

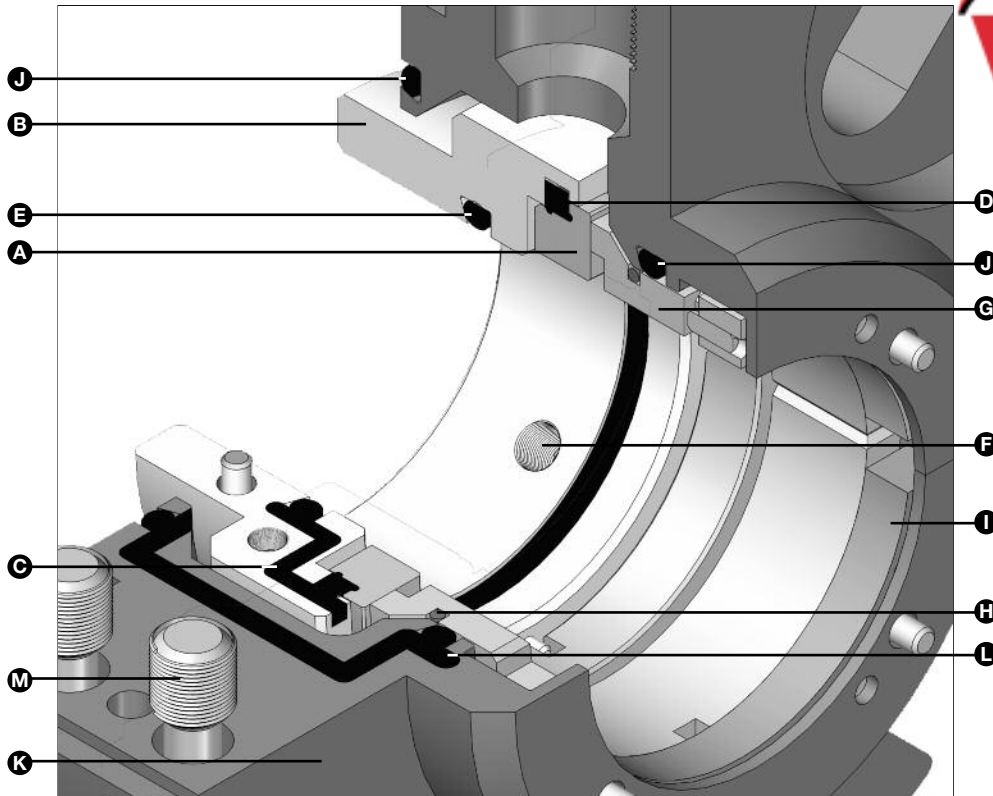
TYPE 3740

WET RUNNING CARTRIDGE SPLIT SEAL

Technical Specification



- A – Mating Ring
- B – Mating Ring Adapter Assy.
- C – Sealing Element Gasket
- D – Sealing Element Strip
- E – Sealing Element O-ring
- F – Set Screw
- G – Primary Ring
- H – Retaining Ring
- I – Spring Adapter Assy. Set
- J – O-ring (Split)
- K – Gland Plate Assy.
- L – Gland Plate Gasket
- M – Captive Socket Head Cap Crews



Product Description

The Type 3740 is a family of split seals using the latest modular split seal technology from John Crane that also combines the unique design requirements for wet-running and dry-running services onto one common seal platform.

- The Type 3740 wet-running split seal incorporates the best features for fast and easy seal installation, while providing reliable seal performance in demanding pump and other rotating equipment fluid services.
- The Type 3740D dry-running split seal is designed for the large shaft run-out and harsh operating conditions commonly associated with top-entry vessel mixing services and other dry-running applications.

Typical Applications

- | | |
|-------------------------------|--------------------|
| • Agitators/mixers | • Chemicals |
| • Centrifugal pumps | • Light slurries |
| • Positive displacement pumps | • Marine |
| • Split case pumps | • Paper stock |
| | • Water/wastewater |

Performance Capabilities

- Temperatures: up to 250°F/121°C
- Pressures: up to 450 psi(g)/31.0 bar(g) excursion
300 psi(g)/20.7 bar(g) continuously
- Speeds: up to 3500 fpm/17.8 m/s
- Runout: up to 0.060" TIR/1.52mm

