



metal bellows seal
range



The AESSEAL[®] Group of
Companies

Designers and
Manufacturers of
Mechanical Seals and
Engineered Seal
Support Systems



Metal Bellows Range of Mechanical Seals

AESSEAL® produces a wide range of modular metal bellows mechanical seals.

This ground breaking technology further enhances the sealing capability of AESSEAL® which covers practically all industry types and conditions.

Corporate Overview

Growing environmental awareness, changing consumer behaviour and more aggressive competition mean that both new and traditional markets are demanding ideas, innovative products and above all service.

The metal bellows development is the result of a global strategy to expand the AESSEAL® product range which will allow further penetration into new markets and offer a more complete service to existing customers.

At the core of this strategy is the improvement of existing products and design excellence which has helped us achieve superior product performance.



AESSEAL® Global Technology Centre, built to support our 35 branches and over 150 distributors worldwide

The AESSEAL® rapid customer service policy is supported by the latest manufacturing technology, extensive inventories of modular components and product design accredited to ISO 9001.

Global technical support is provided in all areas of environmental sealing. This includes 24 hour availability and on site assistance which ensures there is always an Engineer available to help.



In addition the Company has developed world leading knowledge-based software which helps identify the correct mechanical seal for the application, determines which seals will fit without modification and allows the tracking of meantime between failure, following an initial site survey.

Cost savings have already been passed on to our customers due to economies of scale and our product range costs less today than it did in 1983.

AESSEAL® pride itself on a commitment to cost effective sealing and now give, as part of a Seal Management Programme:

- 25% seal cost savings guaranteed when compared with any other seal provider.
- The standard warranty is “no work, no pay.” (Exactly what you would expect from your personal retail suppliers.)
- 48 hours delivery performance on all standard products or they will be provided free of charge.



INVESTOR IN PEOPLE



AESSEAL plc are quality assured to ISO 9001 for the design and manufacture of mechanical seals.

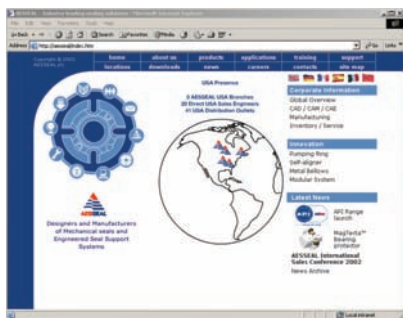


THE QUEEN'S AWARDS
FOR ENTERPRISE
2000 + 2002

CBI, Hammond Suddards & Yorkshire Post 'fit for the future' 1999, "Best Manufacturer" for Yorkshire and Humberside.U.K.

Confederation of British Industry Growing Business Award 1999 for "International initiative of the year"

WINNER OF THE
NATWEST
SUNDAY TIMES
COMPANY OF
TOMORROW
AWARD



AESSEAL® puts Information Technology at the forefront of its business. This has rapidly increased our performance and efficiency through the introduction and management of new technology. One of the biggest single changes through technology has been the introduction of the corporate web site. AESSEAL® is a virtual Internet Service Provider and an increasing amount of e-applications are being offered to our global customer base over the internet.

This brochure can be downloaded from the AESSEAL® website at www.aesseal.com under the 'Product' section or additional copies can be requested from marketing@aes seal.com. To find out the latest additions to the metal bellows range visit our website today.

Metal Bellows Background

Metal bellows technology is an established and everyday part of the seal world. It is estimated that metal bellows seal designs and their derivatives cater for around 20% of the mechanical seal market. However, metal bellows are often inappropriately selected for applications due to a fundamental lack of awareness of their design limitations.



Generalized Advantages of Metal Bellows Seals

The single undeniable benefit of using a metal bellows seal is the removal of a semi-dynamic sliding elastomer from a conventional pusher type mechanical seal. The remaining static elastomer may still operate satisfactory after, for example, swelling from chemical attack compared to the effect on a semi-dynamic elastomer in a pusher seal.

It is fact that many elastomers suffer swell or shrinkage rates at relatively low temperatures. Therefore, the primary application for many metal bellows is to overcome chemical attack problems on elastomers.

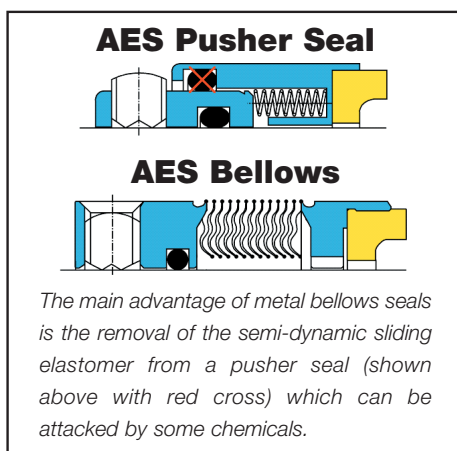
A common misunderstanding is that bellows can always be used on relatively high temperature applications. The sealing performance of the metal bellows in such duties is largely dependent

upon its materials of construction.

