

# BDFI™ / BDFC™

Bellows Double Flow Induction / Convection



- Bellows cartridge seal
- Integral bi-directional flow inducer
- Directed barrier fluid circulation
- Fits on pumps with thin radial cross sectional spaces



## BDFI™ / BDFC™ — Better by Design

The BDFI™ / BDFC™ is an innovative modular hybrid design, created using the inboard design of a BQFD™ and the outboard design of a DMSF™.



### Inboard Bellows

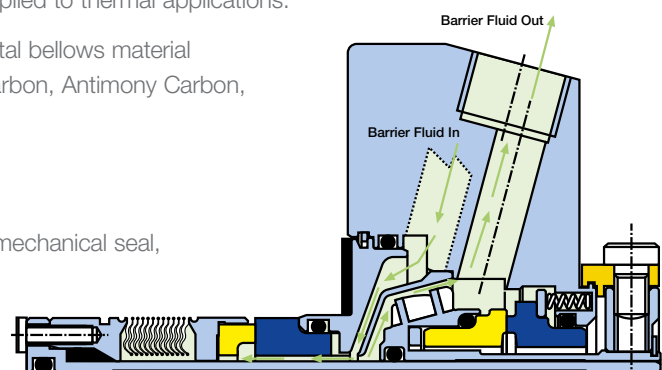
The bellows unit is ideally situated to replace the semi-dynamic sliding elastomer of a conventional pusher seal. This allows the bellows design to be more readily applied to thermal applications.

The BDFI™ / BDFC™ is available in any AESSEAL® standard metal bellows material and seal face combination including SHS, HHH and SAC with Carbon, Antimony Carbon, TC or SiC seal faces.

### Directed Barrier Fluid Circulation

Removing the heat at the inboard faces is critical for any double mechanical seal, more so for a seal which may be applied to thermal applications.

The BDFI™ / BDFC™ directed barrier fluid flow path achieves effective heat removal at both sets of seal faces.



**BDFI™ directed barrier fluid circulation**

### Bi-directional Barrier Fluid Circulation

Developed using the highly efficient Patented DMSF™ pumping ring, the BDFI™ will effectively and reliably circulate barrier fluid irrespective of the direction of shaft rotation. Alternatively, in applications which use an external barrier fluid circulation device, such as a Pumppac™, or where fluid convection is required, the BDFC™ may be offered.

### Fits in Thin Radial Cross Sectional Spaces

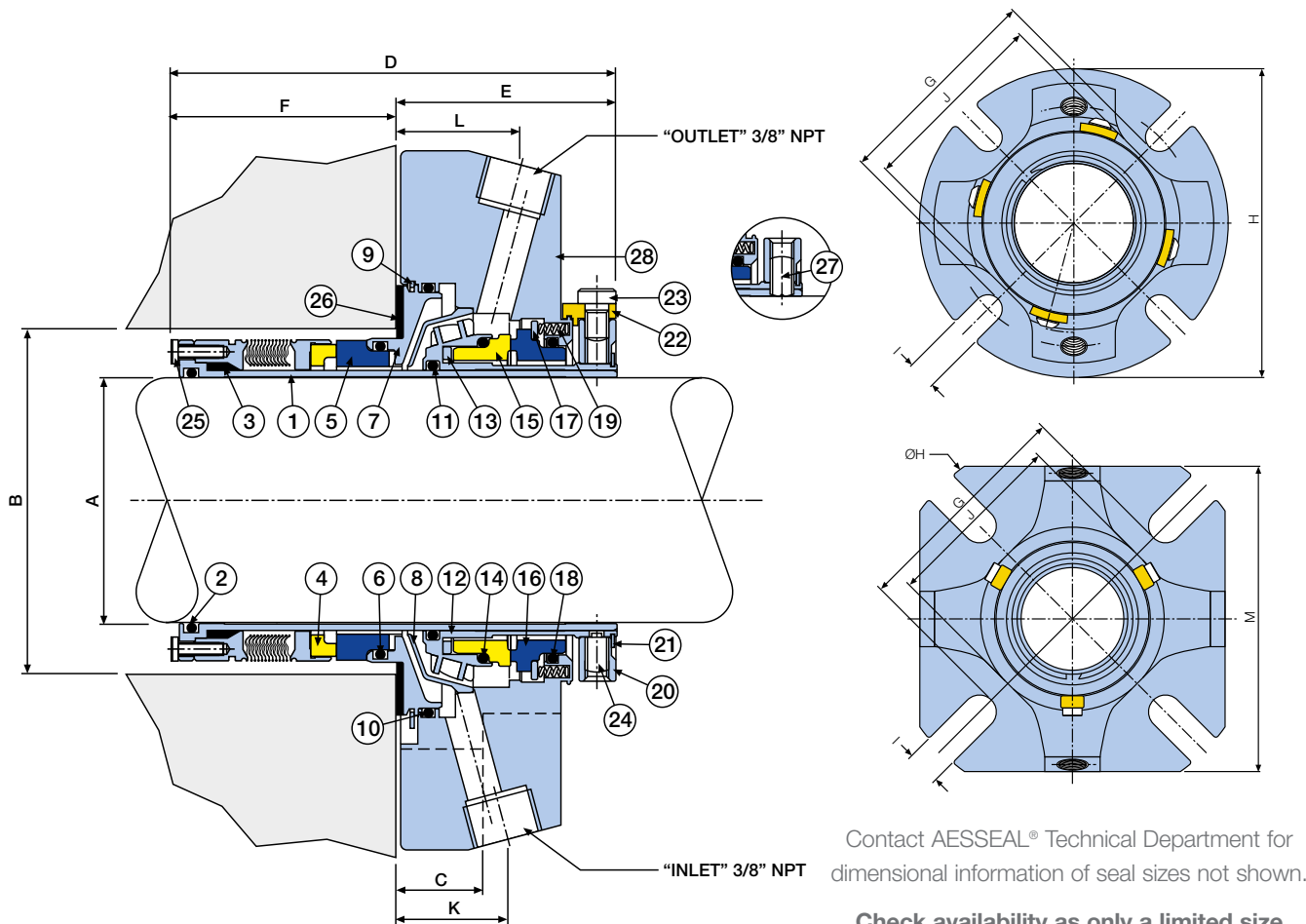
The BDFI™ / BDFC™ can be installed on equipment with radial cross sectional spaces as small as 0.312" (8mm). This is typical on some smaller sized process pumps.

