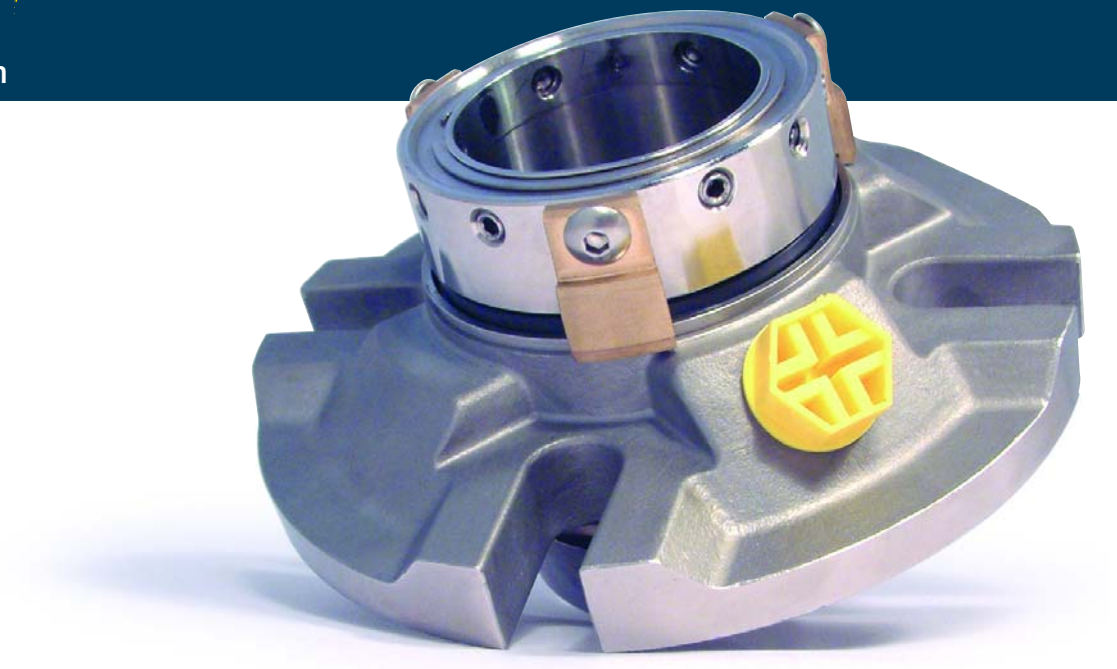
first4seals™

www.first4seals.com

acme range



double stationary

environmental
cartridge mechanical seals

f4s200™ series

type f4s200™

double stationary mechanical cartridge seals

first4seals™

the green issue

f4s200™ cartridge seals can be fully refurbished with most parts being re-used.

As leakage is eliminated corrosion problems to pump, bearing and pump room are all greatly reduced.

f4s200 series - technical specification

metal parts 316 Stainless Steel as standard, other materials available to order.

springs Alloy 276

o-rings Viton® (Flurocarbon) as standard, other materials available to order.

rotary faces Silicon Carbide available as standard.

stationary faces Carbon as standard, with Silicon Carbide available.

temperature limits -30ºC to 260ºC (-22ºF to 500ºF) dependent upon specified elastomer and system configuration.

pressure limits - media and barrier

711mm HG Vacuum to 30 Bar (-28" HG - 440 PSI).

It is recommended that the barrier pressure is 1 Bar (15 psi) greater than the media.

As the conditions of use are outside the control of first4seals the information contained within this brochure is given in good faith but without warranty. The above temperature and pressure limits are individual maximum values for SOFT/HARD seal face combinations only. The values are provided for guidance only and are intended for use by suitably qualified application engineers. It is recommended that all users contact the first4seals Technical Department for advice on any new application.

f4s200™ - design features

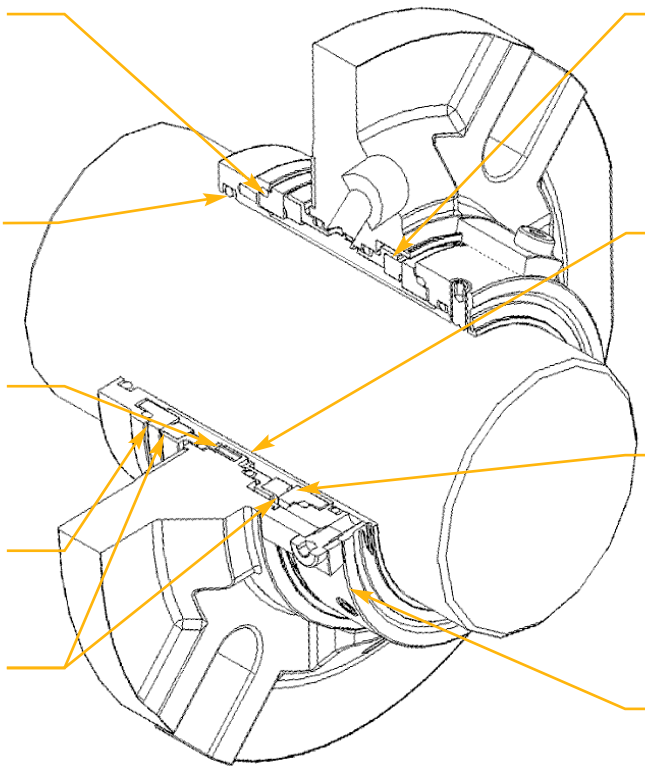
Uptime & Ease of Installation: Self aligning design
Seal face closing is created by springs located behind the stationary faces of the seal. This stationary design allows for some misalignment of the shaft and housing hence preventing spring fatigue/failure due to misalignment.

