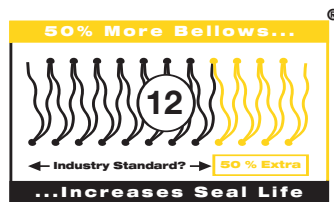
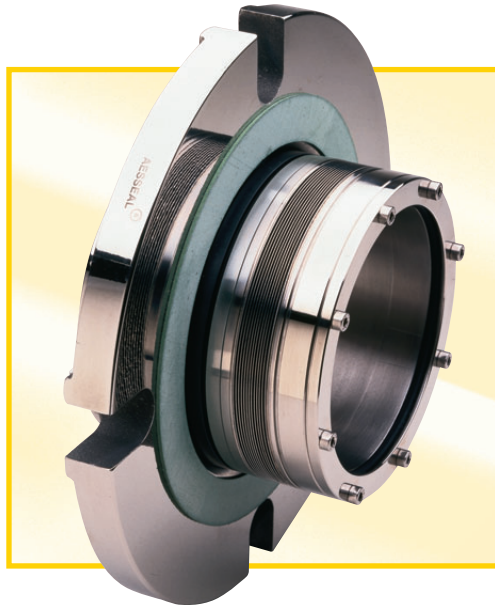




ENVIRONMENTAL TECHNOLOGY

## **BQFD™** Metal Bellows Single Cartridge Seal



- **12 BELLOWS CONVOLUTIONS AS STANDARD**
- **ALLOY 276 STANDARD BELLOWS MATERIAL**
- **CARTRIDGE DESIGN FOR RELIABLE INSTALLATION**
- **FLUSH, QUENCH & DRAIN ENVIRONMENTAL PORT OPTIONS**
- **HYDRAULICALLY BALANCED SEAL FACE DESIGN**
- **MODULAR CONSTRUCTION FOR MAXIMUM FLEXIBILITY**

# BQFD™ Metal Bellows Single Cartridge Seal

The AESSEAL® BQFD™ range of single cartridge mechanical seals use many of the same parts as the BSIV™ single seal but incorporates Flush, Quench and Drain connections making it suitable for more diverse applications.

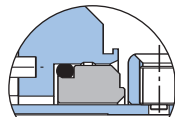
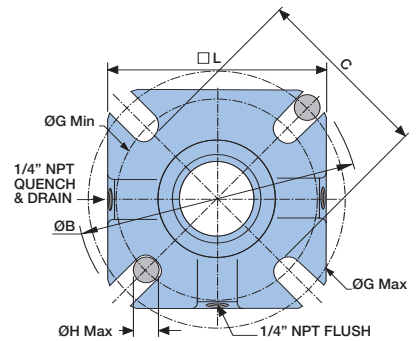
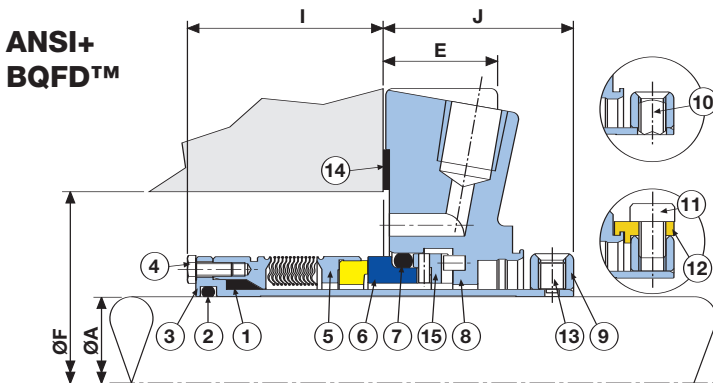
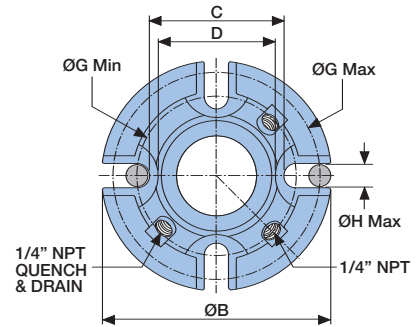
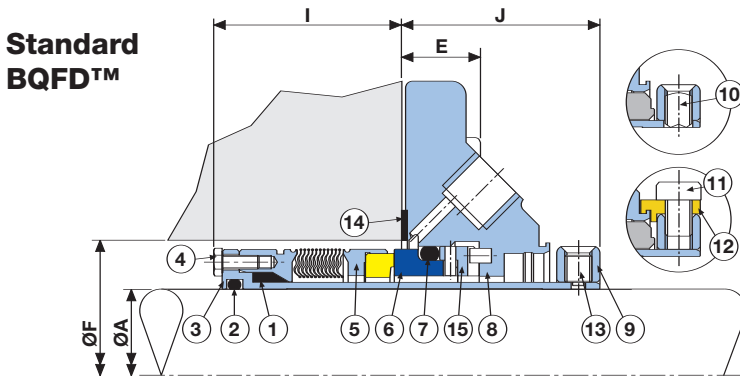
## Major advantages of using AESSEAL® Metal Bellows Seals

