



ENVIRONMENTAL TECHNOLOGY

SCUSI™ Short Cartridge Mechanical Seal



- **EASY RELIABLE INSTALLATION**
- **SELF-ALIGNING FACES**
- **NON-CLOGGING INTERNAL ROTARY**
- **FITS 5/16" (8mm) CROSS SECTION
IN SMALLER PUMPS**
- **ELIMINATES LEAKAGE**
- **REDUCES POWER CONSUMPTION**
- **BALANCED SEAL FACES**

SCUSI™ - short cartridge mechanical seal

All quality mechanical seals should fit properly and be “leak-free” in operation. Fluid containment is achieved by precision lapping rotary & stationary faces and keeping the faces in contact. To guarantee these basic requirements all our mechanical seals are hydrostatically pressure tested to ensure they fit the shaft and are leak free, before leaving the factory.

Design evolution begins by compiling test and actual field results and designing out any problems. Design also evolves to ensure that seals produced will fit inside the space envelope dictated by International Standards such as ISO 3069, DIN EN12756 and BSEN 12756 (formerly DIN 24960), ANSI B73.1/2M, API 610 and API 682. All of these standards are evolving; so too must mechanical seals.

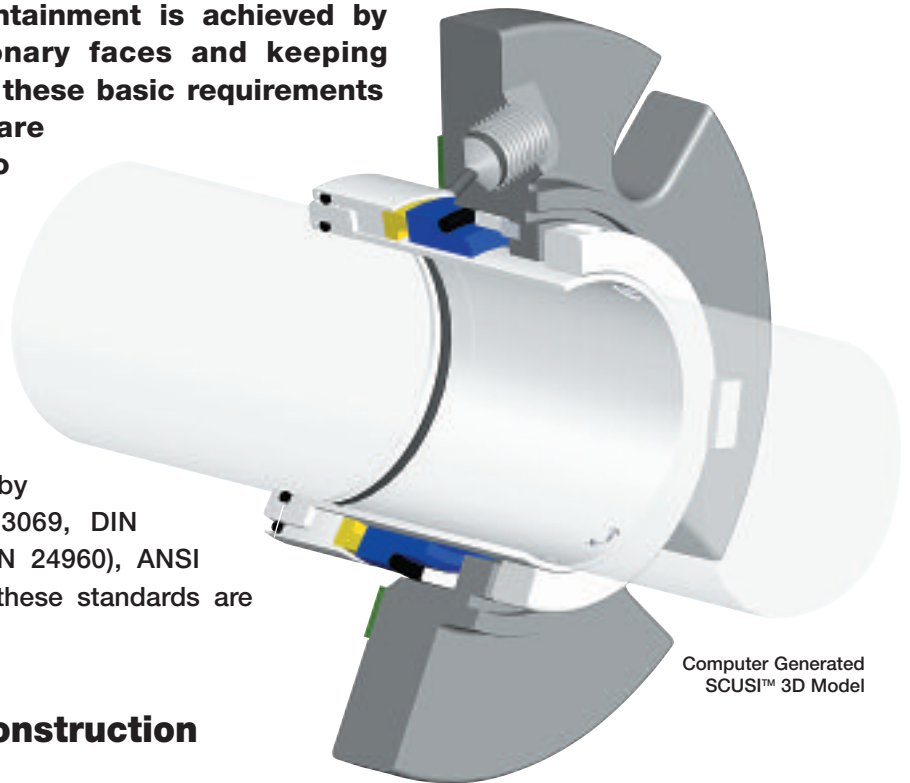
Proven Design - Cartridge Construction

Cartridge seal construction is a proven reliability improvement. Seals pre-assembled at the factory, pressure tested and shipped as a unit, dramatically increase performance as errors due to incorrect installation decline. It is no longer necessary to measure and set spring compression and assembled seals mean that faces are protected from damage during installation.

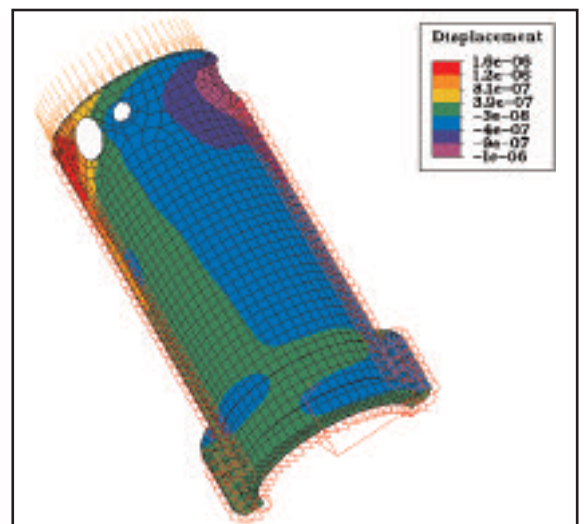
Proven Design - Self-Aligning Faces

The next step in performance maximization is to ensure that seal faces stay loaded and square (90°), to the axis of the rotating shaft. Insertion of gaskets in imprecise rotating equipment make this requirement critical to long-term seal life.