### Monolithic Outboard Seal faces

Any seal design applied to thermal applications, must have the ability to seal relatively hot barrier fluids without leaking externally. Monolithic seal faces have excellent sealing properties in thermal applications. These faces are modular to the DMSF™ / SMSS™.

### Why Outboard Monolithic Faces and not Metal Bellows?

Often seals with outboard metal bellows units will not physically fit in most types of process equipment without equipment modifications. Designs which may fit often compromise the number of outboard bellows convolutions thereby increasing the bellows spring rate and material stresses. Furthermore, as the outboard elastomers sited in the barrier fluid are not generally subject to chemical attack, nor does the seal have a barrier temperature necessitating a metal bellows, external metal bellows designs are not applicable for the majority of applications.



Contact AESSEAL® Technical Department for dimensional information of seal sizes not shown.

**Check availability as only a limited size range is inventoried.**

#### Standard ISO / ANSI Box Bore 28.0mm - 65mm (1.125" - 2.625")

A	B Min	B Max	C	D	E	F	G	H	I	J	K	L
28.0	44.0	52.0	19.1	100.8	52.4	48.4	62.2	111.1	14.0	57.2	20.6	28.6
35.0	51.0	60.3	19.1	100.8	52.4	48.4	71.8	104.1	11.0	67.0	20.6	28.6
45.0	63.5	73.0	19.1	106.7	53.1	53.6	83.8	139.1	14.0	75.7	31.5	33.0
55.0	74.0	90.5	22.2	108.7	53.1	55.6	100.3	150.0	17.5	86.6	25.3	29.0
60.0	79.4	95.0	19.1	108.7	53.1	55.6	108.7	170.8	17.5	94.4	26.5	29.7
63.0	85.8	95.0	19.1	114.9	53.1	61.8	108.7	170.8	17.5	94.4	31.5	33.0
65.0	88.9	98.0	19.1	114.9	53.1	61.8	111.9	180.3	17.5	98.3	31.5	33.0
1.125	1.750	2.062	0.750	3.970	2.062	1.908	2.449	4.375	0.551	2.250	0.812	1.125
1.375	2.000	2.375	0.750	3.970	2.062	1.908	2.827	4.100	0.433	2.638	0.812	1.125
1.750	2.500	2.875	0.750	4.200	2.091	2.109	3.297	5.475	0.551	2.982	1.240	1.299
1.875	2.625	3.000	0.750	4.200	2.091	2.109	3.450	5.906	0.689	3.108	1.240	1.299
1.875-D	2.625	2.875	0.800	4.200	2.091	2.109	3.325	4.875	0.472	3.025	1.150	1.150
2.125	2.875	3.562	0.875	4.280	2.091	2.189	3.950	5.906	0.689	3.408	0.995	1.140
2.375	3.125	3.750	0.750	4.280	2.091	2.189	4.280	6.725	0.689	3.716	1.043	1.170
2.500	3.375	3.750	0.750	4.525	2.091	2.434	4.280	6.725	0.689	3.716	1.240	1.299
2.625	3.500	3.875	0.750	4.525	2.091	2.434	4.405	7.100	0.689	3.871	1.240	1.299