Not all applications are suited to metal bellows technology. Metal bellows applied in the food industry, for example, are deemed to be disadvantageous as the bellows convolutions create "bug" traps, which are very difficult to thoroughly clean. Likewise applying bellows to slurry applications can, in some instances, pack the bellows convolutions to the point where they are unable to move adequately.

Like all mechanical seal designs, "the seal is only as good as the environment it is used in". Changing the seal environment is the key to good mechanical

sealing. In some applications this is not possible, therefore, the selection of the right materials of construction and the actual seal design features are of the utmost importance.



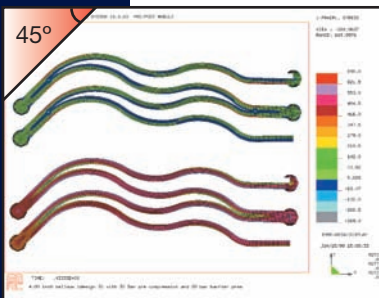
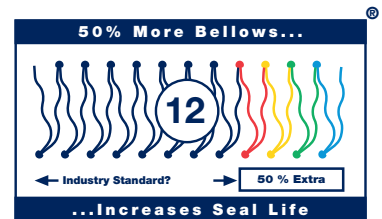


AESSEAL® Metal Bellows Advantages

Development - AESSEAL® produces edge welded bellows. Tests proved that such bellows offer a more linear “spring rate” compared to a rolled bellows favoured by other manufacturers. This has a direct effect on seal face pressure during seal operation. Excessive face pressure, as found in competitor rolled bellows seals, can be inconsistent with long seal life. Edge welded bellows are exactly what they say - two diaphragms, male and female, welded along their circumference to produce a convolution. These convolutions are then welded together to form a bellows stack.

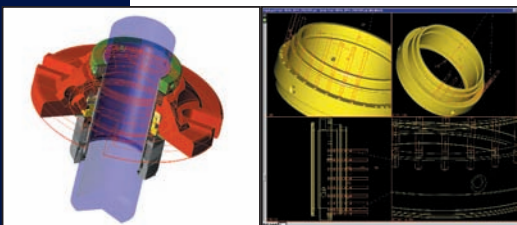
Superior Materials - Alloy 276 has been selected by AESSEAL® as the material for its standard inventoried range of bellows. Alloy 276 is a high Nickel alloy and has superior mechanical and corrosion resistance properties in comparison to bellows cores (such as 300 series Stainless Steel or Alloy 20 materials) which are frequently encountered in the market place. Bellows manufactured from heat treated Alloy AM350 are used where higher pressure or stable high temperature operation is required.

12 Bellows Convolution - Many (not all) mechanical seal suppliers produce edge welded metal bellows with an 8 convolute stack. AESSEAL® produces a 12 convolute bellows as standard. **Maximum convolutions mean maximum seal life.** With more convolutions AES has been able to utilise thicker diaphragm material which improves pressure resistance while maintaining static face pressure performance and a linear bellows spring rate.



Reduced Stress - 12 convolutions is amongst the highest number of convolutions to be found in a standard metal bellows seal in the mechanical seal industry. With more bellows convolutions the less stress there is on each convolution in the bellows stack. Axial and radial deflections will also impact less on each of the bellows convolutes in a 12 convolution stack compared to an 8 convolution stack. A 12 convolute stack is more able to accommodate installation tolerances and will maintain a more consistent face pressure as the seal wears during use. **This is an almost ideal arrangement.** The main drawback is that manufacturing costs are 50% higher than an equivalent 8 bellows stack.

Design - The bellows range of seals were created with the aid of the latest Computer Aided Design and Manufacture programmes including Finite Element Analysis (FEA). This helped to predict how the seal would perform under various conditions and also helped decide on the best bellows convolution profile, which is optimized at 45° on the inside diameter. FEA showed that the AES male and female diaphragms are optimized in terms of stress on the weld beads.

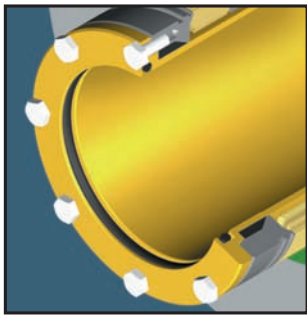


Creating most of the product development electronically, instead of physically, reduced the time taken to finalise the design. It also meant fewer costly physical prototypes were needed which also saved time and money.

Testing - Computer simulation is very effective in testing performance but all AESSEAL® mechanical seals still have to undergo thorough physical testing in a range of arduous environments. Tests were conducted on two test rigs which are capable of testing to API 682 requirements. The first rig (API 1) is capable of testing seals in hot water up to 200°C (400°F) and the second (API 2) tests seals in hot oil up to 300°C (580°F).



Generalized Bellows Cartridge Seal Design Features



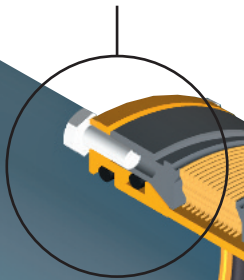
Clamped Drive End

A unique thin cross section clamped drive end prevents sleeve distortion. In many competitor designs, socket set screws attach the bellows to the thin cartridge sleeve. This often resulting in radial sleeve distortion and assembly/disassembly problems.

