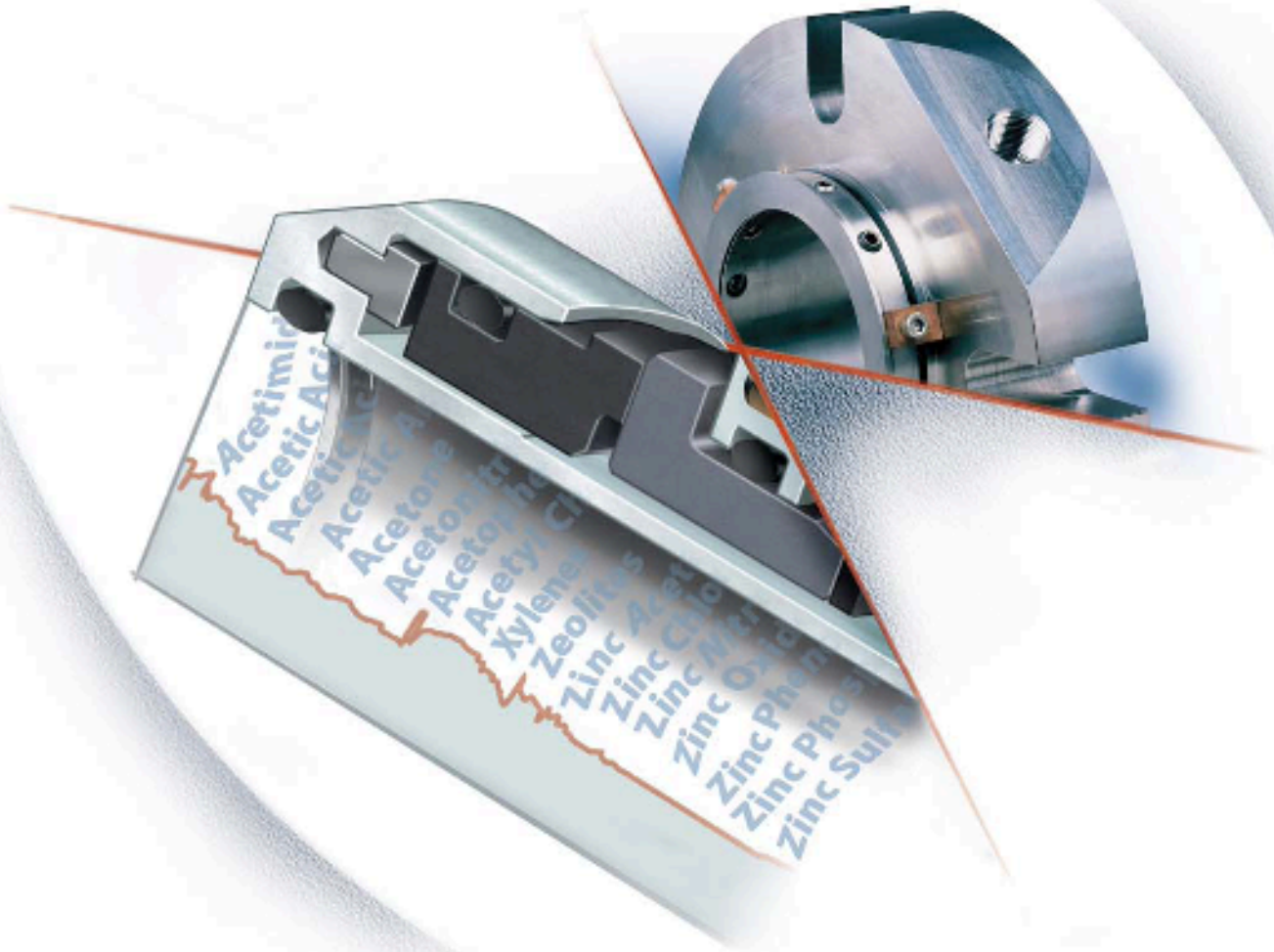
CHESTERTON®
Global Solutions, Local Service.

180™ Heavy Duty Cartridge Single Seal

- Engineered to defend against common causes of seal failure
- Full featured CPI Gland for complete environmental control capability
- Patented centering mechanism ensures faces run true
- Compact design fits ANSI, DIN and API pumps
- Suitable for the broadest range of applications



Upgrade to a new, higher level of reliability and performance

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180™ Heavy Duty Cartridge Single Seal

Upgrade to a new, higher level of reliability and performance

Contemporary seals don't fail from obvious design deficiencies. Instead, reliability is compromised by a multitude of small factors that combine to induce premature failure. The 180 Heavy Duty Single Seal is designed to eliminate all of the small deficiencies common to contemporary seals and be tolerant of system upsets and equipment imperfections.

