Car Seal/Lock Program

NEBULA
SAFETY & ENVIRONMENTAL

Car Seal / Locked Valve Program Management

Across industries, car seals are used to lock or 'seal' a valve in the open or closed position to prevent tampering or unauthorized operation of the valve. However, beyond placing the car seal device (e.g., steel cable, plastic, reusable car seals, etc.) on the valve, what further actions are needed to manage car seals? This Safety Snippet provides guidance on when car seals / locks are required, how to manage car seals, and the elements of an effective car seal valve management program to ensure success at your facility.

When are Car Seals / Locks Required?

Car seals / locks are typically required for 'safety critical valves.' Normally, 'safety critical valves' are those in which turning the valve in normal operation, could result in one of the following:

- A severe safety incident
- An environmental release reportable to State or Federal Agencies
- Severe unit upset

For example, a common instance where a car seal/lock is required is on any block valve on a relief system. All block valves on the relief path must be car sealed open (CSO), including any valves on a relief path common header (e.g., flare header).

What are the requirements for Car Seal/Locked Valve Programs?

Car Seal / Locked Valve programs originate from ASME Section VIII, specifically Appendix M-5. These programs are required for OSHA PSM covered facilities and enforced through the RAGAGEP requirement. In fact, ASME Section VIII Appendix M-5 states that when a facility elects to install a block valve on a relief path, the facility "has the responsibility to establish and maintain a management system that ensures a vessel is not operated without overpressure protection." The management system must include:

- Written procedures (refer to ASME Section VIII Appendix M-5.4a)
- Documented training (refer to ASME Section VIII Appendix M-5.4b)
- Be periodically audited by management (refer to ASME Section VIII Appendix M-5.4b)

In This Issue

Best practices regarding car seal and locked valve program management are discussed.

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Elements of a Car Seal / Locked Valve Management Program

A car seal/locked valve management program should contain a comprehensive car seal/locked valve list, including the following elements:
- List of valves designated as 'Safety Critical'
- Valve Identification Number of 'Safety Critical Valve'
- Car Seal Number of Car Seal placed on 'Safety Critical Valve'
- A description of the valve's location (e.g., Unit/Area, location on vessel/equipment, location upstream or downstream of equipment, etc.)
- The valve's SAFE position (i.e., Open or Closed)
- The valve service / reason for inclusion (e.g., Sprinkler discharge, upstream of PSV, downstream of PSV, etc.)
- Date Car Seal was installed
- Person who fitted the Car Seal
- Person who checked the Car Seal

The car seal management program should also have written procedures that prescribe guidelines for the:
- Installation of car seals
- Maintenance of car seals
- Responsibility to designated individuals for management, maintenance and inspection of car seals
- Operator training on car seal program/procedure
- Inspection procedure and inspection frequency for car seals
- Procedure for updating documentation related to car seals (P&IDs, Car Seal List)
- Steps governing how to handle MOCs for car sealed valves
- Guidelines on bypassing car seals and replacement of car seals following maintenance

Best Practices for Car Seal/Locked Valve Programs

Although there is no prescribed frequency for car seal valve inspections, industry best practice guidelines are to perform quarterly field inspections of all car sealed valves from the car seal list to determine whether valves are in the proper position, the car seal is attached, the car seal number matches the number recorded on the car seal list and the car seal designation and position is noted correctly on the P&IDs.

Another best practice measure is to use color coded seals or tags to visibly denote the correct/safe state of the valve (e.g., GREEN for open and RED for closed). It is also beneficial to include this car seal color coding in contractor safety training and work permit operations to ensure all personnel coming across a car seal know of its significance. In addition, car seals should be placed on valves in such a way to prevent deviation of the device (e.g., no 'hanging' tags, valve operation can only take place by cutting the seal).

The car seal programs should be managed similarly to the Standard Operating Procedures element of OSHA PSM programs, in that periodic reviews should be conducted, training on the program should be performed, the Management of Change (MOC) process should be initiated when a car seal device is added or removed, or a car sealed valve's safe state (open or closed) is changed, and a line item should be added to the Pre-Startup Safety Review (PSSR) to check for car sealed valves/valves returning to correct car sealed position following maintenance/turnaround. It is advised to set time limits for deviation of these safety critical devices - if the time limit is exceeded, a temporary MOC should be required to allow the deviation to continue.

References:

1.https://www.car-seal.com/specification

2. https://resourcecompliance.com/2014/11/11/qa-stop-valves-on-relief-valves/

3. https://www.safteng.net/images/ASSE_PDC_2015_05_30_2015.pdf

4.https://engage.aiche.org/communities/community-home/digestviewer/viewthread?MessageKey=8253bc95-7ea3-4905-b69f-7cc9bf236ac5&CommunityKey=de21ae11-bfdc-41b4-851d-84c7293f0d99&tab=digestviewer&ssopc=1

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