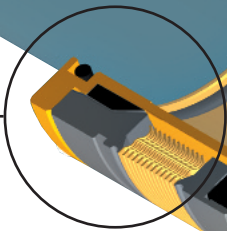
Advanced Bellows Design

The AESSEAL® bellows design includes 12 convolutions rather than the industry standard of 8. This can increase seal life by reducing the amount of stress on each convolution. It also allows linear spring rate and face pressure during operation.

Bellows Unit Elastomer Option



Bellows Unit Graphite Option



Modular Rotary Design

Both the graphite packing and elastomer designs use the same patent pending bellows rotary unit ensuring maximum flexibility. The diagram above shows both options at different sides of the section.

Modular Seal Face Design

Hydraulically balanced seal face design ensures optimum fluid film during process fluctuations. A wide range of stocked materials allows maximum flexibility and delivery performance.

Reliable Drive

Drive screws clamp directly on to a shaft or sleeve to minimise drive loss. Drive screws which do not deform the seal sleeve ensure easy removal and refitting for equipment maintenance. Robust setting clips guarantee correct working length and radial positioning and can be re-used for removal and refitting.



Metal Bellows Manufacture

Massive investment in new manufacturing methods allows optimum machining and high quality welding production processes.

All production techniques have been developed in-house to maximize the quality of the end product.

In depth research has provided advanced technology, as a result of which many of the bellows featured in this brochure have patents pending.

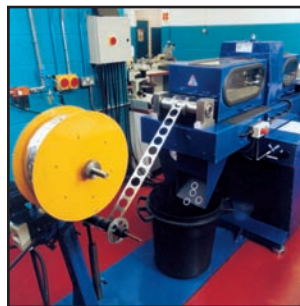


The in-house production and profile diamond machining of dies for precision stamping ensures consistent quality. Manufactured in a Total Quality Environment, 12 process verification checks and over 26 individual production checks ensures that the bellows manufacturing process is one of the most strictly controlled processes in the entire organisation.



Raw Material

AESSEAL® use as standard Alloy 276 on most bellows units and can also produce heat treated AM350 bellows. In order to get the idealised spring rate and thus face pressure on the various sizes of bellows AESSEAL® use, and extensively inventory, different thicknesses of the foil raw material. This also allows a consistent product pressure rating across a range of seal sizes.



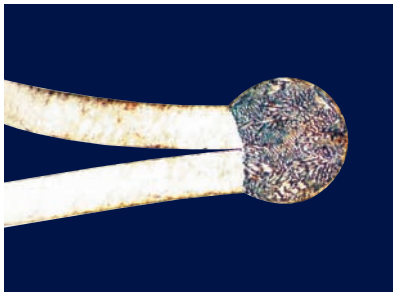
Stamping

The first part of the production process is the 'stamping' of the raw material into male and female diaphragms. This takes place on a fully automated stamping machine which feeds itself the sheet material.



Diaphragm Cleaning

Once the diaphragms have been formed on the stamping machines they have to be cleaned. This is done in a totally controlled environment where they are first thoroughly cleaned in an ultrasonic bath to remove all dirt and dust.



Welding

When the male and female diaphragms are totally clean they are ready for welding. Computer Numerically Controlled (CNC) precision welding technology generates consistent, high quality weld beads to join the male and female diaphragms. Three separate Helium leak checks for each and every bellows verify the quality of the CNC welding process. The cross sectional view on the left shows this precision welding magnified many times.

Heat Treatment

AM350 bellows assemblies are processed through an extensive three phase, computer controlled heat treatment process. In-house facilities include state of the art ovens and a subzero, temperature controlled freezer to conduct the necessary material transformation. The joint between the bellows stack and end fittings is often the place of highest stress and where bellows failure occurs. This is often a result of the last end weld not getting heat treated in some designs found on the market. The FULL AES bellows assembly, complete with end fittings, is taken through the heat treatment process, minimizing the likelihood of material failure at this critical point. The additional post heat treatment processing cost is the only drawback with this "performance first, cost second" AES philosophy.



Diaphragm Pickling

Following cleaning, the diaphragms (of certain material types) are pickled in a mixed acid solution to remove surface oxides. They are then rinsed in de-ionised water and oven dried to prepare them for the next stage.



Inside Diameter Weld

The first part of the welding process welds the male and female diaphragms on their inside diameter to form a convolution. The specially designed dual function welding mounts allow one set of bellows to be automatically welded while another set can be loaded or unloaded.



Outside Diameter Welding Preparation

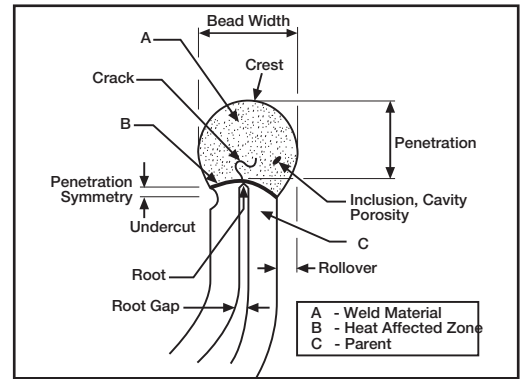
The welded convolutions are positioned on a specially designed jig which holds them in position ready for outside diameter welding. This clamps and spaces the convolutions so welding can be automated.



