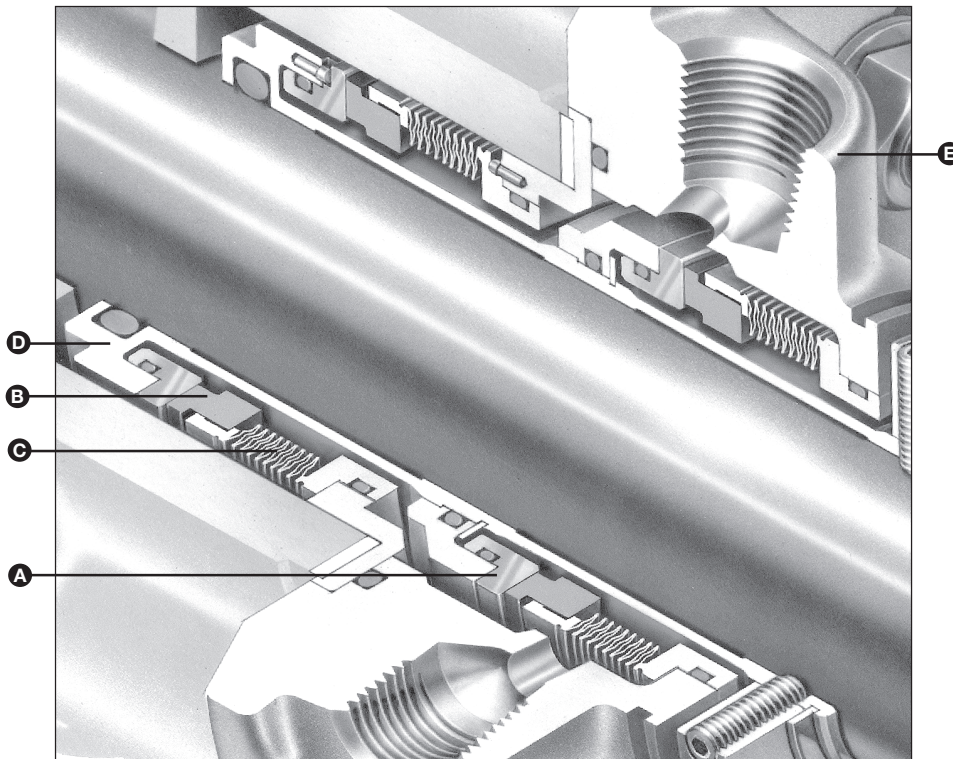


TYPE 5625/5625P

DUAL METAL BELLOWS SEALS

Technical Specification

- A – Face/Primary ring
- B – Seat/Mating ring
- C – Metal bellows seal head
- D – Sleeve
- E – Gland



Product Description

The 5600 Series is a modular cartridge seal family that includes interchangeable elastomer bellows, metal bellows, and elastomer O-ring pusher seal designs.

- The Type 5625 and 5625P dual seal arrangements incorporate an edge-welded metal bellows seal head.
- Primary and mating ring reverse balance designs allow for ID or OD pressurization, which permits the dual seal to operate as a tandem or double. Positive seal face closing forces are maintained in an upset pressure reversal situation.
- OD pressurization of the outboard seal avoids subjecting components to high tensile stresses and achieves improved cooling. For vertical installations, it allows venting of entrapped air.

Design Features

- Reversible seal heads
- Tangential inlet and outlet pipe connections
- ANSI B73.1M and DIN 24960 pump-compliant
- Optimized pressure balanced design
- Set screwless outboard seal drive
- Chemical-resistant metal bellows secondary seal

Performance Capabilities

Temperature:	-29° to 204°C/-20° to 400°F
Pressure:	21 barg/300 psig
Speed:	Up to 25 m/s/5,000 fpm
End play/axial float allowance:	0.13mm/0.005"
Runout/out of squareness:	0.05mm/0.002"