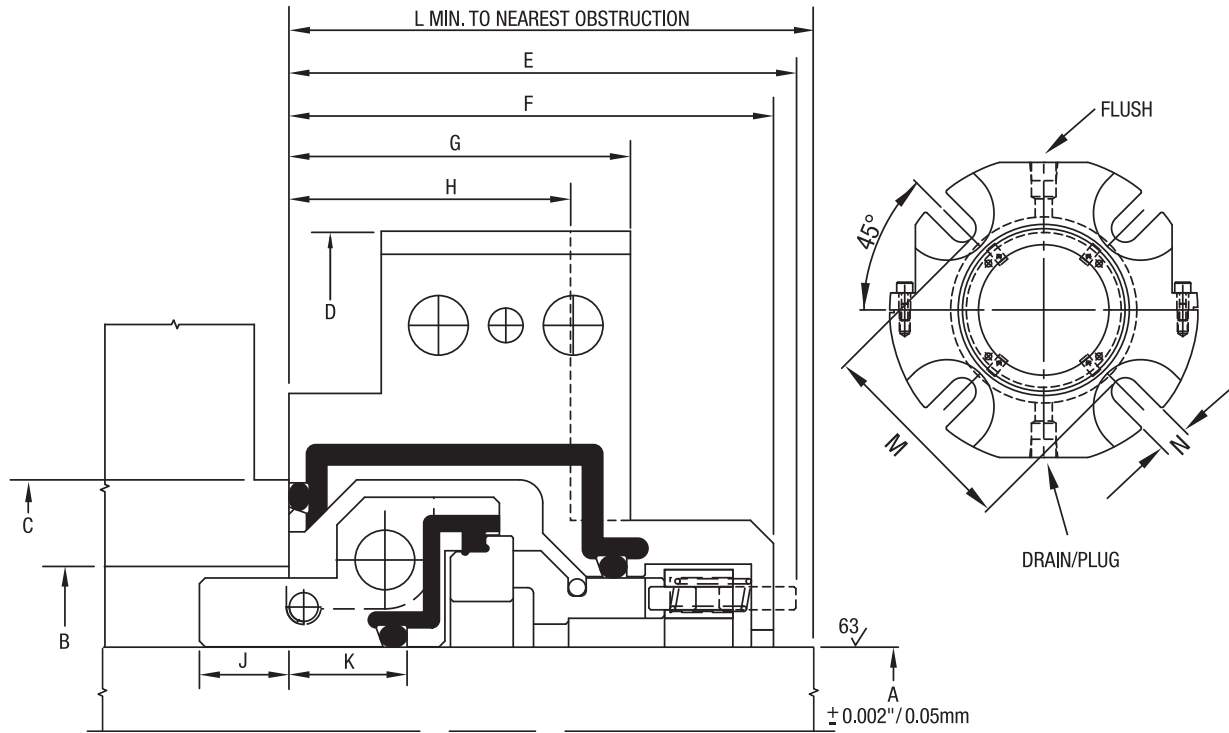
Design Features

- Factory-preassembled rotor assembly for fast, easy yet precise rotating face installation
- Separate stationary seal face for visual assurance the halves are correctly aligned
- Factory-preassembled gland plate assembly for easy, single-step installation
- Balanced primary ring design for increased pressure capability
- Premium seal face materials for optimal performance
- Captive socket head cap screws to eliminate lost or dropped screws
- Same-side screws on all hardware for easy access and faster installation
- Dovetail O-ring grooves to contain all O-rings without requiring adhesives
- Fast and easy field repair kits that do not require any special tools, adhesives or procedures.
- Two connections in the gland to provide easy access for flush piping

TYPE 3740

WET RUNNING CARTRIDGE SPLIT SEAL

Type 3740 Typical Arrangement



Type 3740 Dimensional Data (mm)

