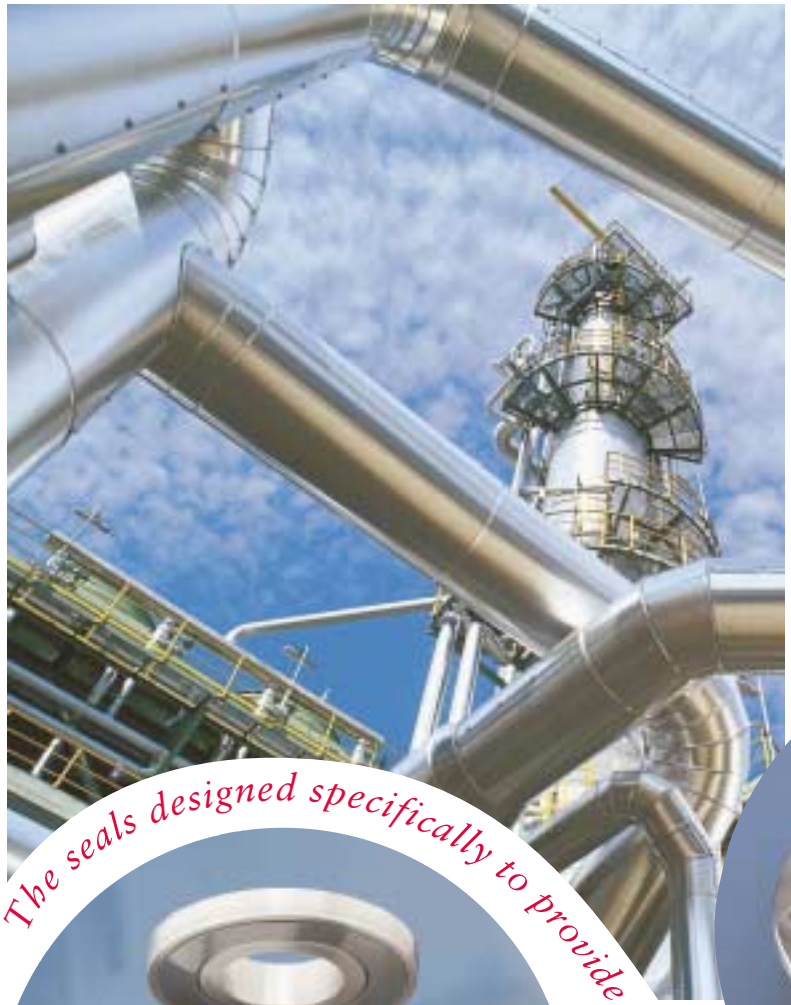
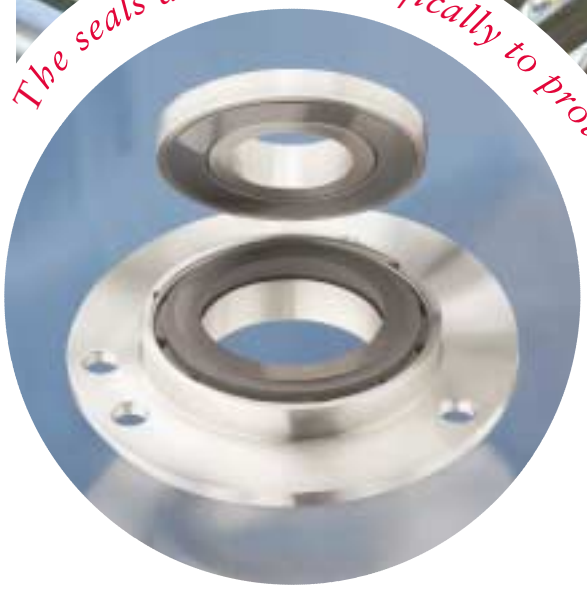
FLOWSERVE®

Flow Solutions Division

GLS, GSS & GSG

Seals for integrally geared API pumps and compressors

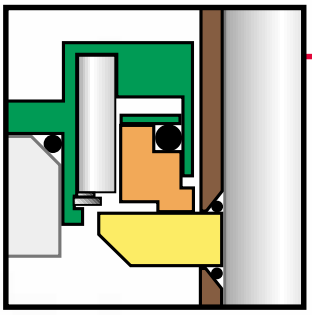




The seals designed specifically to provide superior reliability in high head, low flow equipment.