Available with John Crane Diamond® Technology

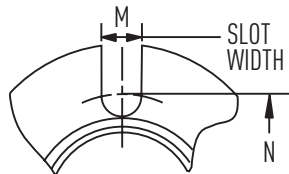
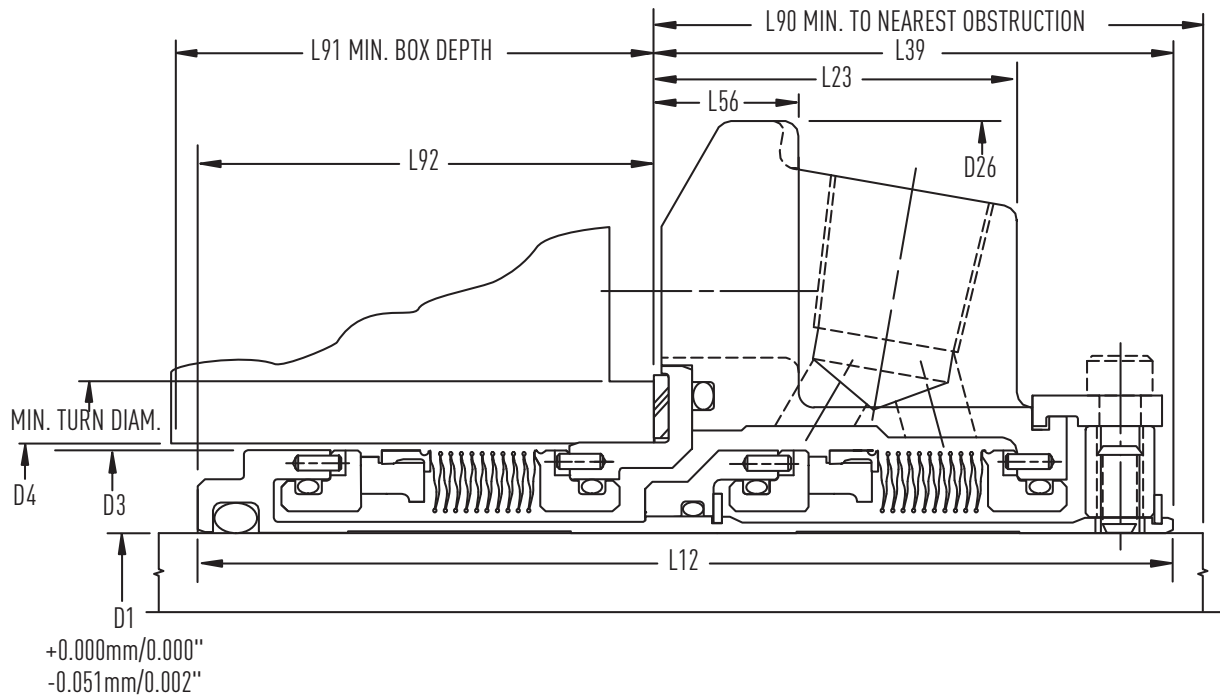
- Brings the features and benefits of pure diamond to mechanical seals
- Withstands abrasive, chemically-aggressive, poor-lubricating and intermittent, dry-running applications
- Reduces energy consumption and cooling requirements



