

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

SMSS23™ - Design Features

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

The SMSS23™ design includes the following features;

Monolithic Seal Faces

All seal faces are of monolithic construction and therefore are less susceptible to thermal seal face rotation 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.



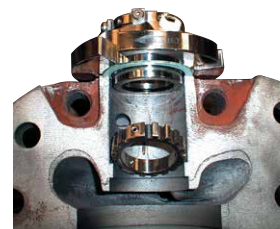
Rear of SMSS23™ showing Pumping Scroll on Sleeve.

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).



Separate conventional seal and pumping ring configuration.

Large Flush Ports

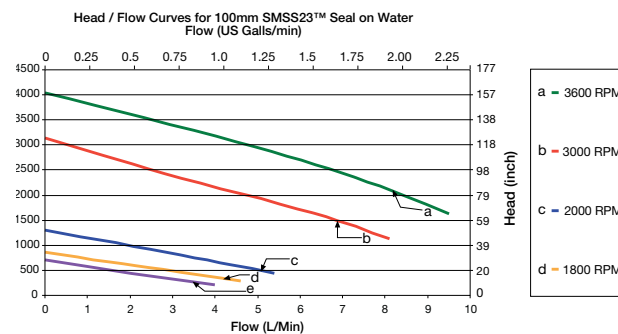
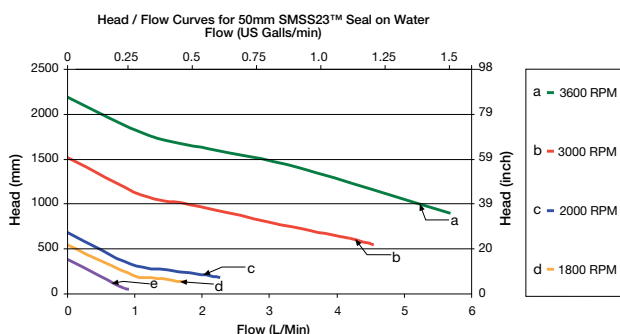
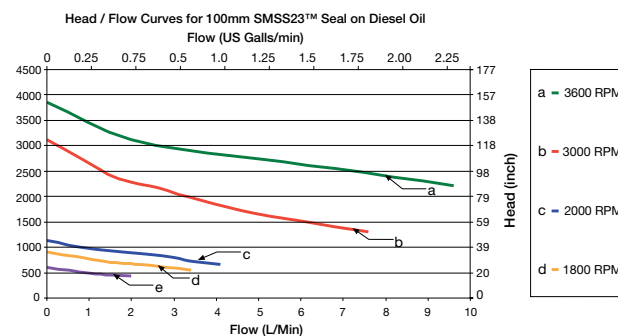
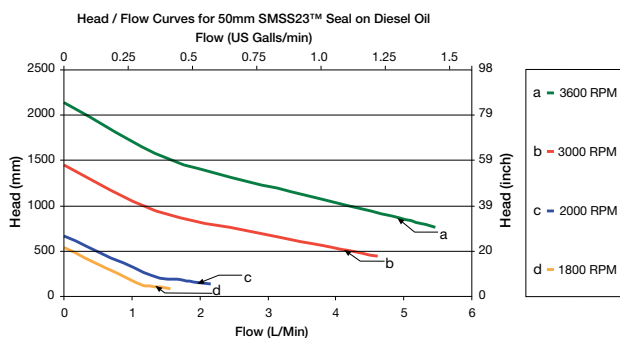
All environmental Control Ports are 3/8" (9.5mm) NPT, helping to maximize the cooling effect around the seal faces. The position of the port, directly over the seal faces, helps with the venting operation.

