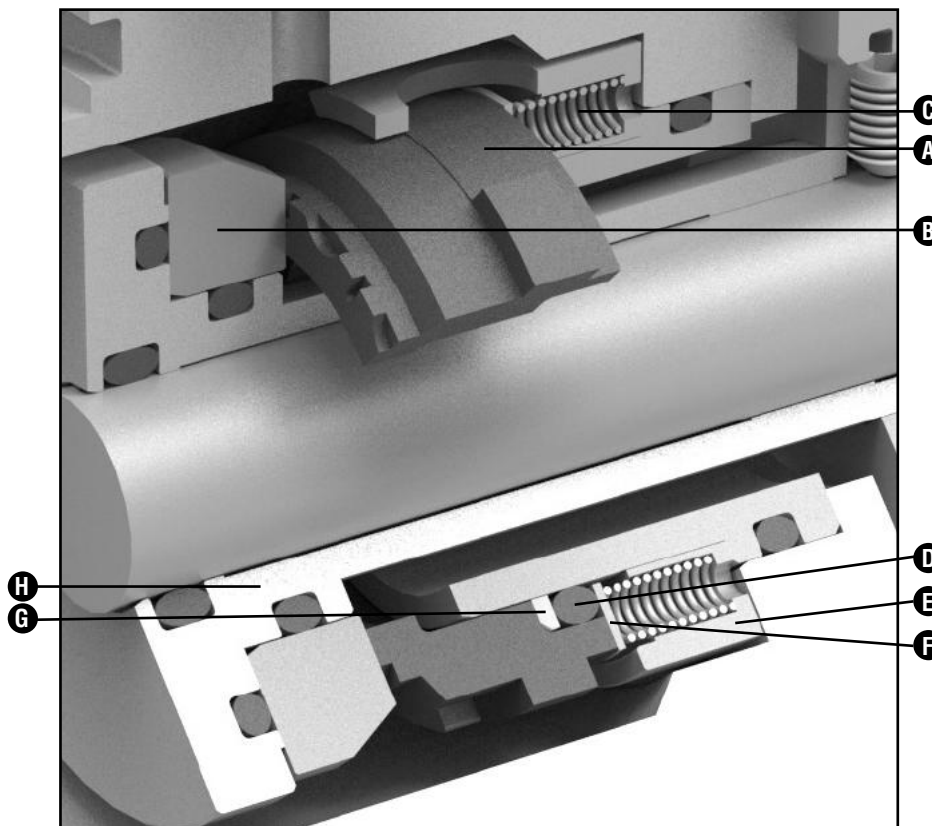


TYPE 48VBF

ELASTOMER O-RING SEAL FOR HOT WATER

Technical Specification

- A – Face/Primary Ring
- B – Seat/Mating Ring
- C – Spring
- D – Dynamic O-ring
- E – Retainer
- F – Disc
- G – Anti-X Ring
- H – Sleeve



Product Description

The 48VBF seal is a single cartridge, stationary head, O-ring pusher seal that can operate without an external heat exchanger (API Plan 23) in critical high temperature, medium pressure pumps. This is ideal for application in Boiler Feed pumps, which inject feedwater (hot, demineralized, deaerated water) into the boiler at fossil-fuel steam power plants or within the on-site generation plant of a processing or manufacturing site.

The main risk of seal failure is due to numerous problems associated with the heat exchanger seal support loop, resulting in the BFW pump shutting down and the boiler going offline. Common heat exchanger support loop problems include:

- Loss of cooling water
- Undersized heat exchanger
- Incorrectly installed/located heat exchanger and/or piping
- Poor/inadequate venting procedure after outages/shutdowns
- Scale/corrosion build-up within the piping, limiting flow and seal cooling

By allowing operation without that heat exchanger, the 48VBF reduces cost to the end-user for the heat exchanger, piping and water usage.

Performance Capabilities

- Temperature: 0°C to 200°C/32°F to 392 °F
- Pressures: Carbon Face: Up to 30 bar g/435 psi g
- Speed: Up to 30 m/s/5900 fpm

Design Features

Primary ring– high duty carbon-graphite grade for tolerance to difficult sealing conditions found in hot water services.

Unique design - proprietary patent pending hydrodynamic features to allow sealing hot water far above its atmospheric boiling point while minimizing leakage. Allows operation on hot water without cooling.

Rotating mating ring design - enhances cooling and permits use at higher shaft speeds, often required in power plants.