TYPE 5625/5625P

DUAL METAL BELLOWS SEALS

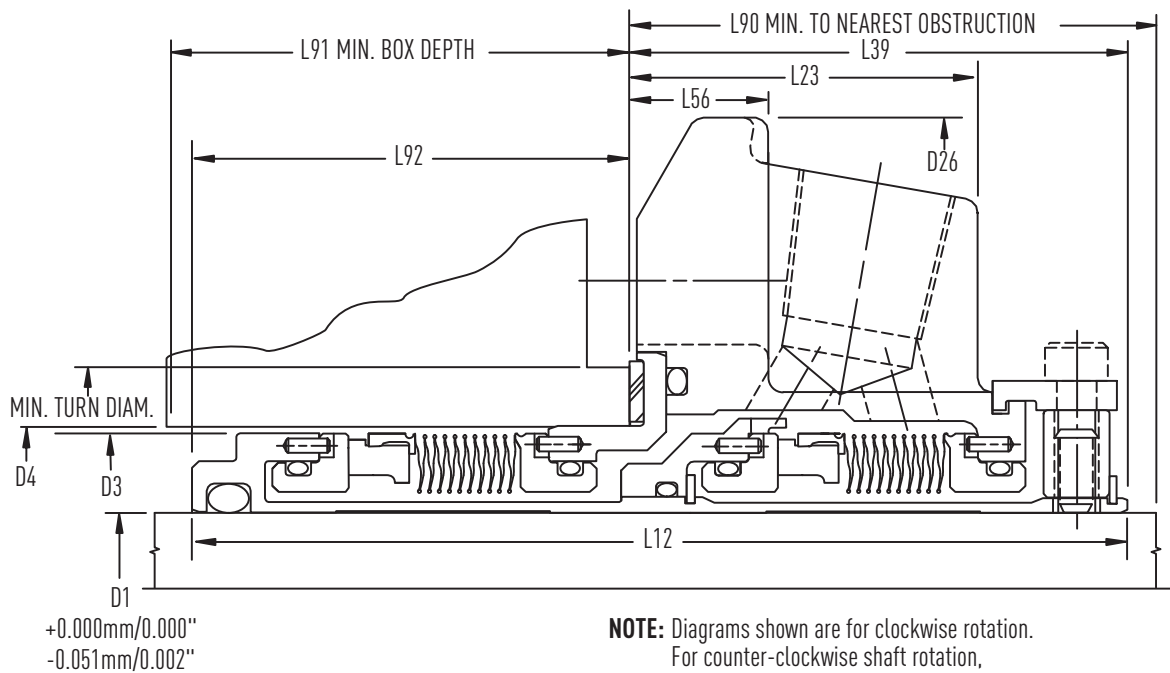
Type 5625 Typical Arrangement



NOTE:

Direction of view is from the driver end of pump. For tangential tapplings only. Gland can be rotated to fit both DIN and ANSI pump type.

Type 5625P Typical Arrangement



NOTE: Diagrams shown are for clockwise rotation.

For counter-clockwise shaft rotation, consult John Crane Engineering.