One Step Closer to a Universal Seal

The CHESTERTON 180 Heavy Duty Single Seal provides a complete and integrated package of technical features to ensure top performance and high reliability across the widest range of services such as:

- Boiler feed water • Hot water • Deionized water
- Slurries • Light Hydrocarbons and Hot Oils
- Pulp & Paper • Wastewater treatment
- Grain Processing • Chemicals
- High and low viscosity products

Full featured CPI Gland

The 180 provides complete environmental control capability. Multi-port flush injection delivers flush to the full circumference of the seal rings. The quench/drain ports allow quenching or piping for secondary containment when necessary. The optional throttle bushing "floats" with shaft movement to prevent damage to either component.

Unique, patented centering mechanism

Sleeve mounted seal face uses unique, patented mechanism to ensure faces run true. The face is positioned both concentric and perpendicular to the shaft to minimize face oscillation and wiping. This limits opportunities for particles to intrude into the seal interface. Longer life and more reliable sealing is ensured.

Compact Design fits ANSI, DIN and API pumps

The 180 fits 5/16" (8 mm) stuffing boxes without modification. There is no compromise to the ruggedness or functionality of the seal to fit tight spaces. Even in the extra small sizes (1.625"/43 mm and smaller), standard faces are used.

Robust design withstands difficult services

The 180 Single Seal resists the effects of high torque common in demanding applications. Large diameter anti-rotation pins resist shearing. Heavy duty cross-section, monolithic faces are exceptionally strong and have been optimized to minimize the effects of pressure and thermal distortion.

Specially protected faces resist abuse

Rotary seal ring is shrouded for protection from impact. The drive mechanism for the rotary seal ring is cushioned for "soft starts". O-rings are on the seal ring O.D. for extra cushioning in high vibration conditions.

O-Ring hang-up problems are defeated

By having the O-rings on the seal face O.D., elastomer hang-up due to thermal expansion of metal parts is minimized. Seal rings are compressed rather than expanded if elastomers swell. In addition, the dynamic O-ring travels on a micro-polished surface to ensure face tracking and prevent premature failures.

Wider range of material choices for special services

Besides standard and hard face combinations, the 180 Seal offers special material options for aggresive chemical applications. It also offers great cost savings in services that require special metallurgies. In these applications, only the sleeve and adapter portion of the seal need to be machined from special metals. This costs far less than having to machine the entire seal from expensive metals.

When you see CHESTERTON, you see the future of sealing.

Construction Details

1 **Full Featured Gland**
Includes flush, quench and drain connections for maximum environmental control capability. Distributed flush arrangement maximizes cooling effect, prevents clogging and reduces thermal distortion.

2 **Stationary Seal Design**
Minimizes rotating mass and the effects of gland distortion while accommodating stuffing box misalignment and enabling compact design.

