

- A – Seat/Mating Ring
- B – Face/Primary Ring
- C – Spring
- D – Retainer
- E – Gland

Spiral Groove Face



### Product Description

Utilizing proven spiral groove technology, the Type 28VL harnesses the rotational energy of the pump shaft to vaporize the process fluid at a controlled rate, creating a stable gas film that lubricates the seal faces.

- Typical problems, such as dry-running wear, vapor lock in the seal chamber, and “face popping” (which can lead to catastrophic failure of conventional wet seals), are eliminated by the Type 28VL non-contacting seal technology.
- For use on pumps where the process fluid is at or near its point of vaporization.

### Performance Capabilities\*

- Temperature: -40°C to 204°C/-40°F to 400°F
- Pressure: up to 124 bar g/1800 psig per seal face
- Speed: up to 180 m/s / 590 ft./sec.
- End play/axial float allowance:  $\pm 3.175\text{mm}/0.125\text{''}$
- Runout/out of squareness:  $0.051\text{mm}/0.002\text{''}$

\*For applications exceeding the standard design conditions, consult John Crane.

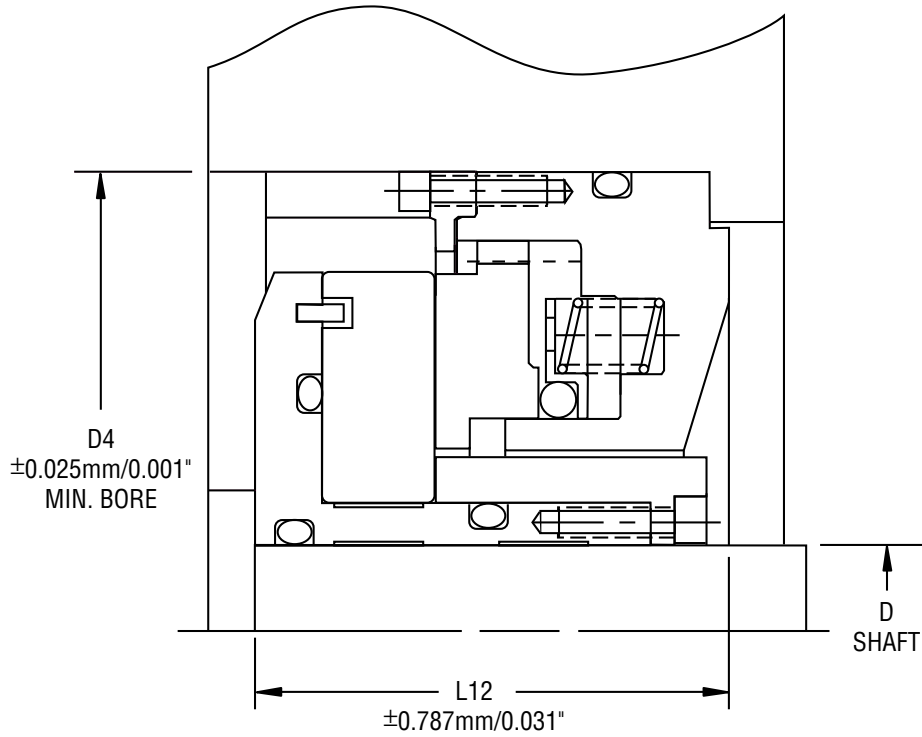
### Design Features

- Extended wear life
- Outstanding reliability
- Reduced power consumption
- Zero process contamination
- Reduced emissions
- Options available

