

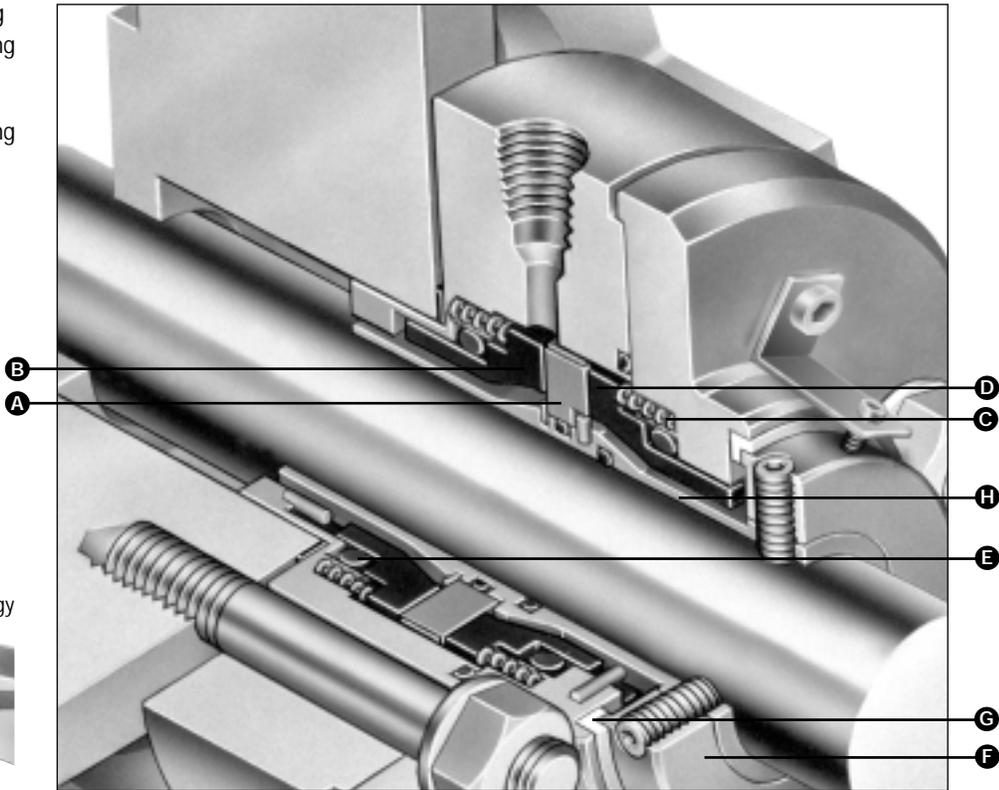


TYPE 2800E

Externally Mounted, Gas Lubricated,
Non-Contacting, Double Cartridge Seal

2800E

- A – Seat/Mating Ring
- B – Face/Primary Ring (inboard)
- C – Spring
- D – Face/Primary Ring (outboard)
- E – O-Ring
- F – Drive Collar
- G – Setting Ring
- H – Sleeve



Spiral Groove Technology



Product Description

Type 2800E is a state-of-the-art gas lubricated, non-contacting double seal cartridge for use in ANSI or DIN standard bore pumps or limited space applications. The 2800E provides zero emissions operation, extended seal life, reduced power consumption, and elimination of wet seal lubrication system. It uses an available pressurized inert gas source for positively sealing hazardous process fluids with zero emissions to atmosphere. Non-contacting, dry-running technology provides high performance sealing of heat sensitive or high purity fluids.

- For Maximum Achievable Control Technology compliance in new or existing standard bore pumps.
- For high reliability sealing of volatile fluids in chemical and petrochemical processes.
- Double seal alternative for positive sealing of high purity fluids without the potential for product contamination.