SEAL SIZE	SIZE CODE	A	B		C	D	E	F	G	H	J	K	L		M	N
			MIN.	MAX.	MIN.								MIN.			
40	0400	40.00	57.15	70.61	76.96	139.70	52.58	50.29	38.10	31.75	9.53	12.07	54.10	80.98	14.27	
45	0450	45.00	60.33	69.85	76.20	139.70	52.58	50.29	38.10	31.75	9.53	12.07	54.10	84.15	14.27	
50	0500	50.00	66.68	76.20	82.55	146.05	52.58	50.29	38.10	31.75	9.53	12.07	54.10	90.50	14.27	
55	0550	55.00	74.63	85.73	92.08	158.75	52.58	50.29	38.10	31.75	9.53	12.07	54.10	100.00	17.48	
60	0600	60.00	76.20	88.90	95.25	158.75	52.58	50.29	38.10	31.75	9.53	12.07	54.10	100.00	17.48	
65	0650	65.00	88.90	99.19	105.54	177.80	58.17	55.50	41.28	34.93	9.27	13.84	59.69	114.30	17.48	
70	0700	70.00	88.90	99.19	105.54	177.80	58.17	55.50	41.28	34.93	9.27	13.84	59.69	114.30	17.48	
75	0750	75.00	95.25	111.13	117.48	190.50	58.17	55.50	41.28	34.93	9.27	13.84	59.69	120.65	17.48	
80	0800	80.00	98.43	110.31	116.66	196.85	58.17	55.50	41.28	34.93	9.27	13.84	59.69	127.00	17.48	
85	0850	85.00	107.95	123.19	129.54	203.20	58.17	55.50	41.28	34.93	9.27	13.84	59.69	133.35	20.62	
90	0900	90.00	114.30	132.59	138.94	228.60	69.85	66.68	46.99	38.86	12.32	16.26	72.14	150.83	20.62	
95	0950	95.00	114.30	132.59	138.94	228.60	69.85	66.68	46.99	38.86	12.32	16.26	72.14	150.83	20.62	
100	1000	100.00	120.65	138.13	144.48	228.60	69.85	66.68	46.99	38.86	12.32	16.26	72.14	150.83	20.62	
105	1050	105.00	127.00	144.48	150.83	241.30	69.85	66.68	46.99	38.86	12.32	16.26	72.14	163.53	20.62	
110	1100	110.00	133.35	150.83	157.18	241.30	69.85	66.68	46.99	38.86	12.32	16.26	72.14	163.53	20.62	
115	1150	115.00	133.35	152.40	158.75	241.30	69.85	66.68	46.99	38.86	12.32	16.26	72.14	163.53	20.62	
120	1200	120.00	139.70	157.18	163.53	254.00	69.85	66.68	46.99	38.86	12.32	16.26	72.14	176.23	20.62	
125	1250	125.00	146.05	163.53	169.88	254.00	69.85	66.68	46.99	38.86	12.32	16.26	72.14	176.23	20.62	
130	1300	130.00	152.40	173.05	179.40	292.10	69.85	66.68	46.99	38.86	12.32	16.26	72.14	204.77	23.83	
135	1350	135.00	158.75	180.16	186.51	292.10	69.85	66.68	46.99	38.86	12.32	16.26	72.14	204.77	23.83	
140	1400	140.00	158.75	176.23	182.58	292.10	69.85	66.68	46.99	38.86	12.32	16.26	72.14	204.77	23.83	
145	1450	145.00	165.10	182.58	188.93	292.10	69.85	66.68	46.99	38.86	12.32	16.26	72.14	204.77	23.83	
150	1500	150.00	171.45	188.93	195.28	292.10	69.85	66.68	46.99	38.86	12.32	16.26	72.14	204.77	23.83	

TYPE 3740

WET RUNNING CARTRIDGE SPLIT SEAL

Type 3740 Dimensional Data (inches)

