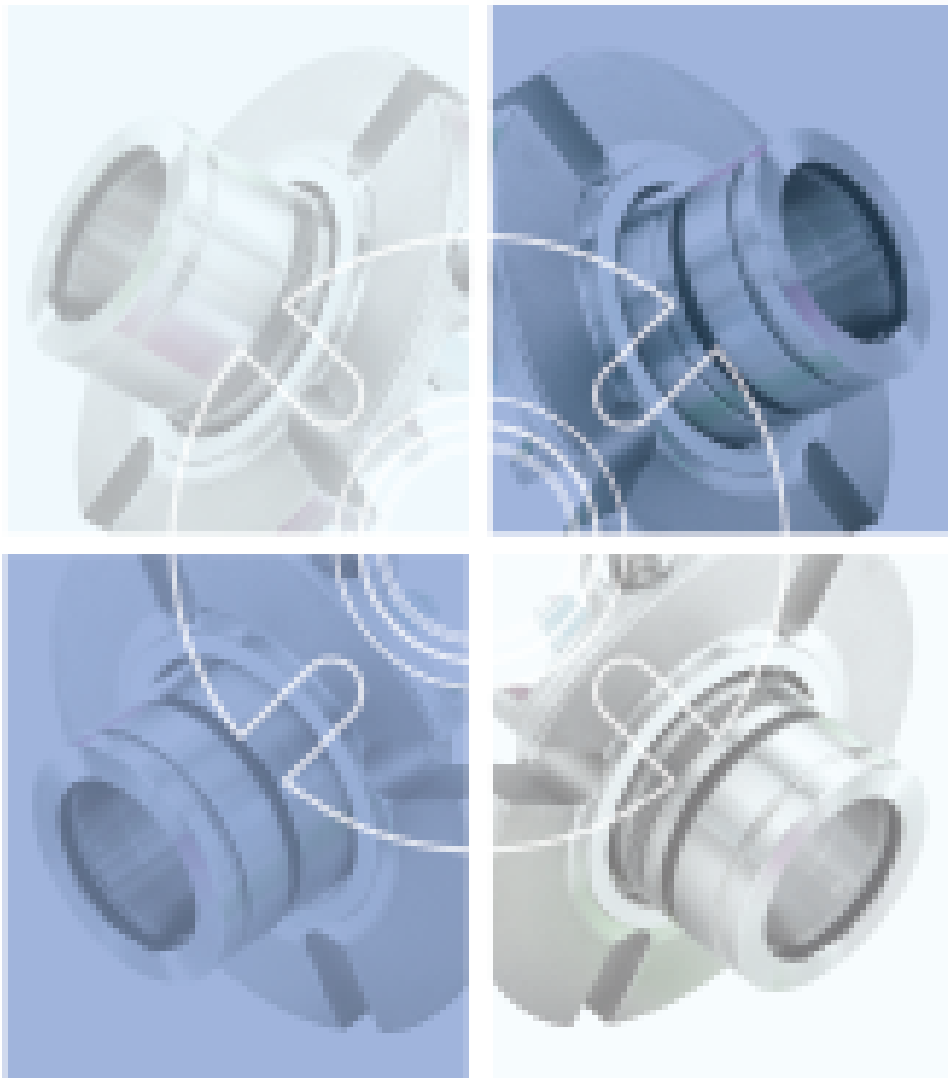




# Strategic Versatility

SMS1, RB1, SB1, SS1



*One design,  
Four Integrated Seals*

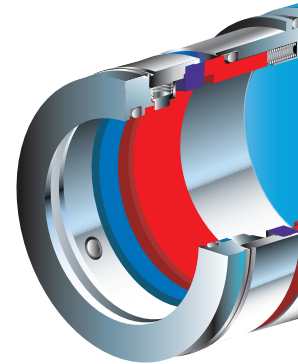


**SB1**



# Versatility Means Savings and Reliability

**SMS1**



With common sleeves, glands, and seal parts for all designs, cartridge assembly is quick and fail-safe. Plus, it's easy to modify face material, metallurgy and elastomers. This strategic grouping covers 80%