Design Features

- 0.0 Fugitive Emissions
- Compact Design
- Dual Balance Inboard Seal Design
- Spiral Groove Technology
- Non-Contacting Design
- Simplified Support System

Performance Capabilities

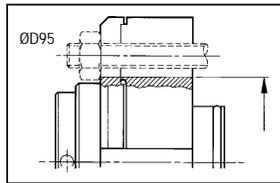
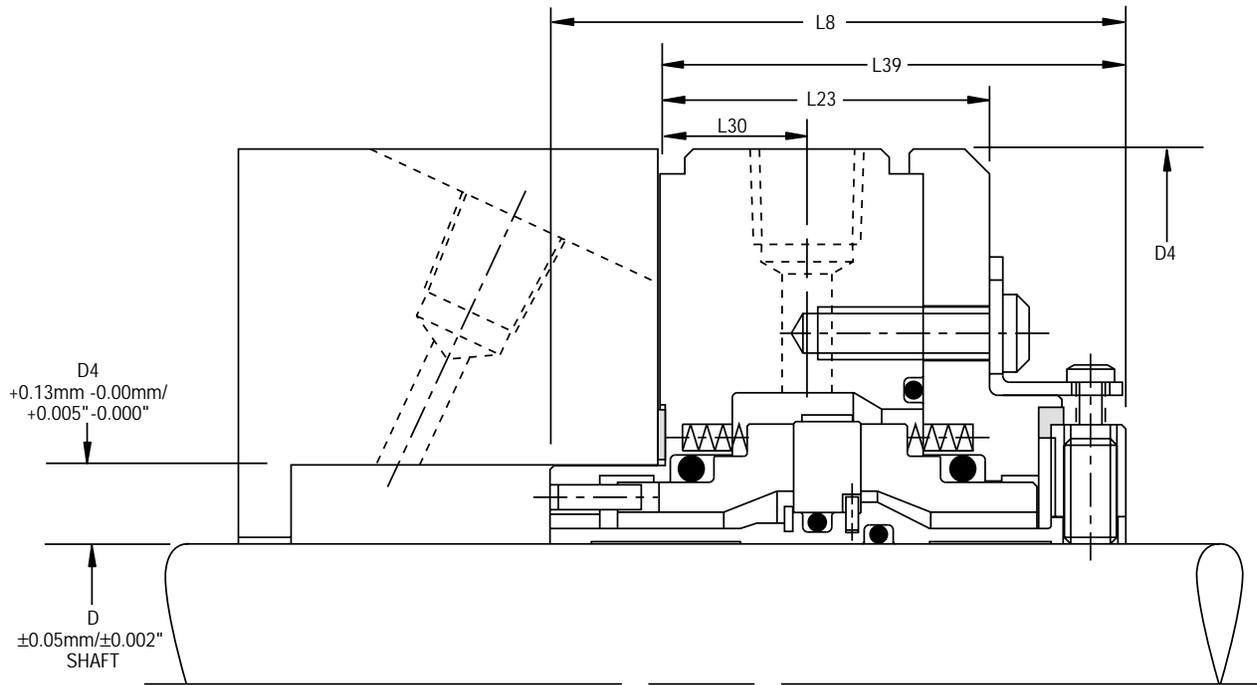
- Temperature:
-40°C to 260°C / -40°F to 500°F
 - Pressure:
Up to 16 bar g / 232 psig
 - Speed:
Up to 25 m/s / 5000 fpm
- Higher operating conditions are achievable. Consult John Crane Engineering.



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Type 2800E Typical Arrangement/Dimensional Data



ØD95 is the minimum possible dimension between diametrically opposed fixing bolts. ØD28 is the bolt slot width.

Type 2800E Dimensional Data (mm)

Seal Size (mm)	Seal Size Code	D	D4 Min.	D26	D28	D95	L8	L23	L30	L39
25	0250	25	41	114	12	64.7	67.8	37.5	15.5	54.5
28	0280	28	44	117	12	67.7	67.8	37.5	15.5	54.5
30	0300	30	46	119	12	69.7	67.8	37.5	15.5	54.5
33	0330	33	49	122	14	72.7	67.8	37.5	15.5	54.5
35	0350	35	51	124	14	74.7	67.8	37.5	15.5	54.5
38	0380	38	58	135	14	79.7	69.4	39.8	17.7	56.5
40	0400	40	60	137	14	81.7	69.4	39.8	17.7	56.5
43	0430	43	63	140	14	84.7	69.4	39.8	17.7	56.5
45	0450	45	65	142	14	86.7	69.4	39.8	17.7	56.5
50	0500	50	70	147	18	91.7	69.4	41.8	17.7	56.5
53	0530	53	73	150	18	94.7	69.4	41.8	17.7	56.5
55	0550	55	75	152	18	96.7	69.4	41.8	17.7	56.5
60	0600	60	85	157	18	101.7	69.4	41.8	17.7	56.5
65	0650	65	90	180	18	106.7	71.4	43.8	19.7	58.5
80	0800	80	109	195	18	121.7	71.4	43.8	19.7	58.5
100	1000	100	129	215	22	141.7	71.4	43.8	19.7	58.5



