



## 050-0100 Family Cycle Test Report

**Company:** TriMark Corporation  
**Address:** 500 Bailey Ave  
New Hampton, Ia. 50659

**Product Code:** 050-01XX (Two Position)  
050-0100; 050-0103; 050-0106; 050-0107

**Reference Test Document:** ET18341

**Date Tested:** 12/21/18 thru 3/15/19

**PICTURE IS FOR REFERENCE ONLY**



## **DISCLAIMERS**

This document is intended to provide a general overview of elements that affect cycle life and performance of TriMark two-rotor latches. In no way is it intended to guarantee performance of such product in the customer's particular application.

TriMark recognizes that applications of this latch may fall within the requirements of FMVSS 206 and SAE J839 safety standards for on-road and off-road operator entrance doors.

These safety related requirements are dependent on door application, e.g. front and rear hinged doors, sliding doors, or hinged upward swinging doors. The entire door hardware system must be included in the design/analysis process: latch, handle, lock mechanism, rods/linkages, fasteners, hinges, etc. This ensures compatibility of all components within the hardware system. If FMVSS 206 is a requirement, then all of the components within the door system must comply with strength, inertia and locking requirements as specified within the Standard.

TriMark assumes no liability for application of latches within systems which are designed, validated, and produced without the involvement of TriMark engineering. It must also be noted that both FMVSS206 and SAEJ839 are standards intended to cover entire SYSTEMS and as such the latch is merely a component of that system and shall not be construed to be a system within itself.

Customers applying TriMark product must take into account a myriad of factors to ensure proper life cycle and performance of the door entry system. TriMark encourages customers to seek the assistance of our professional Engineering Staff for details and assistance in applying our products to their needs.

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**It is recommended that the user contact TriMark prior to making an engineering or purchasing decision to confirm and verify the information and that the product will perform as intended in the respective application.**

# 1. General Information

## 1.1 Description of Product

Manufacturer: TriMark Corporation

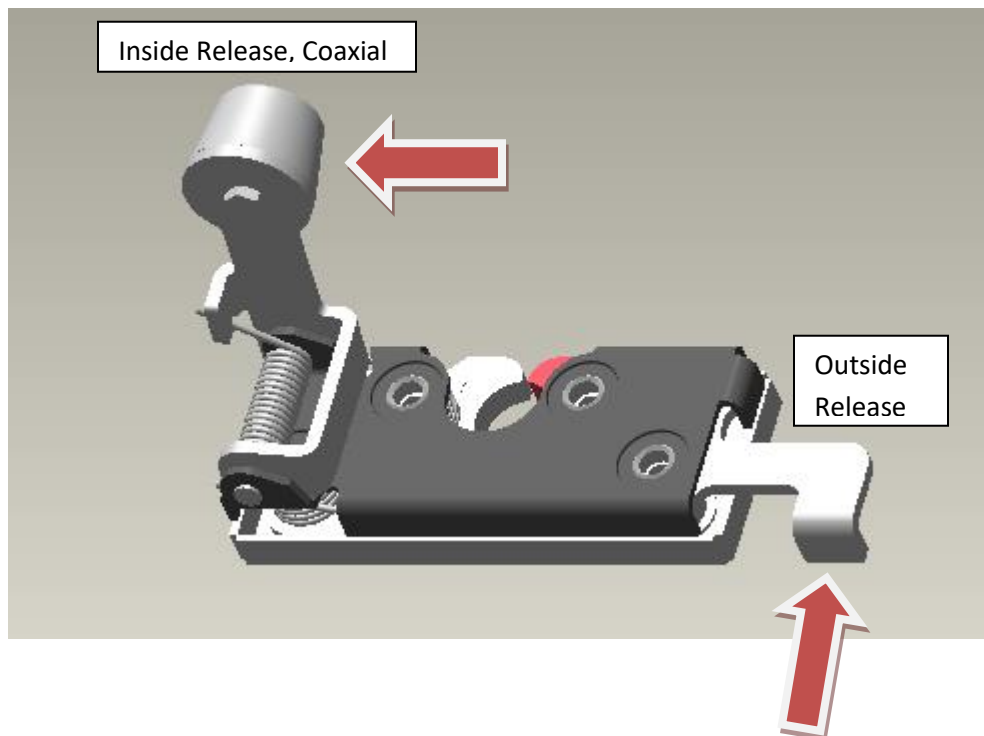
Product Name: 050-0100, 2 Rotor Latch Assembly

Sample Quantity: 24 (12 Lubricated) & (12 Non-Lubricated)