Compatible - Fits API seal chambers, and interchangeable with existing John Crane seals on similar applications.

Easy upgrade - Existing commonly used 48V seal may be upgraded to 48VBF by simple change of primary ring

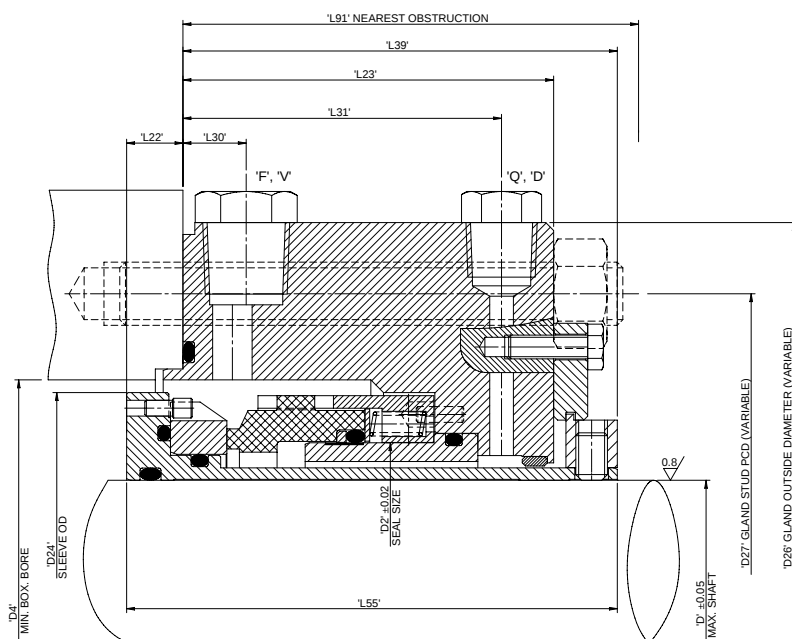
Robust drive mechanism - The primary ring incorporates an optimized ear drive design for increased torque capability

TYPE 48VBF

ELASTOMER O-RING SEAL FOR HOT WATER

Technical Specification

Type 48VBF Typical Arrangement



Type 48VBF Dimensional Data (mm)