**There are Clear Reasons to Employ the Integrated Cartridge System**

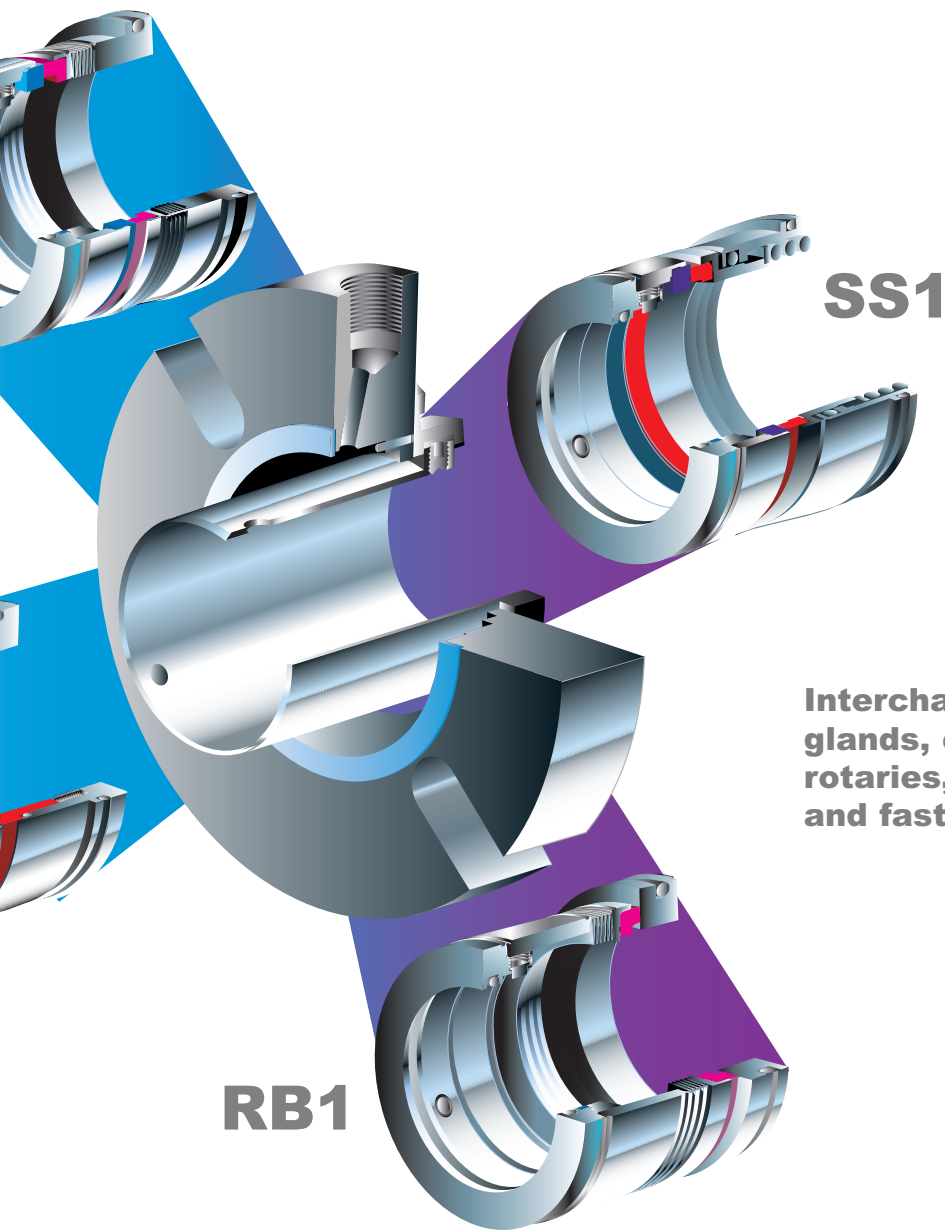
of industries' sealing applications.

The efficiency gained allows aggressive price structures and even low-cost repair kits and exotic

alloys at substantial savings. Flex-A-Seal's famous premium welded bellows designs are included at multiple spring prices.

Downstream, the benefits start with quick deliveries, allowing customers to minimize inventories through various exchange programs.

Design advantages are: simple, easy-to-install cartridge designs; sleeves that are isolated from the product; fewer "O" rings and rugged machined construction.

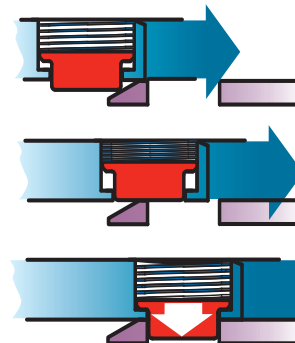


**Interchangeable sleeves,  
glands, clips, faces,  
rotaries, seats, “O” rings,  
and fasteners.**

Traditional cup point set screws in rotating units are replaced by a patent pending Plunger-Lock drive. The torque transmission strength is increased 5 fold over traditional cup point set screws. Most importantly, it allows for quick/easy assembly and seal-kit replacement.

The entire drive mechanism is out of product. This system eliminates any possibility of sleeve distortion from over-tightened set screws. There are no set screws to “back out”. The spring-loaded mechanism keeps the lug “trapped” in position.