The GLS & GSS Sealing Innovation

The latest fluid sealing technologies that enhance equipment



Conventional is just not

Conventional seals to date have been utilizing solid tungsten carbide block rotors. In addition to providing a sealing face, tungsten carbide rotors were part of the rotating assembly stack-up.

With the conventional arrangement, clamping forces could not be isolated from the sealing faces, resulting in rotating face distortion; hence enhanced reliability was not achievable.

Innovative designs for dependable operation

- nonclamped rotating Silicon Carbide face in holder for reduced face distortion
- common cartridge and rotating assemblies for liquid and gas applications
- two carbon face designs, one for light hydrocarbons and the other for heavier liquids

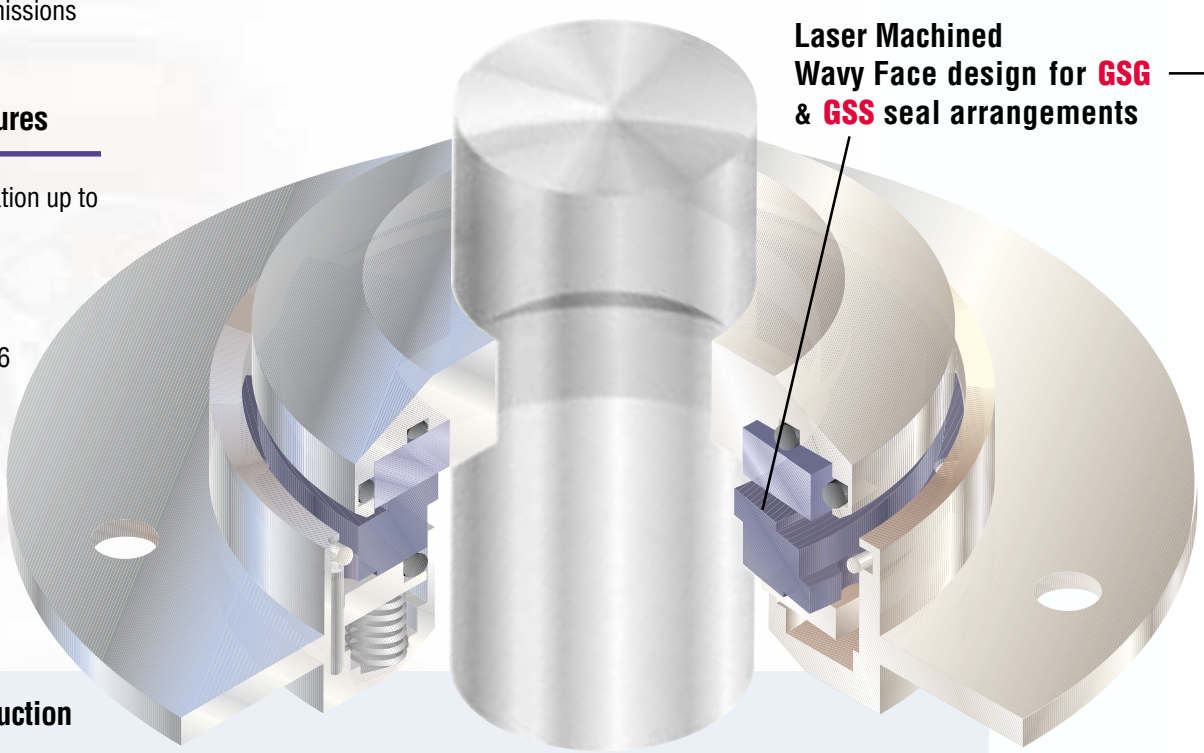
GLS Liquid Seal Features

- successful operation up to 1250 psi (8619 kPa) in flashing hydrocarbons
- no measureable face wear or worn taper
- minimal emissions

Laser Machined Wavy Face design for GSG & GSS seal arrangements

GSS Gas Seal Features

- noncontacting operation up to 1250 psi (8619 kPa)
- low gas leakage
- low emission Plan 76 containment seal



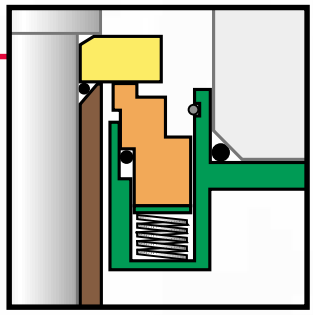
Materials of Construction

Metal Parts	Corrosion Resistant Stainless Steel with Alloy C-276 Springs	Stationary Face	Premium Grade Carbon
Rotating Face	Silicon Carbide	Gaskets	Fluoroelastomer, Perfluoroelastomer, Teflon “Tec-ring”

reliability and increase MTBF of high speed machines.

