

ROTARY OIL SEAL - ROTATION TEST REPORT DOCUMENT

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Customer Name	Colonial Seal Company
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Tax ID (optional for overseas customers)	

Customer Test Request (copied from customer test request Form-1A):

1. Rotary seal testing of provided oil seal to determine leakage or no leakage within a test duration of 10 cycles with each cycle lasting 24 hours.
2. Each 24-hour cycle is to be split into 3 stages with each stage elaborated as below.
 - Stage 1: 10 hours clockwise at 1000 rpm shaft speed.
 - Stage 2: 10 hours counterclockwise at 2000 rpm shaft speed.
 - Stage 3: 4 hours hold with 0 rpm shaft speed.
3. From the above, it is inferred that the seal is to be tested in the rig for a total duration of 240 hours.
4. The oil tank pressure is to be maintained at 0.3 bar. The tolerance for the same is +/- 0.02 bar.
5. The oil temperature is to be preset at 50 degrees Celsius.
6. The oil used as the medium is to be a fully synthetic diesel engine oil of the grade 5W40.
7. There is no slurry requirement in the air side of the oil seal.

Document Deliverables:

This document will deliver the following pre and post test data:

1. Shaft and bore specifications.
2. Test input criteria in the test rig.
3. Test start and end times.
4. Approximate time of leakage if any has been observed.
5. Inference and analysis of post-test observations and data.

Pre-Test Data:

Test Start Date: 06 December 2021

Oil Seal Specifications:

Style	Independence Seal SL Profile – Single lip rotary oil seal
Shaft	5.500 inches
Bore	7.000 inches
Width	0.625 inches
Case and Spring Material	Mild Steel
Lip Material	NBR 85-90 durometer Shore A hardness

Setup:

Housing/Bore Specifications:

Nominal Dimension	7.000 inches
Tolerance	+/- 0.002 inches
Surface Roughness	Ra value of 0.1 to 0.5 microns
Additional Features	EN-8 material

Shaft Specifications:

Nominal Dimension	5.444 inches
Tolerance	+/- 0.004 inches
Surface Roughness	Ra value of 0.2 to 0.4 microns
Additional Features	EN-8 material. Case hardened by Nitriding.

Groove Width:

Nominal Dimension	0.625 inches
Tolerance	+/- 0.010 inches
Additional Features	None specified/requested by customer

Rig Data Inputs:

Cycle Time	24 hours
No. Of Cycles	10
Shaft Speed(s) per cycle	1. 1000 rpm clockwise – 10 hours 2. 2000 rpm counter-clockwise – 10 hours 3. 0 rpm – 4 hours
Temperature range setting	50 degrees Celsius
Pressure range setting	0.28 – 0.32 bar

Post-Test Observations:

Test End Date: 17 December 2021

Total run time – 240 hours 12 minutes

Oil tank temperature at end of testing – 68 degrees Celsius

Oil tank pressure at end of testing – 0.30 bar

No leakage has been observed.

Results and Analysis:

The oil seal has passed the rotation test for the total time and cycles requested by the customer.

There is no visible damage to the shaft or the lip of the oil seal.