TYPE 2800E

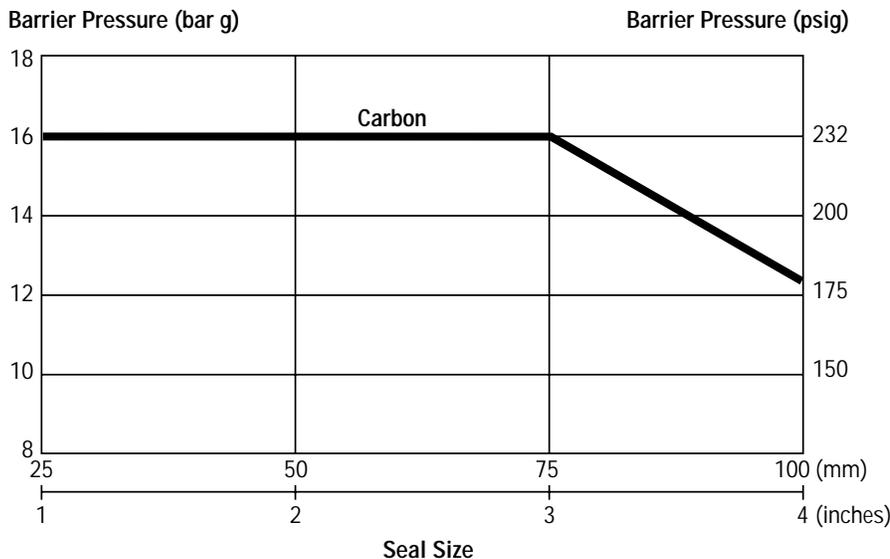
Externally Mounted, Gas Lubricated,
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Type 2800E Dimensional Data (inches)

Seal Size/D1 (inches)	D4	D26	D28	D95	L8	L23	L30	L39
0.875	1.500	3.750	0.437	2.295	2.574	1.398	0.531	2.028
1.000	1.625	3.750	0.437	2.421	2.574	1.398	0.531	2.028
1.125	1.750	4.250	0.437	2.469	2.574	1.398	0.531	2.028
1.250	2.000	4.250	0.437	2.669	2.574	1.398	0.531	2.028
1.375*	2.125	4.250	0.437	2.795	2.574	1.398	0.531	2.028
1.375**	2.000	4.250	0.437	2.795	2.574	1.398	0.531	2.028
1.500	2.250	4.875	0.562	3.142	2.732	1.567	0.697	2.224
1.625	2.375	4.500	0.437	3.268	2.732	1.567	0.697	2.224
1.750	2.500	5.500	0.562	3.390	2.732	1.567	0.697	2.224
1.875	2.625	5.500	0.562	3.335	2.732	1.567	0.697	2.224
2.000	2.750	4.750	0.562	3.461	2.732	1.567	0.697	2.224
2.125	2.875	6.000	0.687	3.768	2.732	1.567	0.697	2.224
2.250	3.125	6.500	0.687	3.890	2.732	1.567	0.697	2.224
2.375	3.250	6.250	0.687	4.016	2.732	1.567	0.697	2.224
2.500	3.375	6.500	0.687	4.142	2.812	1.724	0.776	2.303
2.625	3.625	6.500	0.687	4.268	2.812	1.724	0.776	2.303
2.750	3.750	7.000	0.687	4.370	2.812	1.724	0.776	2.303
3.000	4.000	7.000	0.687	4.642	2.812	1.724	0.776	2.303
3.500	4.500	7.250	0.812	5.142	2.812	1.724	0.776	2.303
4.000	5.000	7.250	0.812	5.642	2.812	1.724	0.776	2.303

*Durco **Goulds

Pressure Limits



The Basic Pressure Rating is based on a standard seal installed according to the criteria given in this data sheet at a minimum speed of 1450rpm, and according to generally accepted industrial practices.

Contact John Crane Engineering for process services outside this range and with more detailed application information in order to obtain the actual dynamic pressure rating.