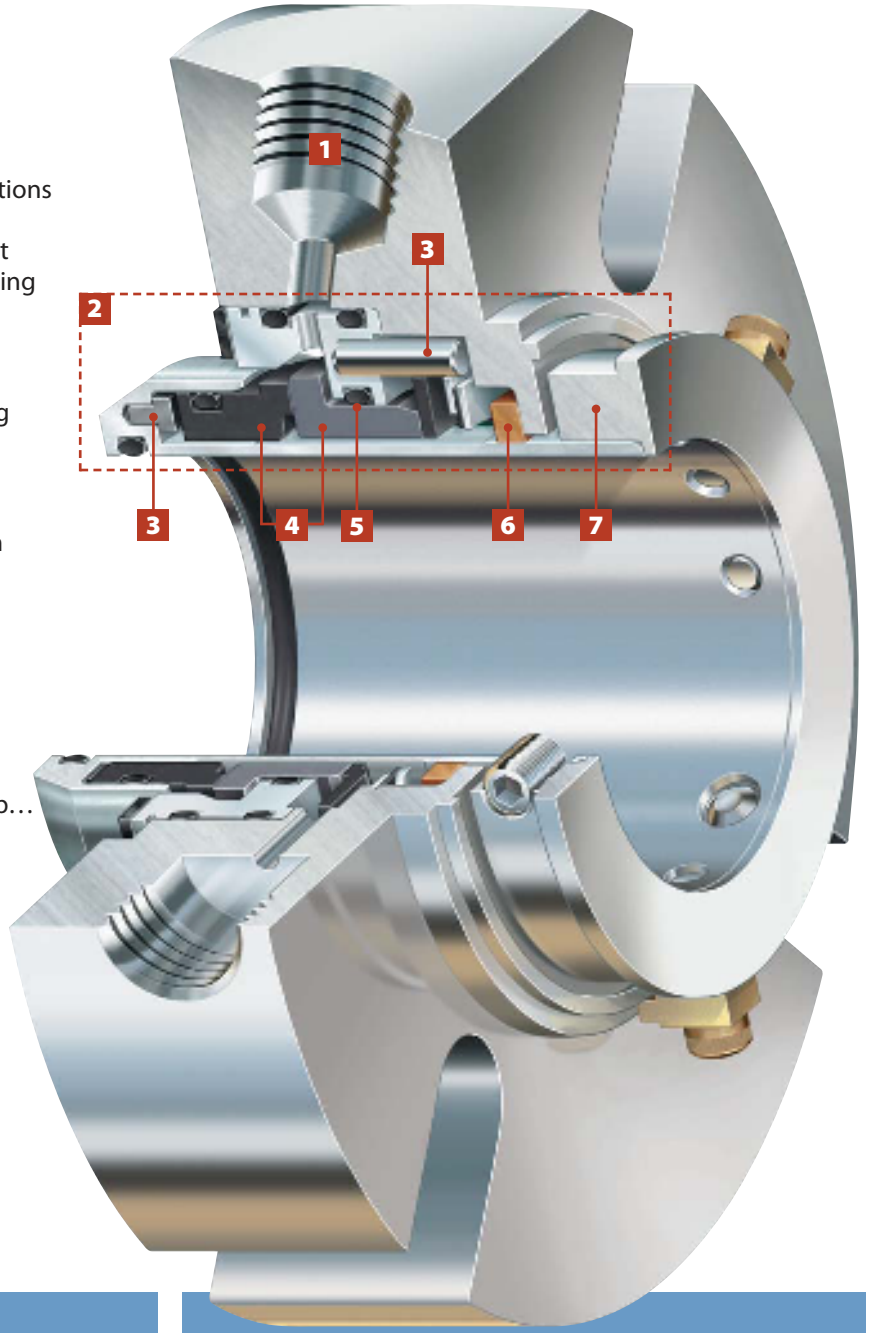
3 **High torque capability**
Robust face cross-section combined with high strength cushioned drive and anti-rotation mechanism.

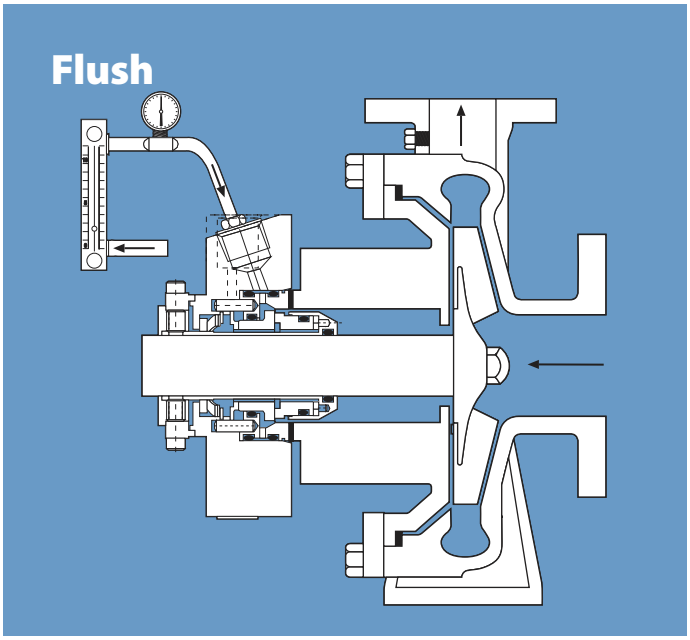
4 **Monolithic Seal Rings**
Enable close control over pressure and thermal effects. Rotary is shrouded for extra protection.

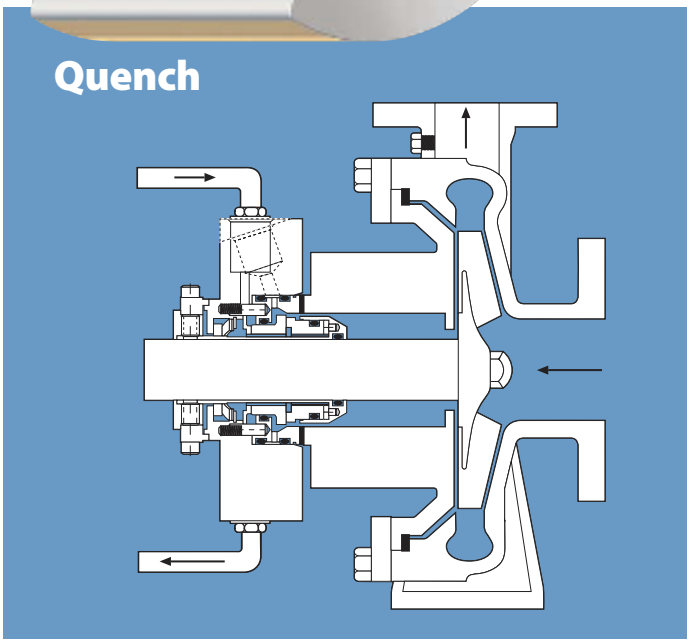
5 **Micro-Polished O-ring Travel surface**
Eliminates the chances of O-ring hang-up… even in sticky services.