The GSG Sealing Innovation

good enough anymore

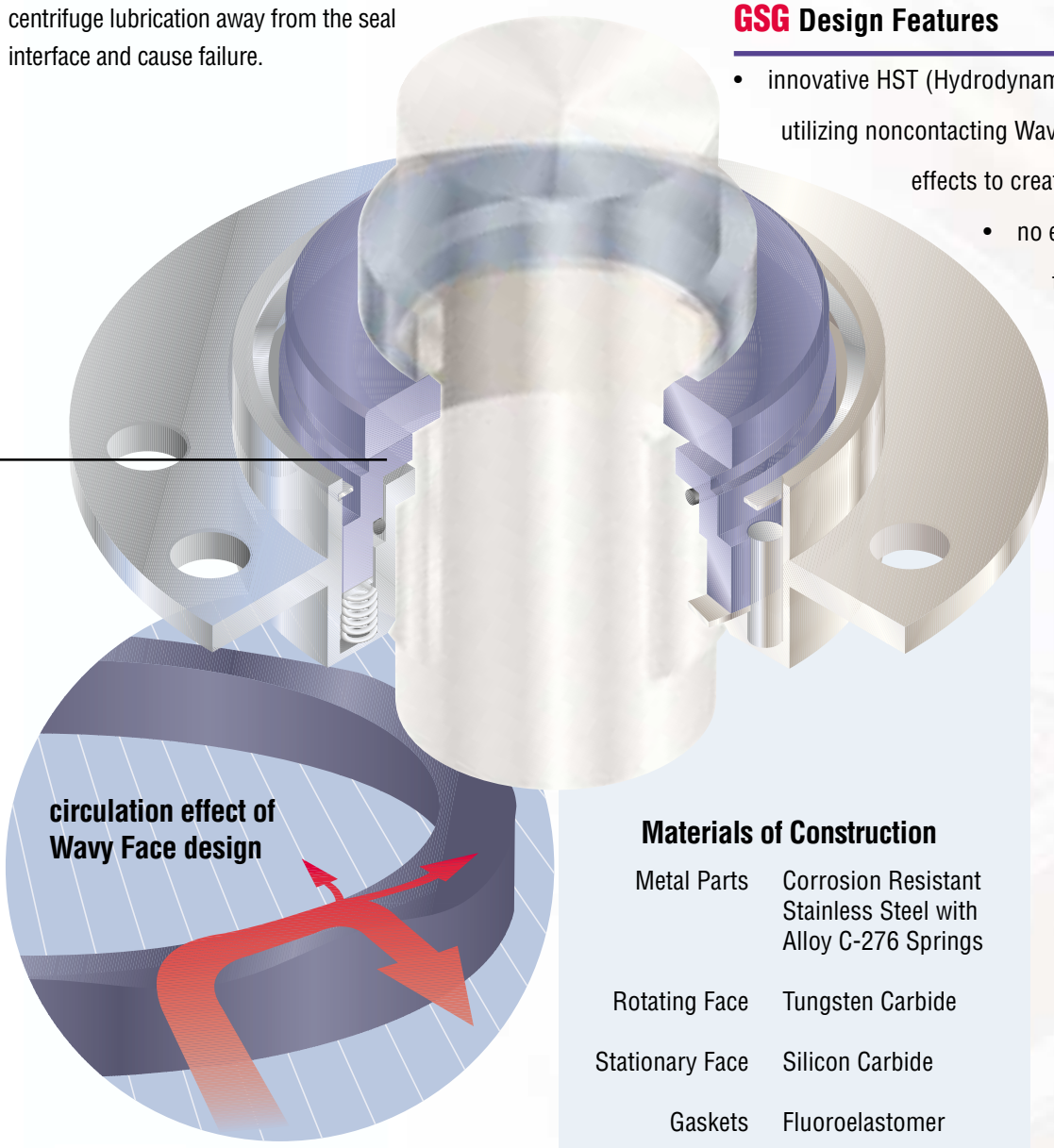


For decades, operators could only apply traditional contacting mechanical seal designs to seal the gearbox on integrally geared pumps and compressors. Traditional designs can be unreliable when subjected to frequent starts and stops that lead to carbon blistering.