Failure Criteria: When the rotor and catch will no longer engage

When the latch cannot hold the striker bolt load exerted by the test equipment

When the latch will not run beyond 100 cycles without adjustment



## 2. Factors for Success

### 2.1 List of Factors

- Minimize Striker Bolt Load (**SBL**) throughout life of system
  - Take into account door seal loads
- Striker bolt alignment
  - Maintain proper control of installation alignment
  - Design for minimum hinge sag over time
  - Account for both centerline and axial alignment in design planning
  - For Proper alignment of striker please download Striker Installation pdf document on TriMark website. [www.trimarkcorp.com](http://www.trimarkcorp.com)
- Environmental conditions of the system
  - Minimize dust and dirt ingress
  - Minimize moisture ingress
- Weight of the door and how the door is supported.
  - Latch is designed to keep door closed, it is not designed to support the door
  - Design for minimum hinge sag over time
  - Welding on or near latches during installation is PROHIBITED and will cause premature failure of critical internal components
- Properly **Torque** mounting fasteners during installation
- Properly lubricate moving components throughout life of product

## 3. Test Information

(Testing was done in test department environment and results in actual application may show different results)

### 3.1 Test Equipment

Bench Cycle Test Equipment

### 3.2 Laboratory Ambience Condition

70°F ambient temperature

### 3.3 Test Condition

Fixture simulated proper Strike Bolt alignment

No dust or dirt added to test environment

Lubricated latches were lubricated once during the assembly of the latch

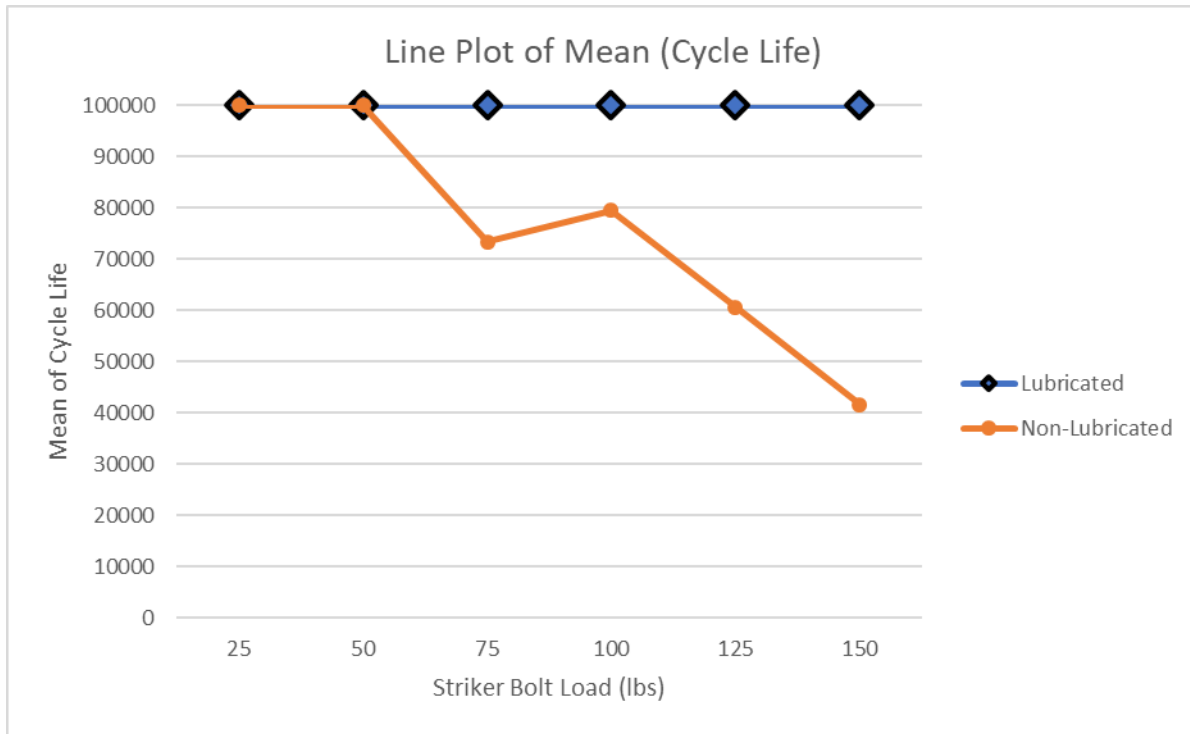
### 3.4 Results and Observations

It is observed from this testing that high strike bolt loads and un-lubricated latches significantly contribute to reduced cycles of the latch.

#### 3.4.1 Cycle Test Results

Example	SBL	Lubricated	Cycle count
1	25	Y	100,000
2	25	Y	100,000
3	50	Y	100,000
4	50	Y	100,000
5	75	Y	100,000
6	75	Y	100,000
7	100	Y	100,000
8	100	Y	100,000
9	125	Y	100,000
10	125	Y	100,000
11	150	Y	100,000
12	150	Y	100,000
13	25	N	100,000
14	25	N	100,000
15	50	N	100,000
16	50	N	100,000
17	75	N	46,807
18	75	N	100,000
19	100	N	58,962
20	100	N	100,000
21	125	N	68,394
22	125	N	52,784
23	150	N	55,890
24	150	N	27,497

One cycle represents striker engaging latch – release from inside, then striker engaging latch again and releasing from outside release. Thus, if the latch reaches 100,000 total cycles than each release lever (inside and outside) achieved 50,000 cycles each.

