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THE QUEEN'S AWARD
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INNOVATION 2004



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ENVIRONMENTAL TECHNOLOGY

SMSS23™ Single Mechanical Seal For Hot Applications

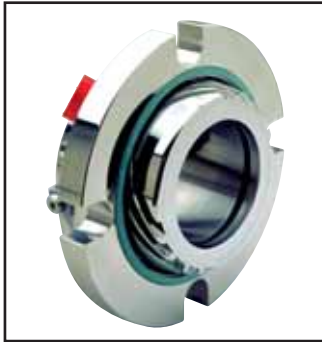


- PATENTED DESIGN
- FULL CARTRIDGE PLAN 23 SEAL DESIGN
- STATIONARY DESIGN
- MONOLITHIC SEAL FACES
- BI-DIRECTIONAL PUMPING
SCROLL PROCESS CIRCULATION

Design Features



The AESSEAL® range of single cartridge mechanical seals incorporates a pumping ring which has been specifically designed to idealize the conditions at the seal faces. The SMSS23™ is best suited for hot process applications.



Rear of SMSS23™ showing Pumping Scroll on Sleeve.

The SMSS23™ design includes the following features;

Monolithic Seal Faces

All seal faces are of monolithic construction and therefore are less likely to face 'rotate' in high or low temperature applications.

The Drive System

Finite Element Analysis has been used to optimize seal face drive. Precise, solid machined drive lugs / pins reduce drive slop between the drive ring and seal face. This is beneficial on equipment start-up / shut-down when using monolithic brittle face materials such as Silicon Carbide or Carbon.

Large Volume of Process Fluid over Seal Faces

The large volume of process fluid around the seal faces improves heat dissipation, helping to increase seal life.

Full Cartridge Plan 23

The SMSS23™ is a true cartridge Plan 23 seal. This avoids the time consuming operation of setting and aligning a separate seal and pumping ring (depicted to the right).

Large Flush Ports

All environmental Control Ports are 3/8" NPT, helping to maximize the cooling effect around the seal faces. The position of the port, directly over the seal faces, helps with the venting operation.

Stationary Seal Design

The stationary seal construction helps to minimize spring fatigue for optimum performance on high shaft speed applications.