TYPE 5625/5625P

DUAL METAL BELLOWS SEALS

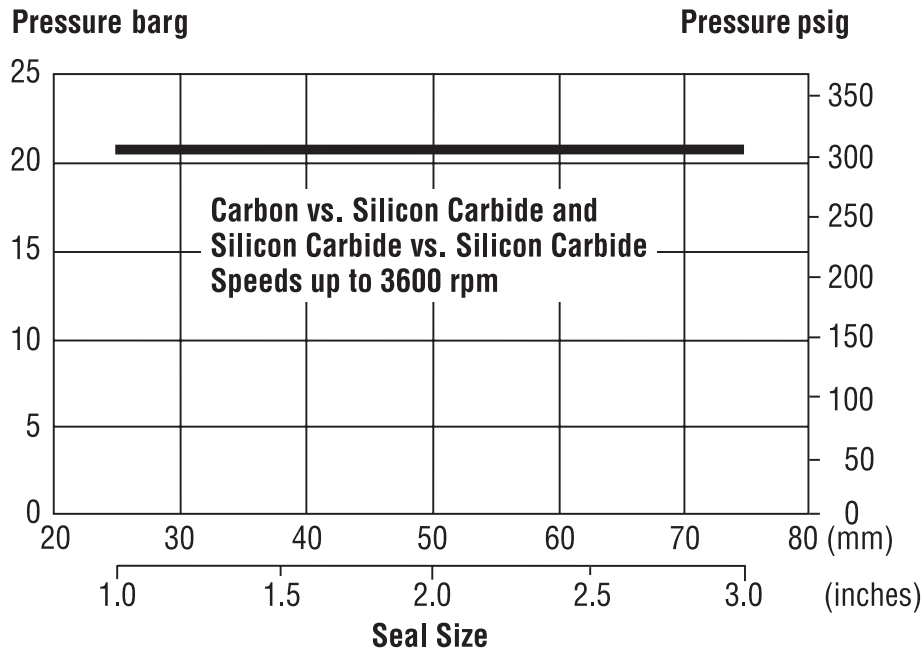
Technical Specification

Type 5625/5625P Dimensional Data (Inches)													
Size D1	D3	D4		D26	L12	L23	L39	L56	L90	L91	L92	M	N
		Min.	Max.										
1.000	1.564	1.625	1.889	4.000	3.705	1.353	1.954	0.531	2.000	1.876	1.751	0.525	2.805
1.125	1.689	1.750	2.015	4.125	3.851	1.446	2.062	0.531	2.125	1.914	1.789	0.525	2.933
1.250	1.812	1.875	2.294	4.250	3.851	1.446	2.062	0.531	2.125	1.914	1.789	0.525	3.213
1.375	1.939	2.000	2.421	4.375	3.851	1.446	2.062	0.531	2.125	1.914	1.789	0.525	3.338
1.500	2.187	2.250	2.680	4.875	3.995	1.487	2.125	0.593	2.187	1.995	1.870	0.525	3.599
1.625	2.312	2.375	2.812	5.000	3.995	1.487	2.125	0.593	2.187	1.995	1.870	0.562	3.766
1.750	2.420	2.480	2.918	5.250	3.995	1.487	2.125	0.593	2.187	1.995	1.870	0.562	3.875
1.875	2.562	2.625	2.918	5.250	3.995	1.487	2.125	0.593	2.187	1.995	1.870	0.562	3.875
2.000	2.687	2.750	3.015	5.500	4.355	1.601	2.312	1.063	2.375	2.167	2.042	0.562	4.000
2.125	2.812	2.875	3.360	5.859	4.355	1.601	2.312	0.593	2.375	2.167	2.042	0.687	4.469
2.250	2.937	3.000	3.485	6.500	4.355	1.601	2.312	0.593	2.375	2.167	2.042	0.687	4.566
2.375	3.062	3.125	3.610	6.500	4.545	1.717	2.466	0.625	2.528	2.204	2.079	0.687	4.719
2.500	3.312	3.375	3.891	6.750	4.545	1.717	2.563	0.625	2.625	2.107	1.982	0.687	5.000
2.625	3.562	3.625	4.062	6.750	4.594	1.625	2.500	0.625	2.562	2.219	2.094	0.687	5.170
2.750	3.562	3.625	4.062	6.750	4.594	1.625	2.500	0.625	2.562	2.219	2.094	0.687	5.170
2.875	3.687	3.750	4.186	7.000	4.594	1.725	2.500	0.625	2.562	2.219	2.094	0.687	5.312
3.000	3.937	4.000	4.469	7.750	4.594	1.787	2.562	0.685	2.625	2.157	2.032	0.812	5.720

Type 5625/5625P Large Bore Dimensional Data (Inches)														
Size D1	D3	D4		D26	L12	L23	L39	L56	L90	L91	L92	M	N	Min. Turn Dia.
		Min.	Max.											
1.375	1.939	2.875	3.023	5.375	3.851	1.446	2.062	0.625	2.125	1.914	1.789	0.562	4.062	3.268
1.750	2.420	3.500	3.925	6.500	3.995	1.487	2.125	0.656	2.187	1.995	1.870	0.687	5.093	3.885
1.875	2.562	3.625	3.734	6.500	3.995	1.487	2.125	0.656	2.187	1.995	1.870	0.687	5.093	4.006
2.125	2.798	3.875	4.250	7.156	4.355	1.570	2.282	0.749	2.407	2.198	2.073	0.687	5.687	4.264
2.500	3.312	4.750	4.875	8.000	4.545	1.697	2.407	0.656	2.532	2.263	2.138	0.687	6.062	5.139
2.625	3.562	4.625	4.740	8.000	4.594	1.788	2.500	0.749	2.562	2.219	2.094	0.687	6.062	5.000
2.750	3.551	4.750	4.875	8.000	4.594	1.697	2.407	0.656	2.532	2.312	2.187	0.687	6.062	5.139