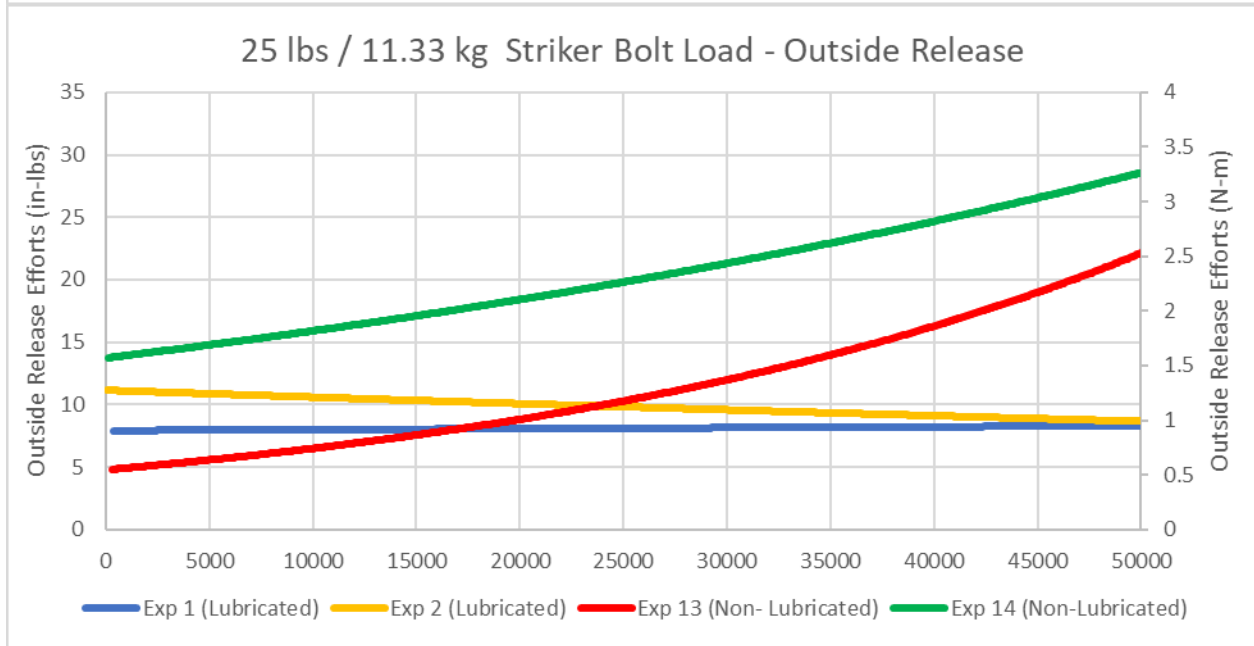
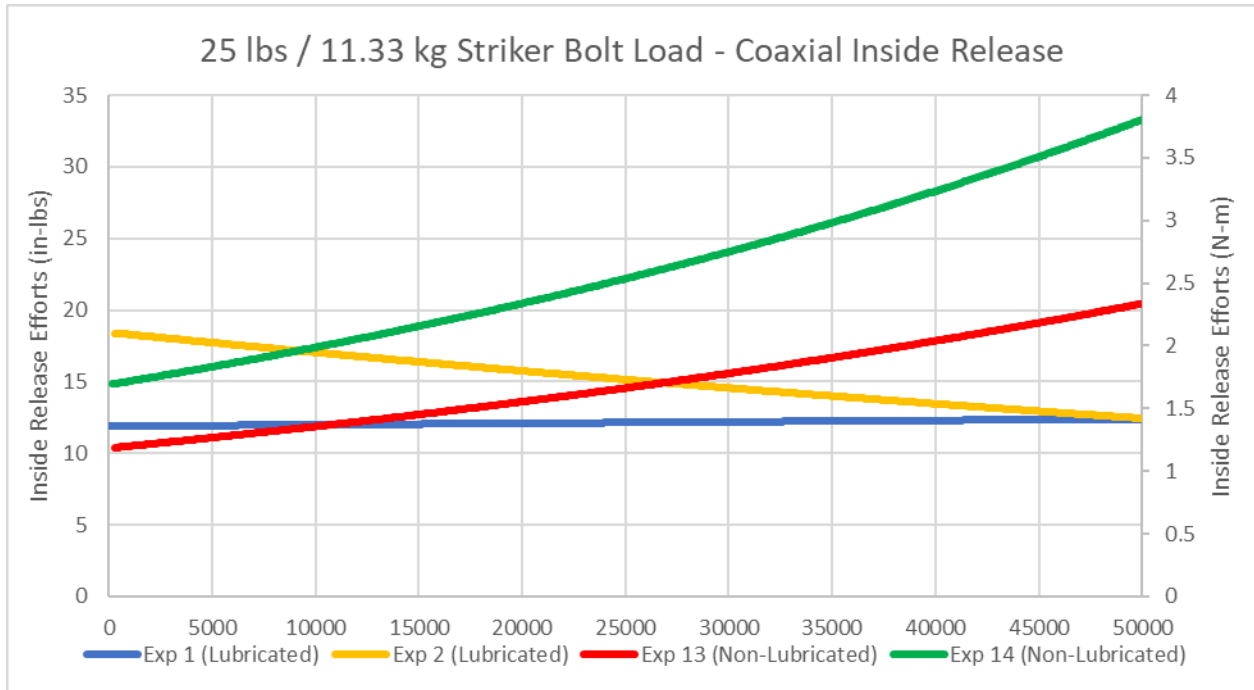