Metal Bellows Manufacture

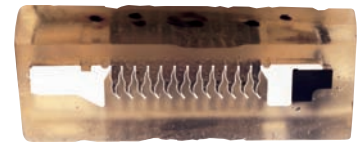
Standard Weld Profile

Plastically mounted inner and outer weld samples are electrolytically etched to reveal the microstructure of the weld. These are then checked under magnification to ensure joins conform to accepted standards for weld bead width, symmetry, penetration and inter-diaphragm root characteristics.



Destructive Testing

Bellows samples from each new batch processed are destructively tested. The weld profile is checked against a standard profile. All test samples are individually serialized and stored for future reference.



Outside Diameter Welding

Once the inside diameters are welded creating convolutions they can be welded together on their outside diameter to form the bellows stack. This involves an automatic tracking system, complete with video cameras showing magnified results, to make sure the weld is consistent.



End Welding

This takes place after all the bellows convolutions are welded together to form a bellows stack. The bellows stack is welded to its supporting entities; the face holder and the drive end. This takes place on a purpose built mandrel which is positioned on the outside diameter welding machine. After completing this process it is now a complete bellows unit.



Weld Inspection

To ensure weld quality, samples from every batch are thoroughly inspected. Sectioned convolutes mounted in resin are polished using diamond lapping to produce a highly polished surface. In this state any imperfections are clearly visible under microscopic examination.



Inventory

In order to achieve industry leading delivery performance AESSEAL® keep a large inventory of the bellows units in standard sizes. We provide immediate response for standard metal bellows seals with same day despatch available together with a 24 hour emergency telephone number for “out of hours” contact.

Modularity

The metal bellows range continues the AESSEAL® tradition of using modular technology. This means the company uses similar parts for many different seals which reduces manufacturing costs and aids superior delivery performance.



Hardness Testing

All heat treatment batches are accompanied by sample convolute stacks which are subjected to a destructive Micro-Hardness check.



Scragging / Face Loading

Scragging is a carefully controlled stretching process used to achieve highly consistent and stable seal face pressure characteristics. This process involves state of the art load monitoring equipment linked to “spring rate” software.

Leak Testing

All bellows units are tested for leakage on a Helium Mass Spectrometer. The inside of the bellows unit is evacuated by placing it on the leak detector test port. A helium sniffer probe is then used to identify any minute weld defects. Each and every bellows unit gets leak checked at least THREE times during the manufacturing process.

Part Marking

All bellows seal assemblies are etched with a unique number which is subsequently recorded on a computer database. This allows full traceability at any time in the future so AESSEAL® can determine when the seal was made and trace all other seals in the same batch.

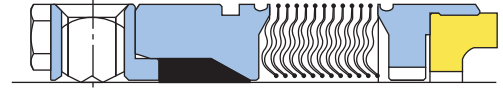


AESSEAL® Bellows Modularity Combinations

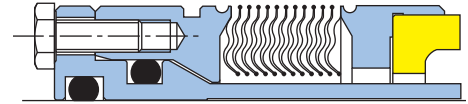
In keeping with the AESSEAL® tradition of modular design the majority of bellows component and cartridge seal options use the same bellows assembly.

The three different bellows options use either a graphite packing or elastomer. All use a modular rotary bellows assembly.

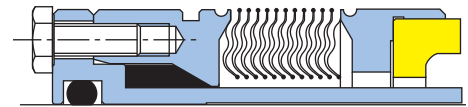
Component Seal Drive End Graphite Packing Option



Cartridge Seal with Elastomer Option

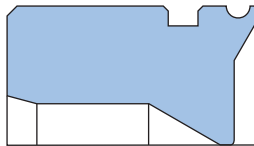


Cartridge Seal with Graphite Packing Option



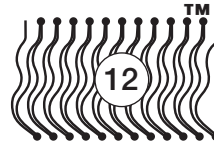
AESSEAL® Material Codes / Designation

Drive End



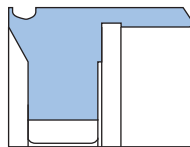
S = 316 SS
H = Alloy 276

Bellows Core or Stack



H = Alloy 276
A = Heat Treated AM350

Seal Face Holder



S = 316 SS
H = Alloy 276
C = Alloy 42

Seal Face

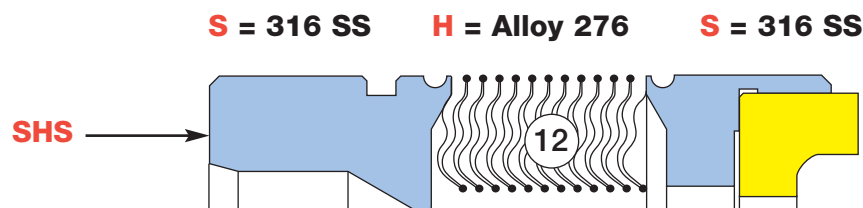


The AESSEAL® bellows range is available with the following seal face materials as standard:

- Carbon
- Silicon Carbide

Antimony Carbon and Tungsten Carbide assemblies can be made to order.