SEAL SIZE	SIZE CODE	B		C		D	E	F	G	H	J	K	L		
		A	MIN.	MAX.	MIN.								MIN.	M	N
1.375	0349	1.375	2.000	2.375	2.625	5.250	2.070	1.980	1.500	1.250	0.375	0.475	2.130	2.813	0.562
1.437	0364	1.437	2.125	2.500	2.750	5.250	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.063	0.562
1.500	0381	1.500	2.125	2.500	2.750	5.250	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.063	0.562
1.625	0412	1.625	2.250	2.625	2.875	5.500	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.188	0.562
1.687	0428	1.687	2.375	2.750	3.000	5.500	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.313	0.562
1.750	0444	1.750	2.375	2.750	3.000	5.500	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.313	0.562
1.875	0476	1.875	2.500	2.875	3.125	5.500	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.313	0.562
1.937	0491	1.937	2.625	3.000	3.250	5.750	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.563	0.562
2.000	0508	2.000	2.625	3.000	3.250	5.750	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.563	0.562
2.125	0539	2.125	2.750	3.125	3.375	6.250	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.937	0.688
2.187	0555	2.187	3.000	3.375	3.625	6.250	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.937	0.688
2.250	0571	2.250	3.000	3.375	3.625	6.250	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.937	0.688
2.375	0603	2.375	3.000	3.500	3.750	6.250	2.070	1.980	1.500	1.250	0.375	0.475	2.130	3.937	0.688
2.437	0618	2.437	3.250	3.750	4.000	6.750	2.290	2.185	1.625	1.375	0.365	0.545	2.350	4.250	0.688
2.500	0635	2.500	3.250	3.750	4.000	6.750	2.290	2.185	1.625	1.375	0.365	0.545	2.350	4.250	0.688
2.625	0666	2.625	3.500	3.905	4.155	7.000	2.290	2.185	1.625	1.375	0.365	0.545	2.350	4.500	0.688
2.687	0682	2.687	3.500	3.905	4.155	7.000	2.290	2.185	1.625	1.375	0.365	0.545	2.350	4.500	0.688
2.750	0698	2.750	3.500	3.905	4.155	7.000	2.290	2.185	1.625	1.375	0.365	0.545	2.350	4.500	0.688
2.875	0730	2.875	3.750	4.188	4.438	7.500	2.290	2.185	1.625	1.375	0.365	0.545	2.350	4.750	0.688
2.937	0745	2.937	3.750	4.375	4.625	7.500	2.290	2.185	1.625	1.375	0.365	0.545	2.350	4.750	0.688
3.000	0762	3.000	3.750	4.375	4.625	7.500	2.290	2.185	1.625	1.375	0.365	0.545	2.350	4.750	0.688
3.125	0793	3.125	3.875	4.313	4.563	7.750	2.290	2.185	1.625	1.375	0.365	0.545	2.350	4.875	0.688
3.187	0809	3.187	4.000	4.500	4.750	7.750	2.290	2.185	1.625	1.375	0.365	0.545	2.350	5.000	0.688
3.250	0825	3.250	4.000	4.500	4.750	7.750	2.290	2.185	1.625	1.375	0.365	0.545	2.350	5.000	0.688
3.375	0857	3.375	4.250	4.750	5.000	8.000	2.290	2.185	1.625	1.375	0.365	0.545	2.350	5.250	0.812
3.500	0889	3.500	4.250	4.750	5.000	8.000	2.290	2.185	1.625	1.375	0.365	0.545	2.350	5.250	0.812
3.625	0920	3.625	4.500	5.188	5.438	9.000	2.750	2.625	1.850	1.530	0.485	0.640	2.840	5.938	0.812
3.750	0952	3.750	4.500	5.188	5.438	9.000	2.750	2.625	1.850	1.530	0.485	0.640	2.840	5.938	0.812
3.875	0984	3.875	4.750	5.438	5.688	9.000	2.750	2.625	1.850	1.530	0.485	0.640	2.840	5.938	0.812
3.937	1000	3.937	4.750	5.438	5.688	9.000	2.750	2.625	1.850	1.530	0.485	0.640	2.840	5.938	0.812
4.000	1016	4.000	4.750	5.438	5.688	9.000	2.750	2.625	1.850	1.530	0.485	0.640	2.840	5.938	0.812
4.125	1047	4.125	5.000	5.688	5.938	9.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	6.438	0.812
4.250	1079	4.250	5.000	5.688	5.938	9.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	6.438	0.812
4.375	1111	4.375	5.250	5.938	6.188	9.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	6.438	0.812
4.500	1143	4.500	5.250	5.938	6.188	9.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	6.438	0.812
4.750	1206	4.750	5.500	6.188	6.438	10.000	2.750	2.625	1.850	1.530	0.485	0.640	2.840	6.938	0.812
5.000	1270	5.000	5.750	6.438	6.688	10.000	2.750	2.625	1.850	1.530	0.485	0.640	2.840	6.938	0.812
5.125	1301	5.125	6.000	6.813	7.063	11.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	8.062	0.938
5.250	1333	5.250	6.000	6.813	7.063	11.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	8.062	0.938
5.375	1365	5.375	6.250	6.938	7.188	11.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	8.062	0.938
5.500	1397	5.500	6.250	6.938	7.188	11.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	8.062	0.938
5.750	1460	5.750	6.500	7.188	7.438	11.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	8.062	0.938
5.875	1492	5.875	6.750	7.438	7.688	11.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	8.062	0.938
6.000	1524	6.000	6.750	7.438	7.688	11.500	2.750	2.625	1.850	1.530	0.485	0.640	2.840	8.062	0.938

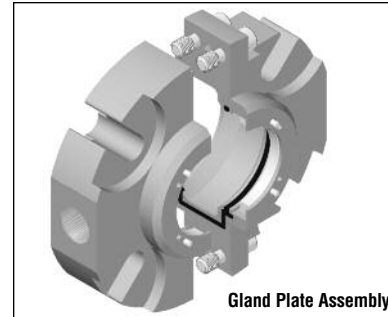
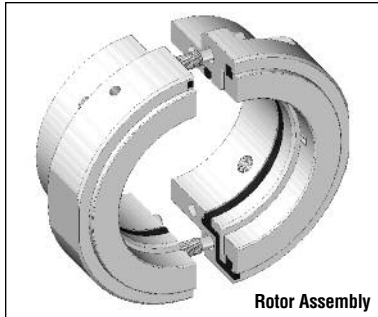
TYPE 3740

