Garlock®

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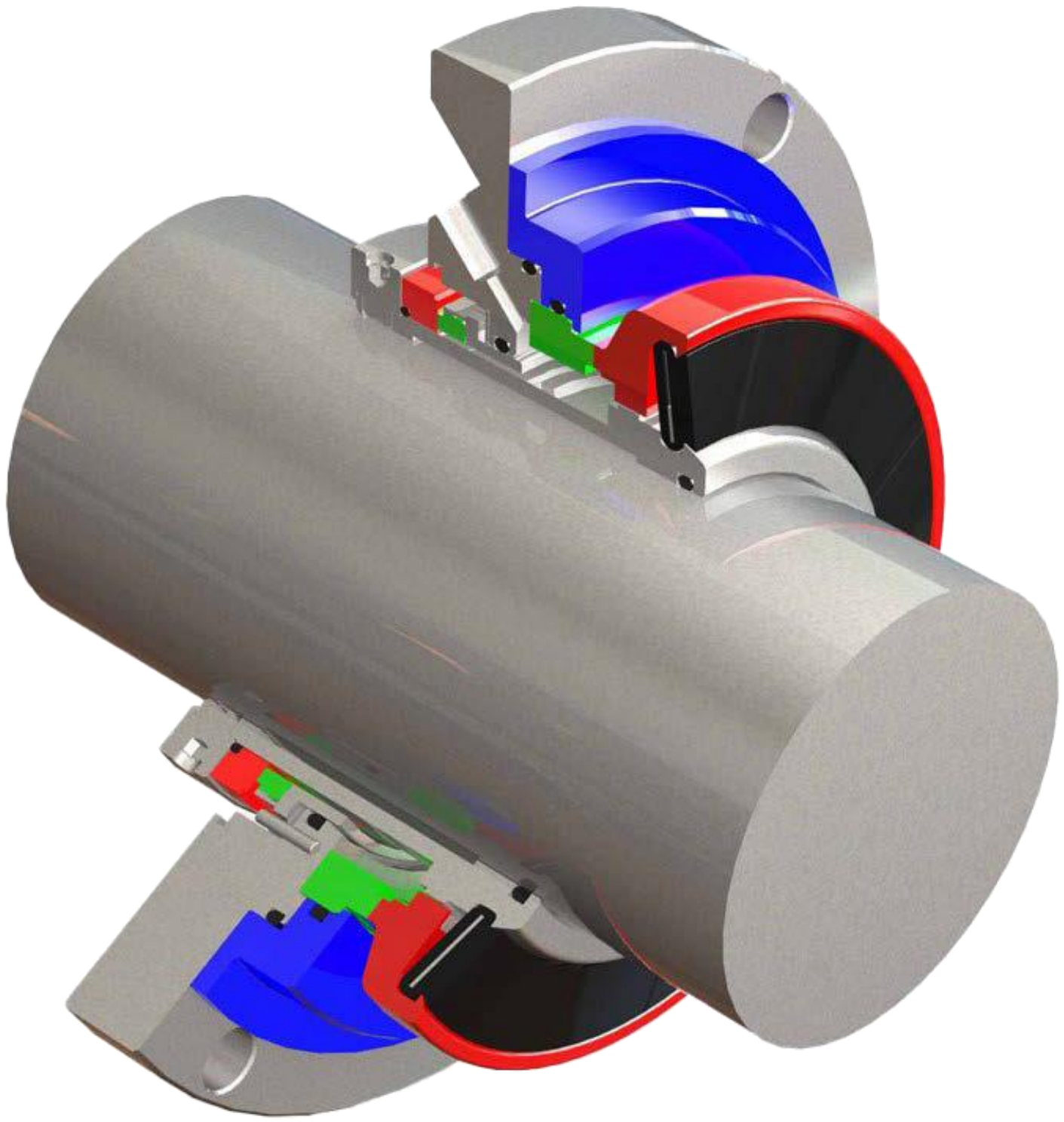
GPA Series
Heavy Duty Slurry Seals



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GPA Series seals start as a heavy-duty single cartridge that can be upgraded to include a quench or double design by using additional components. Built for the harshest slurry pump services found in mining, mineral and ore processing, and a variety of Industrial applications, the GPA is a cost-effective solution for a wide range of duties .