#### Standard ISO / ANSI Box Bore 75.0mm - 100mm (2.750" - 4.000")

A	B Min	B Max	C	D	E	F	G	H	I	J	K	L
75.0	98.5	117.4	23.8	115.9	63.5	69.9	131.4	189.2	17.5	116.5	36.0	40.1
80.0	101.6	127.0	23.8	115.9	63.5	69.9	142.5	201.9	21.0	126.0	36.0	40.1
85.0	108.0	127.0	23.8	115.9	63.5	69.9	142.5	201.9	21.0	126.0	36.0	40.1
90.0	114.3	136.5	23.8	115.9	63.5	69.9	152.0	214.6	21.0	135.5	36.0	40.1
95.0	117.5	139.7	23.8	115.9	63.5	69.9	155.2	227.3	21.0	138.7	36.0	40.1
100.0	123.9	152.4	23.8	115.9	63.5	69.9	167.9	240.0	21.0	151.4	36.0	40.1
2.750	3.625	4.625	0.937	4.937	2.500	2.437	5.173	7.450	0.689	4.585	1.418	1.578
2.875	3.750	4.625	0.937	5.000	2.500	2.500	5.173	7.450	0.689	4.585	1.418	1.578
3.000	3.875	4.625	0.937	5.000	2.500	2.500	5.173	7.450	0.689	4.585	1.418	1.578
3.125	4.000	5.000	0.937	5.000	2.500	2.500	5.610	7.950	0.827	4.960	1.418	1.578
3.250	4.125	5.000	0.937	5.000	2.500	2.500	5.610	7.950	0.827	4.960	1.418	1.578
3.375	4.250	5.000	0.937	5.000	2.500	2.500	5.610	7.950	0.827	4.960	1.418	1.578
3.500	4.375	5.375	0.937	5.000	2.500	2.500	5.985	8.450	0.827	5.335	1.418	1.578
3.625	4.500	5.375	0.937	5.000	2.500	2.500	5.985	8.450	0.827	5.335	1.418	1.578
3.750	4.625	5.500	0.937	5.000	2.500	2.500	6.110	8.950	0.827	5.460	1.418	1.578
3.875	4.750	5.500	0.937	5.000	2.500	2.500	6.110	8.950	0.827	5.460	1.418	1.578
4.000	4.875	6.000	0.937	5.000	2.500	2.500	6.610	9.450	0.827	5.960	1.418	1.578

#### Large ISO / ANSI Plus Box Bore

A	B Min	B Max	C	D	E	F	G	H	I	J	K	L	M
1.125	1.750	2.750	0.750	3.970	2.062	1.908	3.199	5.000	0.551	2.323	1.125	1.125	3.990
1.375	2.000	3.062	0.750	3.970	2.062	1.908	3.449	5.375	0.551	2.638	1.125	1.125	4.250
1.750	3.500	4.000	0.790	4.200	2.000	2.200	4.449	6.750	0.551	3.100	1.087	1.087	5.480
1.875	3.500	4.000	0.619	4.200	2.000	2.200	4.449	6.750	0.551	3.500	1.087	1.087	5.480
2.125	3.875	4.187	0.669	4.280	2.000	2.280	4.661	7.600	0.689	3.715	1.125	1.125	6.205
2.500	4.500	4.812	0.760	4.525	2.091	2.434	5.411	8.225	0.689	4.525	1.231	1.231	6.705
2.625	4.500	4.812	0.760	4.525	2.091	2.434	5.411	8.225	0.689	4.525	1.093	1.093	6.705

**Important** - some glands are manufactured from castings and therefore the angle and position of the port should be checked.

If in doubt, please contact the AESSEAL® Technical Department.