**No more difficult  
set screws. Our  
unique, Plunger-  
Lock Drive makes  
assembly easy.  
(Patent Pending)**



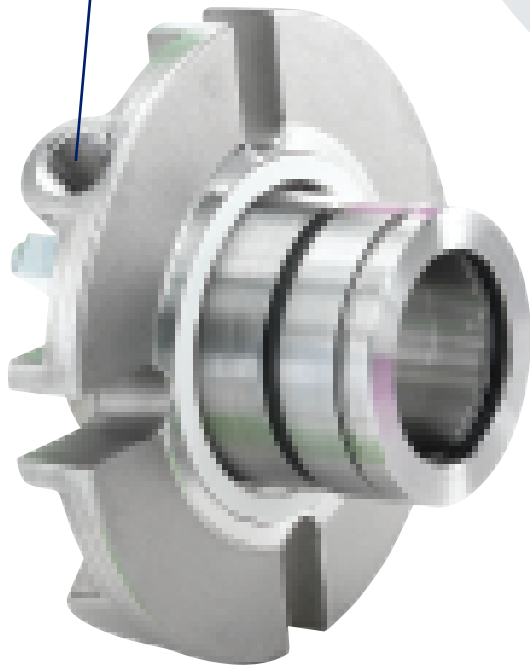
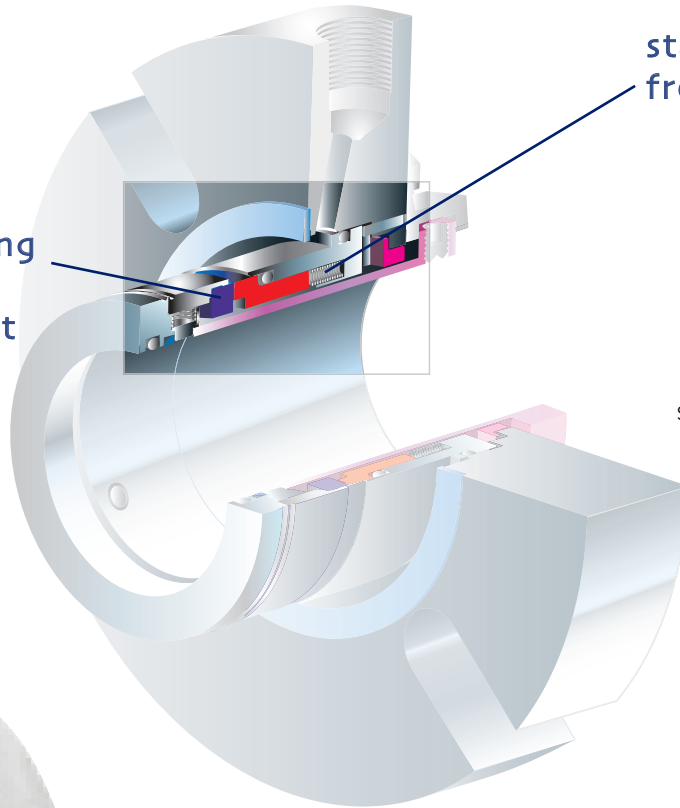


## SMS1 Stationary Multiple Spring Cartridge

rotating mating ring for better face alignment and heat dissipation

stationary springs isolated from the process

flush connection



### SMS1

Rotary Face	Silicon Carbide
Stationary Face	Carbon
	Silicon Carbide
Springs	Hast** C
Metal Parts	316 SS/17-4
	316 SS Hast** C276
	Consult factory for special alloys
"O" Rings	Viton@+ Ethylene Propylene AFLAS* Perfluoroelastomer
Max. Temp.	400°F*** (200 °C)
Max. Pressure	300 PSI (carbon)(20 BAR)
	consult factory for higher pressures
Max. Speed	6000 fpm