- 50% more bellows than the industry standard means there is less stress on each convolution in the bellows stack which helps increase seal life. It is for this reason that this seal is more able to accommodate installation tolerances and will maintain a more consistent face pressure as the seal wears in use.
- Finite Element Analysis was used to optimise the bellows convolution profile on its inside diameter at 45° which means minimal stress on the weld beads.
- The standard bellows material, Alloy 276, has superior mechanical and corrosion resistance properties compared to other industry standard bellows materials such as 300 series Stainless Steel or Alloy 20. The seal face holder and drive end are inventoried as standard in 316L Stainless Steel.

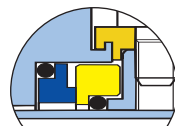
The main benefit of using a metal bellows seal is the removal of the semi-dynamic sliding elastomer from a conventional pusher type seal. This means that bellows seals can be used where chemical attack on this elastomer is a problem.

## The seal is offered with the following features:

- Flush, Quench and Drain environmental port options
- Cartridge design for reliable installation
- Hydraulically balanced inboard seal faces
- Independent seal face design
- Modular construction for maximum adaptability



**BQFD-R™**  
Restriction  
bush option



**BQFD-E™**  
Low pressure external  
seal option

ITEM	DESCRIPTION	MATERIAL
1	Rotary Face Sealing Ring	Graphite
2	Sleeve O Ring	Viton® / EPR / Kalrez® / Aflas®
3	Sleeve	316L Stainless Steel
4	Rotary Drive Screws	Stainless Steel
5	Rotary Bellows Assembly	316L SS - Alloy 276 - 316L SS - Carbon / TC / SiC
6	Stationary Face	TC / *Ceramic / SiC
7	Stationary Sealing Ring	Viton® / EPR / Kalrez® / Aflas® / Graphite
8	Gland	316 Stainless Steel
9	Clamp Ring	316L Stainless Steel
10	Drive Screws	Stainless Steel
11	Setting Clip Screws	Stainless Steel
12	Setting Clips	Metal
13	Anti-tamper Screws	Stainless Steel
14	Gasket	AF1 / GFT
15	Spacer Ring	316L Stainless Steel

\*This material is not available from 3.125" (80mm) and above.

# BQFD™ Metal Bellows Single Cartridge Seal

## BQFD™ - Imperial Dimensional Information (inches)

A	B	C	D	E	Fmin	Fmax	Gmin	Gmax	Hmax	I	J
1.000	4.125	2.125	1.937	0.519	1.625	1.937	2.687	3.562	1/2	1.531	1.590
1.125	4.250	2.250	2.063	0.519	1.750	2.062	2.812	3.687	1/2	1.531	1.590
1.250	4.375	2.375	2.187	0.519	1.875	2.187	2.937	3.812	1/2	1.531	1.590
1.375	4.375	2.500	2.312	0.519	2.000	2.250	3.062	3.812	1/2	1.531	1.590
1.500	5.000	2.812	2.562	0.644	2.250	2.375	3.375	4.437	1/2	1.687	1.752
1.625	5.000	2.812	2.562	0.644	2.375	2.500	3.375	4.437	1/2	1.687	1.752
1.750	5.500	3.187	2.812	0.644	2.500	2.750	3.750	4.937	1/2	1.687	1.752
1.875	5.500	3.187	2.812	0.644	2.625	2.875	3.750	4.937	1/2	1.687	1.752
2.000	6.000	3.562	3.063	0.644	2.750	3.000	4.125	5.437	1/2	1.750	1.752
2.000-AC	5.250	3.450	3.035	0.644	2.750	3.000	4.000	4.750	1/2	1.750	1.752
2.125	6.000	3.562	3.063	0.644	2.875	3.125	4.125	5.437	1/2	1.750	1.752
2.250	6.500	3.812	3.312	0.644	3.000	3.250	4.500	5.812	5/8	1.750	1.752
2.375	6.500	3.812	3.312	0.644	3.125	3.375	4.500	5.812	5/8	1.750	1.752
2.500	7.000	4.312	3.812	0.769	3.375	3.625	5.000	6.312	5/8	2.031	1.877
2.625	7.000	4.312	3.812	0.769	3.500	3.750	5.000	6.312	5/8	2.031	1.877
2.750	7.000	4.312	3.812	0.769	3.625	3.875	5.000	6.312	5/8	2.031	1.877
2.875	7.500	4.937	4.250	0.769	3.750	4.125	5.625	6.812	5/8	2.031	1.877
3.000	7.500	4.937	4.250	0.769	3.875	4.250	5.625	6.812	5/8	2.150	1.877
3.125	7.500	4.937	4.250	0.769	4.000	4.375	5.625	6.812	5/8	2.150	1.877
3.250	8.000	5.312	4.625	0.769	4.125	4.500	6.125	7.187	3/4	2.150	1.877
3.375	8.000	5.312	4.625	0.769	4.250	4.625	6.125	7.187	3/4	2.150	1.877
3.500	8.000	5.312	4.625	0.769	4.375	4.750	6.125	7.187	3/4	2.150	1.877
3.625	8.500	5.937	5.000	0.769	4.500	5.000	6.750	7.687	3/4	2.150	1.877
3.750	8.500	5.937	5.000	0.769	4.625	5.125	6.750	7.687	3/4	2.150	1.877
3.875	9.000	6.625	5.375	0.769	4.875	5.500	7.437	8.187	3/4	2.150	1.877
4.000	9.000	6.625	5.375	0.769	4.875	5.500	7.437	8.187	3/4	2.150	1.877