Low Maintenance: No fretting of the pump shaft
The secondary (sleeve) seal o-ring is static on the shaft and is guaranteed never to fret the pump shaft or sleeve.

Uptime & Low maintenance: Isolated springs
The Alloy 276 springs are not in the process fluid where they could corrode and clog, so they remain effective for the whole of the seal life.

Uptime: Autobalancing seal faces
Seal faces will remain closed in pressure failure modes in either the product or barrier fluid.

Uptime: Full independent double seal
Design utilises two independent sets of springs to energise the seal faces. This creates an inherently safe system whereby single face failure cannot compromise the second seal.



Uptime: Balanced shrink fit stationary
Shrink fitted faces for optimum metal to metal drive and balanced loading design for stability at high temperatures.

Uptime: Efficient bi-directional eccentric pumping
Novel design features in the product create a significant flow of barrier fluid within the seal face cavity. This feature reduces the heat retention within the seal, hence extending the seal life.

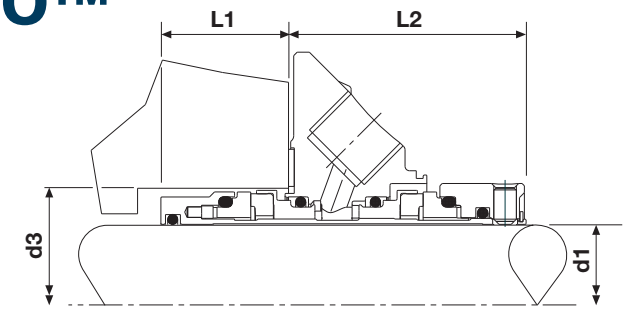
Uptime: Pressure balanced seal faces
The seal is balanced in both directions, achieving optimum face loading for high pressure capability, providing cooler running for longer seal life. Additionally faces are designed on a common axis to eliminate cantilever forces and thrust loads that can lead to leakage from seal face distortion.

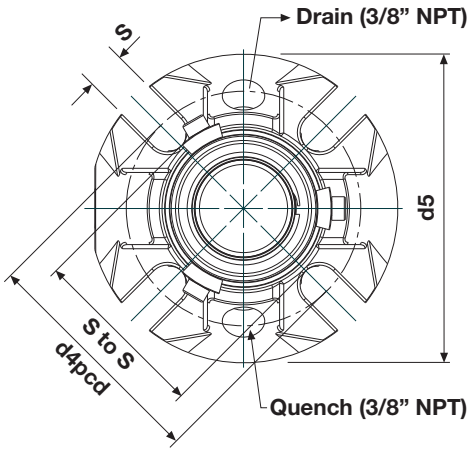
Easy Maintenance: External clamping
Pump efficiency adjustments can be made without dismantling the pump.

type f4s200™

dimensional information

Supplied with Quench & Drain.



