TYPE 8648SC

NON-PUSHER ELASTOMER, DRY RUNNING, SECONDARY CONTAINMENT GAS SEAL

Technical Specification

A – Primary ring
B – Mating ring
C – Bellows
D – Band
E – Spring adapter
F – Spring
G – Retainer
H – Snap ring
I – Stub sleeve

Product Description

The John Crane 8648SC is a standardized non-pusher elastomer, dry running, secondary containment seal designed specifically for non-crude oil hydrocarbon services, with a focus on meeting the demanding requirements of pipeline pumping station duties.

The main risk of seal failure in these applications is due to the numerous problems associated with the secondary dynamic O-ring, potentially resulting in hang-up, fretting or stub sleeve wear. The design of the 8648SC completely eliminates these common problems.

The 8648SC is used in tandem with a primary seal such as the 8648VRS. The 8648SC performs in response to the primary seal leakage or failure. In the event of the seal coming into contact with the process fluid, the faces will close and prevent a mass escape of this fluid. This represents a less complex alternative to dual unpressurized seals using a API Plan 52.

Performance Capabilities

- Temperature: -4° to 400°F/-20° to 204°C
- Pressure: Up to 40 psig/2.75 barg (gas operation)
  Up to 1500 psig/103 barg (liquid operation)
- Speed: Up to 6000 fpm/30.5 ms^{-1}

Design Features

- Unique proven secondary seal technology prevents wear to the sealing diameter and prevents secondary seal hang-up
- Axially compact and easy to install seal head assembly
- Balanced design and premium face materials enables high pressure capability
- Ear drive design on primary ring increase drive torque capability
- 90 shore elastomer for robust construction
- No O-rings in the pusher head assembly to fret under pump shuttling
- Non-compressible flexible elastomer bellows
- May be used with or without a buffer gas depending on the application
- The mating ring is a rotating set design for reduced misalignment and higher shaft speed capability

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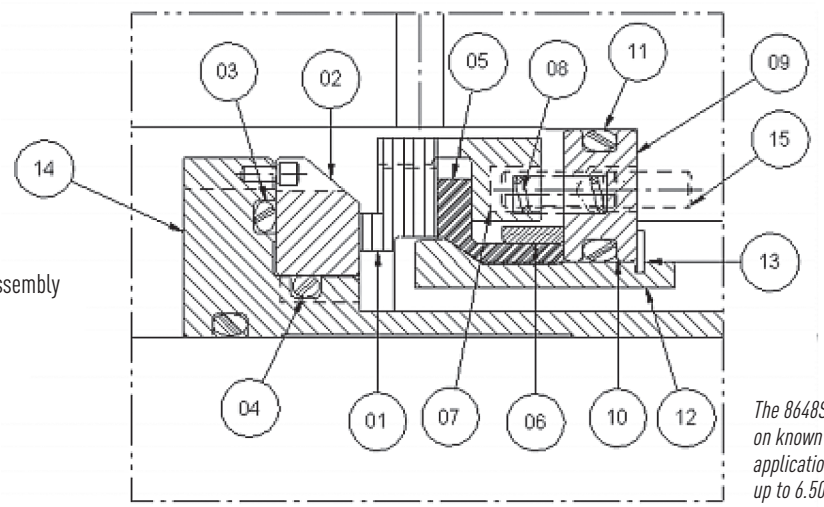
Typical Arrangement/ Dimensional Data

1 – Primary ring
2 – Mating ring
3 – O-ring
4 – O-ring
5 – NPSS
6 – Band
7 – Retainer
8 – Springs
9 – Spring adapter assembly
10 – O-rings
11 – O-rings
12 – Stub sleeve
13 – Snap ring
14 – Sleeve
15 – Pin



The 8648SC secondary containment seal is sized on known equipment dimensions used in pipeline applications. Sizes to fit common pipeline pumps up to 6.500 inch shafts.

Dimensional Data (Inches)

Seal Size	D Max.Shaft	D2	D3	D4	D6	D24	L3	L12	L65
3.500	2.625	3.500	4.437	4.625	3.700	7.376	1.488	2.438	0.294
3.625	2.750	3.625	4.562	4.750	3.825	7.501	1.488	2.438	0.294
3.750	2.875	3.750	4.687	4.875	3.950	7.626	1.488	2.438	0.294
4.000	3.135	4.000	4.937	5.125	4.200	7.876	1.488	2.438	0.294
4.125	3.260	4.125	5.062	5.250	4.325	8.001	1.488	2.438	0.294
4.250	3.375	4.250	5.187	5.375	4.450	8.126	1.488	2.438	0.294
4.500	3.510	4.500	5.437	5.750	4.700	8.376	1.488	2.438	0.294
4.625	3.625	4.625	5.562	5.875	4.825	8.501	1.488	2.438	0.294
4.750	3.760	4.750	5.687	6.000	4.950	8.626	1.488	2.438	0.294
5.000	4.010	5.000	5.937	6.250	5.200	8.876	1.488	2.438	0.294
5.250	4.323	5.250	6.187	6.500	5.450	9.126	1.488	2.438	0.294
5.500	4.510	5.500	6.437	6.750	5.700	9.376	1.488	2.438	0.294
6.500	5.510	6.500	7.437	7.750	6.700	10.376	1.488	2.438	0.294

Dimensional Data (mm)

Seal Size	D Max.Shaft	D2	D3	D4	D6	D24	L3	L12	L65
3.500	66.675	88.900	112.700	117.475	93.980	187.350	37.795	61.925	7.468
3.625	69.850	92.075	115.875	120.650	97.155	190.525	37.795	61.925	7.468
3.750	73.025	95.250	119.050	123.825	100.330	193.700	37.795	61.925	7.468
4.000	79.629	101.600	125.400	130.175	106.680	200.050	37.795	61.925	7.468
4.125	82.804	104.775	128.575	133.350	109.855	203.225	37.795	61.925	7.468
4.250	85.725	107.950	131.750	136.525	113.030	206.400	37.795	61.925	7.468
4.500	89.154	114.300	138.100	146.050	119.380	212.750	37.795	61.925	7.468
4.625	92.075	117.475	141.275	149.225	122.555	215.925	37.795	61.925	7.468
4.750	95.504	120.650	144.450	152.400	125.730	219.100	37.795	61.925	7.468
5.000	101.854	127.000	150.800	158.750	132.080	225.450	37.795	61.925	7.468
5.250	109.804	133.350	157.150	165.100	138.430	231.800	37.795	61.925	7.468
5.500	114.554	139.700	163.500	171.450	144.780	238.150	37.795	61.925	7.468
6.500	139.954	165.100	188.900	196.850	170.180	263.550	37.795	61.925	7.468

Materials of Construction

Seal Component	GMI	Material	Finish
Bellows	0868	Viton 90 duro	
	1792	Aflas 90 duro	
Primary ring	8270	Carbon	polish
Mating ring	9221	SiC	polish
Retainer	0550	316 SS	
Drive band	0594	Duplex SS	
Stub sleeve	0594	Duplex SS	
Spring adapter	0550	316 SS	
Spring	0690	Hast C	
Snap ring	0550	316 SS	

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