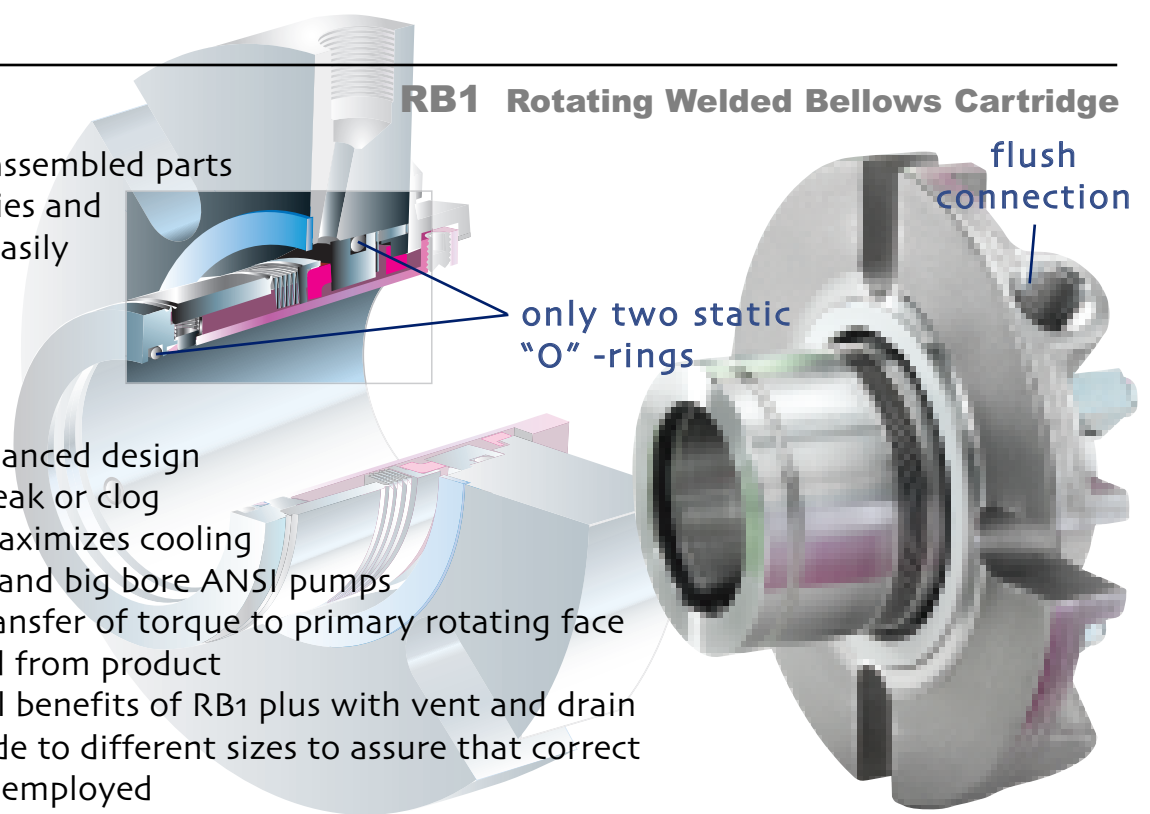
\*\*\*Certain "O" rings will lower temperature limitations  
+Viton@ is a DuPont Performance Elastomer  
\*Asahi Glass Company Ltd. Registered Trademark  
\*\*Cabot Stellite Div. Registered Trademark

- FAS' most cost effective cartridge design
- monolithic face w/ homogenous material
- drive mechanisms out of product
- springs are out of product, minimizes corrosion and stress related failure
- unique shrouded rotary for maximum face protection and reliable startup
- uniform 360 degree transfer of torque to rotating face

- seal faces positioned in gland for maximum protection
- dynamic elastomer moves on non-metallic surface eliminating fretting
- faces designed for optimum heat dissipation
- sleeve is isolated from product
- hydraulically balanced
- easy cartridge installation
- flush position maximizes face cooling
- fits all standard and large bore ANSI pumps
- **SMS3 FV&D** all benefits of SMS1 plus with vent and drain connections made to different sizes to assure that correct piping plans are employed
- very cost effective upgrade

## RB1 Rotating Welded Bellows Cartridge

- only 4 primary assembled parts
- faces, metallurgies and elastomers are easily upgradeable
- self cleaning
- easy cartridge installation
- hydraulically balanced design
- no springs to break or clog
- flush position maximizes cooling
- fits all standard and big bore ANSI pumps
- uniform 360° transfer of torque to primary rotating face
- sleeve is isolated from product
- **RB3 FV&D** all benefits of RB1 plus with vent and drain connections made to different sizes to assure that correct piping plans are employed