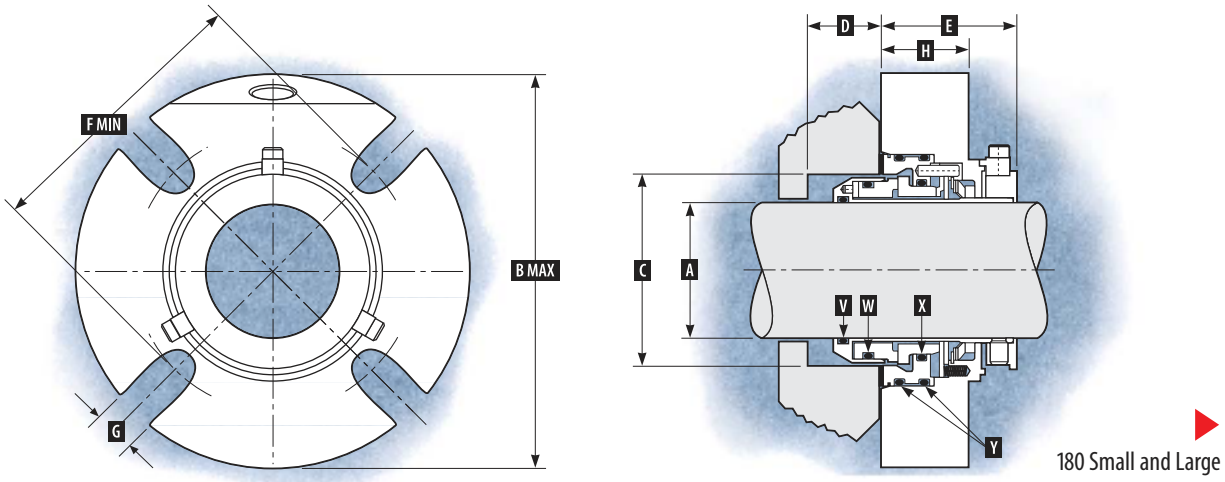
6 **Floating Throttle Bushing (optional)**
Provides flow restriction during quench/drain operation.

7 **Self-Centering Lock Ring™**
Eliminates rotary seal oscillation, reduces secondary seal wear and improves dynamic tracking.