### Lubrication

Products manufactured by TriMark are lubricated and shipped with the minimum amount of lubrication to function correctly when they leave the factory. Many products have a dry-type solid film lubricant applied that will give years of trouble free performance however; mechanical products do require maintenance and periodic lubrication. The application of a quality lubricant such as Alpha 2000 or its equivalent, will maintain the quality and performance of the TriMark products.

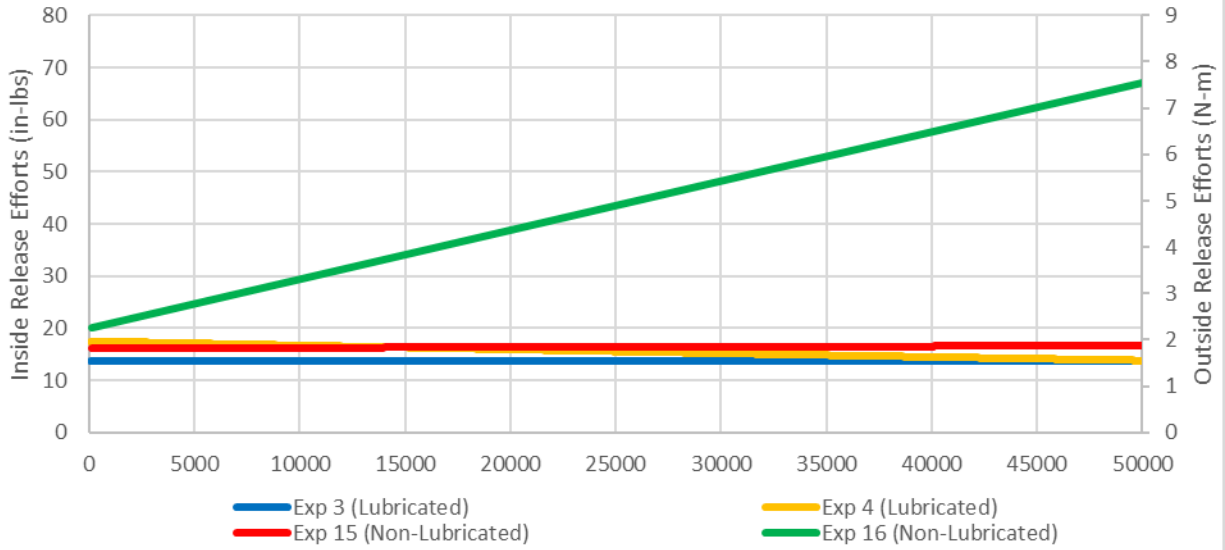
Please note by adding a lubricant to the latch it will increase the chance of the lubricant picking up contaminants such as dust and dirt. These contaminants can cause adverse affects to the performance/life of the latch. However, the results of this testing conclude that, applications with a high strike bolt load require additional lubricant to increase the cycle life of the product.