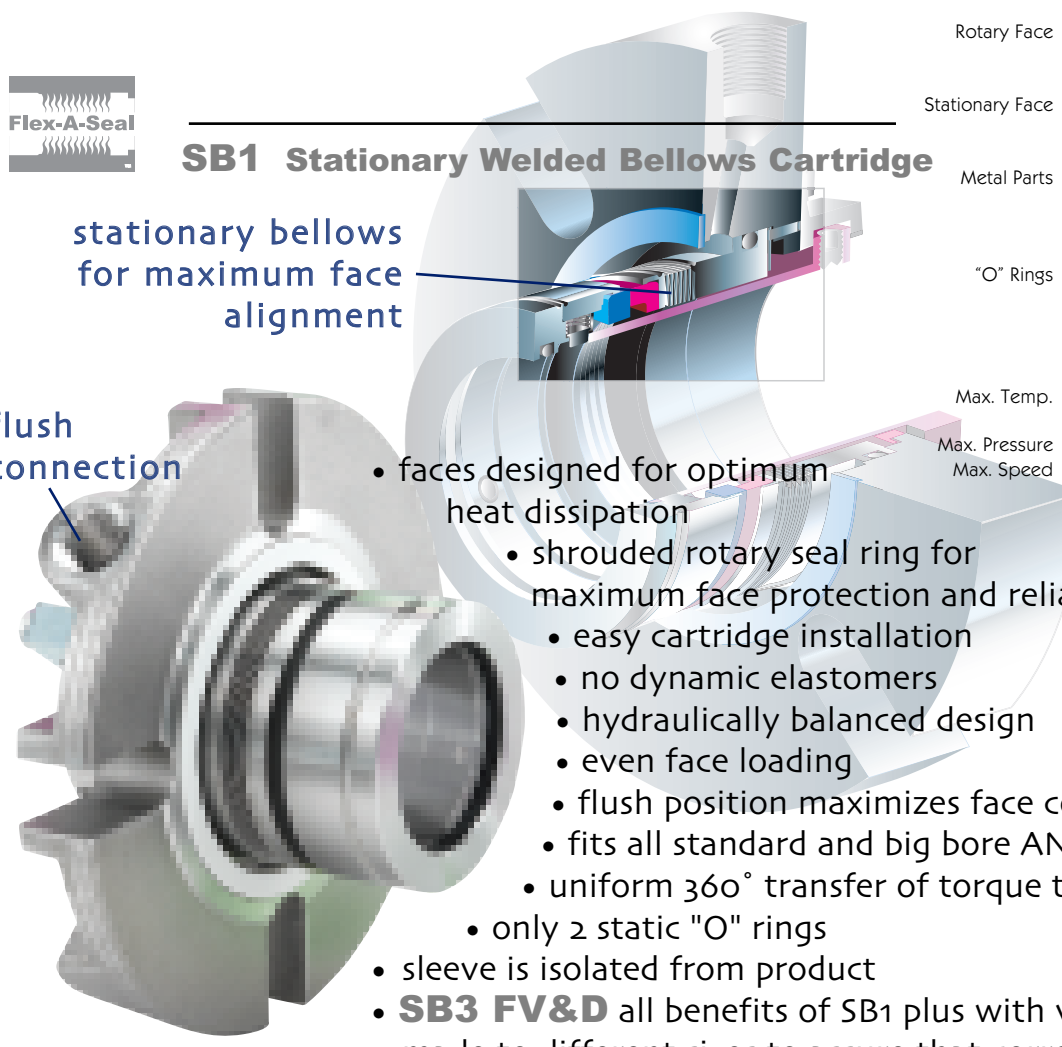


## SB1 Stationary Welded Bellows Cartridge

stationary bellows for maximum face alignment

flush connection

- faces designed for optimum heat dissipation
- shrouded rotary seal ring for maximum face protection and reliable start-up
  - easy cartridge installation
  - no dynamic elastomers
  - hydraulically balanced design
  - even face loading
  - flush position maximizes face cooling
  - fits all standard and big bore ANSI pumps
  - uniform 360° transfer of torque to the primary rotating face
- only 2 static "O" rings
- sleeve is isolated from product
- **SB3 FV&D** all benefits of SB1 plus with vent and drain connections made to different sizes to assure that correct piping plans are employed
- very cost effective upgrade



	RB1	SB1
Rotary Face	Carbon Nickel Tungsten Carbide Silicon Carbide	Silicon Carbide
Stationary Face	Silicon Carbide	Carbon Nickel Tungsten Carbide Silicon Carbide
Metal Parts	Hastelloy**C 276 316 SS	Hastelloy**C276 316 SS/17-4 316 SS Hast**C276
	consult factory for special alloys	
"O" Rings	Viton®+ Ethylene Propylene AFLAS* Perfluoroelastomer TJV®+	Viton®+ Ethylene Propylene AFLAS* Perfluoroelastomer TJV®+
Max. Temp.	400°F (200°C)	400°F(200°C)
	consult factory for higher temps.	
Max. Pressure	300 PSI(20 BAR)	300 PSI(20 BAR)
Max. Speed	4500 fpm	6000 fpm

\*\*\*Certain "O" rings will lower temperature limitations  
 +Viton® is a DuPont Performance Elastomer \*Asahi Glass Company Ltd. Registered Trademark \*\*Cabot Stellite Div. Registered Trademark