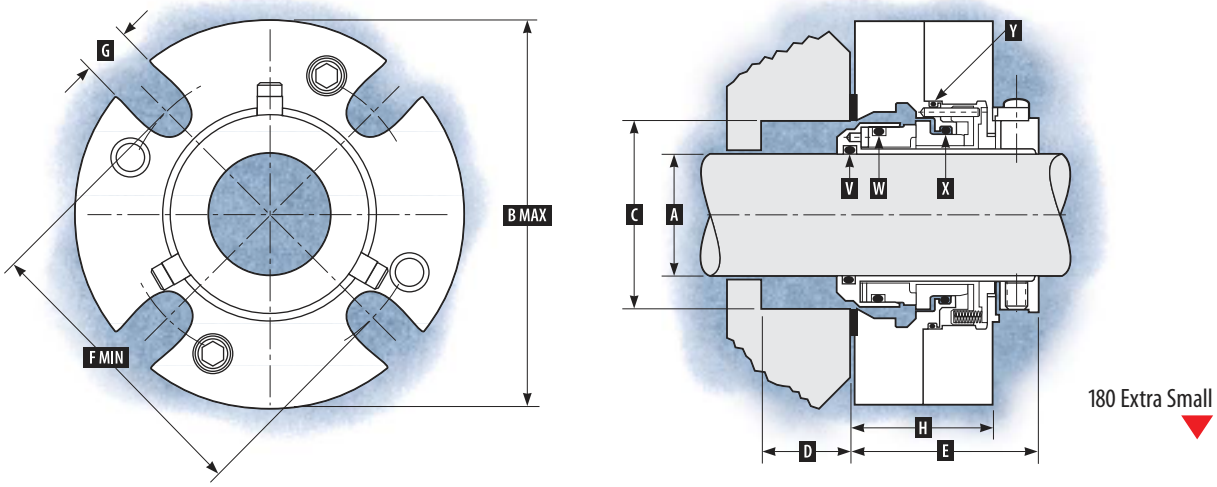








180 Small and Large



180 Extra Small

180 EXTRA SMALL – Dimensional Data/Inch

SHAFT SIZE	GLAND OD	STUFFING BOX BORE		SB DEPTH	OB LENGTH	BOLT CIRCLE BY BOLT SIZE			SLOT WIDTH	GLAND WIDTH	O-RINGS			
											SHAFT	ROTARY	STATIONARY	GLAND
A	B MAX	C MIN	C MAX	D MIN	E MAX	3/8"	F MIN 1/2"	5/8"	G	H MAX	V	W	X	Y
1.000	4.11	1.63	2.01	0.22	2.11	2.88			0.44	1.62	120	126	127	033
1.125	4.11	1.75	2.04	0.22	2.11	2.88			0.44	1.62	122	128	129	034
1.250	4.11	1.88	2.27	0.22	2.11	3.14			0.44	1.62	124	130	131	035
1.375	4.36	2.00	2.33	0.22	2.11	3.13	3.25*		0.57	1.62	126	132	133	036
1.500	4.49	2.13	2.44	0.22	2.11	3.33	3.45		0.57	1.62	128	134	135	037
1.625	4.99	225	2.69	0.22	2.11	3.52	3.65		0.57	1.62	130	136	137	038

180 EXTRA SMALL – Dimensional Data/Metric

25	104	41	51	6	54	73			11	41	120	126	127	033
28	104	44	52	6	54	73			11	41	122	128	129	034
30	104	46	57	6	54	78			11	41	123	129	130	035
32	104	48	58	6	54	80			11	41	124	130	131	035
33	113	49	59	6	54	81	83		14	41	125	131	132	036
35	111	51	59	6	54	80	82*		14	41	126	132	133	036
38	114	54	61	6	54	85	87		14	41	128	134	135	037
40	127	56	68	6	54	90	92		13	41	129	135	136	038
42	127	58	66	6	54	88	90		13	41	130	136	137	038
43	127	59	69	6	54	91	93		13	41	131	137	138	039

* Requires SHCS or D shaped washers. PIPING CONNECTIONS: 0.250" – 18 NPT

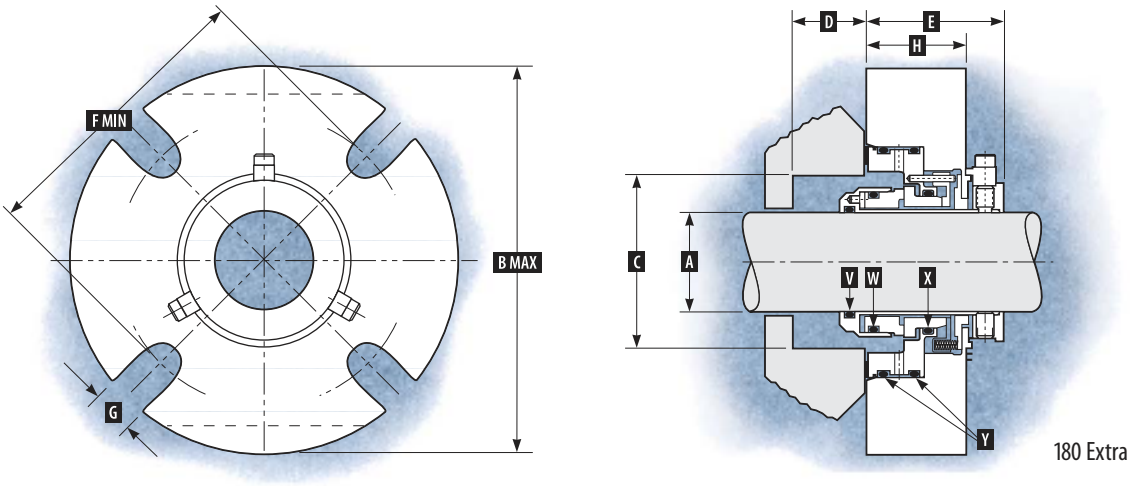
180 SMALL & LARGE– Dimensional Data/Inch

