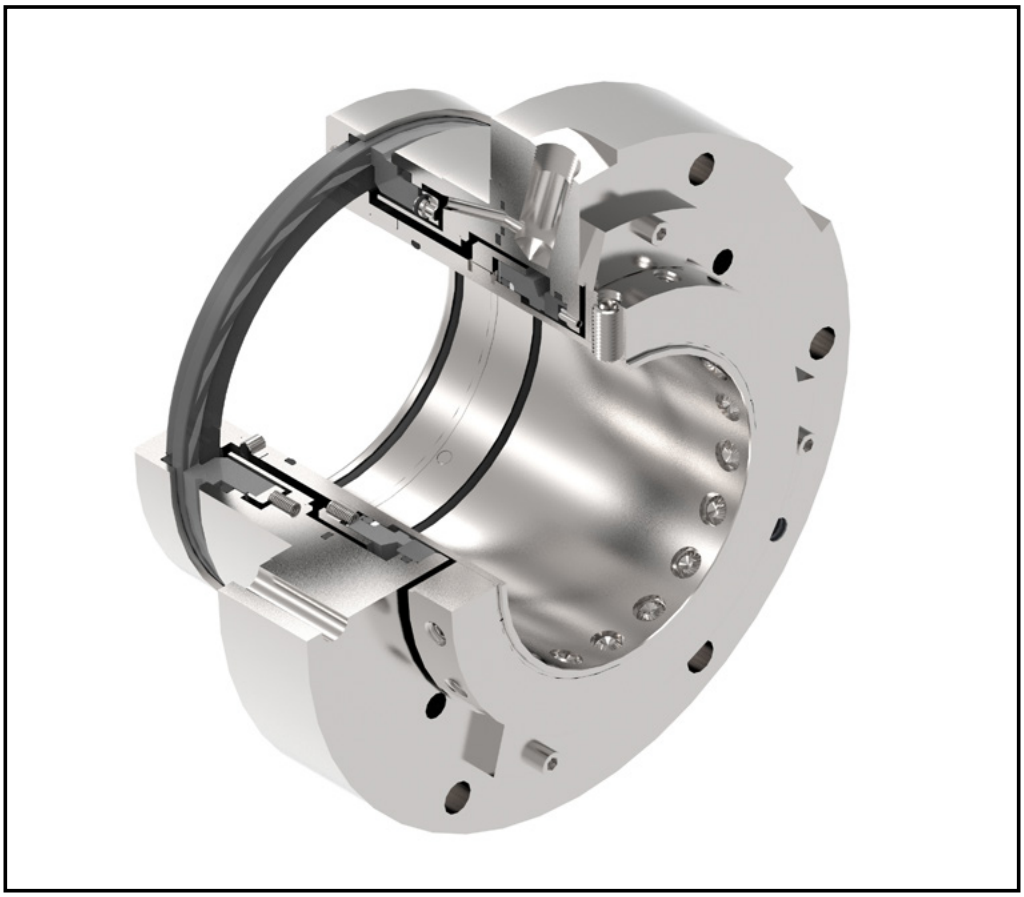
TYPE 5864-USP

DUAL UNPRESSURISED CARTRIDGE SLURRY SEAL

Technical Specification



Product description

- The Type 5864-USP is a ruggedly constructed, dual unpressurised cartridge seal with upstream pumping capabilities to provide reliable service in poor lubricating and dirty environments.
- The seal is designed specifically for use in heavy duty slurry pumps, mixers and other rotating equipment for the mining and mineral industries. Other applications are refineries, chemical/petrochemical processing, water treatment, mining, pulp & paper and other industries where chemicals, low lubricity liquids, caustics, sour water, slurries and toxic products are pumped.
- The Type 5864-USP upstream pumping seal provides the environmental protection of a dual pressurised seal arrangement with the inherent safety and relative simplicity of a dual unpressurised seal arrangement.