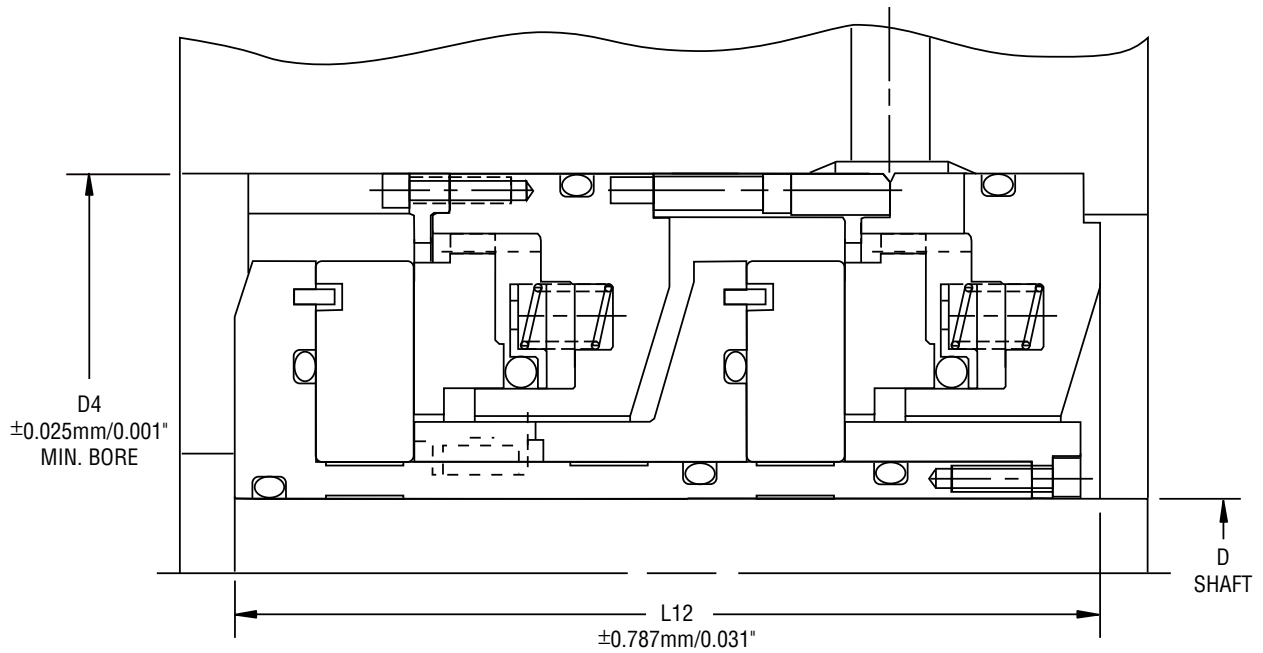
# TYPE 28VL

## NON-CONTACTING, VAPORIZING LIQUID SEAL

### Type 28VL Single Typical Arrangement/Dimensional Data



### Type 28VL Tandem Typical Arrangement/Dimensional Data



# TYPE 28VL

## NON-CONTACTING, VAPORIZING LIQUID SEAL

Technical Specification

### Type 28VL Dimensional Data (mm)

Seal Size (mm)	D Shaft Range	D4	L12	
			Single Min.	Tandem Min.
56	25.4 - 29.0	104.8	46.4	99.2
62	29.0 - 34.9	111.9	46.8	99.2
68	35.0 - 41.3	119.5	47.2	99.6
75	41.3 - 46.8	126.2	47.2	99.6
81	46.8 - 53.2	133.7	47.6	100.0
87	53.2 - 59.5	140.9	48.4	100.4
94	59.5 - 65.1	148.0	48.8	100.8
100	65.1 - 71.4	155.2	48.8	100.8
106	71.5 - 77.0	162.3	49.2	101.2
113	77.0 - 82.9	169.4	50.0	101.6
119	83.0 - 88.9	177.0	50.0	101.6
125	88.9 - 94.8	183.7	50.8	102.8
132	94.9 - 101.2	191.3	51.6	104.4
138	101.2 - 107.1	198.4	52.0	104.8
144	107.2 - 113.1	205.6	52.8	106.3
151	113.1 - 119.0	212.7	53.6	108.0
156	119.1 - 123.4	217.9	54.8	109.5
162	123.4 - 129.8	225.4	55.1	110.7
168	129.8 - 135.7	232.6	55.5	111.5
175	135.7 - 141.7	239.7	56.3	112.3
181	141.7 - 147.6	246.8	57.2	114.3
187	147.7 - 153.6	254.0	57.9	115.9
194	153.6 - 159.9	261.1	58.7	117.5
200	159.9 - 165.9	268.7	59.5	119.0
206	165.9 - 171.8	277.8	59.9	119.5
213	171.9 - 177.4	285.3	60.7	121.0
219	177.4 - 183.3	292.1	61.5	122.2
225	183.4 - 189.7	299.6	62.3	123.8
232	189.7 - 195.7	306.8	63.1	125.4
238	195.7 - 201.6	313.9	63.5	126.2
244	201.6 - 207.5	321.1	64.3	127.8
251	207.6 - 213.5	328.2	65.1	129.4
257	213.5 - 219.9	335.4	65.5	130.2