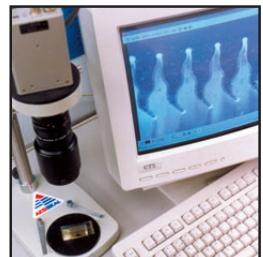
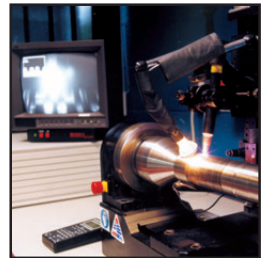
Minimum bolt circle based on bolt size shown.



## BQFD™ - Metric Dimensional Information (millimetres)

A	B	C	D	E	Fmin	Fmax	Gmin	Gmax	Hmax	I	J
24	104.8	54.0	49.2	13.2	41.0	49.0	67.0	90.5	12	38.9	40.5
25	104.8	54.0	49.2	13.2	41.0	49.0	67.0	90.5	12	38.9	40.5
28	108.0	57.2	52.4	13.2	44.0	52.3	70.3	93.6	12	38.9	40.5
30	111.0	60.4	55.6	13.2	46.0	55.5	73.5	96.8	12	38.9	40.5
32	111.0	60.4	55.6	13.2	48.0	55.5	73.5	96.8	12	38.9	40.5
33	111.0	60.4	55.6	13.2	49.0	55.5	73.5	96.8	12	38.9	40.5
35	111.0	63.5	58.8	13.2	51.0	57.5	76.6	96.8	12	38.9	40.5
38	127.0	71.5	65.0	16.4	57.2	60.4	85.7	114.3	12	42.9	44.5
40	127.0	71.5	65.0	16.4	58.0	60.4	85.7	114.3	12	42.9	44.5
43	139.7	81.0	71.4	16.4	61.0	69.9	95.3	127.0	12	42.9	44.5
45	139.7	81.0	71.4	16.4	63.5	69.9	95.3	127.0	12	42.9	44.5
48	139.7	81.0	71.4	16.4	66.7	73.0	95.3	127.0	12	42.9	44.5
50	152.4	90.5	77.8	16.4	68.0	76.2	104.8	139.7	12	44.5	44.5
53	152.4	90.5	77.8	16.4	71.0	76.2	104.8	139.7	12	44.5	44.5
55	165.1	96.8	84.1	16.4	74.0	82.5	114.3	149.2	16	44.5	44.5
58	165.1	96.8	84.1	16.4	76.2	82.6	114.3	149.2	16	44.5	44.5
60	165.1	96.8	84.1	16.4	79.4	85.7	114.3	149.2	16	44.5	44.5
63	177.8	109.5	96.8	19.6	85.8	92.1	127.0	160.3	16	51.6	47.7
65	177.8	109.5	96.8	19.6	88.9	95.3	127.0	160.3	16	51.6	47.7
68	177.8	109.5	96.8	19.6	92.1	98.4	127.0	160.3	16	51.6	47.7
70	177.8	109.5	96.8	19.6	92.1	98.4	127.0	160.3	16	51.6	47.7
75	190.5	125.4	108.0	19.6	98.5	108.0	142.9	173.0	16	54.6	47.7
80	190.5	125.4	108.0	19.6	101.6	111.1	142.9	173.0	16	54.6	47.7
85	203.2	135.0	117.5	19.6	108.0	117.5	155.6	182.5	20	54.6	47.7
90	215.9	150.8	127.0	19.6	114.3	127.0	171.5	195.2	20	54.6	47.7
95	215.9	150.8	127.0	19.6	117.5	130.2	171.5	195.2	20	54.6	47.7
100	228.6	168.3	136.5	19.6	123.9	139.7	188.9	207.9	20	54.6	47.7