Performance capabilities

- Temperature: 80° C (176° F)
- Pressure: Up to 40 Barg (580 PSIG)
- Speed: 500 to 1450 RPM {2.5-25 m/s (500-5000 fpm)}

Design features

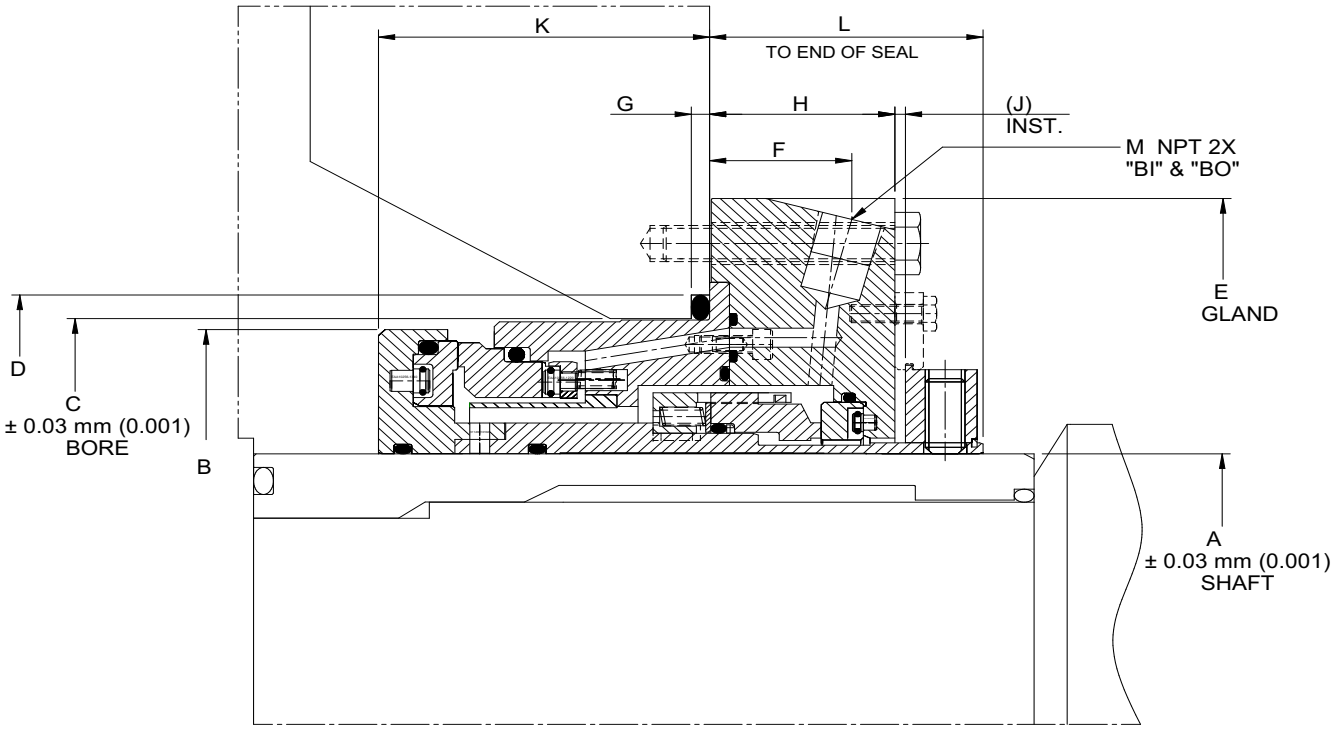
- Non-Contact Face Sealing – Provides reliable sealing for abrasive, low lubricity and multi-phase liquids, because the upstream pumping effect keeps harmful particles away from the seal faces and induces clean barrier fluid between them, resulting in long seal life and low heat generation.
- Spiral Groove Technology – The non-contacting inboard seal uses patented John Crane spiral groove technology to pump a small quantity of a safe, product-compatible barrier liquid upstream to prevent leakage of the product being sealed.
- Low Heat Generation – Seal reliability is enhanced by lower levels of seal heat generation.
- Minimal Seal Exposure to Process – The seal features springs outside of the process fluid and a rotating mating ring with process at the OD. Centrifugal forces aid in buffer fluid flow and help keep solids away from the faces.
- Robust Cushioned Drive Pins – Prevent chipping and damage to seal faces.