Designed for rugged service, the GPA offers simple installation, maintenance and operation. The GPA cartridge seal is designed to be dimensionally interchangeable with other seals that have been designed for the same pump.

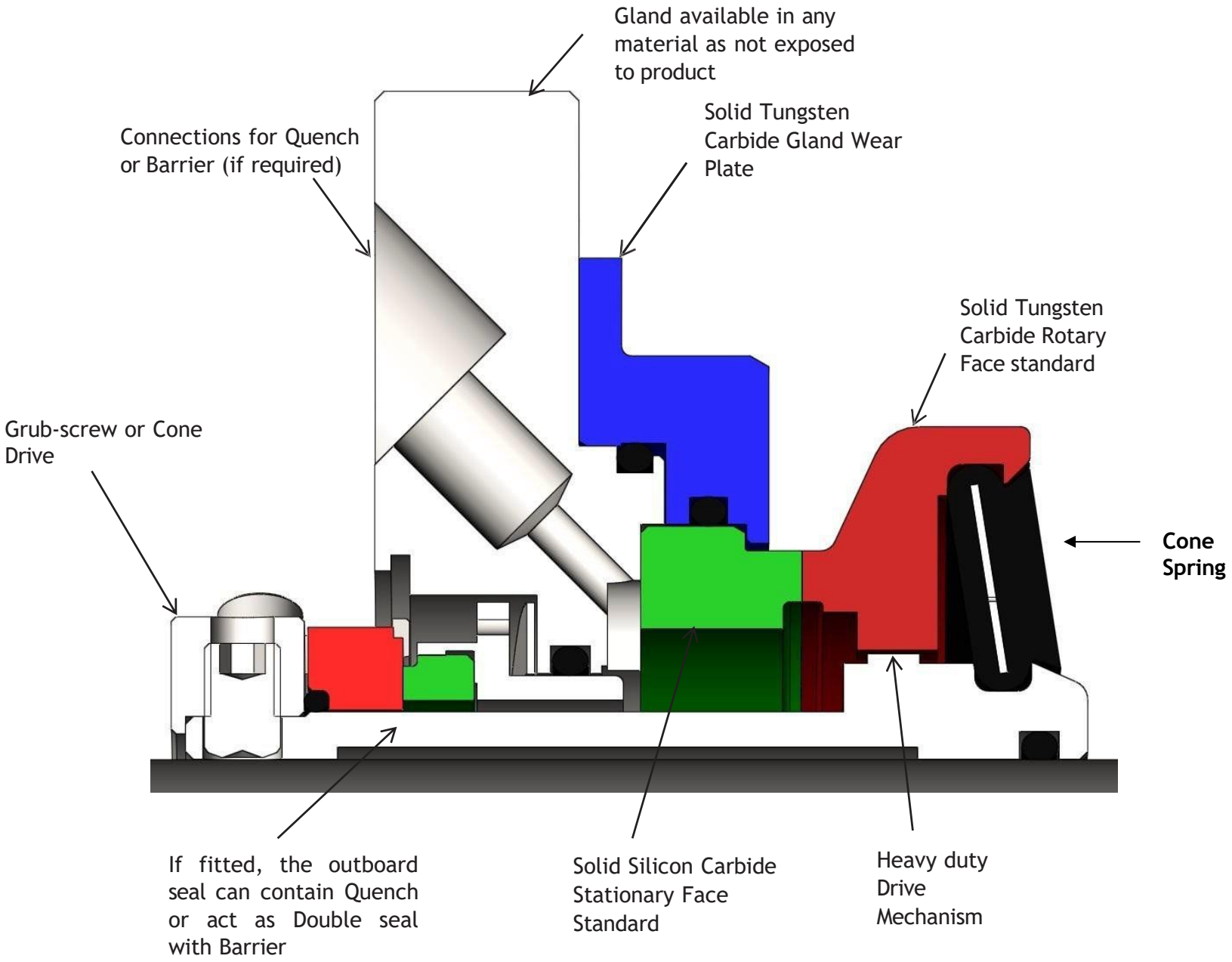
Garlock owned, Cefilac, in France, designed the first recognised Cone Spring Slurry Seal in 1977 to meet the most challenging abrasive slurries found in Alumina processing. The latest generation GPA, with built in flexibilty, continues to bring innovation to heavy duty slurry pump sealing in mining, mineral processing, and a wide range of industrial plants and applications.