*For standard inventoried cartridge seals (check availability for other material combinations) Ø 1.000" - 4.000" (24mm - 100mm) the following materials are used:



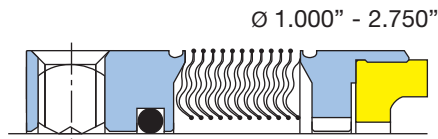
BSAI™ Component Seals with Elastomer Options



BSAI™ Design Features

The seal is offered with the following features:

- Hydraulically balanced seal face design
- Short internal working length
- Patent Pending modular rotary seal head
- No shaft fretting
- Excellent general service seal
- Fits 0.3125" (8mm) cross section in smaller pump models
- 12 convolute metal bellows as standard

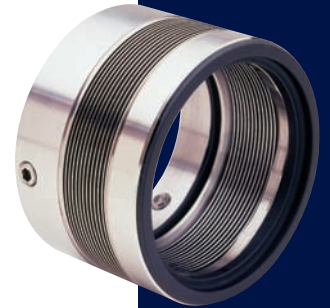
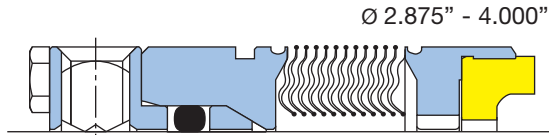


Imperial BSAI™

Sizes available: Ø1.000" - 4.000"

Sizes inventoried - ANSI shaft sizes -

Ø 1.125", 1.375", 1.750", 1.875", 2.125", 2.500", 2.625", 2.750.

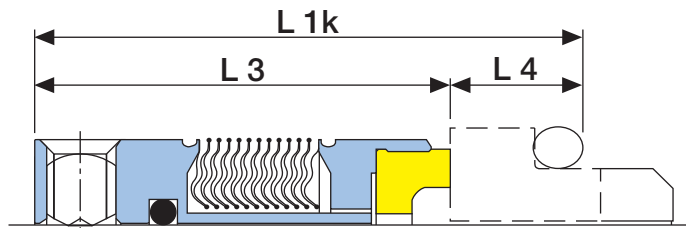


The BSAI™ range is available in a wide range of seal face and elastomer combinations, together with self-aligning, DIN, CURC™, T, L shaped or boot mounted stationaries.

Inventoried in SHS bellows materials. Other materials are available on request.

DIN BSAI™

- Any non inventoried DIN BSAI™ seal size can be made to order.
- The metric BSAI™ seals conform to BS EN 12756 (formerly DIN 24960) when used in conjunction with an AESSEAL® DIN stationary.



Sizes available: Ø 24mm - 100mm

Sizes inventoried - Popular metric shaft sizes including Ø 33mm, 35mm, 43mm, 45mm and 53mm.

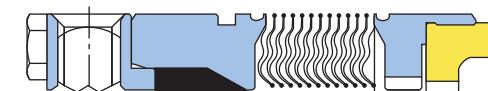
Inventoried in SHS bellows materials. Other materials are available on request.

BSAIG™ Component Seals with Graphite Packing Options

The BSAIG™ component seal with graphite packing employs the standard rotary unit in the AESSEAL® modular seal range.

The seal is offered with the following features:

- Hydraulically balanced seal face design
- No shaft fretting
- High performance single component seal
- Fits 0.3125" (8mm) cross section in smaller pump models
- Graphite packing with excellent chemical resistance
- 12 convolute metal bellows as standard



Sizes available: Most imperial and DIN metric sizes can be made to order

Sizes inventoried - ANSI shaft sizes - 1.125", 1.375", 1.750", 1.875", 2.125", 2.500", 2.625", 2.750".

The BSAI™ is available in a wide range of seal face and elastomer combinations, together with self-aligning, DIN, CURC™, T, L shaped or boot mounted stationaries.

Inventoried in SHS bellows materials. Other materials are available on request.





BSIV™ Bellows Single Cartridge Seal

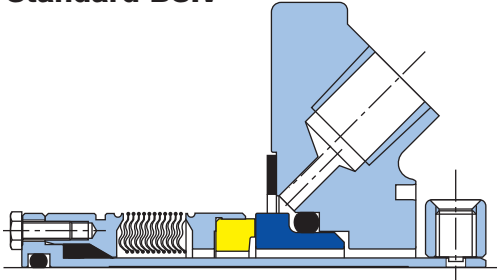
The AESSEAL® BSIV™ range of single cartridge mechanical seals have been designed as a value for money, high performance sealing solution for general applications.