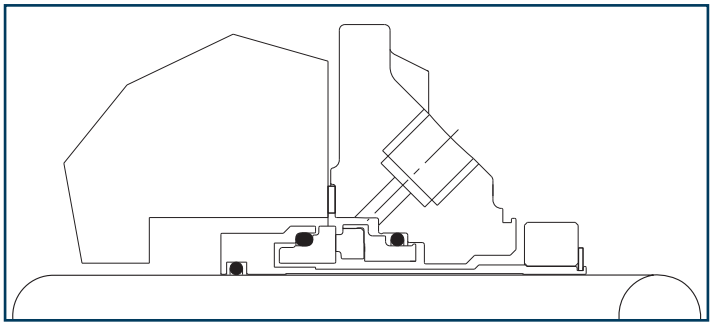


f4s200™ series - size chart

d1	d3		d4*pcd		d5	L1	L2	S to S	S
Imperial	S/B I.D. Min	S/B I.D. Max	Min	Max	Gland O.D.	Inboard	Outboard	Slot to Slot	Slot Width
1.000	1.625	1.875	2.750	3.562	4.034	1.110	2.070	2.146	0.551
1.125	1.750	2.062	2.875	3.687	4.113	1.110	2.070	2.264	0.551
1.250	1.875	2.187	3.000	3.812	4.349	1.110	2.070	2.402	0.551
1.375	2.000	2.250	3.125	3.812	4.389	1.110	2.070	2.500	0.551
1.500	2.250	2.375	3.437	4.437	5.000	1.100	2.100	2.835	0.551
1.625	2.375	2.500	3.437	4.437	5.000	1.100	2.100	2.835	0.551
1.750	2.500	2.75	3.750	4.937	5.500	1.100	2.100	3.189	0.551
1.875	2.625	2.875	3.750	4.937	5.500	1.100	2.100	3.189	0.551
2.000	2.750	3.000	4.125	5.437	6.000	1.100	2.100	3.563	0.551
2.125	2.875	3.125	4.125	5.437	6.000	1.100	2.100	3.563	0.551
2.250	3.000	3.250	4.500	5.812	6.500	1.100	2.100	3.813	0.551
2.375	3.125	3.375	4.500	5.812	6.500	1.100	2.100	3.813	0.551
2.500	3.250	3.625	5.000	6.312	7.000	0.930	2.280	4.311	0.689
2.625	3.375	3.750	5.000	6.312	7.000	0.930	2.280	4.311	0.689
2.750	3.500	3.875	5.000	6.312	7.000	0.930	2.280	4.311	0.689
2.875	3.750	4.125	5.625	6.812	7.500	1.330	2.340	4.941	0.689
3.000	3.875	4.250	5.625	6.812	7.500	1.330	2.340	4.941	0.689
3.125	4.000	4.375	5.625	6.812	7.500	1.330	2.340	4.941	0.689
3.250	4.125	4.500	6.187	7.187	8.000	1.330	2.340	5.335	0.827
3.375	4.250	4.625	6.187	7.187	8.000	1.330	2.340	5.335	0.827

Metric	S/B I.D. Min	S/B I.D. Max	Min	Max	Gland O.D.	Inboard	Outboard	Slot to Slot	Slot Width
24.0	41.0	48.0	68.5	90.5	102.5	28.2	52.6	54.5	14.0
25.0	41.0	48.0	68.5	90.5	102.5	28.2	52.6	54.5	14.0
28.0	44.0	52.0	71.5	93.5	104.5	28.2	52.6	57.5	14.0
30.0	46.0	55.0	75.0	97.0	110.5	28.2	52.6	61.0	14.0
32.0	48.0	55.0	75.0	97.0	110.5	28.2	52.6	61.0	14.0
33.0	49.0	55.0	75.0	97.0	110.5	28.2	52.6	61.0	14.0
33K	49.0	55.0	75.0	90.0	101.6	28.2	52.6	61.0	14.0
35.0	51.0	57.0	77.5	97.0	111.5	28.2	52.6	63.5	14.0
38.0	57.0	60.0	86.0	114.5	127.0	28.0	53.3	72.0	14.0
40.0	60.0	63.5	86.0	114.5	127.0	28.0	53.3	72.0	14.0
43.0	63.0	70.0	95.0	127.0	139.7	28.0	53.3	81.0	14.0
43K	63.0	70.0	95.0	105.0	119.6	28.0	53.3	81.0	14.0
45.0	64.0	70.0	95.0	127.0	139.7	28.0	53.3	81.0	14.0
48.0	67.0	73.0	95.0	127.0	139.7	28.0	53.3	81.0	14.0
50.0	70.0	76.0	104.5	139.5	152.4	28.0	53.3	90.5	14.0
53.0	73.0	79.5	104.5	139.5	152.4	28.0	53.3	90.5	14.0
53K	73.0	79.5	104.5	117.5	130.4	28.0	53.3	90.5	14.0
55.0	74.0	82.5	114.4	149.0	165.1	28.0	53.3	96.9	17.5
58.0	77.0	82.5	114.4	149.0	165.1	28.0	53.3	96.9	17.5
60.0	79.0	85.5	114.4	149.0	165.1	28.0	53.3	96.9	17.5
63.0	83.0	92.0	127.0	160.5	177.8	23.5	58.0	109.5	17.5
65.0	85.0	95.0	127.0	160.5	177.8	23.5	58.0	109.5	17.5
70.0	90.0	98.0	127.0	160.5	177.8	23.5	58.0	109.5	17.5
75.0	99.0	108.0	143.0	173.0	190.5	33.8	59.5	125.5	17.5
80.0	102.0	111.0	143.0	173.0	190.5	33.8	59.5	125.5	17.5
85.0	108.0	117.0	156.5	182.5	203.2	33.8	59.5	135.5	21.0