Operating Parameters		
Application	Abrasive Slurries up to 60% concentrations by weight.	
Temperature	Single Type GPA-S	0 – 80°C
	Quench Type GPA-U	0 – 135°C
	Double Type GPA-W	0 – 135°C
Pressure	Single Type	300 psi
	Quench Type GPA-U	300 psi
	Double Type GPA-W	450 psi
Speed	Up to 15 m/s	
Sizes	20mm -220mm/0.750” – 7.125”	

Materials of Construction

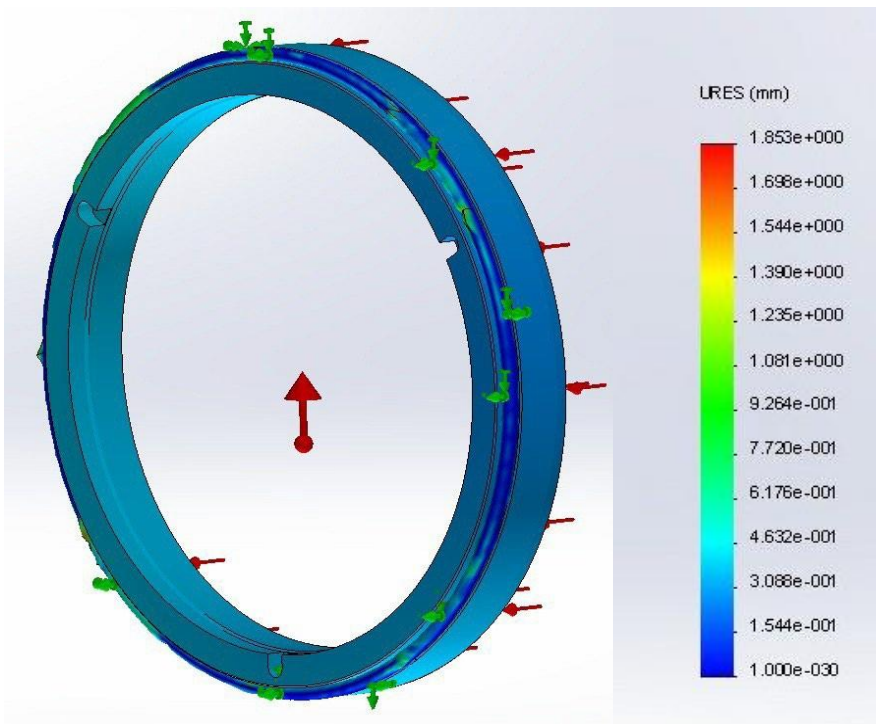
DESCRIPTION	STANDARD MATERIAL	OPTIONAL MATERIAL
Gland Plate	304 Stainless Steel	Duplex 2205 and other materials
Shaft Sleeve	Duplex 2205	Stainless Steel, Hastelloy C
Drive Collar	304 Stainless Steel	316 Stainless Steel, Duplex 2205
Membrane / Spring	AFLAS® (TFE/P) encapsulated steel	
Rotary Face	Tungsten Carbide (solid)	Silicon carbide
Stationary Seat	Silicon Carbide	Tungsten Carbide
Set screw cup point	Zinc Coat HDN Steel	
Wave Spring	302 Stainless Steel	17-7 PH, AM350
Setting Clip	Aluminium	304 Stainless Steel
Set Screws (other)	316 Stainless Steel	
Elastomers	AFLAS® (TFE/P)	
Gland Wear Plate	Tungsten Carbide	Duplex 2205