WET RUNNING CARTRIDGE SPLIT SEAL

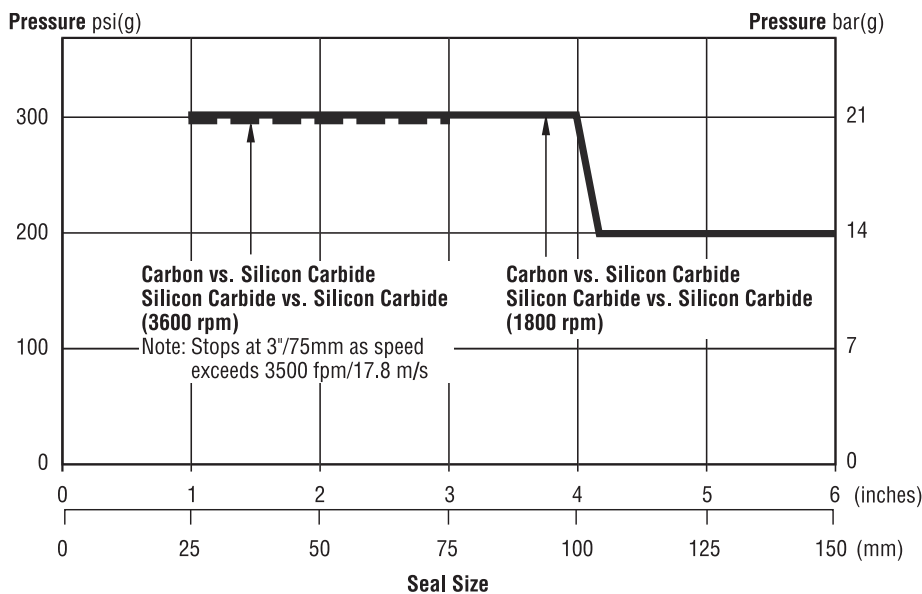
Modular Split Seal Technology

The Type 3740 cartridge split seal is the latest in split seal design technology that makes installation as fast and as easy as possible, yet ensures the important step of proper seal face halves alignment is done correctly for optimal performance. The Type 3740 seal is comprised of pre-assembled modules that combine multiple individual parts into three components:

- Rotor assembly – rotating mating ring seal face and hardware
- Primary ring assembly – stationary primary ring seal face and retaining ring clip
- Gland plate assembly – all stationary hardware



Basic Pressure Ratings



The basic pressure rating is for a standard Type 3740 seal, as shown in the typical arrangement, when installed according to the criteria given in this data sheet and generally accepted industrial practices.

Contact John Crane for pressure excursion operation above the curve and up to 450 psi(g)/31.0 bar(g).

The basic pressure rating assumes stable operation at the rated speed in a clean, cool, lubricating, nonvolatile liquid, with an adequate flush rate. When used with the multiplier factors, the basic pressure rating can be adjusted to provide a conservative estimate of the dynamic pressure rating. For process services outside this range or a more precise assessment of the dynamic pressure rating, contact John Crane for more information.

Multiplier Factors

	Selection Considerations	Multiplier Factor
Sealed Fluid Temperature	Below 175°F/80°C	x 1.00
	From 175°F to 250°F/80°C to 125°C	x 0.90

Example for Determining Pressure Rating Limits

Seal: 2"/50mm diameter Type 3740
 Product: water
 Face material: carbon vs. silicon carbide
 Temperature: 185°F/85°C
 Speed: 1800 rpm

Using the basic pressure rating chart, the maximum pressure would be 300 psi(g)/20.7 bar(g).

From the multiplier factors chart, apply the multipliers for the specific service requirements to determine the maximum operating pressure for the application.

$$300 \text{ psi(g)/20.7 bar(g)} \times 0.90 = 270 \text{ psi(g)/18.6 bar(g)}$$

Materials of Construction

SEAL COMPONENTS	MATERIALS	
	Description	Standard
Primary Ring	Carbon	Silicon Carbide
Mating Ring	Silicon Carbide	—
Gland Plate Assembly Mating Ring Adapter Assembly Spring Adapter Assembly Set	316 Stainless Steel	Alloy 20 Monel® Titanium Inconel® 625
Retaining Ring	Alloy X-750	—
Springs	Alloy C-276	—
Elastomers	Ethylene Propylene Fluoroelastomer	—

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WET RUNNING CARTRIDGE SPLIT SEAL

Technical Specification

john crane

TYPE 3740

WET RUNNING CARTRIDGE SPLIT SEAL

Technical Specification

For Type 3740 Installation Instructions see I-3740.
 For Type 3740 Repair Kit Instructions see I-3740RK.

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