Type 5625/5625P Dimensional Data (mm)														
Size D1	Size Code	D3	D4		D26	L12	L23	L39	L56	L90	L91	L92	M	N
			Min.	Max.										
24	0240	39.7	41.3	48.0	101.6	94.1	34.4	49.6	13.5	50.8	47.7	44.5	13.3	71.2
25	0250	39.7	41.3	48.0	101.6	94.1	34.4	49.6	13.5	50.8	47.7	44.5	13.3	71.2
28	0280	42.9	44.5	51.2	104.8	97.8	36.7	52.4	13.5	54.0	48.6	45.4	13.3	74.5
30	0300	44.8	46.1	56.5	108.0	97.8	36.7	52.4	13.5	54.0	48.6	45.4	13.3	79.9
32	0320	46.0	47.6	58.3	108.0	97.8	36.7	52.4	13.5	54.0	48.6	45.4	13.3	81.6
33	0330	49.3	50.8	61.5	111.1	97.8	36.7	52.4	13.5	54.0	48.6	45.4	13.3	84.8
35	0350	49.3	50.8	61.5	111.1	97.8	36.7	52.4	13.5	54.0	48.6	45.4	13.3	84.8
38	0380	55.6	57.2	68.1	123.8	101.5	37.8	54.0	15.1	55.5	50.7	47.5	13.3	91.4
40	0400	58.7	60.3	71.4	127.0	101.5	37.8	54.0	15.1	55.5	50.7	47.5	14.3	95.7
43	0430	61.5	63.0	74.1	133.4	101.5	37.8	54.0	15.1	55.5	50.7	47.5	14.3	98.4
45	0450	61.5	63.0	74.1	133.4	101.5	37.8	54.0	15.1	55.5	50.7	47.5	14.3	98.4
48	0480	65.1	66.7	74.1	133.4	101.5	37.8	54.0	15.1	55.5	50.7	47.5	14.3	98.4
50	0500	68.3	70.0	76.6	139.7	110.6	40.7	58.7	27.0	60.3	55.0	51.9	14.3	101.6
53	0530	71.4	73.0	85.3	148.8	110.6	40.7	58.7	15.1	60.3	55.0	51.9	17.4	113.5
55	0550	73.0	75.0	85.3	148.8	110.6	40.7	58.7	15.1	60.3	55.0	51.9	17.4	113.5
58	0580	74.6	76.2	88.5	165.1	110.6	40.7	58.7	15.1	60.3	55.0	51.9	17.4	116.0
60	0600	77.8	79.4	91.7	165.1	115.4	43.6	62.6	15.9	64.2	56.0	52.8	17.4	119.9
63	0630	84.1	85.7	98.8	171.5	115.4	43.6	65.1	15.9	66.7	53.5	50.3	17.4	127.0
65	0650	84.1	85.7	98.8	171.5	115.4	43.6	65.1	15.9	66.7	53.5	50.3	17.4	127.0
68	0680	90.5	92.1	103.2	171.5	116.7	41.3	63.5	15.9	65.1	56.4	53.2	17.4	131.3
70	0700	90.5	92.1	103.2	171.5	116.7	41.3	63.5	15.9	65.1	56.4	53.2	17.4	131.3
75	0750	100.0	101.6	113.5	196.9	116.7	45.4	65.1	17.4	66.7	54.8	51.6	20.6	145.3

Pressure Rating Limits



1. When Carbon face is used, temperature limit is 200°C/393°F.
2. For Silicon Carbide vs. Tungsten Carbide temperature limits, consult John Crane.