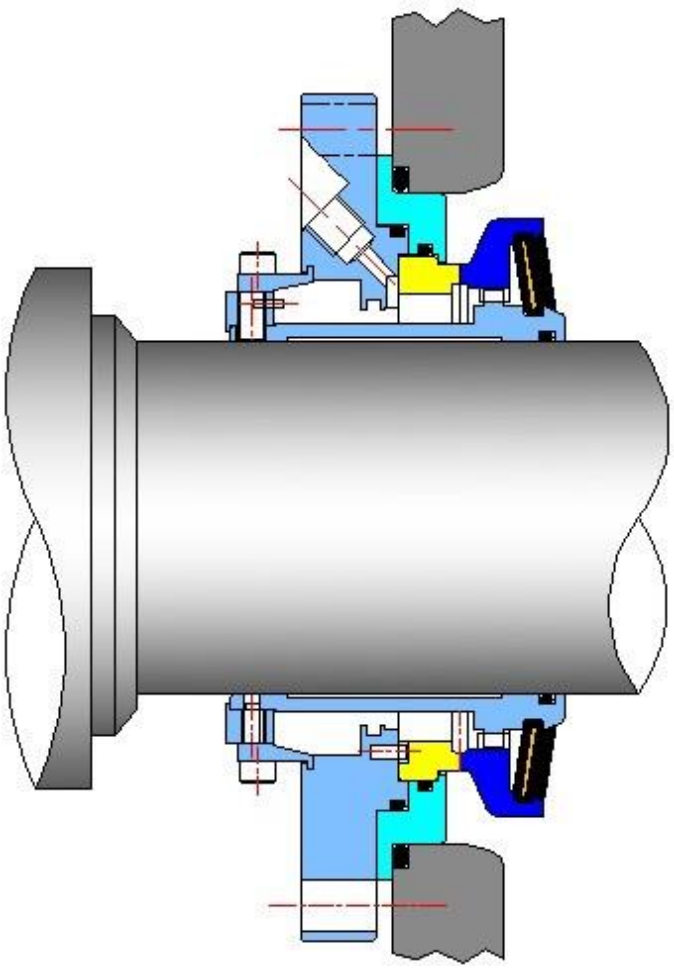
Typical Double Seal Arrangement



THE GPA Solution

- Start with a Non Clogging Rubber Encapsulated Cone Spring, that provides constant load under all operating conditions, resists scale build up, and eliminates dynamic O-rings.
- Abrasion and corrosion resistant metal components along with carbide faces that are able to last longer.
- Larger than industry standard driving lugs of rotary face for stable face torque transmission.
- Robust Cartridge design with 6 group sizes.
- Does not require flush water, which eliminates product dilution and associated evaporation costs.
- Rugged construction allows use in slurry particle hardness of MOH 9 in concentrations of 60% by weight.
- Addition of outboard seal components to single cartridge allows for use of external Plan 62 quench using grease or water to provide lubrication to the seal faces during intermittant dry running excursions.
- The same outboard seal components allow the seal to operate as a double seal system using a plan 52 buffer fluid system.
- Face geometry optimised using in-house design software.