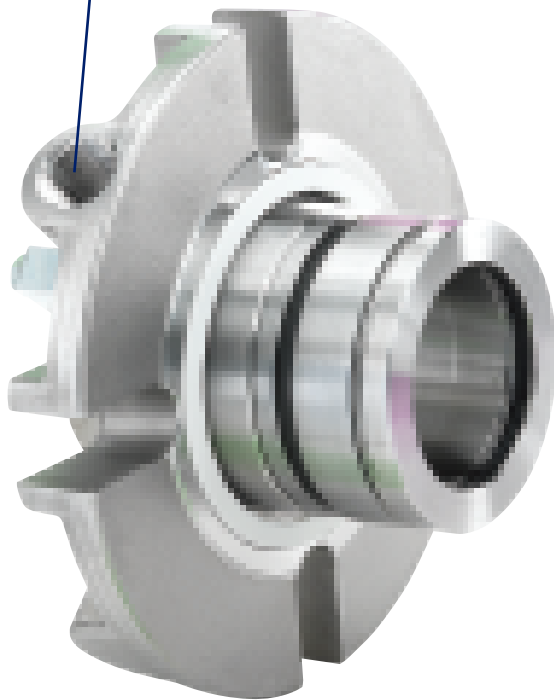
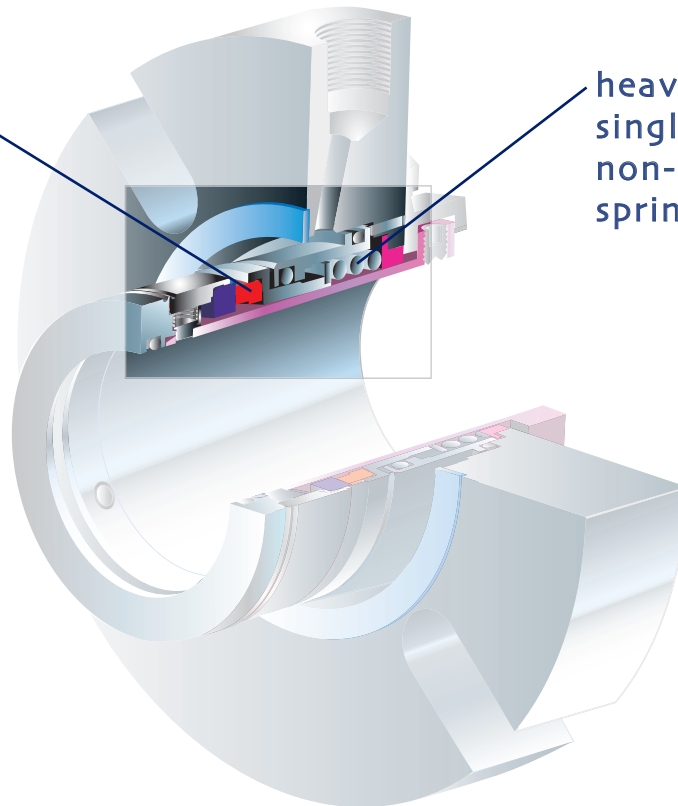


## SS1 Stationary Single Spring Cartridge

rugged tang design  
with improved  
anti-rotation drive

heavy-duty,  
single-coil,  
non-clogging  
spring

flush connection



- stationary pusher design
- heavy-duty non-clogging design
- faces designed for optimum heat dissipation
- one heavy duty single spring located out of the product
- shrouded rotary seal ring for maximum face protection and reliable start-up
- uniform 360° transfer of torque to primary rotating face
- upgradeable faces, metallurgies, and elastomers
- sleeve is isolated from product
- hydraulically balanced
- easy cartridge installation
- flush position maximizes face cooling
- fits all standard and large bore ANSI pumps