Optional Integral Floating Bush

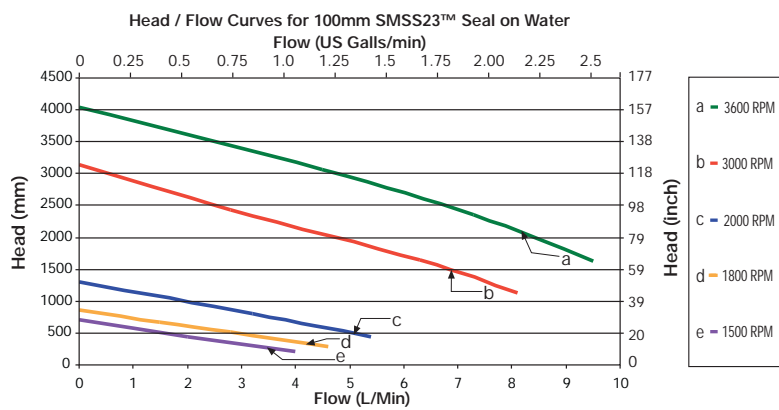
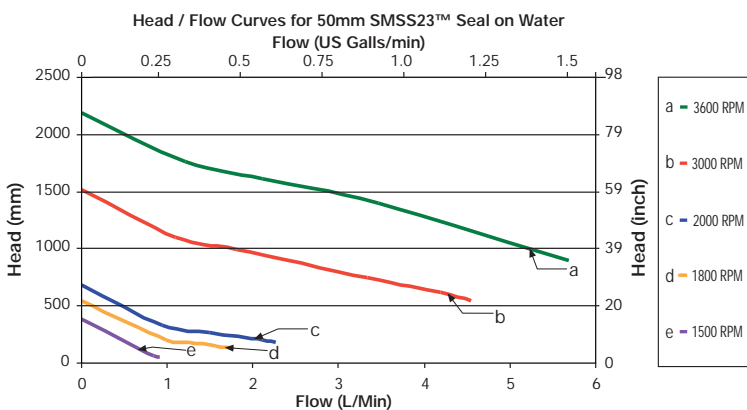
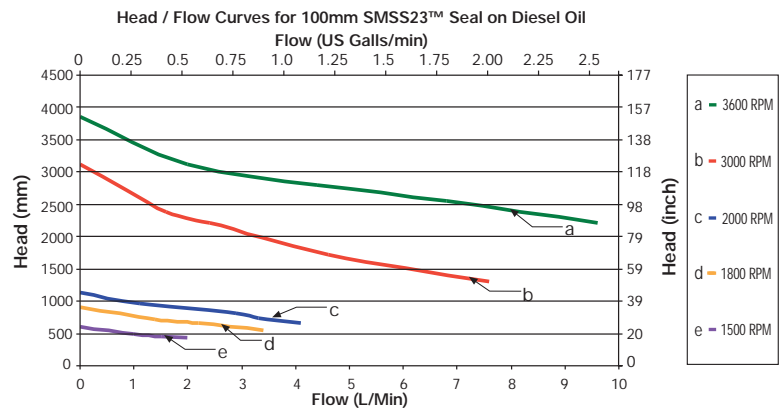
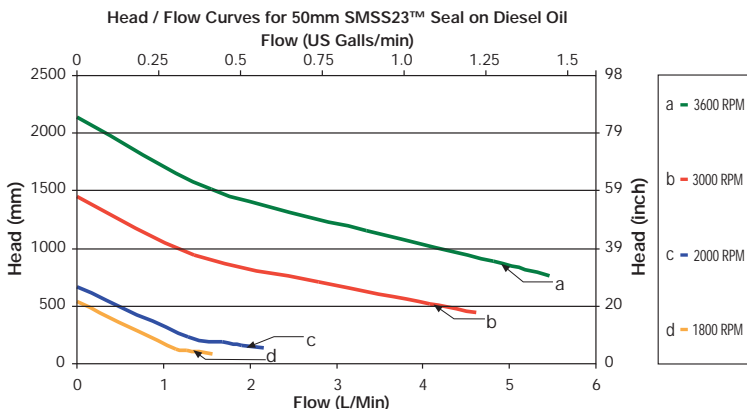
Upon request, the SMSS23™ is supplied with a throttle bush to help isolate the hot process media from the Plan 23 system.



Separate conventional seal and pumping ring configuration.