Multiplier Factors

	Selection Consideration	Multiplier Factor
Sealed fluid lubricity	Petrol/Gasoline, kerosene or better	x 1.00
	Water and aqueous solutions	x 0.75
	Flashing Hydrocarbons (specific gravity <0.65, etc.)	x 0.60
Sealed fluid temperature	Up to 80°C/175°F	x 1.00
	80° to 120°C/ 175° to 250°F	x 0.90
	120° to 180°C/ 250° to 355°F	x 0.80
	180° to 230°C/ 355° to 445°F	x 0.65

Example of determining pressure rating limits:

Seal: 50.8 mm/2.0" diameter Type 5625
 Operating mode: Pressurized dual
 Barrier fluid: Aqueous solution
 Face materials: Silicon carbide vs. silicon carbide
 Operating temperature: 80°C/175°F
 Operating speed: 2,950 rpm

Using the pressure rating limits graph, the maximum pressure would be 21 barg/300 psig.

From the Multiplier Factors table on the left, apply the multipliers for the specific service requirements to determine the maximum operating pressure for the application:

$$21 \text{ barg/300 psig} \times 0.75 \times 0.90 = 14 \text{ barg/203 psig}$$

The maximum operating pressure for this 50.8mm/2" Type 5625 seal is 14 barg/203 psig.

TYPE 5625/5625P

DUAL METAL BELLOWS SEALS

Maximum Pressure Limits

Tandem Type 5625*	
Process Pressure	
21 barg/300 psig	
Double Type 5625*	
Barrier Fluid Pressure**	Inboard Seal Internal Pressure Rating***
21 barg/300 psig	2 to 4 barg/20 to 50 psig (normal) 10 barg/150 psig (max. operating) 21 barg/300 psig (max. static)

* Barrier fluid pressure relative to seal chamber pressure (API Plan 52 or 53) determines usage of the cartridge. As a tandem, the buffer pressure is lower than process pressure; or as a double, the barrier pressure is higher than process fluid pressure to be sealed.

** John Crane recommends barrier fluids having a viscosity less than 14cSt/65 SSU and fluid lubricity that is equal to or better than water at 38°C/100°F.

*** Inboard seal (process side) internal pressure rating is defined as the barrier fluid pressure minus the seal chamber throat pressure.

Materials of Construction

SEAL COMPONENTS	MATERIALS	
Description	Standard	Options
Face/Primary ring	Resin-impregnated carbon	Silicon carbide Nickel binder tungsten carbide
Seat/Mating ring	Silicon carbide	John Crane Diamond® Nickel binder tungsten carbide
Sleeve Gland Collar Gland adapter Sleeve adapter	316 stainless steel	Alloy 20CB3 SS Alloy C-276 (UNS N10276)
O-ring	Flouoroelastomer Ethylene Propylene	Perfluoroelastomer Buna-N
Bellows	Alloy 20CB3 SS	Alloy C-276 (UNS N10276)

Application Criteria

The Type 5625 and 5625P cartridge seals may be customized for specific installations after review and evaluation by John Crane. The following data is needed to evaluate the proposed service:

- Make and model of equipment
- Shaft or sleeve OD
- Direction of shaft rotation viewed from drive end
- Seal cavity dimensions
- Buffer/Barrier fluid
- Process fluid
 - Specific gravity
 - Box pressure
 - Vapor pressure
 - Temperature
 - Viscosity
- Speed

TYPE 5625/5625P

DUAL METAL BELLOWS SEALS



North America
United States of America
Tel: 1-847-967-2400

Europe
United Kingdom
Tel: 44-1753-224000

Latin America
Brazil
Tel: 55-11-3371-2500

Middle East & Africa
United Arab Emirates
Tel: 971-481-27800

Asia Pacific
Singapore
Tel: 65-6518-1800

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