Seal Size	Size Code	D Max. Shaft Size	D2	D4	D24	D26	D27	L22	L23	L30	L31	L39	L55	L91	Stud Size
2.750	0698	50.80	69.85	98.4	92.1	178	142	11.1	89.1	16	75.9	105.2	116.2	108.2	M16
2.875	0730	53.98	73.03	101.6	95.3	181	145	11.1	89.1	16	75.9	105.2	116.2	108.2	M16
3.000	0762	57.15	76.20	104.8	98.4	185	149	11.1	89.1	16	75.9	105.2	116.2	108.2	M16
3.125	0793	60.33	79.38	111.1	104.8	191	155	14.2	89.1	16	75.9	105.2	119.4	108.2	M16
3.250	0825	63.50	82.55	114.3	108.0	194	158	14.2	89.1	16	75.9	105.2	119.4	108.2	M16
3.375	0857	66.68	85.73	117.5	111.1	197	161	14.2	89.1	16	75.9	105.2	119.4	108.2	M16
3.500	0889	69.85	88.90	120.7	114.3	200	164	14.2	89.1	16	75.9	105.2	119.4	108.2	M16
3.625	0920	73.03	92.08	123.8	117.5	204	168	14.3	93.8	16	80.6	109.9	124.2	112.9	M16
3.750	0952	76.20	95.25	127.0	120.7	207	171	14.3	93.8	16	80.6	109.9	124.2	112.9	M16
3.875	0984	79.38	98.43	130.2	123.8	210	174	14.3	93.8	16	80.6	109.9	124.2	112.9	M16
4.000	1016	82.55	101.60	133.4	127.0	213	177	14.3	93.8	16	80.6	109.9	124.2	112.9	M16
4.125	1047	85.73	104.78	136.5	130.2	228	184	14.3	93.8	16	80.6	109.9	124.2	112.9	M20
4.250	1079	88.90	107.95	139.7	133.4	234	190	14.3	93.8	16	80.6	109.9	124.2	112.9	M20
4.375	1111	92.08	111.13	142.9	136.5	238	194	14.3	93.8	16	80.6	112.9	127.2	115.9	M20
4.500	1143	95.25	114.30	146.1	139.7	241	197	14.3	93.8	16	80.6	112.9	127.2	115.9	M20
4.625	1174	98.43	117.48	150.8	144.4	244	200	17.4	93.9	16	80.7	113.0	130.4	116.0	M20
4.750	1206	101.60	120.65	154.0	147.6	247	203	17.4	93.9	16	80.7	113.0	130.4	116.0	M20
4.875	1238	104.78	123.83	157.1	150.8	251	207	17.4	93.9	16	80.7	113.0	130.4	116.0	M20
5.000	1270	107.95	127.00	160.3	154.0	253	209	17.4	93.9	16	80.7	113.0	130.4	116.0	M20
5.125	1301	111.13	130.18	163.5	157.1	257	213	17.4	93.9	16	80.7	113.0	130.4	116.0	M20
5.250	1333	114.30	133.35	166.7	160.3	260	216	17.3	101.9	16	88.7	121.0	138.3	124.0	M20
5.375	1365	117.48	136.53	169.8	163.5	263	219	17.3	101.9	16	88.7	121.0	138.3	124.0	M20
5.500	1397	120.65	139.70	173.0	166.7	266	222	17.3	101.9	16	88.7	121.0	138.3	124.0	M20
5.625	1428	123.83	142.88	176.2	169.8	270	226	17.3	101.9	16	88.7	121.0	138.3	124.0	M20
5.750	1460	127.00	146.05	179.4	173.0	272	228	17.3	101.9	16	88.7	121.0	138.3	124.0	M20
5.875	1492	130.18	149.23	182.5	176.2	276	232	17.3	101.9	16	88.7	121.0	138.3	124.0	M20
6.000	1524	133.35	152.40	185.7	179.4	288	244	17.3	101.9	16	88.7	121.0	138.3	124.0	M20
6.250	1587	139.70	158.75	193.8	185.7	294	250	17.6	103.1	16	90.0	126.2	143.9	129.2	M20
6.500	1651	146.05	165.10	200.1	192.1	300	256	17.6	103.1	16	90.0	126.2	143.9	129.2	M20
6.750	1714	152.40	171.45	206.5	198.4	306	262	17.6	103.1	16	90.0	126.2	143.9	129.2	M20
7.000	1778	158.75	177.80	212.8	204.8	312	268	17.6	103.1	16	90.0	126.2	143.9	129.2	M20
7.250	1841	165.10	184.15	219.2	211.1	318	274	17.6	103.1	16	90.0	126.2	143.9	129.2	M20
7.500	1905	171.45	190.50	225.5	217.5	324	280	17.6	103.1	16	90.0	126.2	143.9	129.2	M20
7.750	1968	177.80	196.85	231.9	225.4	330	286	19.3	109.5	16	96.3	132.6	151.8	135.6	M20