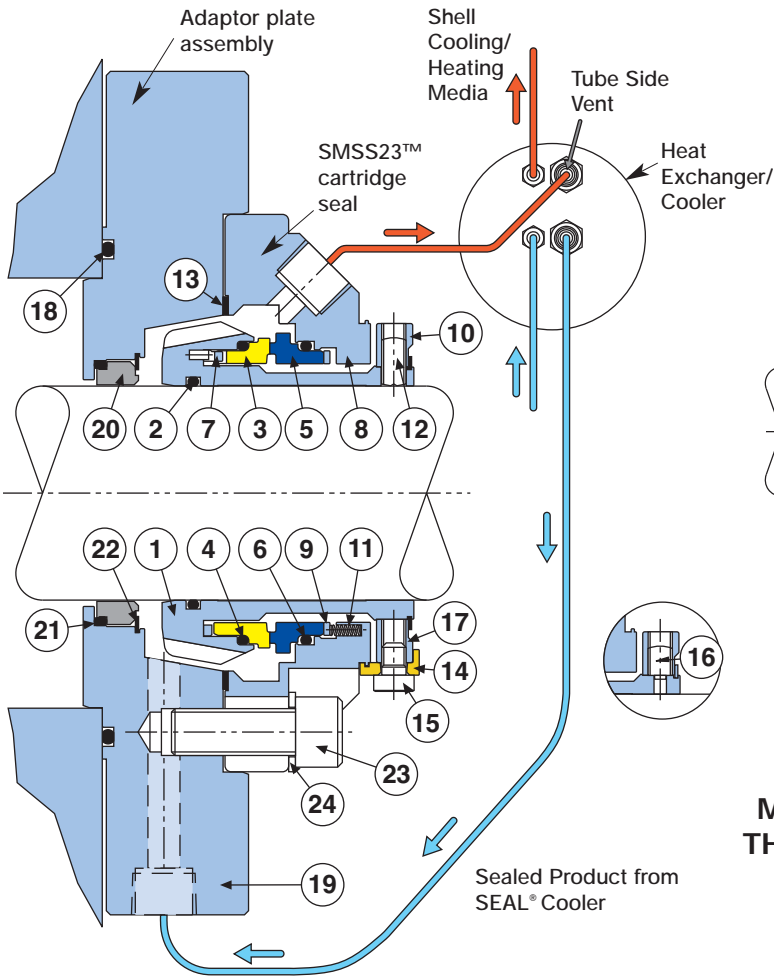
Technical Pumping Performance

Typical Flow Rates and Head Generated by the Pumping Scroll with Water and Oil as the Process Media.

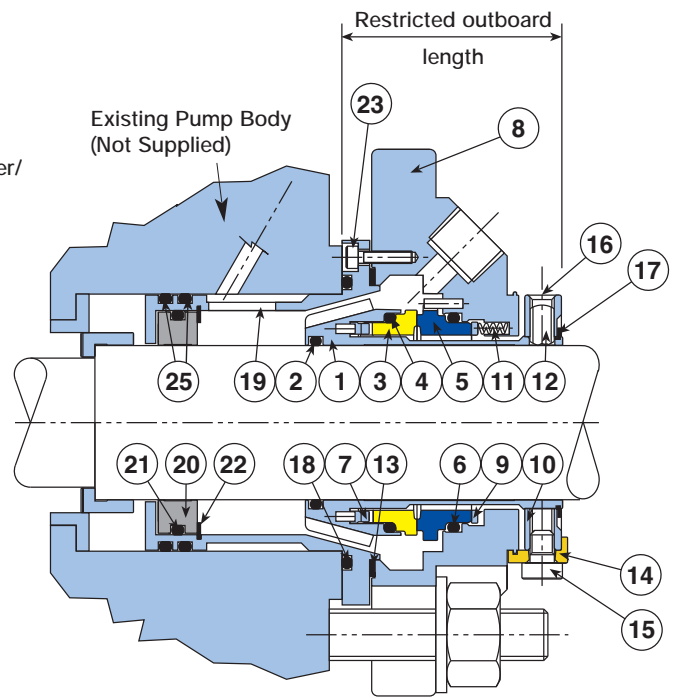




Typical SMSS23™ design configuration (Based on API Plan 23)



Alternate SMSS23™ design configuration (Depending on equipment configuration / restrictions)



**MOST SEAL DESIGNS ARE A COMPROMISE.
THE SMSS23™ IS EVERYTHING YOU NEED TO
SEAL BOILER FEED AND LOW VAPOUR
PRESSURE PRODUCTS.**

Item	Description	Material
1	Sleeve	316L Stainless Steel
2	Sleeve O Ring	Viton® / EPR / Kalrez® / Aflas®
3	Internal Rotary Face	SIC / TC
4	Internal Rotary Face O Ring	Viton® / EPR / Kalrez® / Aflas®
5	Internal Stationary Face	SIC / TC / Carbon*
6	Internal Stationary Face O Ring	Viton® / EPR / Kalrez® / Aflas®
7	Drive Ring / Pin	316L Stainless Steel
8	Gland	316 Stainless Steel
9	Spring Plate	316L Stainless Steel
10	Clamp Ring	316L Stainless Steel
11	Springs	Alloy 276
12	Drive Screws	Stainless Steel
13	Gasket	AF1 / GFT
14	Setting Clips	Brass
15	Setting Clip Screws	Stainless Steel
16	Anti Tamper Screws	Stainless Steel
17	External Circlip	Stainless Steel
18	Adaptor Plate O Ring	Viton® / EPR / Kalrez® / Aflas®
19	Adaptor Plate / Gland Insert	316L Stainless Steel
20	Restriction Bush	Carbon
21	Restriction Bush O Ring	Viton® / EPR / Kalrez® / Aflas®
22	Internal Circlip	Stainless Steel
23	Caphead Screw	Stainless Steel
24	Washer (where applicable)	Stainless Steel
25	Gland Insert O Ring	Viton® / EPR / Kalrez® / Aflas®

* The Carbon seal face is positioned as a rotary component for seal sizes 2.875" (75mm) and above.