Self-aligning stationary designs, incorporating a spring loaded rotary and a floating stationary face, address the angular misalignment problem. Building on the success of the innovative “universal joint self-aligning system”, the SCUSI™ development incorporates improved third generation self-aligning technology.



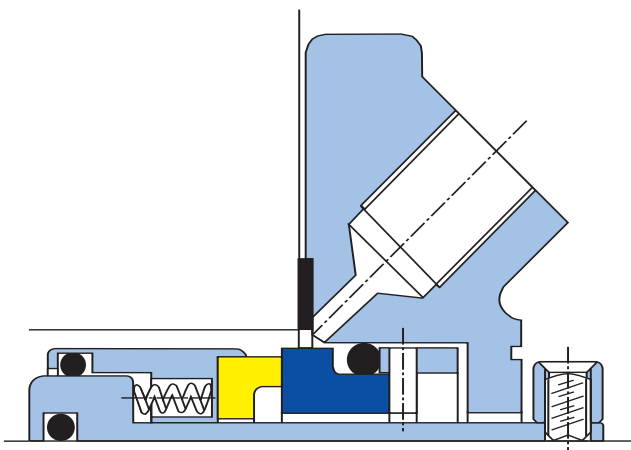
Computer Generated SCUSI™ 3D Model



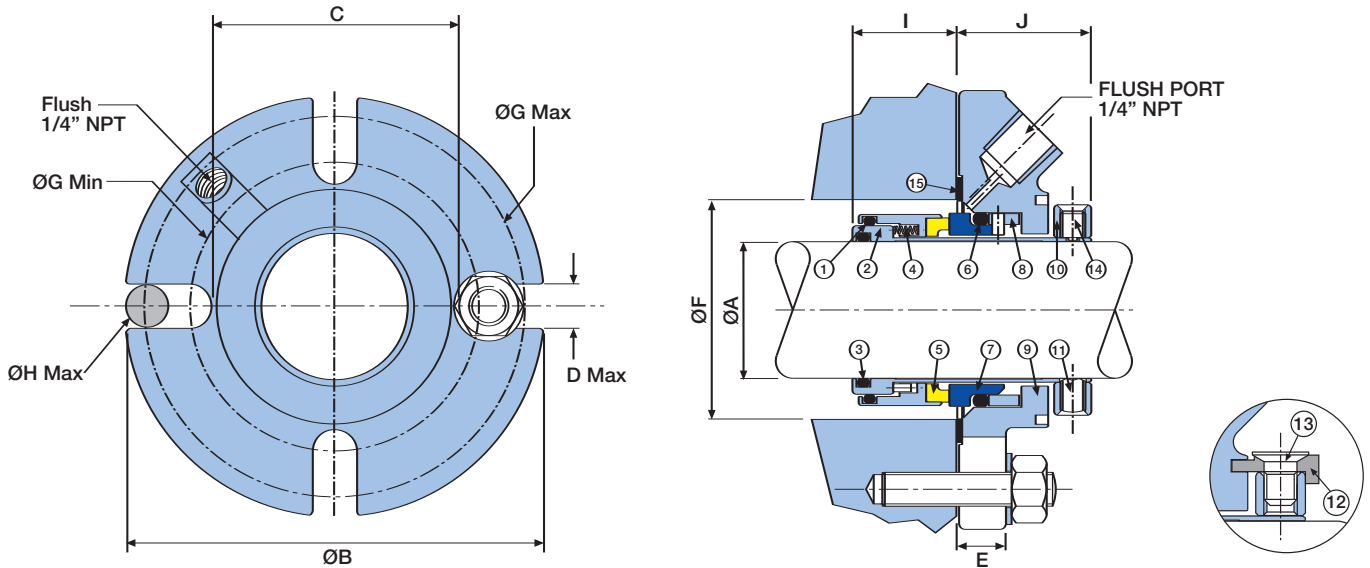
Finite Element Analysis of Stress on a SCUSI™ Sleeve.

With the aid of Finite Element Analysis (FEA), a range of seals was designed to optimize the use of Silicon Carbide. This third generation seal incorporates an improved self-aligning concept and prevents shock damage to Silicon Carbide on start-up, which is the most significant reason for Silicon Carbide damage in other seal designs.

In addition, the spring loaded rotary centrifuges solids away from the seal face and resists clogging, increasing the range of general service applications to include slurries and some abrasives. Faces remain flat, square to the shaft and suspended solids are prevented from crossing the flat seal faces.