### 3.4.2 Average Release Efforts

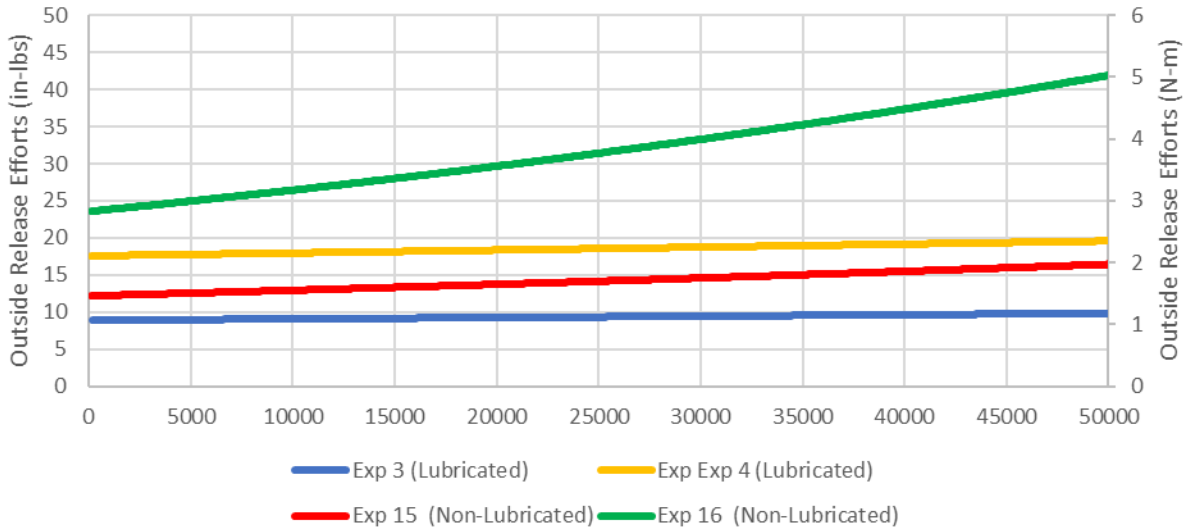




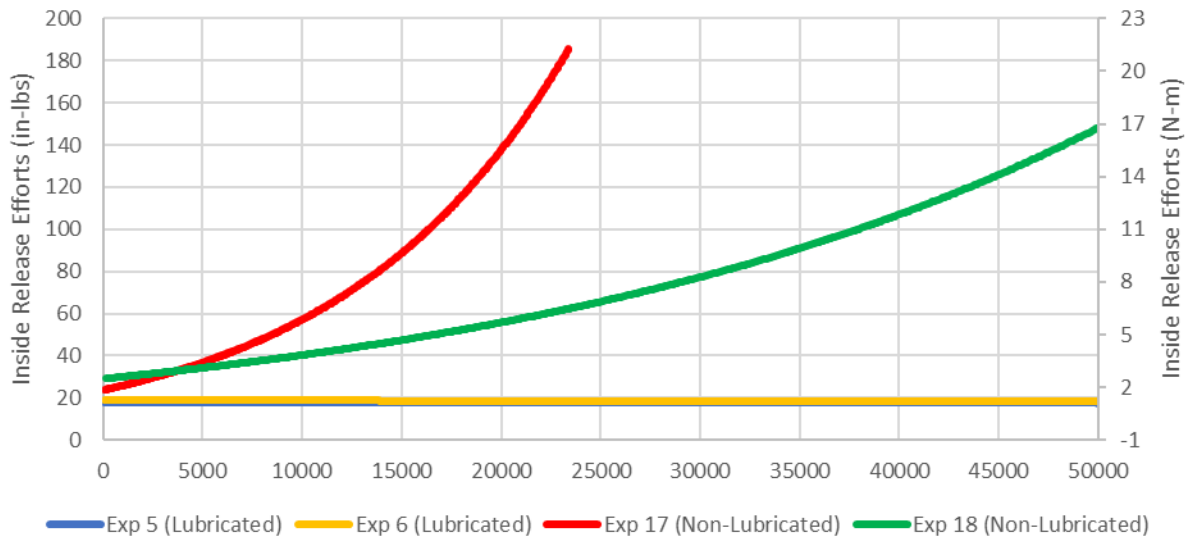
50 lbs / 22.68 kg Striker Bolt Load - Coaxial Inside Release



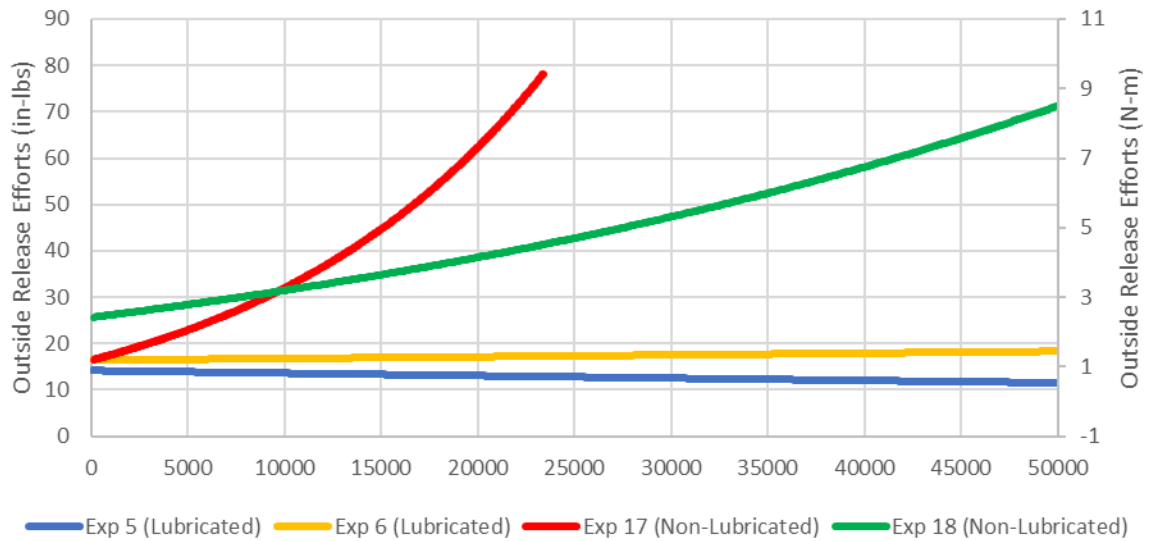
50 lbs / 22.68 kg Striker Bolt Load - Outside Release