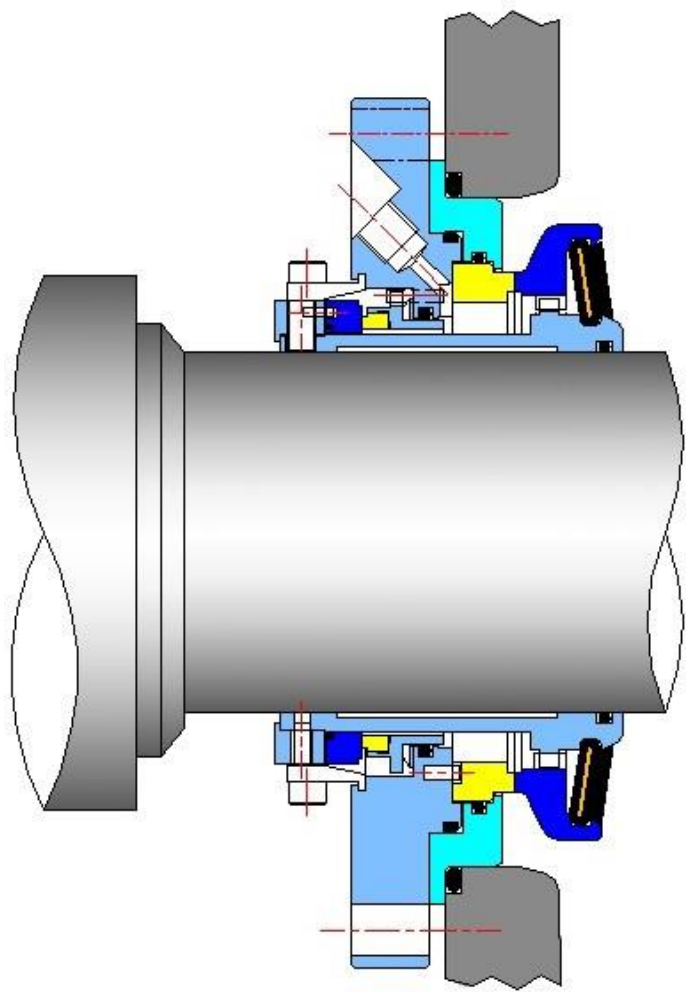
Single GPA

Single and Double GPA seals share the same Gland, Membrane, Sleeve, Gland Wear Protector, Rotary and Stationary faces. The gland has two connections for use as a quench or double seal arrangements. All elastomers and the membrane are Aflas.
If a single seal is purchased, it can be upgraded to a Quench or Double seal by adding the few components for the outboard seal.

Single Seal: Use in harsh slurries without flush but when liquid is available to protect the seal faces.

Quench Seal: Introduce a low pressure water quench on the underside of the seal faces when dry running is experienced through caviation, pump suction issues, and other reasons for heat generation at the seal faces. Another option to water is the use of a Synthetic Grease supplied with a suitable lubricator.