### SS3 FV&D

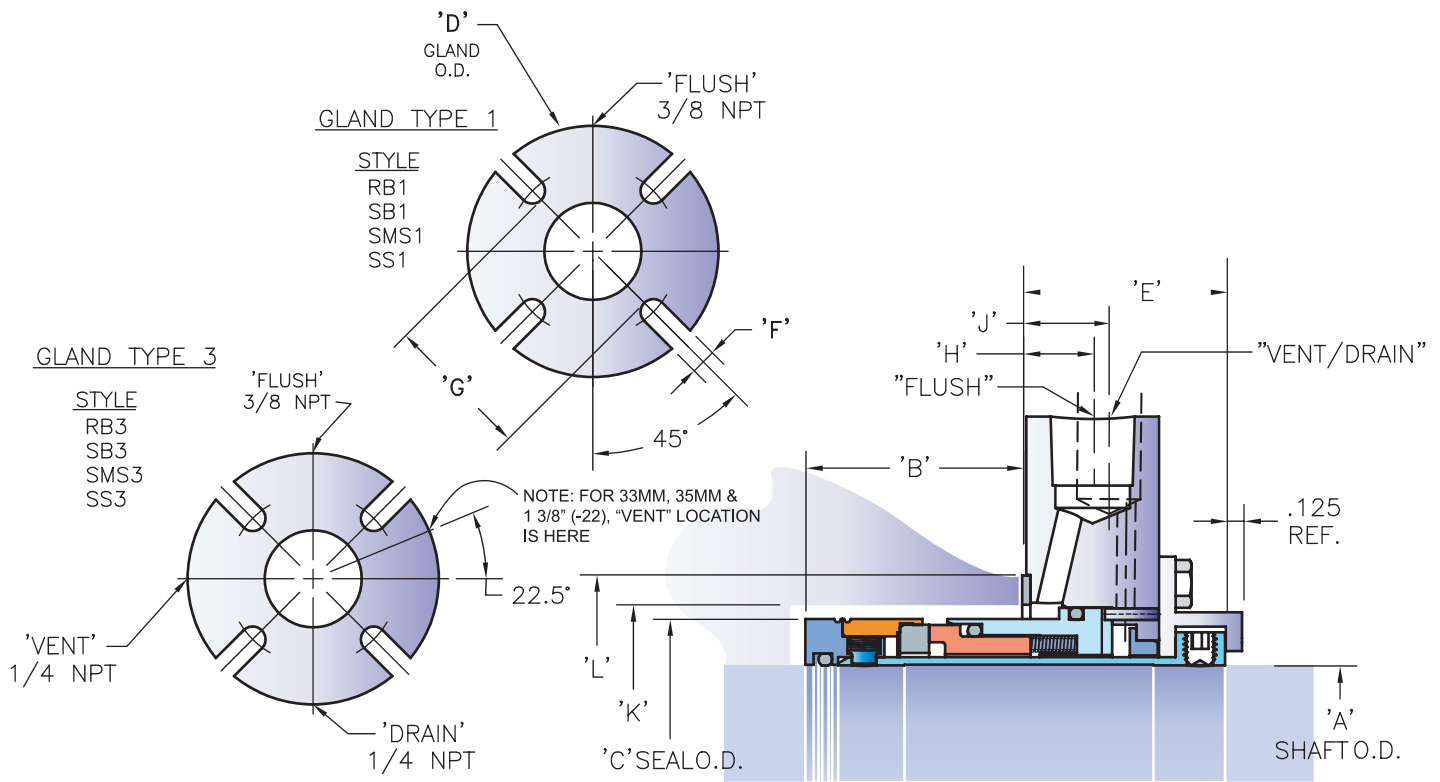
- all benefits of SS1 plus with vent and drain connections made to different sizes to assure that correct piping plans are employed
- very cost effective upgrade

### SS1

Rotary Face	<b>Silicon Carbide</b>
Stationary Face	<b>Silicon Carbide Carbon Nickel/Tungsten Carbide</b>
Springs	<b>316 SS</b>
Metal Parts	<b>316 SS/17-4SS 316 SS/Hast** C276 Consult factory for special alloys</b>
"O" Rings	<b>Viton®+ Ethylene Propylene AFLAS* Perfluoroelastomer</b>
Max. Temp.	<b>400° F*** (200°C)</b>
Max. Pressure	<b>300 PSI (20Bar)</b>
Max. Speed	<b>6000 FPM</b>