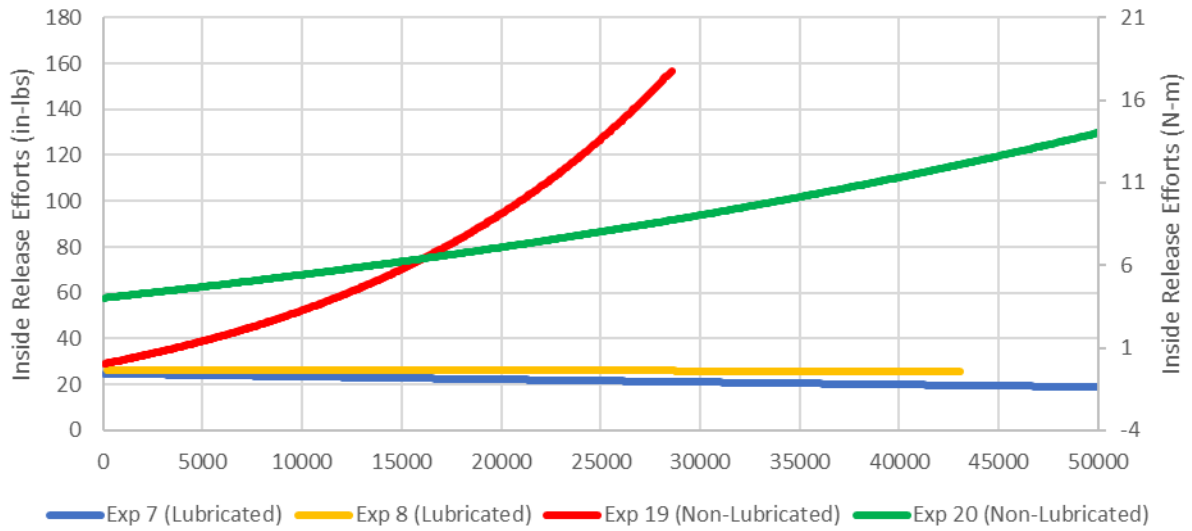
### 75 lbs / 34.02 kg Striker Bolt Load - Coaxial Inside Release