SCUSI™ - size charts and cross sections



Item	Description	Material	Item	Description	Material
1	Rotary O Ring	Viton® / EPR / Kalrez® / Aflas®	9	Gland	316 Stainless Steel
2	Sleeve	316L Stainless Steel	10	Clamp Ring	316L Stainless Steel
3	Sleeve O Ring	Viton® / EPR / Kalrez® / Aflas®	11	Drive Screws	Stainless Steel
4	Springs	Alloy 276	12	Centering Clips	Hard Plastic
5	Rotary Face	316L SS - Carbon / TC / SiC	13	Clip Screws	Stainless Steel
6	Stationary O Ring	Viton® / EPR / Kalrez® / Aflas®	14	Anti-tamper Screws	Stainless Steel
7	Stationary Face	SiC / Ceramic / TC / 316LSS-CrOx	15	Gasket	AF1 - GFT
8	Pivot Ring	316L Stainless Steel			

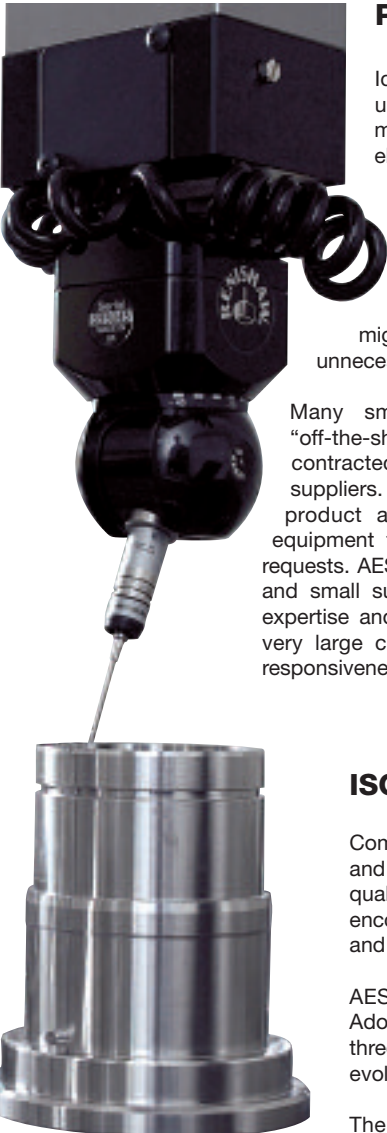
SCUSI™ - Dimensional Information (inches)

A	B	C	DMax	E	ØFMin	ØFMax	ØGMin	ØGMax	ØHMax	I	J
1.000	4.125	2.187	0.562	0.492	1.625	1.937	2.750	3.625	1/2	1.055	1.354
1.125	4.250	2.312	0.562	0.492	1.750	2.062	2.875	3.750	1/2	1.055	1.354
1.250	4.375	2.437	0.562	0.492	1.875	2.187	3.000	3.875	1/2	1.055	1.354
1.375	4.375	2.625	0.562	0.492	2.000	2.312	3.125	3.875	1/2	1.055	1.354
1.500	5.000	2.875	0.562	0.644	2.250	2.500	3.437	4.500	1/2	1.090	1.393
1.625	5.000	2.875	0.562	0.644	2.375	2.500	3.437	4.500	1/2	1.090	1.393
1.750	5.250	3.000	0.562	0.644	2.500	2.625	3.562	4.750	1/2	1.090	1.393
1.875	5.500	3.312	0.562	0.644	2.625	3.000	3.875	5.000	1/2	1.090	1.393
2.000	5.500	3.312	0.562	0.644	2.750	3.000	3.875	5.000	1/2	1.150	1.413
2.125	5.750	3.687	0.687	0.644	2.875	3.312	4.375	5.125	5/8	1.150	1.413
2.250	5.750	3.687	0.687	0.644	3.000	3.312	4.375	5.125	5/8	1.150	1.413
2.375	6.000	3.937	0.687	0.644	3.125	3.562	4.625	5.375	5/8	1.150	1.413
2.500	6.250	4.187	0.687	0.644	3.375	3.687	4.875	5.625	5/8	1.199	1.413
2.625	6.250	4.187	0.687	0.644	3.500	3.750	4.875	5.625	5/8	1.199	1.413
2.750	6.250	4.187	0.687	0.644	3.625	3.875	4.875	5.625	5/8	1.199	1.413

SCUSI™ - Dimensional Information (mm)

