

# BAIER® RAIL SINGLE-BOLT TANK CAR MANWAY SYSTEM – A MODERN SOLUTION FOR THE RAILWAY TANK CAR INDUSTRY

## Introduction

The Baier® Single-Bolt Manway System is a unique solution for sealing a tank car manway. This patented system is fundamentally different from all other designs. The single rambolt and strongback design centrally applies force which distributes equally around the cover. There are no troublesome eyebolts or unequal loading. The operator can create a more consistent seal in one quick operation with simple hand tools. No retorquing is needed, no special sockets or tools.

## 21<sup>st</sup> Century Challenge

*The need for a better tank car closure system.*

Research of existing designs revealed fundamental deficiencies in traditional eyebolt manways (see fig 1), including: permanent deformation of sealing gaskets; stretched eyebolts due to over-torquing and metal fatigue; “scalloped” stress of the cover resulting in unequal sealing, and broken on the cover. These design limitations are the leading causes of Non-Accidental Releases (NAR’s) in non-pressure tank cars in the U.S and Canada.

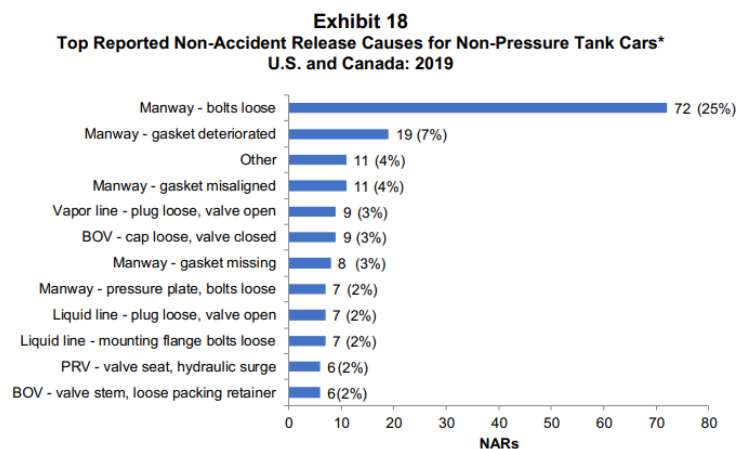


Figure 1: 2019 AAR/BOE NAR Breakdown Annual Report

## 21<sup>st</sup> Century Solution

Baier® Rail designed the single-bolt manway from the ground up to meet specific tank car industry criteria. The design is a modern solution that increases efficiency and decreases overall costs while maintaining the high regulatory standards of the AAR.

The Baier® Single-Bolt Manway System is AAR approved with over 500 covers in service to date.

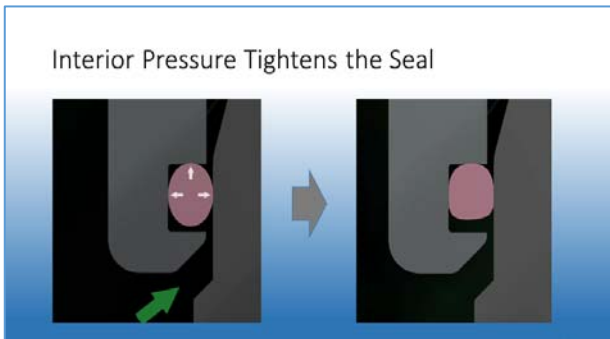
AAR Approval No: **E152106**

# Time to Seal

Considerably reducing the time to open and close makes loading/unloading operations more efficient.

The elimination of eyebolts in the design reduces the time necessary to retorque 6 – 8 bolts up to 3 additional times to ensure a proper seal.

The encapsulated O-ring is positioned between the nozzle wall and the cover shear ring. This creates consistent and uniform compression without the damaging effects of squeezing a flat gasket in a multi-bolt manway.



	<b>BAIER</b> RAIL  Baier® Single-bolt Manway	Traditional Multi-bolt Manway
<b>Close Manway</b> First pass	1 min*	3 min
<b>Retorque Time</b>	None	6-10 min
<b>Retorque Delay</b> Allowing gasket to set	None	Variable Up to 24 hours*
<b>Replacing Gasket</b> Per 10 round trips	1X*	10X*

\* Figures will depend upon type of cargo and operating procedure

## Safety First Design

Traditional manway covers with eyebolt closures may present operational hazards. The Baier® Single-Bolt Manway System design promotes environmental and operator safety.



- A** Visible positive close indicator: vibration will not loosen the cover.
- B** O-ring sealing system that is designed to prevent cargo leakage. O-rings will not fall into the tank removing opportunity for load contamination. O-ring allows for multiple uses unlike most gaskets.
- C** 2-stage venting process that directs venting towards the back of the unit, away from the operator. The safety catch keeps the cover closed until pressure is released.
- D** Built in spring assist for ease of use. Reduces weight for operator to approximately 30lbs.

## Less Maintenance

The system is designed for easier operation and lower maintenance compared to existing manway designs.

One standard Teflon® encapsulated O-ring works for almost all commodities and lasts for more shipping cycles without replacement vs. flat gaskets. In addition, there are no torn or overtorqued gaskets as the O-ring is never mechanically pinched or compressed.

One central ram bolt replaces 6 or 8 threaded eyebolts, which eliminates the maintenance process of checking and replacing damage/worn eyebolts, nuts, washers, and button head rods.



## Cost of Ownership

### TIME = \$\$

The Baier® Single-Bolt Manway System makes quick work of your loading and unloading operations, saving both time and money.

### Maintenance = \$\$

This simple but effective design involves no standard threaded eyebolts; only one ram bolt to open and close with zero retorquing required.

### Service Interruptions = \$\$

Baier's Single-Bolt Manway System is designed to help reduce or eliminate NAR fines, mobile repair costs, and logistical interruptions.

For additional details on operations and features of this manway, please contact Salco Products.



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