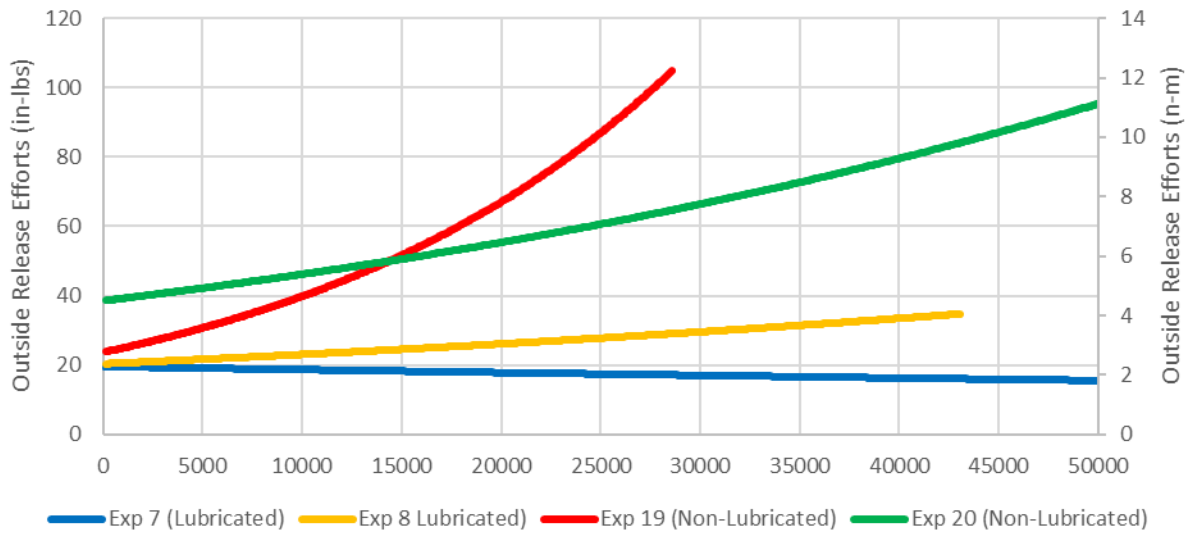
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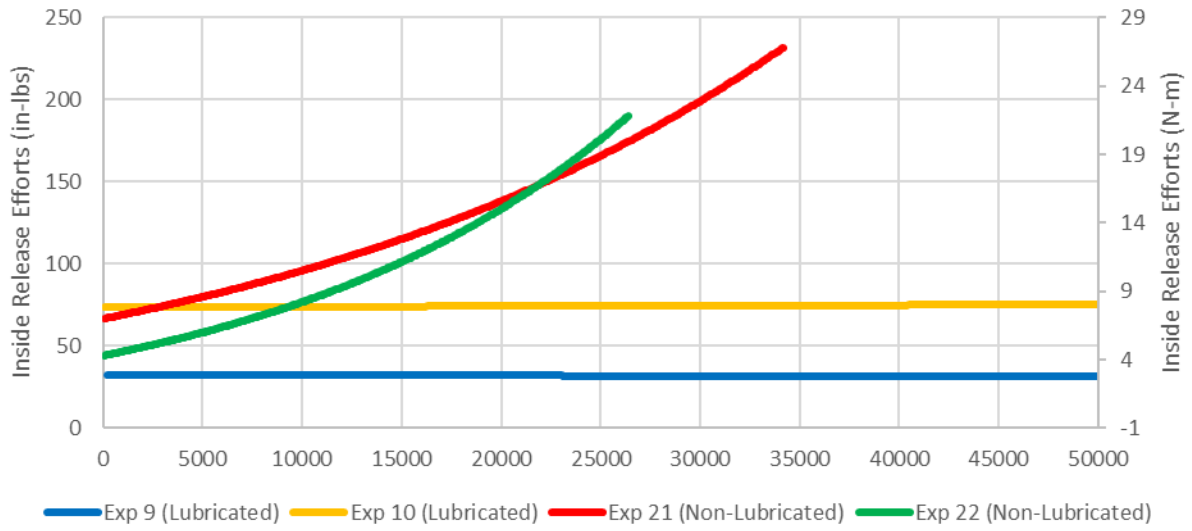
### 100 lbs / 45.36 kg Striker Bolt Load - Coaxial Inside Release



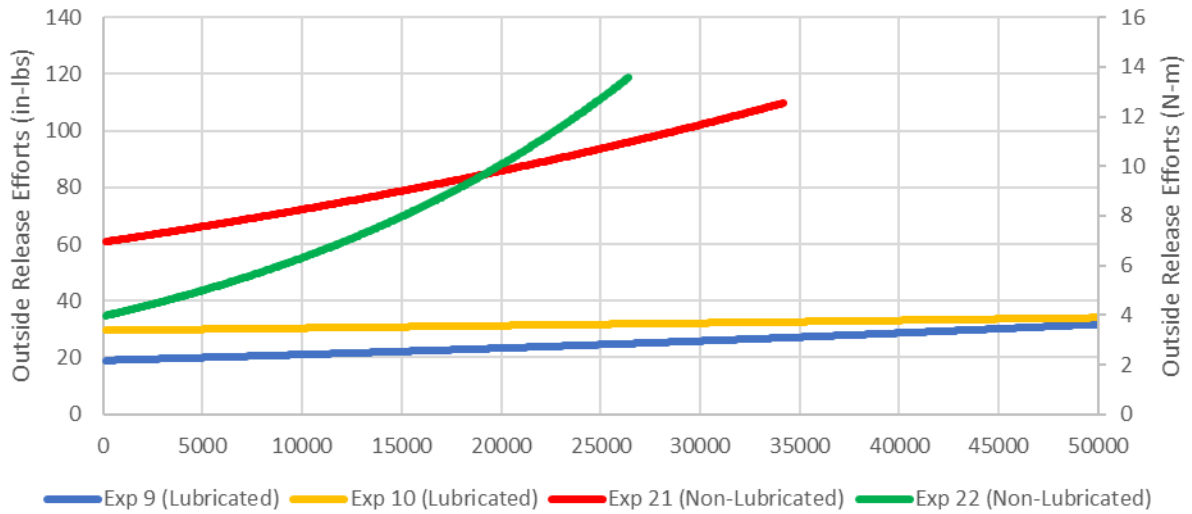
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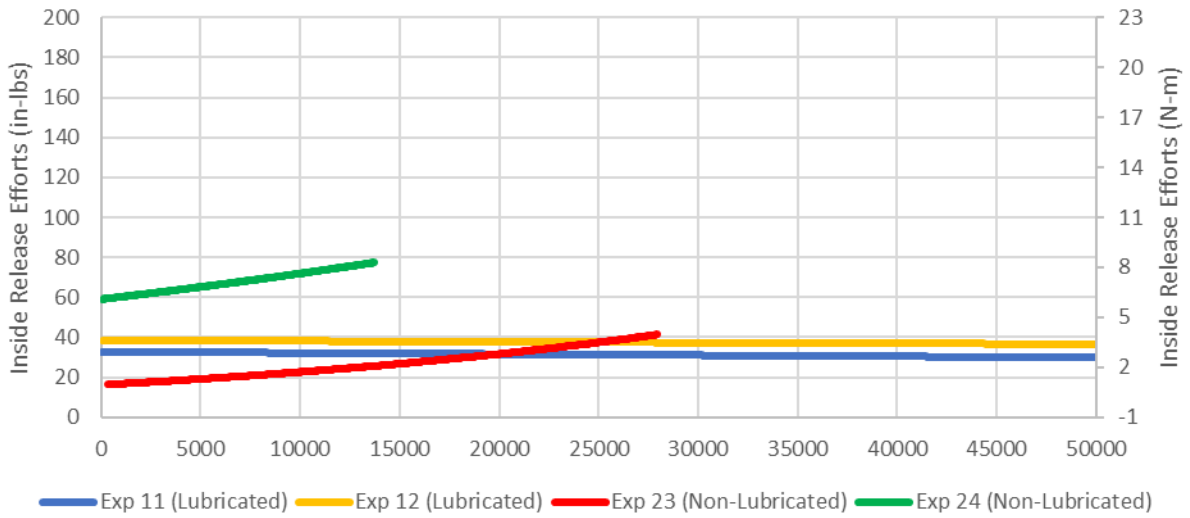
### 125 lbs / 56.70 kg Striker Bolt Load - Coaxial Inside Release