SMSS23™ seals have been designed to suit various pumps. Some of which include:-

- Bingham
- Byron Jackson
- Dean Brothers
- Flowserve
- Goulds
- Ingersol Rand
- Naniwa
- Peerless
- Weir
- Sulzer

* For latest sizes and suitable pump information please contact our technical department.

Environmental Control Systems

European Spec

KIT	Surface Area	Tube Dia	Coil Length	Shell Equ Length	Max LPM @ 3MPS Coil	3MPS Casing
AES23-25X6C	0.23m ²	6mm	12m	1.7m	25.8	40.4
AES23-27X6C	0.25m ²	12mm	6.4m	1.98m	64.7	52.80

KIT	Allowable Working Pressure / Temperature					
	Shellside	Tubeside				
AES23-25X6C	177°C @ 6bar	93°C @ 138bar	149°C @ 135bar	204°C @ 130bar	316°C @ 125bar	427°C @ 118bar
AES23-27X6C	177°C @ 5.7bar	93°C @ 90bar	149°C @ 86bar	204°C @ 85bar	316°C @ 80bar	427°C @ 76bar

US Spec

KIT	Surface Area	Tube Dia	Coil Length	Shell Equ Length	Max GPM @ 9FPS Coil	9FPS Casing
AES23-25X6C	2.56Ft ²	1/4"	472"	68"	5.67	8.88
AES23-27X6C	2.75Ft ²	1/2"	252"	78"	14.22	11.60

KIT	Allowable Working Pressure / Temperature					
	Shellside	Tubeside				
AES23-25X6C	350°F @ 89psig	200°F @ 2000psig	300°F @ 1950psig	400°F @ 1900psig	600°F @ 1800psig	800°F @ 1700psig
AES23-27X6C	350°F @ 83psig	200°F @ 1300psig	300°F @ 1250psig	400°F @ 1225psig	600°F @ 1150psig	800°F @ 1100psig

SMSS23™ Standard System Kit



The AESSEAL® cooler kit is supplied as standard with a case side vent and tube side vent which is installed at the highest point in the flush line. The SMSS23™ and the Standard Kit are sold as a package by combining the codes for each item.

This kit comprises of a unit with cast iron casing and 316 Stainless tubes, tube side vent, case side vent and drain port. With four S/S 1/2" (12mm) compression fittings for seal and cooler.

Final selection is dependent on running conditions. Please consult with AESSEAL (MCK) Ltd.

Environmental Control System Range

In addition to a vast range of mechanical seals, AESSEAL® has a specialized systems division, dedicated to the design and manufacture of a comprehensive range of seal support packages for double mechanical seals. These range from the SSE10™ vessel to the high pressure AES-15™ vessels and PUMPPAC™ API Plan 54 forced circulation systems.

SW2™



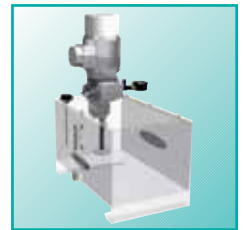
SSE10-P™



AES-15™



PUMPPAC-SOU™



The systems above are compatible with a wide selection of Barrier and Buffer fluid mediums. They are supplied pre-assembled with all necessary components and fittings. On site inventory costs are reduced by modular system construction.

THIS DOCUMENT IS DESIGNED TO PROVIDE DIMENSIONAL INFORMATION AND AN INDICATION OF AVAILABILITY. FOR FURTHER INFORMATION AND SAFE OPERATING LIMITS CONTACT OUR TECHNICAL SPECIALISTS AT THE LOCATIONS BELOW.



USE DOUBLE MECHANICAL SEALS WITH HAZARDOUS PRODUCTS. ALWAYS TAKE SAFETY PRECAUTIONS:

- GUARD YOUR EQUIPMENT
- WEAR PROTECTIVE CLOTHING



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Our Purpose: 'To give our customers such exceptional service that they need never consider alternative sources of supply.'

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