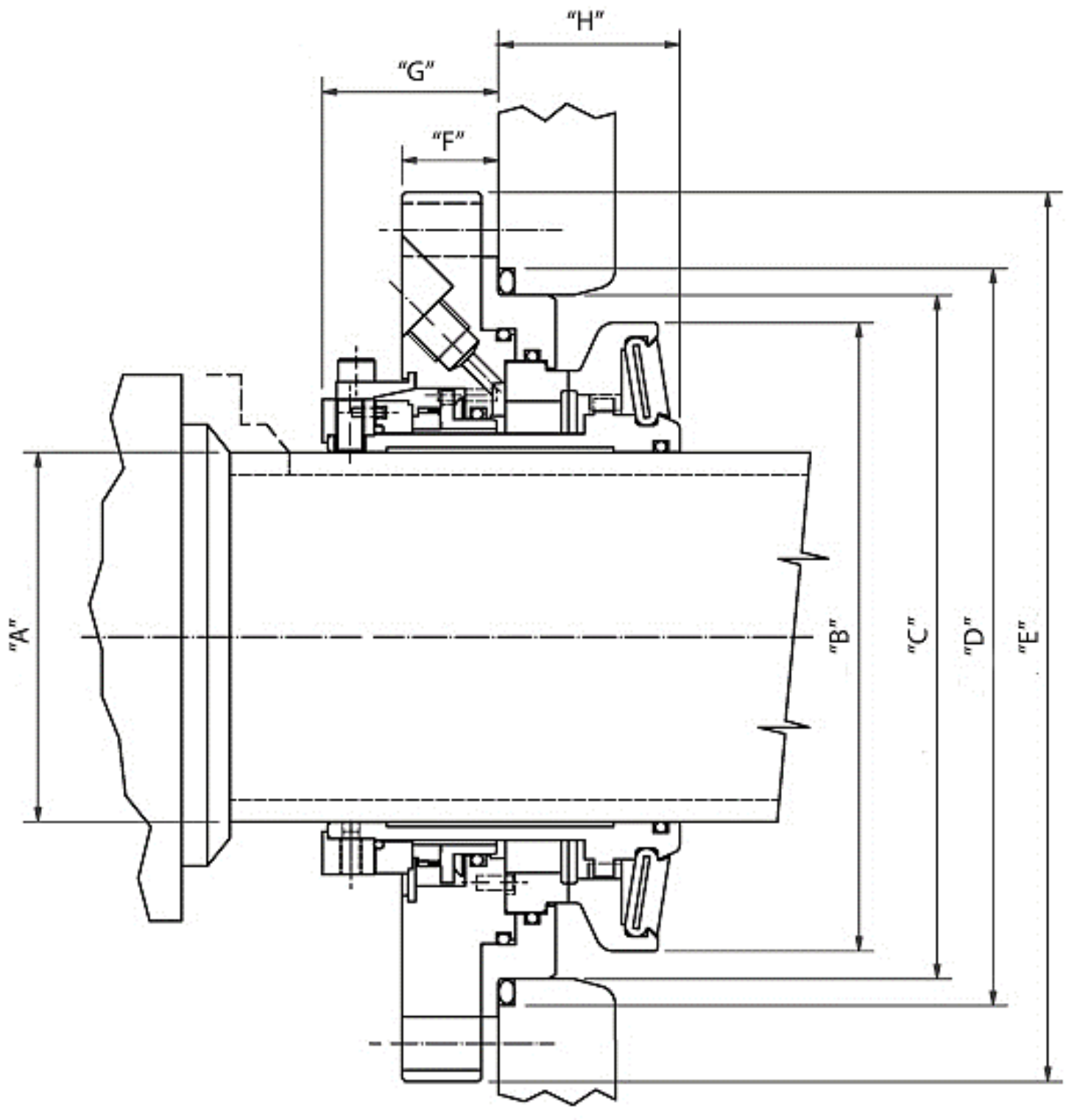
Double Seal: For use when a better solution is required over the quench option. The double seal provides carbon/silicon carbide faces with the outboard seal to allow operation of a low pressure closed loop



Quench or Double GPA

Slurry Sealing at its very best!
Start with a single cartridge seal design.
Upgrade to a Quench seal by adding components.
Change to a pressurized Double Cartridge Seal

Serious Seals for Serious pumps!



Metric Dimensions

Group	A	B	C	D	E	F	G	H
1	31 - 51	100	NA	NA	140	NA	36.6	33.2
2	51 - 85	136	140/163	149.8/172.8	175/216	24.5	39/41.5	41/44
3	85 - 105	170	185	201	241	26.2	44.8	57.6
4	105 -138	202	210	226	285	25	59.6	54.5
5	138 - 180	257	270	286	345	25.5	65.5/67.5	59
6	180 - 220	310	327.3	343.1	430	30	72	100

Imperial Dimensions

Group	A	B	C	D	E	F	G	H
1	1.375 - 2.000	3.937	NA	NA	5.512	NA	1.441	1.307
2	2.000 - 3.250	5.355	5.512/6.418	5.898/6.804	6.890/8.504	0.957	1.536/1.634	1.615/1.733
3	3.250 - 4.125	6.693	7.284	7.914	9.489	1.032	1.764	2.268
4	4.125 - 5.438	7.953	8.268	8.898	11.221	0.985	2.347	2.146
5	5.438 - 7.125	10.119	10.630	11.260	13.583	1.004	2.579/2.658	2.323
6	7.125 - 8.625	12.205	12.886	13.508	16.930	1.182	2.835	3.937

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