The high speed and zero sealed pressure common to gearbox seal applications can centrifuge lubrication away from the seal interface and cause failure.

GSG Design Features

- innovative HST (Hydrodynamic Surface Tension) technology utilizing noncontacting Wavy Face and surface tension effects to create a near-zero leakage seal
- no equipment modifications required to replace any other design

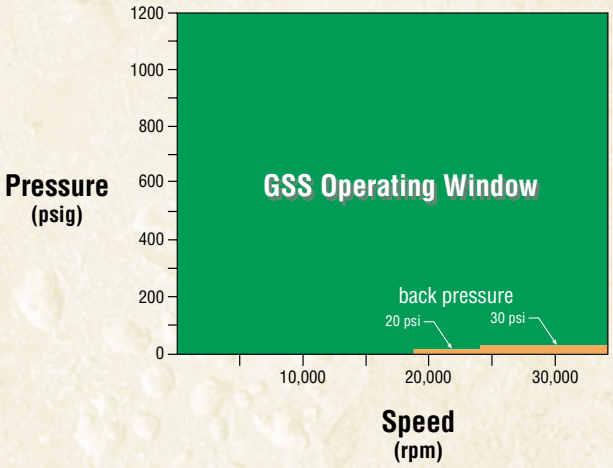


Materials of Construction

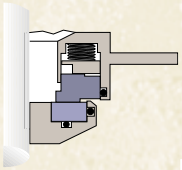
Metal Parts	Corrosion Resistant Stainless Steel with Alloy C-276 Springs
Rotating Face	Tungsten Carbide
Stationary Face	Silicon Carbide
Gaskets	Fluoroelastomer

Operating Parameters

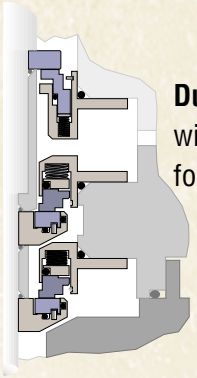
Maximum Dynamic Pressure	Gas	0 to 1250 psi (0 to 8619 kPa)
	Liquid	0 to 1250 psi (0 to 8619 kPa)
Seal Chamber Temperature		-80°F to 400°F (-62°C to 204°C)
Speed		**GSS** up to 36,000 rpm **GLS** up to 26,000 rpm **GSG** up to 36,000 rpm
Seal Size		1.5 inch (38 mm)



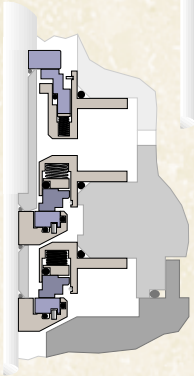
Typical Configurations



Single GLS/GSS
for pump and compressor applications

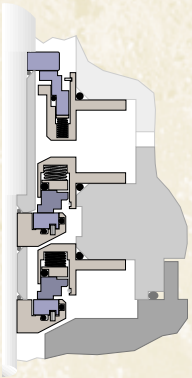


Dual Nonpressurized GLS
with **GSG gearbox seal**
for pump applications

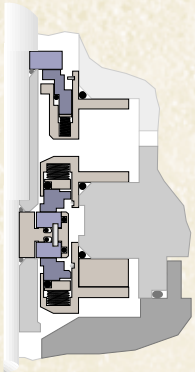


Dual Nonpressurized GLS/GSS Dry Running Backup
with **GSG gearbox seal**
for pump applications

Dual Pressurized GLS
with **GSG gearbox seal**
for pump and compressor applications



Dual Nonpressurized GSS with **GSG gearbox seal** for compressor applications



Dual Pressurized GSS
with **GSG gearbox seal**
for pump and compressor applications

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