



Sahara International Petrochemical Company

# CAR SEAL VALVES LINE-UP AFTER MAJOR TURNAROUND

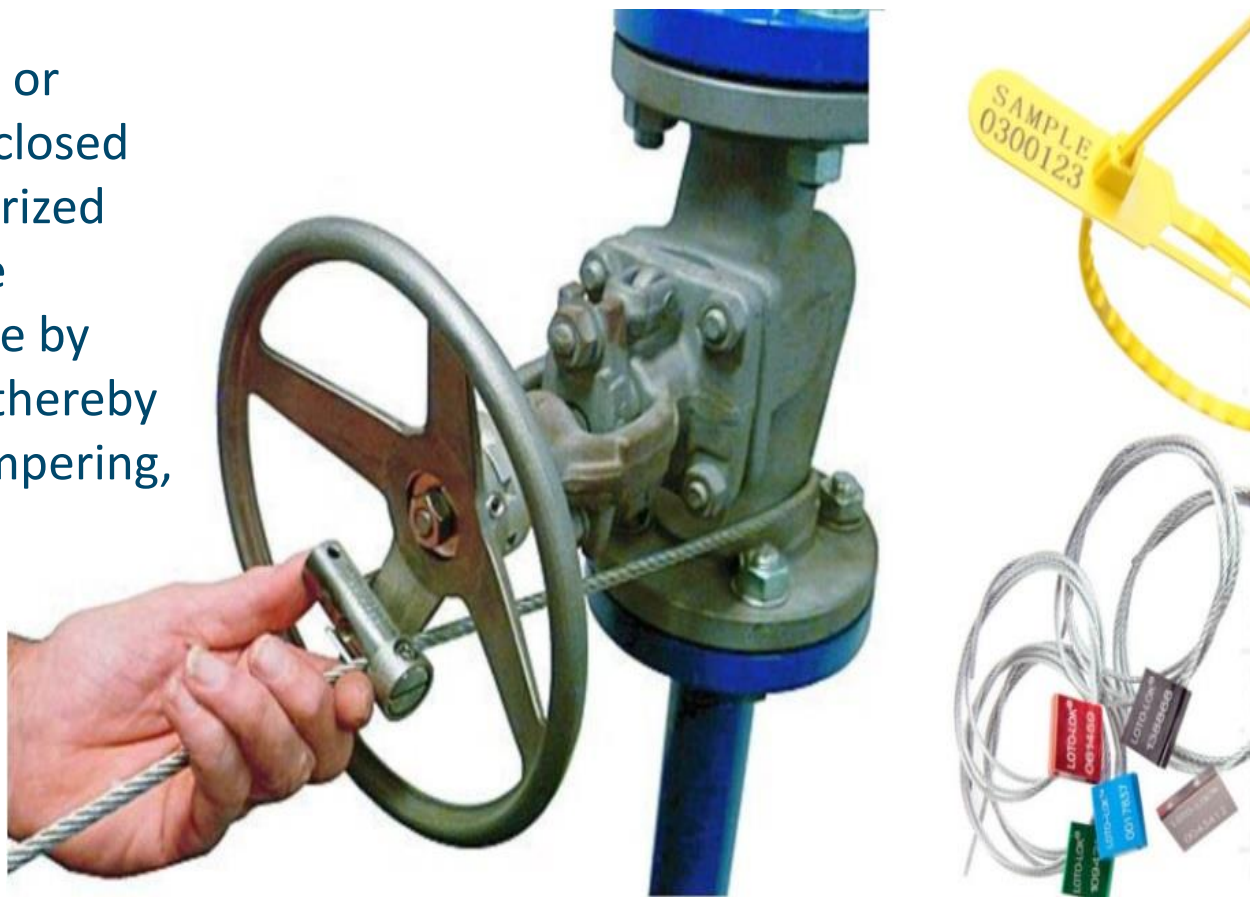
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Presented by:

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## Car Seal Valve

A simple device used to lock or 'seal' a valve in the open or closed position to prevent unauthorized operation of the valve. Valve operation can only take place by cutting/ removing the seal, thereby giving evidence of either tampering, or activity by an authorized employee.



## Definition

1

**Turnaround** - The plant is shutdown for an extended period of time to do several equipment preventive maintenance; corrective repair; strip-down and overhaul; or component replacement work. It can last for weeks or months.

2

**Car Seal Open (CSO) Valve** - A valve in the open position to which a car seal has been applied in a manner that the valve cannot be closed without breaking the seal.

3

**Car Seal Close (CSC) Valve** - A valve in the close position to which a car seal has been applied in a manner that the valve cannot be opened without breaking the seal.

4

**Catastrophic Incident** - A major uncontrolled emission, fire, or explosion that presents serious danger to employees in the workplace.