TYPE 48VBF

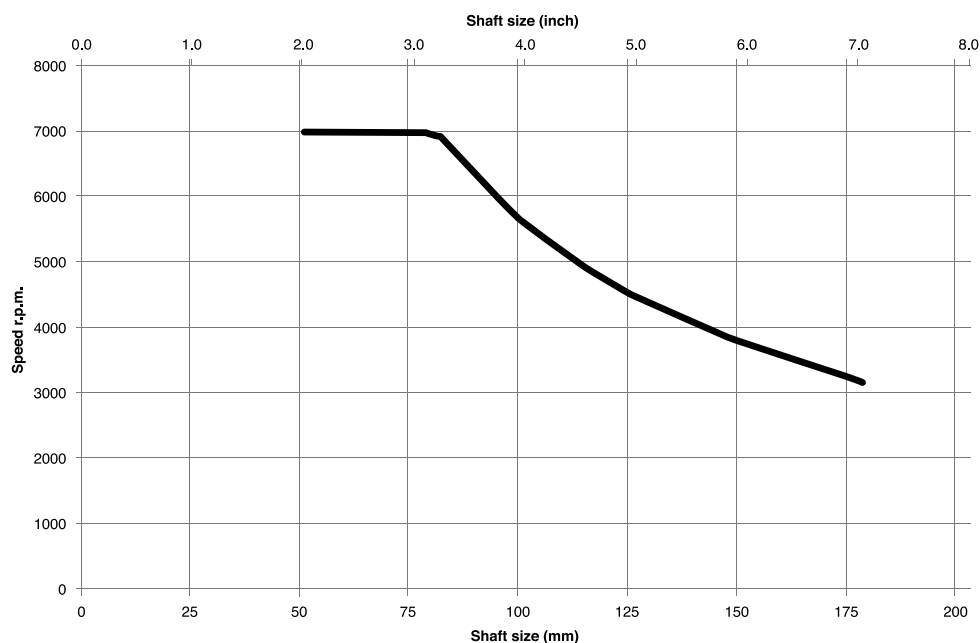
ELASTOMER O-RING SEAL FOR HOT WATER

Technical Specification

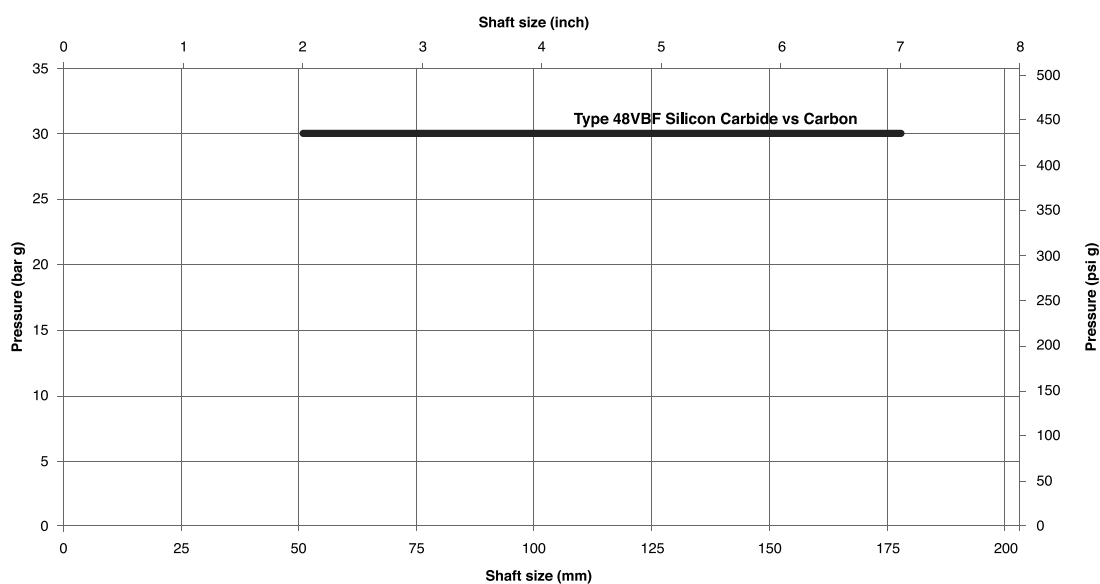
Type 48VBF Dimensional Data (inches)