Smaller cross-section seals and seals for larger shaft diameters are available.  
Contact John Crane.

### Type 28VL Dimensional Data (inches)

Seal Size (inches)	D Shaft Range	D4	L12	
			Single Min.	Tandem Min.
2.187	1.000 - 1.140	4.125	1.828	3.906
2.437	1.141 - 1.375	4.406	1.843	3.906
2.687	1.376 - 1.625	4.703	1.859	3.921
2.937	1.626 - 1.843	4.968	1.859	3.921
3.187	1.844 - 2.093	5.265	1.875	3.937
3.437	2.094 - 2.343	5.546	1.906	3.953
3.687	2.344 - 2.562	5.828	1.921	3.968
3.937	2.563 - 2.812	6.109	1.921	3.968
4.187	2.813 - 3.031	6.390	1.937	3.984
4.437	3.032 - 3.265	6.671	1.968	4.000
4.687	3.266 - 3.500	6.968	1.968	4.000
4.937	3.501 - 3.734	7.234	2.000	4.046
5.187	3.735 - 3.984	7.531	2.031	4.109
5.437	3.985 - 4.218	7.812	2.046	4.125
5.687	4.219 - 4.453	8.093	2.078	4.187
5.937	4.454 - 4.687	8.375	2.109	4.250
6.125	4.688 - 4.859	8.578	2.156	4.312
6.375	4.860 - 5.109	8.875	2.171	4.359
6.625	5.110 - 5.343	9.156	2.187	4.390
6.875	5.344 - 5.578	9.437	2.218	4.421
7.125	5.579 - 5.812	9.718	2.250	4.500
7.375	5.813 - 6.046	10.000	2.281	4.562
7.625	6.047 - 6.296	10.281	2.312	4.625
7.875	6.297 - 6.531	10.578	2.343	4.687
8.125	6.532 - 6.765	10.937	2.359	4.703
8.375	6.766 - 6.984	11.234	2.390	4.765
8.625	6.985 - 7.218	11.500	2.421	4.812
8.875	7.219 - 7.468	11.796	2.453	4.875
9.125	7.469 - 7.703	12.078	2.484	4.937
9.375	7.704 - 7.937	12.359	2.500	4.968
9.625	7.938 - 8.171	12.640	2.531	5.031
9.875	8.172 - 8.406	12.921	2.562	5.093
10.125	8.407 - 8.656	13.203	2.578	5.125

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### Materials of Construction

SEAL COMPONENTS	MATERIALS	
	Description	Standard
Face/Primary Ring	Carbon	—
Seat/Mating Ring	Tungsten Carbide	Silicon Carbide Coatings on Ductile Substrates
Retainer* Disc* Drive Band*	410 Stainless Steel	Alloy C-276 (UNS N10276) Alloy B-2 Alloy 20CB3 SS Monel® Inconel® X-750 316 Stainless Steel
O-ring	Fluoroelastomer	Nitrile Silicone Fluorosilicone Aflas® Kalrez® Neoprene® Ethylene Propylene Spring-Energized Polymers
Springs*	Alloy C-276 (UNS N10276)	Alloy 20CB3 SS Alloy B-2 Monel Inconel X-750 316 Stainless Steel

\*NACE #MR-01-75 compliant materials are available.

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