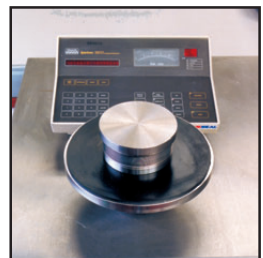
Minimum bolt circle based on bolt size shown.



## BQFD™ - ANSI+ Gland format Dimensional Information (inches)

A	B	C	E	F min	F max	G min	G max	H max	I	J	□L
1.125	5.000	3.188	1.000	2.625	2.850	3.750	4.250	0.500	1.531	1.565	3.990
1.375	5.375	3.438	1.000	2.875	3.100	4.000	4.625	0.500	1.531	1.565	4.240
1.750	6.750	4.438	0.644	3.500	4.100	5.000	6.000	0.500	1.687	1.690	5.480
1.875	6.750	4.438	0.644	3.625	4.100	5.000	6.000	0.500	1.687	1.690	5.480
2.125	7.625	4.688	0.644	3.875	4.225	5.375	6.687	0.625	1.750	1.690	6.230
2.500	8.250	5.438	0.644	4.500	5.100	6.125	7.312	0.625	2.031	1.890	6.730
2.625	8.250	5.438	0.644	4.625	5.100	6.125	7.312	0.625	2.031	1.890	6.730
2.750	8.250	5.438	0.644	4.625	5.100	6.125	7.312	0.625	2.031	1.890	6.730

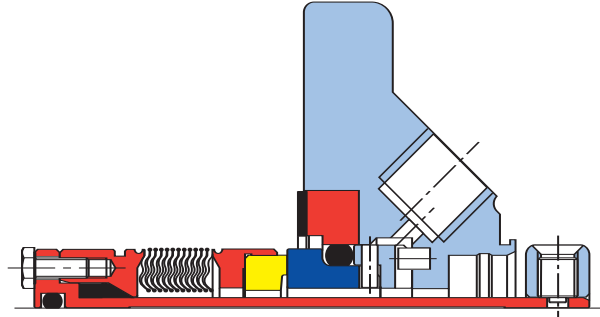
Minimum bolt circle based on bolt size shown.



# BQFD™ Metal Bellows Single Cartridge Seal

## Exotic BQFD™

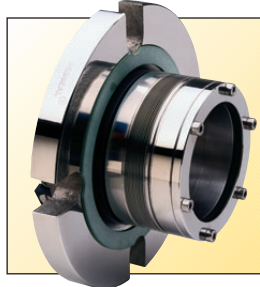
The BQFD™ range is complemented with an exotic alloy option. It is available with Alloy 276 wetted parts in standard ANSI and ANSI+ gland formats. Sizes: Ø1.000" - Ø4.000" (24mm - 100mm) available to order.



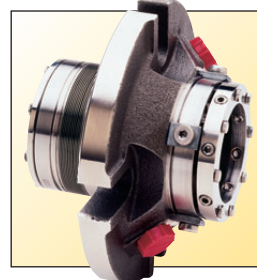
AESSEAL® also produce a further range of single and double cartridge mechanical seals using the same modular Metal Bellows technology. The main products in this range are the BSAI™, BSIV™, BDFI™ and BSFG™ which all have their own brochure which can be requested from AESSEAL®.



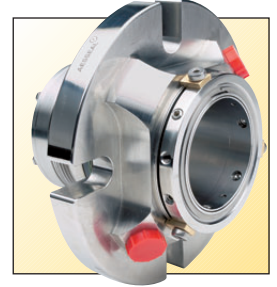
BSAI™/BSAIG™



BSIV™



BSFG™



BDFI™

Any high performance double mechanical seal demands a high performance barrier fluid system to maximize the performance envelope. AESSEAL® has a wide range of standard environmental control systems for all operating parameters. Full technical specifications are available on request. [systems@aes seal.co.uk](mailto:systems@aes seal.co.uk)



Gas Range



AS15™ Range



Pumppac SOU™ Range



Pumppac™ Range

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



**WARNING**

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E-mail: [MCK@aes seal.com](mailto:MCK@aes seal.com)