Seal Size	Size Code	D Max. Shaft Size	D2	D4	D24	D26	D27	L22	L23	L30	L31	L39	L55	L91	Stud Size
2.750	0698	2.000	2.750	3.874	3.626	7.008	5.591	0.437	3.508	0.630	2.988	4.142	4.575	4.260	5/8"-11UNC
2.875	0730	2.125	2.875	4.000	3.752	7.126	5.709	0.437	3.508	0.630	2.988	4.142	4.575	4.260	5/8"-11UNC
3.000	0762	2.250	3.000	4.126	3.874	7.283	5.866	0.437	3.508	0.630	2.988	4.142	4.575	4.260	5/8"-11UNC
3.125	0793	2.375	3.125	4.374	4.126	7.520	6.102	0.559	3.508	0.630	2.988	4.142	4.701	4.260	5/8"-11UNC
3.250	0825	2.500	3.250	4.500	4.252	7.638	6.220	0.559	3.508	0.630	2.988	4.142	4.701	4.260	5/8"-11UNC
3.375	0857	2.625	3.375	4.626	4.374	7.756	6.339	0.559	3.508	0.630	2.988	4.142	4.701	4.260	5/8"-11UNC
3.500	0889	2.750	3.500	4.752	4.500	7.874	6.457	0.559	3.508	0.630	2.988	4.142	4.701	4.260	5/8"-11UNC
3.625	0920	2.875	3.625	4.874	4.626	8.031	6.614	0.563	3.693	0.630	3.173	4.327	4.890	4.445	5/8"-11UNC
3.750	0952	3.000	3.750	5.000	4.752	8.150	6.732	0.563	3.693	0.630	3.173	4.327	4.890	4.445	5/8"-11UNC
3.875	0984	3.125	3.875	5.126	4.874	8.268	6.850	0.563	3.693	0.630	3.173	4.327	4.890	4.445	5/8"-11UNC
4.000	1016	3.250	4.000	5.252	5.000	8.386	6.969	0.563	3.693	0.630	3.173	4.327	4.890	4.445	5/8"-11UNC
4.125	1047	3.375	4.125	5.374	5.126	8.976	7.244	0.563	3.693	0.630	3.173	4.327	4.890	4.445	5/8"-11UNC
4.250	1079	3.500	4.250	5.500	5.252	9.213	7.480	0.563	3.693	0.630	3.173	4.327	4.890	4.445	3/4"-10UNC
4.375	1111	3.625	4.375	5.626	5.374	9.370	7.638	0.563	3.693	0.630	3.173	4.445	5.008	4.563	3/4"-10UNC
4.500	1143	3.750	4.500	5.752	5.500	9.488	7.756	0.563	3.693	0.630	3.173	4.445	5.008	4.563	3/4"-10UNC
4.625	1174	3.875	4.625	5.937	5.685	9.606	7.874	0.685	3.697	0.630	3.177	4.449	5.134	4.567	3/4"-10UNC
4.750	1206	4.000	4.750	6.063	5.811	9.724	7.992	0.685	3.697	0.630	3.177	4.449	5.134	4.567	3/4"-10UNC
4.875	1238	4.125	4.875	6.185	5.937	9.882	8.150	0.685	3.697	0.630	3.177	4.449	5.134	4.567	3/4"-10UNC
5.000	1270	4.250	5.000	6.311	6.063	9.961	8.228	0.685	3.697	0.630	3.177	4.449	5.134	4.567	3/4"-10UNC
5.125	1301	4.375	5.125	6.437	6.185	10.118	8.386	0.685	3.697	0.630	3.177	4.449	5.134	4.567	3/4"-10UNC
5.250	1333	4.500	5.250	6.563	6.311	10.236	8.504	0.681	4.012	0.630	3.492	4.764	5.445	4.882	3/4"-10UNC
5.375	1365	4.625	5.375	6.685	6.437	10.354	8.622	0.681	4.012	0.630	3.492	4.764	5.445	4.882	3/4"-10UNC
5.500	1397	4.750	5.500	6.811	6.563	10.472	8.740	0.681	4.012	0.630	3.492	4.764	5.445	4.882	3/4"-10UNC
5.625	1428	4.875	5.625	6.937	6.685	10.630	8.898	0.681	4.012	0.630	3.492	4.764	5.445	4.882	3/4"-10UNC
5.750	1460	5.000	5.750	7.063	6.811	10.709	8.976	0.681	4.012	0.630	3.492	4.764	5.445	4.882	3/4"-10UNC
5.875	1492	5.125	5.875	7.185	6.937	10.866	9.134	0.681	4.012	0.630	3.492	4.764	5.445	4.882	3/4"-10UNC
6.000	1524	5.250	6.000	7.311	7.063	11.339	9.606	0.681	4.012	0.630	3.492	4.764	5.445	4.882	3/4"-10UNC
6.250	1587	5.500	6.250	7.628	7.312	11.575	9.843	0.693	4.059	0.630	3.543	4.969	5.665	5.087	3/4"-10UNC
6.500	1651	5.750	6.500	7.878	7.562	11.811	10.079	0.693	4.059	0.630	3.543	4.969	5.665	5.087	3/4"-10UNC
6.750	1714	6.000	6.750	8.128	7.812	12.047	10.315	0.693	4.059	0.630	3.543	4.969	5.665	5.087	3/4"-10UNC
7.000	1778	6.250	7.000	8.378	8.062	12.283	10.551	0.693	4.059	0.630	3.543	4.969	5.665	5.087	3/4"-10UNC
7.250	1841	6.500	7.250	8.628	8.312	12.520	10.787	0.693	4.059	0.630	3.543	4.969	5.665	5.087	3/4"-10UNC
7.500	1905	6.750	7.500	8.878	8.562	12.756	11.024	0.693	4.059	0.630	3.543	4.969	5.665	5.087	3/4"-10UNC
7.750	1968	7.000	7.750	9.128	8.875	12.992	11.260	0.760	4.311	0.630	3.791	5.220	5.976	5.339	3/4"-10UNC

Type 48VBF Speed Rating



Type 48VBF Pressure Rating



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