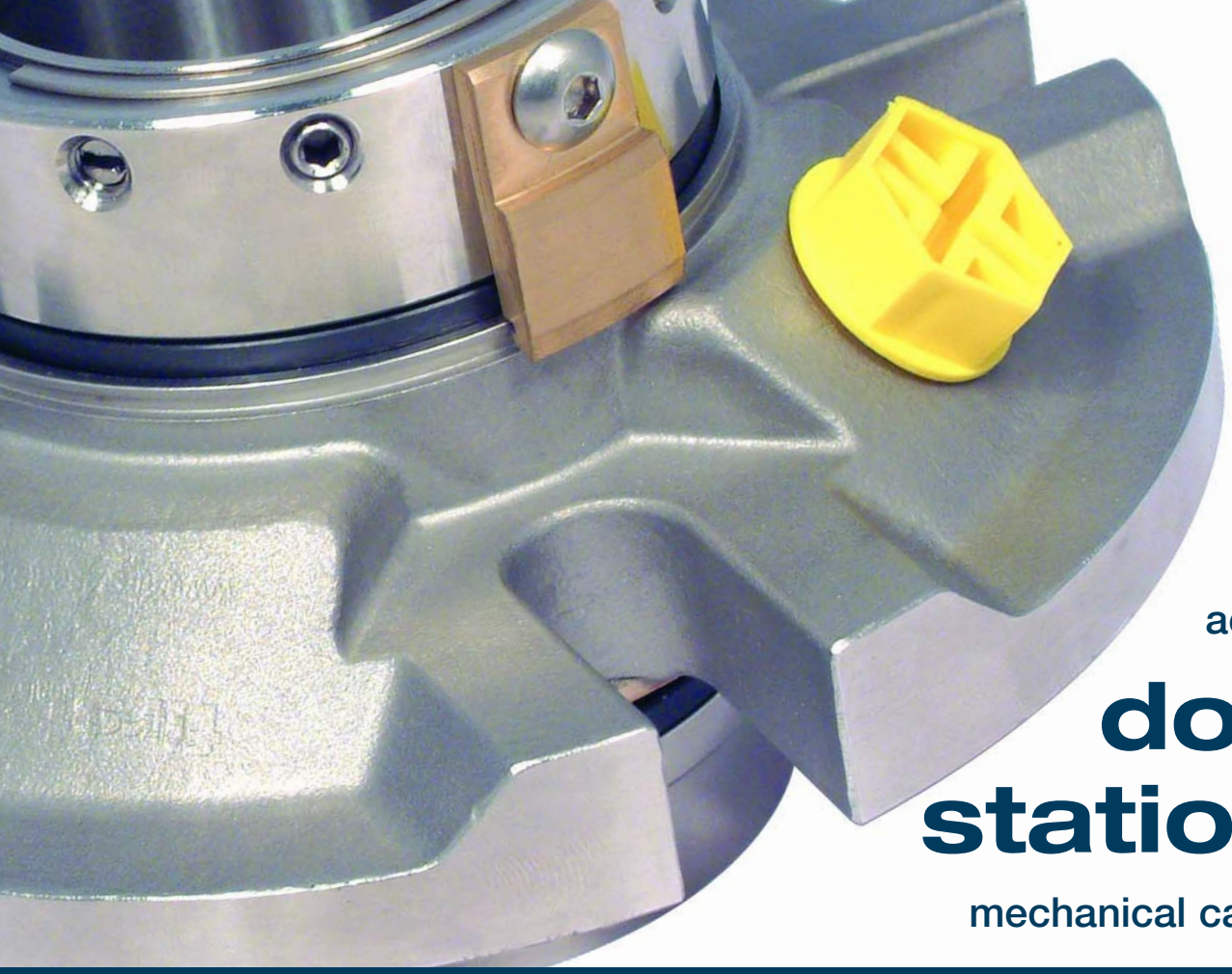
* Based on the largest bolt diameter (specials can be produced).



single stationary cartridge seals

f4s100™

Single stationary seals available to suit all application needs. See f4s100™ series literature for further details.



acme range of

double stationary

mechanical cartridge seals

first4environment

To conform to current environmental legislation, double cartridge seals are specified to provide maximum emission control in critical and noxious applications.

Double balanced cartridge seal designs use 50% of the power required by standard unbalanced seals, and only 20% of the power of pump packing.

All packing must leak to survive, whereas seals should be leak free. This reduces environmental contaminants and disposal costs.

first4seals plc, mount street, bradford, west yorkshire. bd3 9sn united kingdom
Tel: +44 (0) 1274 720775 Fax: +44 (0) 1274 729022
email: seals@first4seals.com - web: www.first4seals.com

Reference Issue • 2LIT-F4S200/02 04/2006