Stationary Seal Design

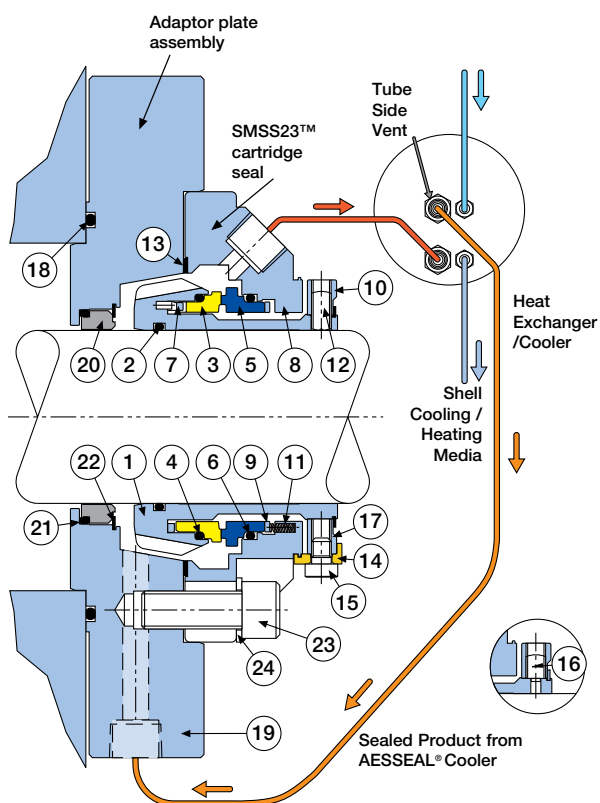
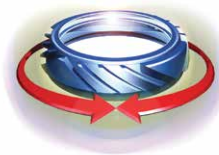
The stationary seal construction helps to minimize spring fatigue for optimum performance on high shaft speed applications.

Technical Pumping Performance

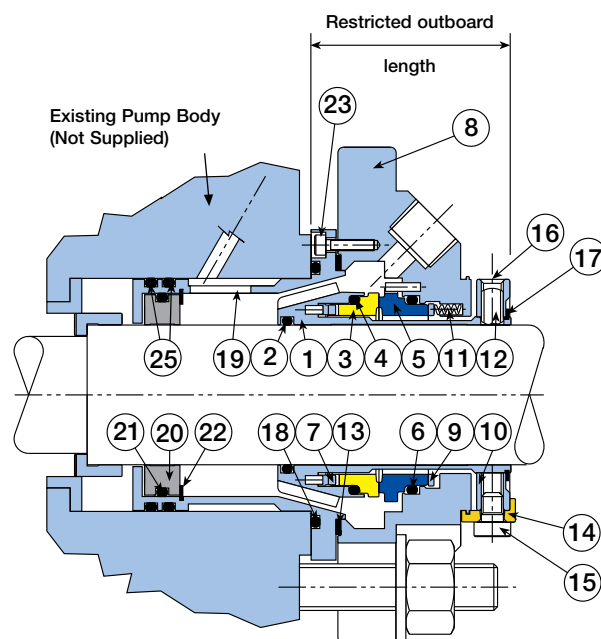
Typical Flow Rates and Head Generated by the Pumping Scroll with Water and Oil as the Process Media.



Materials of Construction



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 with Pumping Ring	316L Stainless Steel
2	Sleeve O Ring	FKM / EPR / FFKM / TFE/P
3	Internal Rotary Face	SiC / TC
4	Internal Rotary Face O Ring	FKM / EPR / FFKM / TFE/P
5	Internal Stationary Face	SiC / TC / Carbon*
6	Internal Stationary Face O Ring	FKM / EPR / FFKM / TFE/P
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	FKM / EPR / FFKM / TFE/P
19	Adaptor Plate / Gland Insert	316L Stainless Steel
20	Restriction Bush	Carbon
21	Restriction Bush O Ring	FKM / EPR / FFKM / TFE/P
22	Internal Circlip	Stainless Steel
23	Caphead Screw	Stainless Steel
24	Washer (where applicable)	Stainless Steel
25	Gland Insert O Ring	FKM / EPR / FFKM / TFE/P

* 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 Casing
AES23-25X6C	0.23m²	6mm	12m	1.7m	25.8	40.4
AES23-27X6C	0.25m²	12mm	6.4m	1.98m	64.7	52.80

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

US Spec

KIT	Surface Area	Tube Dia	Coil Length	Shell Equ Length	Max GPM @ 9FPS	Coil Casing
AES23-25X6C	2.56Ft²	1/4"	472"	68"	5.67	8.88
AES23-27X6C	2.75Ft²	1/2"	252"	78"	14.22	11.60