Item	Description	Material
1	Sleeve	316L SS
2	Sleeve 'O' Ring	AES-ELAST / EPR / FFKE / FKM / TFE/P
3	Rotary Wedge	Graphite
4	Rotary Bellows Face - SHS	316L SS - Alloy 276 - 316L SS - Carbon / TC / SiC / Ant Car
4	Rotary Bellows Face - SAC	316L SS - AM350 - C42 - Carbon / TC / SiC / Ant Car
4	Rotary Bellows Face - HHH	Alloy 276 - Alloy 276 - Alloy 276 - Carbon / TC / SiC / Ant Car
5	Stationary Face	SiC / TC
6	Stationary 'O' Ring	AES-ELAST / EPR / FFKE / FKM / TFE/P
7	Gland Insert	316L Stainless Steel
8	Deflector	316L Stainless Steel
9	Snap Ring	Stainless Steel
10	Gland Insert 'O' Ring	AES-ELAST / EPR / FFKE / FKM / TFE/P
11	Rotary Holder 'O' Ring	AES-ELAST / EPR / FFKE / FKM / TFE/P
12	Rotary Holder	316 Stainless Steel
13	Drive Ring	316L Stainless Steel
14	Rotary 'O' Ring	AES-ELAST / EPR / FFKE / FKM / TFE/P
15	Rotary Face	SiC / TC
16	Stationary Face	Carbon / SiC / TC / Ant Car
17	Spring Plate	316L Stainless Steel
18	Stationary 'O' Ring	AES-ELAST / EPR / FFKE / FKM / TFE/P
19	Springs	Alloy 276
20	Clamp Ring	316L Stainless Steel
21	Circlip	Stainless Steel
22	Settings Clips	Brass
23	Setting Clip Screws	Stainless Steel
24	Anti Tamper Screws	Stainless Steel
25	Screws	Stainless Steel / Alloy 276
26	Gasket	AF1 / GFT
27	Drive Screws	Stainless Steel
28	Gland	316 Stainless Steel

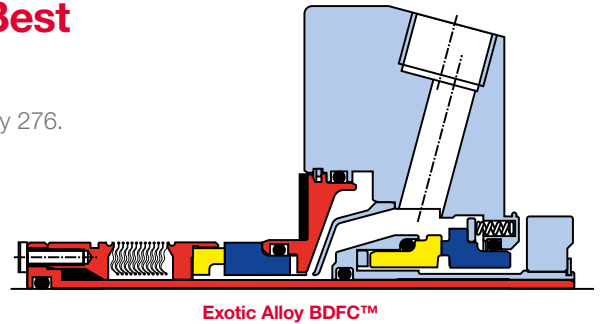
# BDFI™ / CDFI™ — Modularity At Its Best

## Exotic Alloy Wetted Options.

The BDFI™ / BDFC™ is available with wetted components offered in Alloy 276.

### Exotic Alloy Seals

Contact AESSEAL® for availability of Exotic Alloy options.



Exotic Alloy BDFC™

## Changing the Environment

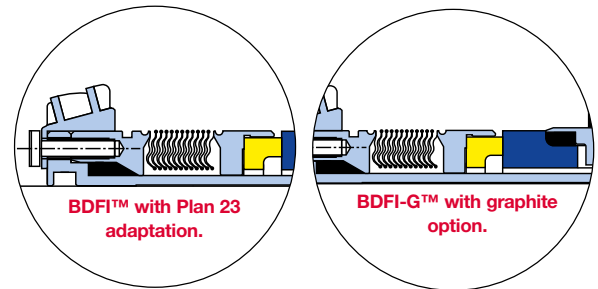
Often the most applicable solution to sealing difficult applications is to change the seal environment.

AESSEAL® widely promote the use of Plan 23 systems, using seals and systems like the SMSS23™ and AESSEAL® Cooler™ range.

The BDFI23™ or BDFC23™ are simple and cost-effective solutions which also effectively change the seal environment when used in conjunction with an appropriate adapter plate.

The BDFI™ / BDFC™ is also available with a graphite stationary ring. These variants are suffixed with a 'G' (eg. BDFI-G™).

This BDFI-G™ / BDFC-G™ design is only to be used in conjunction with a Plan 52, unpressurised barrier fluid system.



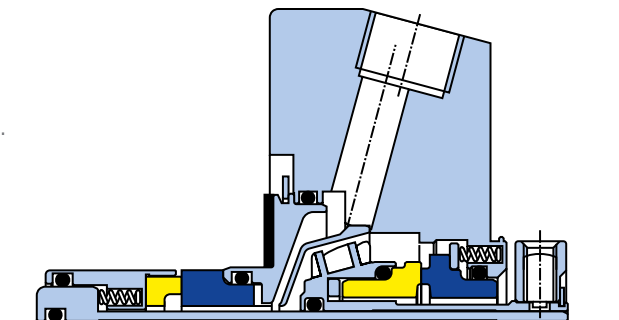
## CDFI™ and CDFC™ Range

Like all AESSEAL® products, modularity is key to providing service at an affordable price.

The CDFI™ and CDFC™ are sister products to the BDFI™ / BDFC™.

These pusher seals offer the advantage of a metal-to-metal inboard drive and an integral bi-directional pumping device which will fit in radial cross sectional spaces as small as 0.312" (8mm).

See the CDFI™ / CDFC™ literature for further information. You can download this and other information from [www.aesseal.com](http://www.aesseal.com) or request it from [marketing@aes seal.com](mailto:marketing@aes seal.com).



CDFI™ - Cartridge Double Flow Inducer

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



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### 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



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