## Types of Car Seal



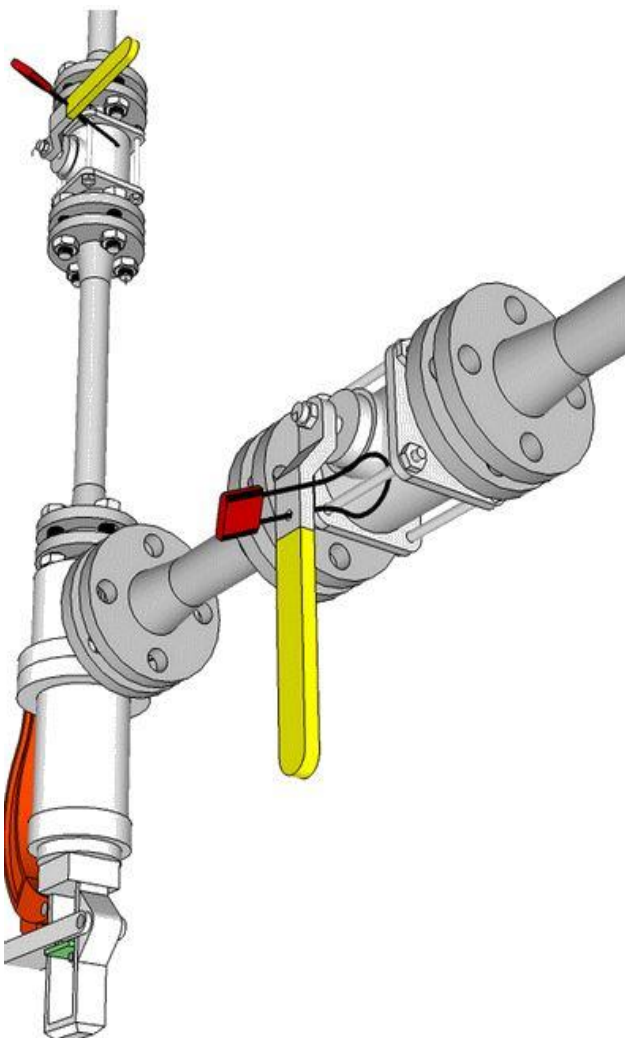
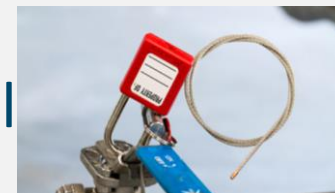
Steel Cable Car Seal



Plastic Car Seals



Re-useable Car Seal





## Requirements

The use of CSO/CSC valves must be limited to situation where the inadvertent operation of the valves can lead to a potential consequence of catastrophic incident.

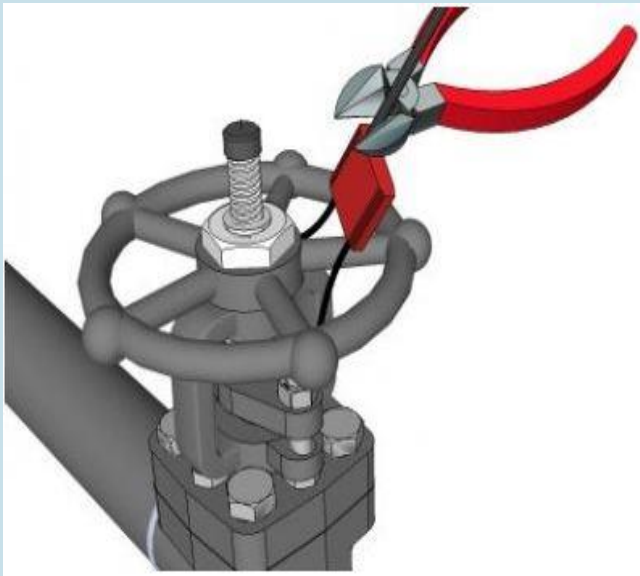
Valves maintained in a certain position due to operational requirements only, will not be designated as CSO/CSC valves.



## Car Seal Specifications

- All car seal will be assigned a number and valves painted in bright color to be decided by the organization (with a colored weather-proof tag).
- Car seals may be made of metal cable and be strong enough to prevent inadvertent or accidental removal (minimum unlocking / breaking strength 50 pounds).
- A **Red color** metal cable designated for Car Seal Close valves.
- A **Green color** metal cable designated for Car Seal Open valves.
- Car seals must be attachable by hand and be self-locking and non-releasable
- Car seals drawn must be available for all size of valves

## Car Seal Valve Management and Implementation as part of PSSR checklist after Major Turnaround



Are all CSO/CSC valves in their proper position and car-sealed?