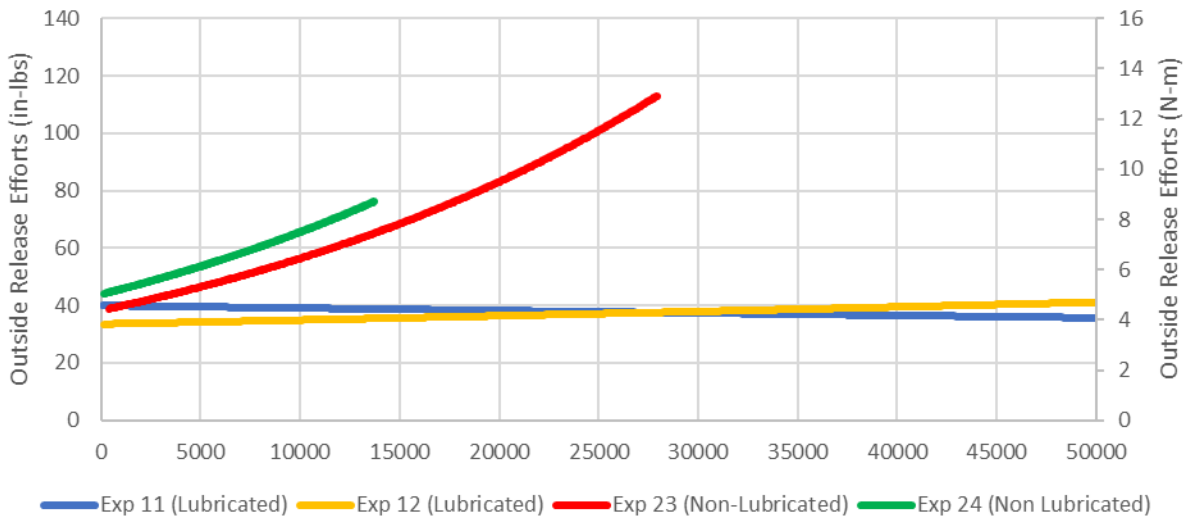
### 125 lbs / 56.70 kg Striker Bolt Load - Outside Release



### 150 lbs / 68.04 kg Striker Bolt Load - Coaxial Inside Release



### 150 lbs / 68.04 kg Striker Bolt Load - Outside Release



### **3.5 Technical Product Information**

The following ***Technical Product Information*** is available by clicking the links below to direct you to the applicable pages on TriMark Corporation's website. These can also be found under the Products Tab of [TriMark Corporation's](#) home page.

[\*\*\*Door Hardware Design and Consideration\*\*\*](#)

[\*\*\*Strength Guidelines\*\*\*](#)

[\*\*\*Loads on Rotary Door Latching\*\*\*](#)

[\*\*\*Measuring DCF \(Door Closing Force\) and SBL \(Strike Bolt Load\)\*\*\*](#)

[\*\*\*Guidelines for Mounting Torque\*\*\*](#)

[\*\*\*Latch and Striker Installation\*\*\*](#)

[\*\*\*Finishes\*\*\*](#)

[\*\*\*Materials\*\*\*](#)

[\*\*\*Lubrication\*\*\*](#)

[\*\*\*Glossary of Terms\*\*\*](#)