\*\*\*Certain "O" rings will  
lower temperature limitations

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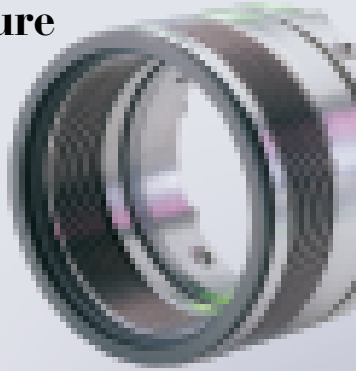
Seal Size	A	(Metric)** B	C	D	E	F	G	H	J	K(gasket)	L(gasket)	
-16	1.000	24mm	1.633	1.700	4.000	1.531	.437	2.375	.531	.657	1.790	2.230
-16	1.000	25mm	1.633	1.700	4.000	1.531	.437	2.375	.531	.657	1.790	2.230
-18	1.125	28mm	1.633	1.700	4.250	1.531	.437	2.462	.531	.657	1.915	2.355
-20	1.250	30mm	1.633	1.950	4.250	1.531	.437	2.583	.531	.657	2.040	2.480
		32mm	1.633	1.950	4.250	1.531	.437	2.583	.531	.657	2.040	2.480
-22	1.375	33mm	1.633	1.950	4.250	1.531	.437	2.712	.531	.657	2.165	2.605
		35mm	1.633	1.950	4.250	1.531	.437	2.712	.531	.657	2.165	2.605
-24	1.500	38mm	1.633	2.200	4.500	1.531	.562	2.950	.531	.657	2.415	2.855
-26	1.625	40mm	1.633	2.325	5.000	1.531	.562	3.075	.531	.657	2.540	2.990
-28	1.750	43mm	1.633	2.450	5.500	1.531	.562	3.188	.531	.657	2.665	3.105
		45mm	1.633	2.450	5.500	1.531	.562	3.188	.531	.657	2.665	3.105
-30	1.875	48mm	1.633	2.575	5.500	1.531	.562	3.313	.531	.657	2.790	3.230
-32	2.000	50mm	1.582	2.700	5.500	1.594	.562	3.570	.562	.719	3.040	3.490
-34	2.125	53mm	1.582	2.825	6.000	1.594	.687	3.687	.500	.719	3.165	3.605
-36	2.250	55mm	1.539	2.950	6.250	1.656	.687	3.813	.593	.782	3.290	3.730
-38	2.375	58mm	1.714	3.195	6.250	1.656	.687	3.937	.531	.782	3.415	3.855
		60mm	1.714	3.195	6.250	1.656	.687	3.937	.531	.782	3.415	3.855
-40	2.500	63mm	1.650	3.320	6.500	1.720	.687	3.937	.500	.845	3.500	3.855
-42	2.625	65mm	1.650	3.560	6.500	1.720	.687	4.188	.500	.845	3.625	4.070
-44	2.750	68mm	1.589	3.650	7.500	1.781	.687	4.438	.500	.907	3.820	4.320
		70mm	1.589	3.650	7.500	1.781	.687	4.438	.500	.907	3.820	4.320
-46	2.875	72mm	1.712	3.785	7.500	1.781	.687	4.625	.656	.907	3.950	4.450
-48	3.000	75mm	1.822	3.900	8.000	1.781	.687	5.062	.656	.907	4.075	4.825
-50	3.125	n/a	1.970	4.050	8.000	1.781	.687	5.062	.656	.907	4.200	4.825
-52	3.250	80mm	1.922	4.175	8.250	1.781	.687	5.187	.656	.907	4.325	4.950
-54	3.375	85mm	1.970	4.300	8.500	1.781	.812	5.312	.656	.907	4.450	5.075
-56	3.500	n/a	1.860	4.430	8.500	1.843	.812	5.438	.687	.969	4.575	5.200
-58	3.625	90mm	1.908	4.555	8.500	1.843	.812	5.562	.687	.969	4.700	5.325
-60	3.750	95mm	1.860	4.680	8.750	1.843	.812	5.688	.687	.969	4.825	5.450
-62	3.875	n/a	1.908	4.900	8.750	1.843	.812	5.812	.687	.969	4.950	5.575
-64	4.000	100mm	1.750	5.150	9.000	1.843	.812	6.063	.687	.969	5.325	5.950
<b>ANSI large bore</b>												
-22	1.375	33mm	1.633	1.950	5.250	1.531	.437	3.563	.531	.657	2.875	3.375
-28	1.750	40mm	1.633	2.450	6.500	1.531	.563	4.937	.531	.657	3.570	4.070
-30	1.875	43mm	1.633	2.575	6.000	1.531	.563	4.437	.531	.657	3.625	4.070
-40	2.500	55mm	1.650	3.320	8.000	1.720	.688	6.063	.500	.845	4.700	5.325
-42	2.625	58mm	1.650	3.560	7.000	1.720	.563	5.437	.500	.845	4.625	5.125

\*\*Indicate metric when ordering

Flex-A-Seal offers a line of welded metal bellows seals to handle extreme high-heat operating conditions. Full technical specification and application information is available upon request.

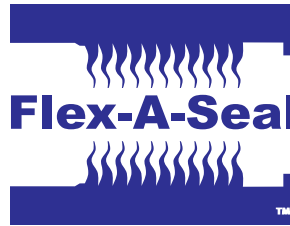
## Styles 60/62/64/66

### High Temperature Solutions



#### Capabilities include:

- Temperatures to 800°F/425°C
- Compatible metallurgy for high temperatures
- High temperature static grafoil packing throughout
- Balanced design - pressures to 300 PSI
- Self-cleaning
- Stationary and drive lug options
- Cartridge designs available
- Single and double-ply AM350, Inconel 718 bellows available
- Easy installation
- Individual connection sizes to assure proper piping
- Easily upgradeable to API design specifications



#### Manufacturing and stocking centers

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