The seal is offered with the following features:

- Industry proven modular technology
- 100% inventoried
- Cartridge design unit for reliable installation
- Requires no pump modification
- Ideal replacement for 2 part seals or previously packed stuffing boxes
- Eliminates leakage
- No shaft fretting
- Flush connection as standard
- 12 convolute metal bellows as standard



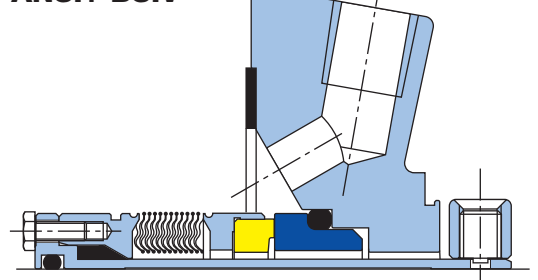
Standard BSIV™



Sizes available: Ø 1.000" - 4.000" (24mm - 100mm) in a wide range of seal face and elastomer combinations.

Inventoried in SHS bellows materials. Other material combinations available including a full, solid alloy 276 bellows and gland arrangement in all ANSI sizes.

ANSI+ BSIV™



Sizes available: ANSI+ (Big Bore) Ø 1.125", 1.375", 1.750", 1.875", 2.125", 2.500", 2.625", 2.750".

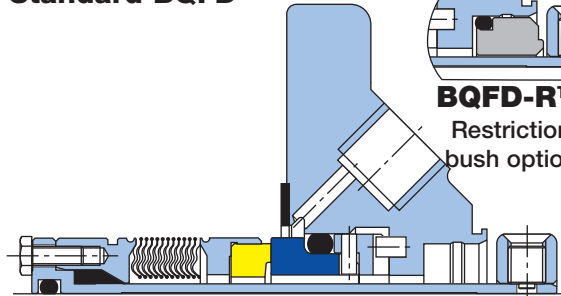
BQFD™ Bellows Quench, Flush & Drain Single Cartridge Seal

The AESSEAL® BQFD™ range of single cartridge mechanical seals uses many of the same modular parts as a BSIV™ but has the added features of Quench and Drain making it usable in more diverse applications.

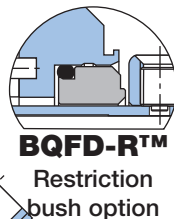
The seal is offered with the following features:

- Flush, Quench and Drain environmental port options
- Alloy 276 wetted parts available
- Cartridge design unit for reliable installation
- Hydraulically balanced seal face design
- No shaft fretting
- 12 convolute metal bellows as standard

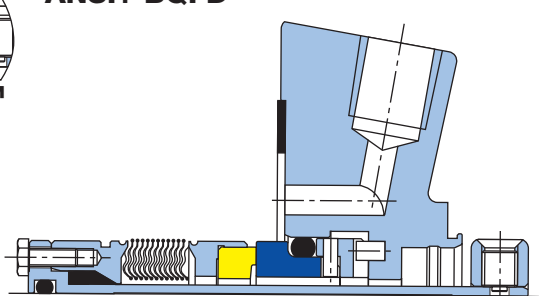
Standard BQFD™



Sizes available: Ø1.000" - 4.000" (24mm - 100mm) in a wide range of seal face and elastomer combinations.



ANSI+ BQFD™



Sizes available: ANSI+ (Big Bore) Ø 1.125", 1.375", 1.750", 1.875", 2.125", 2.500", 2.625", 2.750".

Wetted Alloy parts are available in Alloy 276 - see the exotic alloy product range opposite.

Inventoried in SHS bellows materials. Other material combinations available on request.

The BSIV™ is also available with wetted parts in Alloy 276.



BDFI™ / BDFC™ Bellows Double Flow Induction/Convection

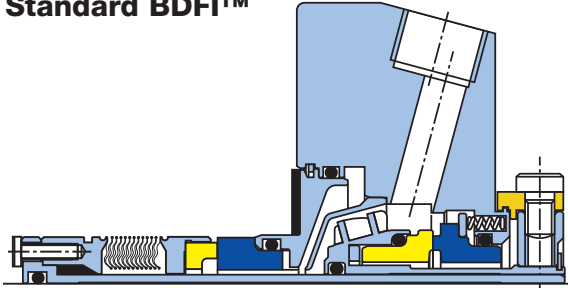
The BDFI™ / BDFC™ is an innovative modular hybrid design, created using the advanced features of two other AESSEAL® mechanical seals. The BDFI™ contains an integral, bi-directional pumping ring to improve barrier fluid circulation within the seal. Both the BDFI™ and BDFC™ contain a deflector to direct barrier fluid to both sets of seal faces. This effectively removes heat thereby helping to improve seal life.



