Seal)	John Crane	Roten	Sealol	Vulcan	US Seal
AU 9										
AU 10				LN						
AU 11										
AU 12						WM				
BR 1		S04				N (DIN)			24 STAT	1
BR 2						NG				1
BR 3						N				1
BR 4						2100 Sta.				1
BR 5										1
BR 6										1
BR 7										1
BR 8										1
BR 9										1
DE 1							Roten long, face shrink-fitted			
DE 2							Roten long, narrow face			
DE 3							Roten short, narrow face			
DE 4							Roten short, flat face			
DE 5							Roten short, face shrink-fitted			
ES 1						BO				
ES 2		S010				BP				
ES 3		S010				BD				
ES 4										
ES 5						PP				
FR 1						WG				3
FR 2		S07			1H	W			21	3
FR 3										3
FR 4										3
FR 5										3
FR 6										3
FR 7										3
FR 8										
FR 9										
NL 1							Uniten DIN long, narrow face			
NL 2							Uniten DIN short, narrow face			
NL 3							Uniten DIN lomg, face shrink-fitted			
NL 4							Uniten short, face shrink-fitted			
RU 1										
RU 2				LE						
RU 4										
TR 1										27
TR 2										27
TR 3		S08				V			25	27
TR 4										27
UK 1							Uniten DIN short, flat face			
UK 2							Uniten DIN long, flat face			
US 1		S040	G606			M			19B.STAT	G60
US 2			G50							G50
US 3		S01	G4						8.STD	G4
US 4		S01SL	S5							
US 5		S03	G6		8S				8.DINS	G6
US 6			G606							G606
US 7		S02	G9		8L				8.DINL	G9
US 9			G9							
US 10			G13							G13
US 11			G46							
US 12			G16							
US 13			G7							

General Catalog Rev. 1.1

CITY LINE

world wide seals

CiTY LiNE
9105 Seguin Drive Suite F - Pharr, TX 78577
Phone: 01 (956) 782 2400 X223
info.usa@citylineseals.com
www.citylineseals.com

a brand of MeccanotecnicaUmbraGroup