

Timken® EcoTurn™ Labyrinth Seal for Rail Applications

TIMKEN

Where You Turn



For decades, Timken has offered an extensive line of sealing solutions for a wide array of industrial and automotive applications.

The company realized early on that advancements in seal design can have a significant impact on the operation of roller bearings, and more broadly, power transmission system performance. It's this core competency – along with our drive to provide the rail industry with innovative friction management solutions – that has helped position Timken as a leader in rail bearing seal design for more than half a century.

And the tradition continues today with our Timken® EcoTurn™ non-contacting labyrinth seal. The EcoTurn seal offers

a low torque design, which can provide railroads with a significant energy and emissions savings benefit. This patent-pending seal leverages extensive research and testing to deliver performance that is unmatched in the industry.

A Differentiating Component

Available for Timken® AP-2™ rail bearing assemblies, the EcoTurn seal represents the next innovative development in our line of high quality seals. The key differentiating feature is its minimal torque. As laboratory test data indicates, the difference in torque between today's low torque

Timken® HDL™ seal and the EcoTurn is significant. This performance helps to minimize frictional forces in the bearing, which in turn can dramatically reduce the amount of fuel consumed and the tons of emissions released into the atmosphere. Other EcoTurn features include:

- *No direct contaminant ingress path which provides reliable performance by reducing the likelihood of debris entering the bearing assembly.*
- *Improved grease retention which helps minimize grease weepage.*
- *For car owners, the EcoTurn contributes toward a lower and more consistent bearing operating temperature.*



Note: For illustrative purposes, no frame key is shown in this application.

The Timken® EcoTurn™ labyrinth seal offers superior low torque properties for Class K AP-2™ bearing assemblies.

Seal comparison test: Stand alone (without being integrated in bearing assembly)		
Seal Torque (in lb.)	Timken® HDL™ Seal	Timken® EcoTurn™ Seal
34		
32		
30		
28		
26		
24		
22		
20		
18		
16		
14		
12	8-12	
10		
8		
6		
4		
2		
0		0-2

Fig. 1 - Torque for one seal.

Seal comparison test: (integrated in bearing assembly)		
Bearing Assembly Torque (in lb.)	Timken® HDL™ Seal	Timken® EcoTurn™ Seal
90		
85		
80		
75		
70		
65		
60		
55		
50		
45	35-45	
40		
35		
30		
25		
20		
15		18-22

Fig. 2 – Torque for a Class K AP-2 bearing assembly with EcoTurn seal.
Note: The torque measured was during bench testing and not subject to any load.

Fig. 1 and 2. Compared to current industry seals, Timken’s HDL™ and EcoTurn™ designs provide exceptional low torque performance. However, when compared in a side-by-side test environment, the EcoTurn design produces essentially no torque (see Figure 1) which consequently has a significant impact on the overall torque generated from a bearing assembly (see Figure 2).

As our continuous advancements in sealing design demonstrates, Timken’s focus on innovation, product development and process improvement, uniquely positions the company to serve the needs of railroads, car builders and rail operators globally. When you consider our history, an unbeatable product line and industry-leading technical support, Timken is where the rail industry turns for quality products and services to help optimize performance.

For more information on Timken rail solutions, contact your local Timken representative or visit www.timken.com/rail.

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