TYPE 5864-USP

DUAL UNPRESSURISED CARTRIDGE
SLURRY SEAL

Technical Specification

Typical installation of Type 5864-USP



Type 5864-USP dimensional data (inches)

A (Shaft Size)	B	C	D	E	F	G	H	J	K	L	M
1.968	4.218	5.251	-	5.467	0.384	-	0.910	0.093	1.684	1.456	1/8 NPT
2.361	5.391	5.513	5.894	6.890	0.553	0.115	0.822	0.125	2.007	1.535	1/8 NPT
3.345	6.364	6.408	6.789	8.533	0.574	0.110	0.930	0.125	2.556	1.772	1/4 NPT
3.937	7.236	7.285	7.884	9.567	0.869	0.171	1.326	0.125	3.000	2.365	3/8 NPT
5.117	8.187	8.269	8.882	11.417	1.378	0.170	1.888	0.125	3.437	2.927	1/2 NPT
5.708	9.937	10.631	11.250	13.780	1.191	0.217	1.701	0.125	4.150	3.627	1/2 NPT
6.496	10.343	10.631	11.250	13.780	1.191	0.217	1.703	0.125	3.812	2.750	1/2 NPT
7.086	10.343	10.631	11.250	13.780	1.691	0.217	2.203	0.125	3.937	3.250	1/2 NPT

Type 5864-USP dimensional data (millimeters)

A (Shaft Size)	B	C	D	E	F	G	H	J	K	L	M
50.00	107.14	133.38	-	138.86	9.75	-	23.11	2.36	42.77	36.98	1/8 NPT
60.00	136.92	140.03	149.71	175.00	14.05	2.92	20.87	3.17	50.98	38.99	1/8 NPT
85.00	161.65	162.77	172.44	216.74	14.58	2.80	23.61	3.17	64.92	45.01	1/4 NPT
100.00	183.79	185.04	200.25	243.00	22.07	4.35	33.67	3.17	76.20	60.08	3/8 NPT
130.00	207.95	210.04	225.60	290.00	35.00	4.33	47.95	3.17	87.30	74.36	1/2 NPT
145.00	252.40	270.04	285.75	350.00	30.25	5.52	43.20	3.17	105.41	92.13	1/2 NPT
165.00	262.71	270.04	285.75	350.00	30.25	5.52	43.25	3.17	96.82	69.86	1/2 NPT
180.00	262.71	270.04	285.75	350.00	42.95	5.52	55.95	3.17	100.00	82.56	1/2 NPT