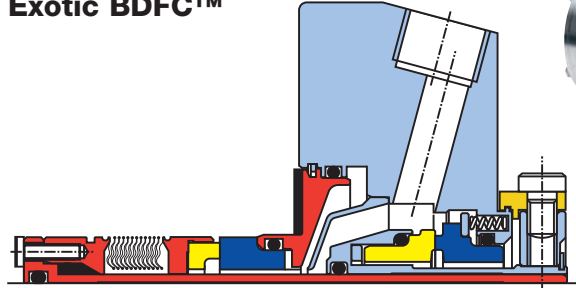
The seal is offered with the following features:

- Cartridge design unit for reliable installation
- Integral bi-directional flow inducer (on BDFI™)
- Directed barrier fluid circulation
- Patent Pending
- BDFI™ & BDFC™ contain a deflector
- Fits on pumps with thin radial cross sectional spaces
- No shaft fretting
- 12 convolute metal bellows as standard

Standard BDFI™



Exotic BDFC™



Sizes available: Standard ISO / ANSI+ (Big Bore)
 Ø 1.125" - 4.000" (28mm - 100mm) in a wide range of seal face and elastomer combinations. Not all sizes are inventoried. Please contact AESSEAL® for more information.

BDFI™, BDFC™ and ANSI+: All are offered with wetted parts in Alloy 276. Contact AESSEAL® for availability.

Inventoried in SHS bellows materials. Other material combinations available on request.



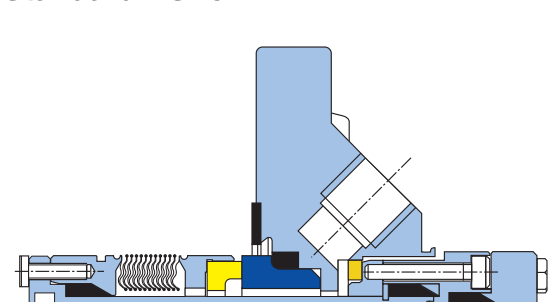
BSFG™ Bellows Single Full Graphite Cartridge Seal

The BSFG™ is specifically designed to eliminate the costly and often long lead-time issues of exotic elastomer compounds. This unique patent pending single cartridge mechanical seal has graphite rings at every primary sealing surface, eliminating the need for elastomers.

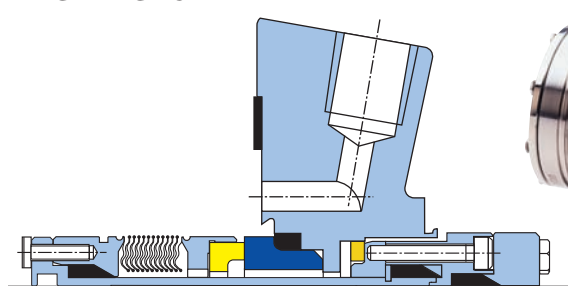
The seal is offered with the following features:

- Full cartridge graphite single seal
- No elastomers
- Fits pumps with thin radial cross sectional spaces
- Integral disaster bush
- Quench and drain environmental ports (Flush on same sizes only)
- Patent Pending
- 12 convolute metal bellows as standard

Standard BSFG™

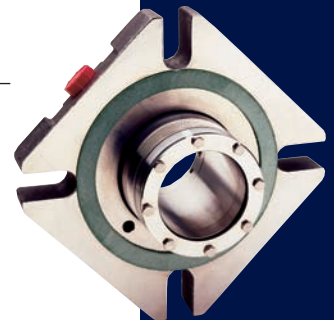


ANSI+ BSFG™



Sizes available: Ø1.000" - 4.000" (24mm - 100mm) in a wide range of seal face and elastomer combinations. Not all sizes are inventoried. Please contact AESSEAL® for more information.

Sizes available: ANSI+ (Big Bore) Ø 1.125", 1.375", 1.750", 1.875", 2.125", 2.500", 2.625", 2.750".





Special Bellows Seals

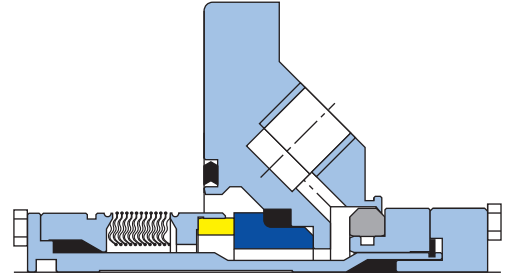
AESSEAL® also offer a wide range of specially designed bellows seals to suit the specific requirements of individual industries. Some examples of these special seals are shown below:

Special BQFD™ to suit Dean Brothers R434, PH234, R210 & R454 Ranges

The AESSEAL® BQFD™ range of single cartridge mechanical seals to suit the Dean Brothers range of pumps is a modular design with all graphite sealing.

The seal is offered with the following features:

- Fits directly onto the bare shaft and is offered with stubshaft if required
- Flush, Quench and Drain environmental port options
- Exotic alloy wetted parts available
- Cartridge design unit for reliable installation
- Hydraulically balanced seal face design
- No shaft fretting
- 12 convolute bellows as standard
- Full graphite sealing with metallic gasket
- Modular construction supplied with SAC bellows materials
- Extensive stubshaft designs available to protect bare shaft from product media

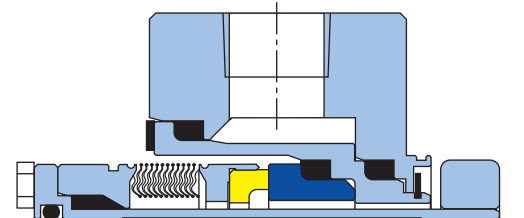


Special BQFD™ to suit the Flowserve MKII GPI & MKII GPII - CBS/FMS Ranges

The AESSEAL® BQFD™ range of single cartridge mechanical seals to suit the Flowserve CBS/FMS is a modular design with integral cooling/heating jacket.