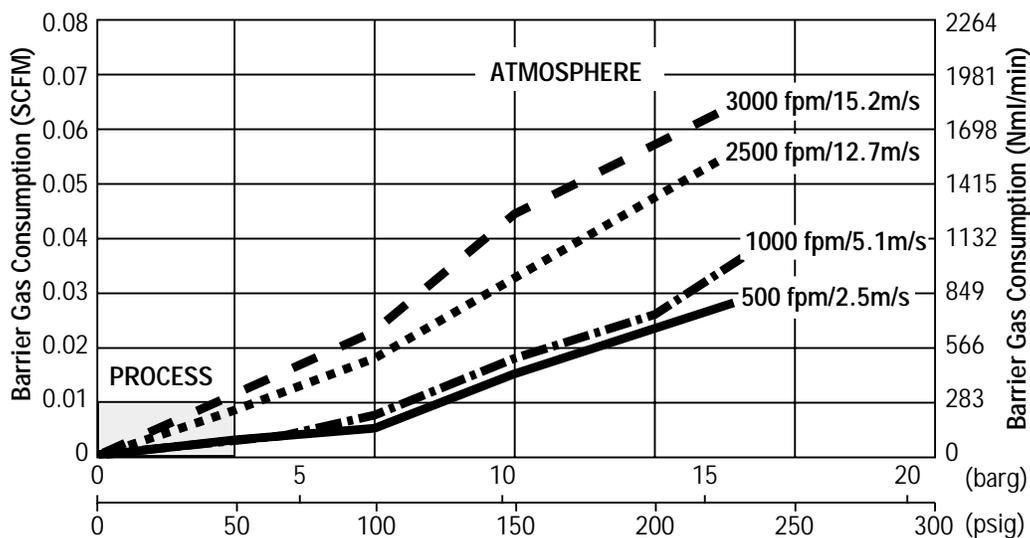
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Criteria for Installation

SHAFT/SLEEVE	LIMITS
Surface Finish	1.6µmRa/63Ra or better
Ovality/Out of Roundness (Shaft)	0.05mm/0.002"
End Play/Axial Float Allowance	±0.08mm/0.003"
Runout/Out of Squareness	0.051mm/0.002"
Shaft Squareness to Housing	0.08mm/0.003"

Barrier Gas Consumption



NOTES:

1. Data based on each seal face.
2. Consumption based on ambient temperature and atmospheric pressure flow indicated by flowmeter at gas inlet is compressed gas and therefore considerably less.

$$\text{fpm} = \text{Seal Size (inches) Dia.} + 0.50" \times \text{rpm} \times 0.2618$$

*Curves are to be used as a **guide only**. Actual consumption rates may vary.
Consult John Crane Engineering if specific application gas consumption data is required.