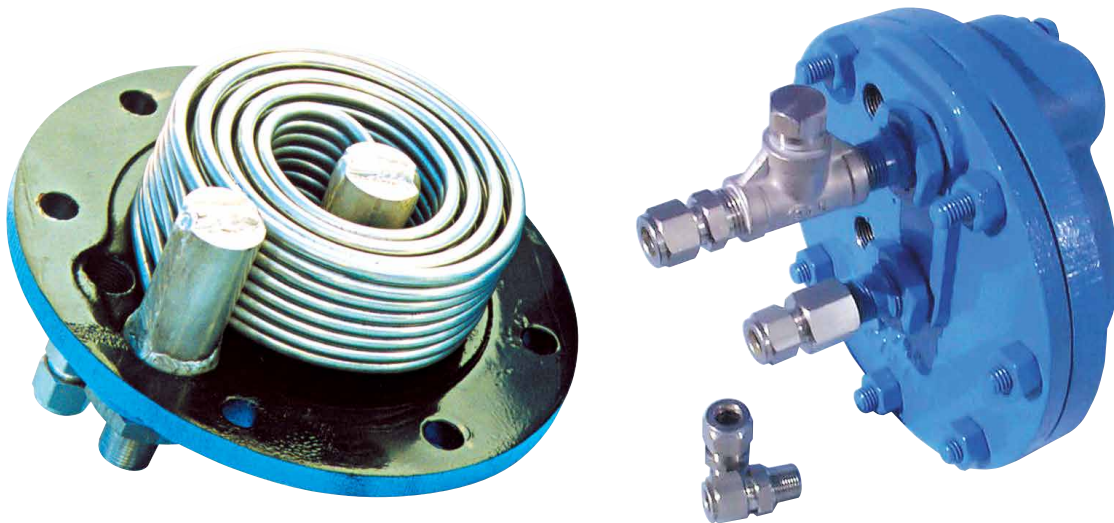
KIT	Allowable Working Pressure / Temperature					
	Shellside	Tubeside				
AES23-25X6C	350°F @ 89 psig	200°F @ 2000 psig	300°F @ 1950 psig	400°F @ 1900 psig	600°F @ 1800 psig	800°F @ 1700 psig
AES23-27X6C	350°F @ 83 psig	200°F @ 1300 psig	300°F @ 1250 psig	400°F @ 1225 psig	600°F @ 1150 psig	800°F @ 1100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

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 contact AESSEAL at the address below.



This brochure is fully recyclable. When laminated, a sustainable, biodegradable and recyclable lamination is used.

For further information and safe operating limits contact our technical specialists at the locations below.



UK Sales & Technical advice:

AESSEAL plc
Mill Close
Bradmarsh Business Park
Rotherham,
S60 1BZ, UK
Tel: +44 (0) 1709 369966
E-mail: enquiries@aes seal.info
www.aes seal.com

AESSEAL plc is certified to:

ISO 9001, ISO 14001, ISO/IEC 20000, ISO/IEC 27001,
ISO/TS 29001, ISO 37001, ISO 45001 & ISO 50001



Net Zero champions globally



INVESTOR
IN PEOPLE

Use double mechanical seals with hazardous products.

Always take safety precautions:

- Guard your equipment
- Wear protective clothing



USA Sales & Technical advice:

AESSEAL Inc.
355 Dunavant Drive
Rockford,
TN. 37853,
USA

Tel: +1 865 531 0192
E-mail: usa@aes seal.com
www.aes seal.com

Important: Since the conditions and methods of use of this product are beyond our control, AESSEAL plc expressly disclaims any and all liability resulting or arising from any use of this product or reliance on any information contained in this document - AESSEAL plc standard conditions of sale apply. All sizes are subject to manufacturing tolerances. We reserve the right to modify specifications at any time. AESSEAL® is a Registered Trademark of AES Engineering Ltd, AESSEAL plc recognizes all trademarks and trademark names as the property of their owners.

LIT-UK/US-L-SMSS23-05PDF Copyright © 2023 AESSEAL plc 08/2023