A	B	C	DMax	E	ØFMin	ØFMax	ØGMin	ØGMax	ØHMax	I	J
24	101.6	52.4	14.3	12.5	40.0	46.0	66.7	88.9	12	26.8	34.4
25	104.8	55.6	14.3	12.5	41.0	49.2	69.9	92.0	12	26.8	34.4
28	108.0	58.7	14.3	12.5	44.0	52.4	73.0	95.3	12	26.8	34.4
30	111.0	61.9	14.3	12.5	46.0	55.6	76.2	98.4	12	26.8	34.4
32	111.0	61.9	14.3	12.5	48.0	55.6	76.2	98.4	12	26.8	34.4
33	111.0	61.9	14.3	12.5	49.0	55.6	76.2	98.4	12	26.8	34.4
35	111.0	66.7	14.3	12.5	50.8	58.7	79.4	98.4	12	26.8	34.4
38	127.0	73.0	14.3	16.4	57.2	63.5	87.3	114.3	12	27.7	35.4
40	127.0	73.0	14.3	16.4	57.2	63.5	87.3	114.3	12	27.7	35.4
43	127.0	73.0	14.3	16.4	60.3	63.5	87.3	114.3	12	27.7	35.4
45	133.4	76.2	14.3	16.4	63.5	66.7	90.5	120.7	12	27.7	35.4
48	139.7	84.1	14.3	16.4	66.7	76.2	98.4	127.0	12	27.7	35.4
50	139.7	84.1	14.3	16.4	66.7	76.2	98.4	127.0	12	27.7	35.4
53	139.7	84.1	14.3	16.4	69.9	76.2	98.4	127.0	12	29.2	35.9
55	146.0	93.7	17.5	16.4	73.0	84.1	111.1	130.2	16	29.2	35.9
58	146.0	93.7	17.5	16.4	76.2	84.1	111.1	130.2	16	29.2	35.9
60	152.4	100.0	17.5	16.4	79.4	90.5	117.5	136.5	16	29.2	35.9
63	158.8	106.4	17.5	16.4	85.7	93.7	123.8	142.9	16	30.5	35.9
65	158.8	106.4	17.5	16.4	88.9	95.3	123.8	142.9	16	30.5	35.9
70	158.8	106.4	17.5	16.4	92.1	98.4	123.8	142.9	16	30.5	35.9

SCUSI™ - proven quality performance



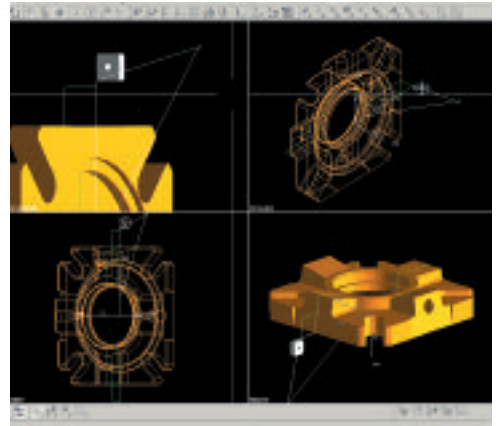
CNC Controlled Inspection of a seal component.

Proven Performance - Standard & Special Seal Ranges

Ideally a mechanical seal can be fitted without modifying the equipment. Many seal installations involve upgrading process equipment from the inefficient use of mechanical packing. A successful conversion to mechanical seals, installed in pumps, mixers and other rotating equipment, reduces power consumption, eliminates leakage and provides a safer and cleaner working environment.

Proper adaptation sometimes requires slight modifications to standard seals and/or the use of an adaptor plate, so attention to how modifications affect the original seal quality should be considered. A large seal company might have difficulty customizing one seal, leading to unnecessary equipment modifications.

Many smaller seal companies are limited to one "off-the-shelf" product design and component machining is contracted through production-orientated Machine Shop suppliers. Some smaller firms are mainly involved in finished product assembly and lack the technical people and equipment to control and respond to special dimensional requests. AESSEAL® integrates the strengths of both the large and small supplier. The quality system, design engineering expertise and CAD/CAM production control capabilities of a very large company are integrated with the flexibility and responsiveness of a smaller organization.



Integrated CAM Programming.

ISO 9001 Quality Assurance Program

Commitment to quality is reflected in Stainless Steel polishing and the tracking of raw materials. Designing and machining in an integrated CAD/CAM facility and component inspection are some aspects of the quality assurance system. However, quality must go beyond the manufacturing process and should encompass all of the organization from Product Development through Manufacturing, Distribution, Sales and Technical Service support.

AESSEAL® is Quality Assured to ISO 9001 (International Standards Organization) BS5750 Part 1. Adoption of ISO 9001 standards ensures consistent quality from product development to testing, including three years field trials on the SCUSI™. Quality Assurance certification began at AESSEAL® in 1985 and is evolving through commitment to Total Quality Management (TQM).

The combination of Quality Assurance, proven design features and cartridge construction, with self-aligning faces, extends seal performance.

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.



AESSEAL® Seals and Systems are ATEX compliant.

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

- GUARD YOUR EQUIPMENT
- WEAR PROTECTIVE CLOTHING



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