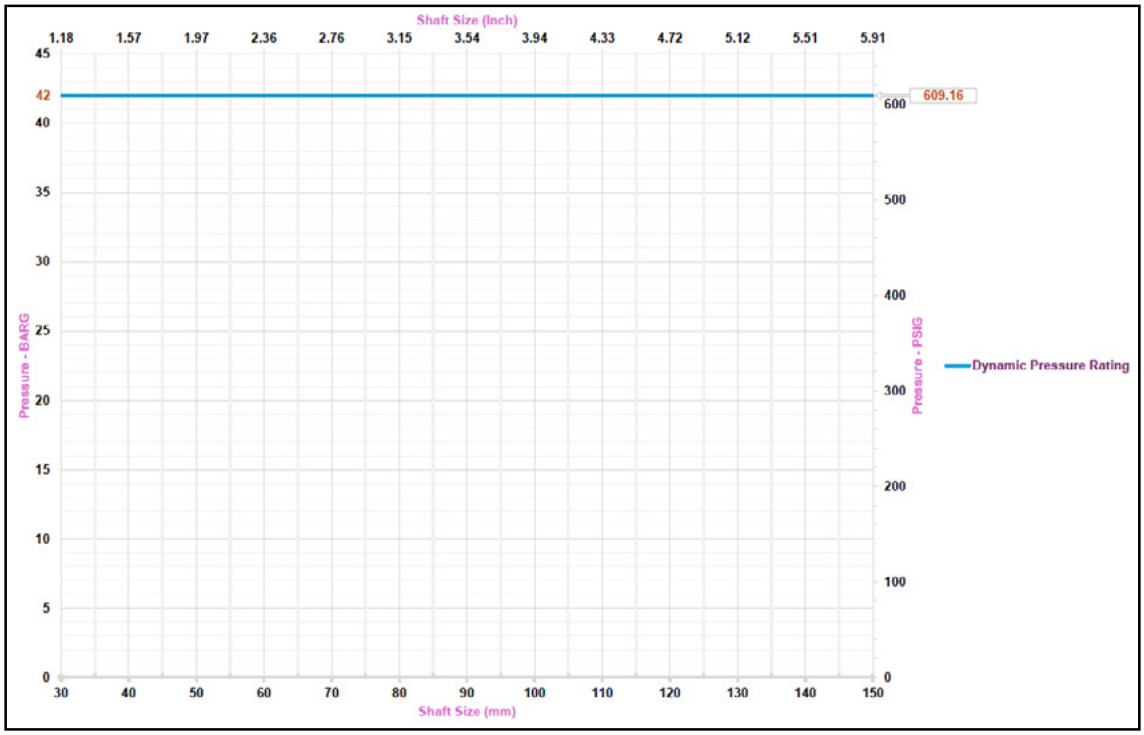
TYPE 5864-USP

DUAL UNPRESSURISED CARTRIDGE
SLURRY SEAL

Technical Specification

Basic pressure rating

The dynamic sealing pressure rating for the standard Type 5864-USP is 40 Barg (580 PSIG) across the entire size range. This rating assumes that the seal is running at sufficient speed to generate upstream flow. Please contact John Crane for pressures and speeds outside the published range.



Materials of construction

Seal Components	Materials	
Description	**Standard**	**Option**
Primary Ring (inboard)	Self-Sintered Silicon Carbide	Graphite-loaded Silicon Carbide
Primary Ring (outboard)	Self-Sintered Silicon Carbide	–
Mating Ring (inboard)	Self-Sintered Silicon Carbide	–
Mating Ring (outboard)	Self-Sintered Silicon Carbide	–
O-rings	Fluoroelastomer	Perfluorelastomer
Seal Adaptive Hardware	Duplex Stainless Steel + 316 Stainless Steel	Super Duplex Stainless Steel Alloy C-276
Spring	316 Stainless Steel	Alloy C-276

TYPE 5864-USP

DUAL UNPRESSURISED CARTRIDGE
SLURRY SEAL

Technical Specification

Seal support system

Mechanical seals utilising upstream pumping seal face technology require support systems that differ from those used with traditional dual mechanical seals. A standardised support system is available for our standard Upstream Pumping seals, eliminating the need for a custom-designed solution.

Support systems are available in two versions:

GS-USP-R, RESERVOIR SYSTEM

Includes a reservoir of stored barrier fluid.



GS-USP-D, DIRECT CONNECT SYSTEM

Omits the reservoir and connects the seal directly to the water supply.



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

Europe
United Kingdom
Tel: 44-1753-224002

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

If the products featured will be used in a potentially dangerous and/or hazardous process, your John Crane representative should be consulted prior to their selection and use. In the interest of continuous development, John Crane Companies reserve the right to alter designs and specifications without prior notice. It is dangerous to smoke while handling products made from PTFE. Old and new PTFE products must not be incinerated. ISO 9001 and ISO14001 Certified, details available on request.