SHAFT SIZE	GLAND OD	STUFFING BOX BORE		SB DEPTH	OB LENGTH	BOLT CIRCLE BY BOLT SIZE			SLOT WIDTH	GLAND WIDTH	O-RINGS			
											SHAFT	ROTARY	STATIONARY	GLAND
A	B MAX	C MIN	C MAX	D MIN	E MAX	3/8"	F MIN 1/2"	5/8"	G	H MAX	V	W	X	Y
1.750	5.49	2.50	2.81	0.69	1.91	3.62	3.75*		0.57	1.27	132	138	139	150
1.875	5.49	2.63	2.94	0.69	1.91	3.75	3.87*		0.57	1.27	134	140	141	151
2.000	5.49	2.75	3.19	0.69	1.91	4.00	4.13		0.57	1.27	136	142	143	152
2.125	5.99	2.88	3.44	0.69	1.91	4.25	4.38	4.50	0.69	1.27	138	144	145	153
2.250	5.99	3.00	3.56	0.69	1.91	4.37	4.50	4.62	0.69	1.27	140	146	147	153
2.375	5.99	3.13	3.59	0.69	1.91	4.43	4.56	4.68	0.69	1.27	142	148	149	153
2.500	6.49	3.25	3.81	0.69	1.91	4.62	4.75	4.87	0.69	1.27	144	150	151	154
						1/2"	5/8"	3/4"						
2.625	6.45	3.63	4.04	0.88	2.50	5.02	5.15		0.69	1.77	231	235	236	242
2.750	7.70	3.75	4.38	0.88	2.50	5.42	5.55		0.69	1.77	232	236	237	245
2.875	7.83	3.88	4.50	0.88	2.50	5.50	5.62		0.69	1.77	233	237	238	246
3.000	7.94	4.00	4.69	0.88	2.50	5.65	5.77		0.69	1.77	234	238	239	247
3.125	7.99	4.13	4.81	0.88	2.50	5.80	5.92		0.69	1.77	235	239	240	248
3.250	8.19	4.25	4.94	0.88	2.50	5.93	6.05		0.69	1.77	236	240	241	249
3.375	8.30	4.38	5.06	0.88	2.50	6.02	6.14	6.27	0.81	1.77	237	241	242	250
3.500	8.44	4.50	5.19	0.88	2.50	6.18	6.31	6.43	0.81	1.77	238	242	243	251
3.625	8.49	4.63	5.31	0.88	2.50	6.31	6.44	6.56	0.81	1.77	239	243	244	252
3.750	8.71	4.75	5.39	0.88	2.50	6.38	6.51	6.63	0.81	1.77	240	244	245	253
3.875	8.84	4.88	5.51	0.88	2.50	6.52	6.64	6.77	0.81	1.77	241	245	246	254
4.000	8.96	5.00	5.69	0.88	2.50	6.66	6.78	6.91	0.81	1.77	242	246	247	255
4.125	8.99	5.13	5.81	0.88	2.50	6.79	6.90	7.03	0.81	1.77	243	247	248	256
4.250	8.99	5.25	5.94	0.88	2.50	6.91	7.04	7.16	0.81	1.77	244	248	249	257
4.375	9.33	5.38	6.06	0.88	2.50	7.03	7.15	7.28	0.81	1.77	245	249	250	258
4.500	9.49	5.50	6.19	0.88	2.50	7.18	7.30	7.43	0.81	1.77	246	250	251	258
4.625	9.49	5.63	6.31	0.88	2.50	7.28	7.40	7.53	0.81	1.77	247	251	252	259
4.750	10.49	5.75	6.47	0.88	2.50	7.40	7.53	7.65	0.81	1.77	248	252	253	259

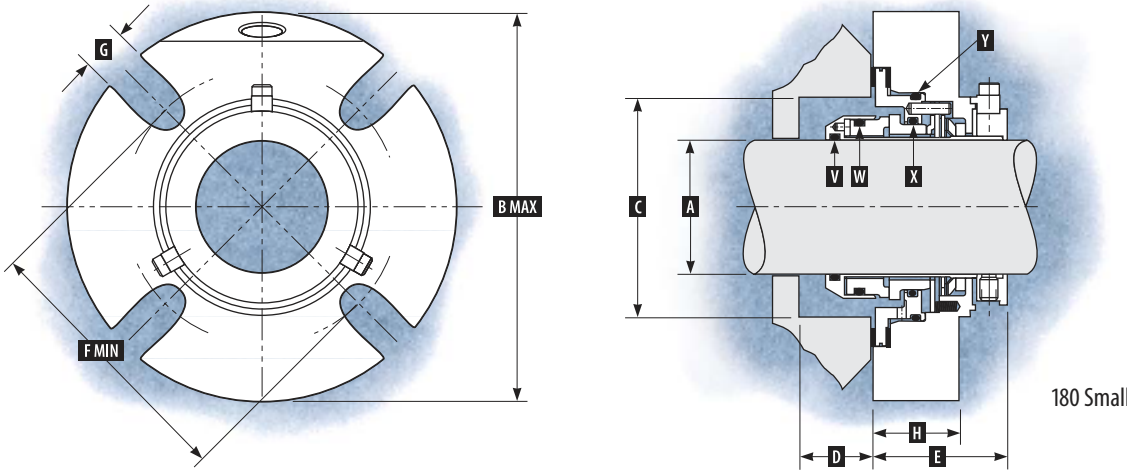
180 SMALL & LARGE– Dimensional Data/Metric