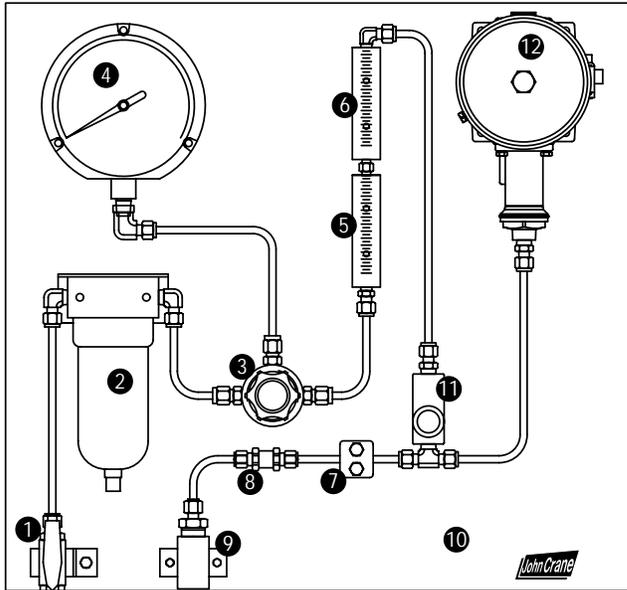


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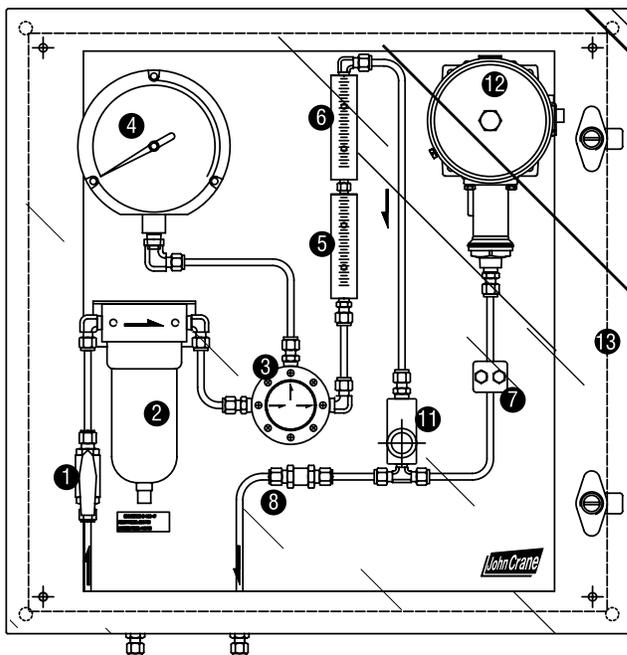
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Barrier Gas Supply Systems

Available from John Crane in both standard Tamperproof Enclosure and Panel Mounted Designs.



Barrier Supply ↑
Seal Chamber ↓



Standard Components

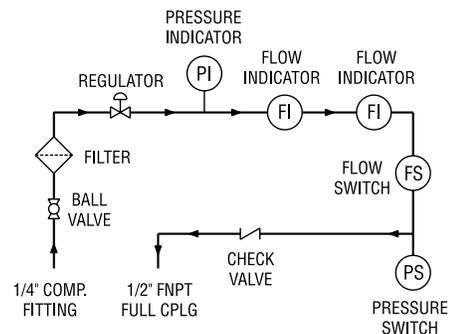
- 1 Isolating Ball Valve
- 2 Coalescing Filter
- 3 Pressure Regulator
- 4 Pressure Gauge
- 5 Flow Meter (Low Range)
- 6 Flow Meter (High Range)
- 7 Tubing Clamp
- 8 Check Valve
- 9 Coupling (To Seal Piping)
- 10 Back Panel

Options

- 11 Flow Switch
- 12 Pressure Switch
- 13 Enclosure
 - Isolast™ and Kalrez® for the Check Valve Seat Material
 - Stand
 - Enclosures are also available in a NEMA 4X Enclosure (as shown)
 - Gas Amplifier/Booster Systems
 - Pressure Tracking Regulators

Further application information is available from John Crane.

GAS FLOW SCHEMATIC





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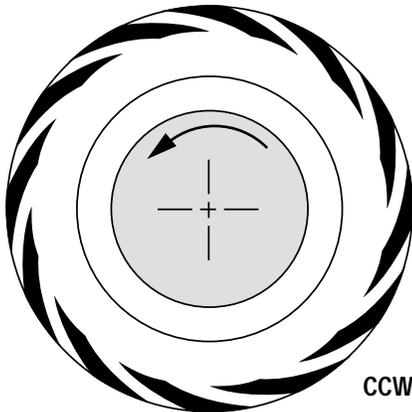
Materials of Construction

SEAL COMPONENTS	MATERIALS	
	Description	Options
Face/Primary Ring	Metal Filled Carbon	Sintered Silicon Carbide (Inboard only)
Seat/Mating Ring	Tungsten Carbide	Silicon Carbide
Cap Head Screws Anti-Rotation Pins Snap Ring Sleeve Gland Plate Spring Set Screws Drive Collar Drive Pins	316 Stainless Steel	Alloy 20GB3 SS (UNS N8020) Alloy C-276 (UNS N10276) Titanium
O-Rings	Fluoroelastomer	Perfluoroelastomer EPR
Setting Ring (Spacer)	Pure PTFE	—
Gasket	PTFE Glass Filled	—

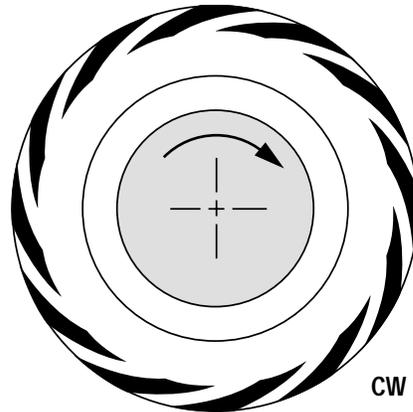
Mating Ring Spiral Groove Pattern

Rotating Mating Ring with clockwise spiral groove pattern.

Rotating Mating Ring with counterclockwise spiral groove pattern.



CCW Shaft Rotation



CW Shaft Rotation



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