The seal is offered with the following features:

- Integral cooling/heating jacket
- Alloy 276 wetted parts available
- Cartridge design unit for reliable installation
- Hydraulically balanced seal face design
- No shaft fretting
- 12 convolute bellows as standard

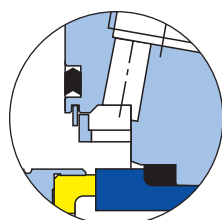


Special BQFD™ Range to suit the Flowserve - FML and CBL Ranges

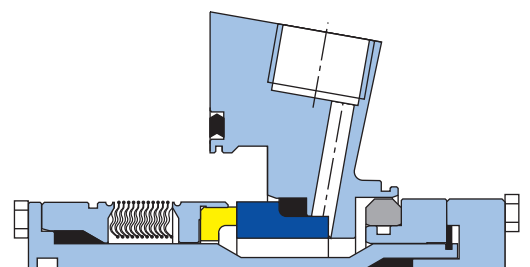
The AESSEAL® BQFD™ range of single cartridge mechanical seals to suit the Flowserve Big Bore range of pumps is a modular design with all graphite sealing.

The seal is offered with the following features:

- Flush, Quench and Drain environmental port options
- Alloy 276 wetted parts available
- Cartridge design unit for reliable installation
- Hydraulically balanced seal face design
- No shaft fretting
- 12 convolute bellows as standard
- Multi-port flush ring is optional



Multi-port Flush Option



AESSEAL® Support System

AESSEAL® offer a wide range of modular seal support systems to complement all their mechanical seal designs. Some of these are shown below:

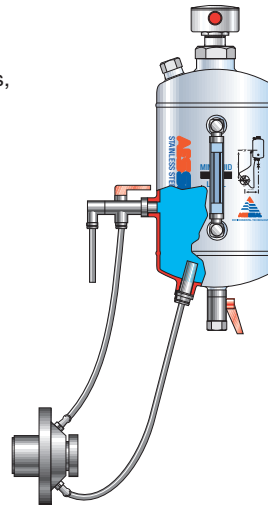


SSE10™ - Thermosyphon & Water Management Systems

A range of barrier fluid systems to cover most applications, offering fast and problem free installation on-site.

The system is offered with the following features:

- Modular design
- Complete with all necessary components and fittings
- Gas / Air Pressurised System
- 10 Litres (2.64 US gal) nominal capacity
- Factory tested and pre-assembled
- The "thermosyphon" effect (natural convection) ensures the seal is kept cool
- 25 litres (6.60 US gals) system (SSE25™) is also available

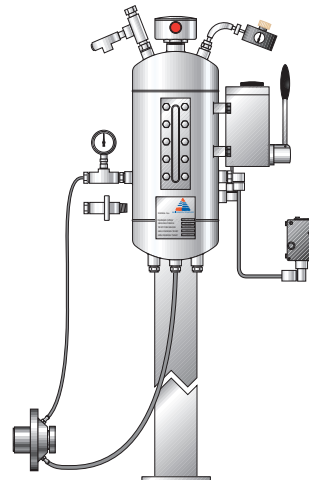


AS15™ - Seal Support System

A range of modular barrier fluid systems which have been designed and constructed to an internationally accepted design code. The seal is cooled by the "thermosyphon" effect.

The system is offered with the following features:

- Modular design
- Complete with all necessary components and fittings
- 316L Stainless Steel construction
- 15 Litres (3.96 US gal) nominal capacity
- Factory tested and pre-assembled
- ASME VIII Div.1 coded, not "U" stamped
- Gas / Air Pressurised System
- 30 barg (435 psig) at 200°C (392°F)

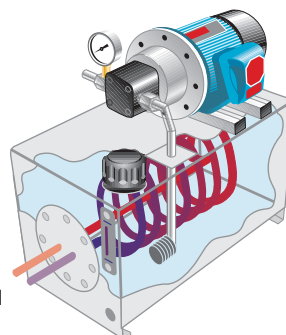


PUMPPAC™ - Flow Induced Seal Support System

The PUMPPAC™ is a range of self-contained, easily installed, pumped barrier fluid systems for use with double mechanical seals.

The system is offered with the following features:

- Flow induced barrier circulation up to 4.76 L/min (1.5 US gal)
- Modular design
- 316L Stainless Steel construction
- 45 Litres (11.8 US gal) nominal tank capacity
- Can work up to 30 barg (435 psig) at 1,500 rpm
- Zone II Exn (Class I, Div II, Groups A, B, C & D) motor fitted as standard
- Standard Oil and Water barrier fluid designs inventoried
- Factory tested and pre-assembled



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- GUARD YOUR EQUIPMENT
- WEAR PROTECTIVE CLOTHING



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