						10 mm	12 mm	16 mm						
45	139	64	73	18	49	95	97		13	43	133	139	140	150
48	139	67	73	18	49	95*	97*		13	43	134	141	142	151
50	139	69	78	18	49	100	102		13	43	136	142	143	151
53	152	73	87	18	49	109	111	115	17	43	137	144	145	153
55	152	74	83	18	49	105	107	111	17	43	139	145	146	152
58	152	80	91	18	49	114	116	120	17	43	140	148	149	153
60	152	80	91	18	49	114	116	120	17	43	142	148	149	153
						12 mm	16 mm	20 mm						
65	164	92	103	22	64	127	131		17	45	231	235	236	242
70	196	96	111	22	64	137	141		17	45	232	236	237	245
75	202	102	119	22	64	143	147		17	45	234	238	239	247
80	203	106	122	22	64	150	154		17	45	236	239	240	248
85	211	111	128	22	64	152	156	161	21	45	237	241	242	250
90	214	116	132	22	64	160	164	168	21	45	239	242	243	251
95	221	121	137	22	64	161	165	170	21	45	240	244	245	253
100	228	127	144	22	64	168	172	177	21	45	242	246	247	255
110	237	137	154	22	64	178	182	186	21	45	245	249	250	258
120	266	146	164	22	64	187	191	195	21	45	248	252	253	259

* Requires SHCS or D shaped washers. PIPING CONNECTIONS: Small 0.375" – 18 NPT Large 0.500" – 14 NPT



180 Extra Small



180 Small and Large

180 EXTRA SMALL OVERSIZE – Dimensional Data

SHAFT SIZE	GLAND OD	STUFFING BOX BORE		SB DEPTH	OB LENGTH	BOLT CIRCLE BY BOLT SIZE			SLOT WIDTH	GLAND WIDTH	O-RINGS			
											SHAFT	ROTARY	STATIONARY	ADAPTER
A	B MAX	C MIN	C MAX	D MIN	E MAX	3/8"	F MIN 1/2"	5/8"	G	H MAX	V	W	X	Y
1.125	4.48	2.50	2.75	0.40	1.93	3.71			0.44	1.44	122	128	129	150
1.375	5.40	2.68	3.00	0.40	1.93	4.03			0.44	1.44	126	132	133	151

180 SMALL & LARGE OVERSIZE – Dimensional Data

						3/8"	1/2"	5/8"						
1.750	6.64	3.50	3.75	0.69	1.91	5.21	5.33	5.46	0.57	1.44	132	138	139	151
1.875	5.99	3.56	3.81	0.69	1.91		5.00		0.57	1.44	134	140	141	152
2.125	6.99	3.88	4.25	0.69	1.91			5.95	0.69	1.44	138	144	145	153
2.375	8.40	4.13	4.50	0.69	1.91			7.00	0.69	1.44	142	148	149	154
2.500	7.77	4.50	4.75	0.69	1.91			6.75	0.69	1.44	144	150	151	154
						5/8"	3/4"	7/8"						
2.625	6.98	4.55	4.78	0.88	2.50	6.00			0.69	1.77	231	235	236	242
2.750	7.89	4.45	4.78	0.88	2.50		6.38		0.81	1.77	232	236	237	243
3.000	8.64	4.93	5.39	0.88	2.50	7.00	7.13	7.25	0.94	1.77	234	238	239	246
3.375	8.39	4.95	5.27	0.88	2.50		6.88		0.82	1.77	237	241	242	248
3.750	9.76	5.08	6.40	0.88	2.50	8.25			0.82	1.77	240	244	245	252
4.125	9.76	5.95	6.27	0.88	2.50			8.00	0.82	1.77	243	247	248	255
4.500	12.49	6.75	7.49	0.88	2.50		10.76		0.82	1.77	246	250	251	258
4.750	11.39	7.20	7.65	0.88	2.50	9.88	10.00		0.82	1.77	248	252	253	259

PIPING CONNECTIONS: XSM OS 0.250" – 18 NPT Small OS 0.375" – 18 NPT Large OS 0.500" – 14 NPT

Universal Applicability In A Compact, High Reliability Package

The 180 Single Seal offers maximum reliability in a wide application range. The compact chassis is designed to fit ANSI, DIN and API pumps with no modifications for ease of use. Advanced design features combined with a rigorus testing regimen have yielded this "next-step" single seal technology. Put the 180 to work in your plant today for maximum reliability in a single seal.

Specifications

OPERATING LIMITS

Speed Limits:

- 5000 fpm 25 m/sec Maximum

Temperature Limits:

- To 300°F (150°C) Ethylene Propylene
- To 400°F (205°C) Fluorocarbon/AFLAS†
- To 500°F (260°C) Perfluoroelastomer

Pressure Limits:

- Extra Small Sizes
  1.00" through 1.625"/25mm through 43mm
  600 psig/40 bar g*
  For pressures above 400 psig/26 bar g consult CHESTERTON Mechanical Seal Engineering.
- Small Sizes
  1.750" through 2.500"/45mm through 60mm
  600 psig/40 bar g*
  Consult Chesterton Mechanical Seal Engineering for services beyond these limits.
- Large Sizes
  2.625" through 4.750"/65mm through 120mm
  600 psig/40 bar g max.**

STANDARD MATERIALS

Faces:

- Carbon
- Sintered Silicon Carbide
- Tungsten Carbide
- Consult factory for additional materials availability.

Elastomers:

- Fluorocarbon, EP, AFLAS† standard

Metal Parts:

- 316SS major components
- Alloy C-276 springs
- Tungsten Carbide anti-rotation pins
- Consult factory for additional materials availability.

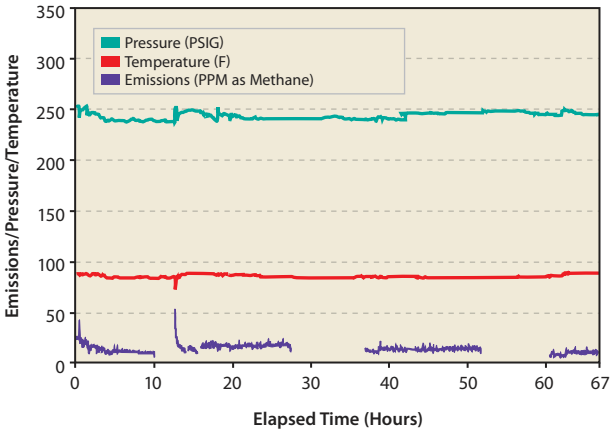
† Asahi Glass Co. Registered Trademark.

* Use 4 gland bolts above 400 psig/26 bar g

**4 gland bolts and environmental controls recommended over 300 psig/19.5 bar g

Reliable emissions control in a single seal

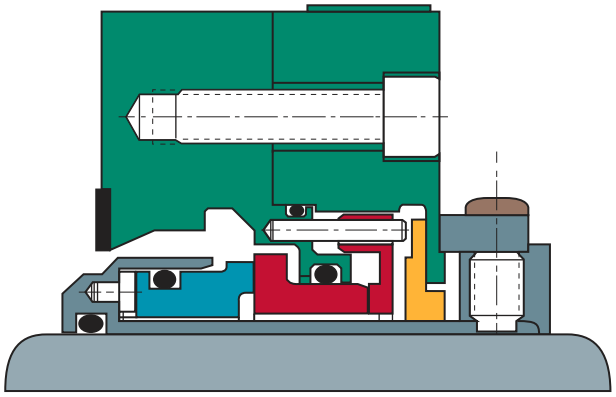
Extensive testing has shown the 180 to be a top performing single seal for emissions control. Propane testing to API 682 standards indicates dynamic emissions to be well below U.S. federal standards. In this day of regulatory compliance, a highly reliable single seal that can meet or exceed these standards is a great value.



Propane testing proves superior emissions control capability.

Small size pumps sealed without compromise

The tight stuffing box confinements of small frame pumps often force designers to compromise seal design or performance in order to fit a seal into these dimensional envelopes. CHESTERTON engineers have designed a seal to fit small frame pumps without sacrificing features or overall seal integrity. The extra small size range 180 Seal is a full-featured seal which fits 5/16" (8 mm) cross-section stuffing boxes without pump modification.



The 180 extra small cross-section.

Universal applicability

The 180 Seal has been designed to be a rugged, all around performer in sealing applications across industry segments. Having undergone a rigorous in-house and field testing program, the 180 has proven itself in applications ranging from light hydrocarbon service to sand slurry and many things in-between. A proven performer designed for the role of plant-wide standard. The 180 Single Seal and 280 Dual Seal are the perfect pair for solving your sealing problems today.

180™ Cartridge Single Seal

280™ Cartridge Dual Seal

Chesterton ISO certificates available on www.chesterton.com/corporate/iso

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