Pre-startup safety inspections must include car-sealed block and bypass of safety valves

## Catastrophic Incident

- Process unit startups and shutdowns are significantly more hazardous than normal facility operations.
- This is because startup and shutdown periods involve many non-routine procedures, and these periods can result in unexpected and unusual situations.
- A 2010 study of incidents in the manufacturing and refining industry found 50 percent of process safety events occur during startups, turnarounds or maintenance shutdowns, and other cases that infrequently occur.
- During major turnaround, several car seal valves that were operated need to be inspected before any plant startup to ensure the correctness of the process



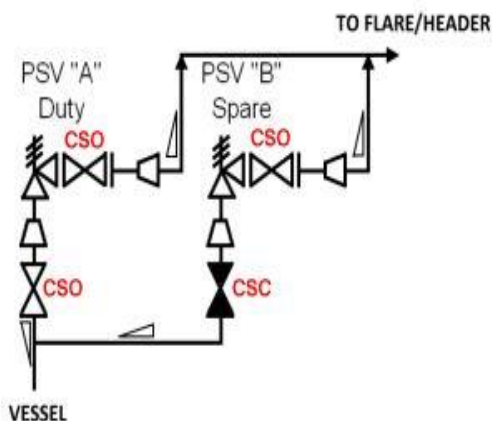
- It is critical to walk through/ survey and verify all the positions (line-up) of the car seal valves every after major turnaround prior to plant start up.
- Deficiencies noted during the inspection, such as valves not in the correct position, and / or missing car seals must be immediately corrected.
- All car seal valves must be inspected every month, as a minimum to ensure that the valve is in the correct position and the car seals are still present using a checklist.

[illegible]



## Identification of Car Seal Valves

- A master list of valves that are kept normally open designated as CSO or normally close designated as CSC. The list must include but not limited to the valves on relief valves and rupture disc inlet and outlet, valves on flare lines, battery limit isolation valves, bypass valves on safety critical control valves and any other valves which if closed or opened during the normal operations may or have the potential to result in a catastrophic incident.
- In some organizations car seal valve in process service must be painted in bright color to indicate that they are special valves and designated as car sealed.
- Car Seal shall be installed in such a way that the valve cannot be operated without removing the Car Seal.
- All Car Seal valve and their position needs to be marked on the as-built P&IDs as CSO and CSC.



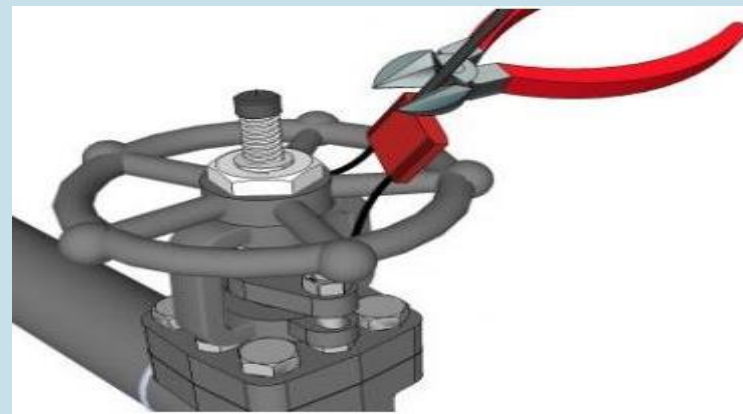
- Master list must only be updated or changed after approved MOC(FCR).
- For Turnaround car seals can be removed after approval from operations manager.
- Inspection and survey need to be conducted to ensure the correctness of the process line-up prior to start up of plant after major turnaround.

[illegible]

## Removal of Car Seals

- A car seal on a process valve will only be removed and the valve operated after obtaining a written approval.
- For Temporary change, the Affiliate can get approval from Area General Manager on form attached for maximum one month. After that it must be treated as change and need to process MOC procedure through MOC(FCR) stature as permanent or temporary as needed.

CAR SEAL TEMPORARY REMOVAL AUTHORIZATION FORM (To be Displayed at Prominent Location in Control Room) (To Filled By Shift Supervisor)			
<b>Affiliate</b>	<b>Unit</b>	<b>Date:</b>	
Description of Valve			
Location of valve			
Purpose of Car seal			
Car seal original position as per master list (CSO/CSC)			
Permanent/Temporary Removal			
Operations Precautions During removal			
Isolation of system (Yes/No)			
<b>INITIATED BY</b>			
Affiliate Shift Supervisor (Name, Signature, Time) (To be Filled by His Own Handwriting)		(Name, Signature, Date)	
<b>APPROVAL BY (For 24 hrs. Only)</b>			
Affiliate Operations Section Head (Name, Signature, Time)		(Name, Signature, Date)	
<b>EXTENSION IN APPROVAL BY (For Next 48 hrs. Only)</b>			
Affiliate Operations Manager (Name, Signature, Time)		(Name, Signature, Date)	



## Roles and Responsibility

**General Manager**

**Operations Manager**

**Section Head**

**Operations staff**

**Operations Specialists**

**Fire /ER Team**

### RACI MATRIX

Key roles and accountabilities of all stakeholders, a RACI (Responsible, Accountable, Consulted and Informed) Matrix for all identified activities.

Activity Description	General Manager	Operations Manager	Section Head	Operations Staff (Shift Sup, Opttr, Engr)	Operations Specialist	Fire / ER Team
Temporary removal of Car seals	R C I	R A C	R A	C I	C I	R C I
Car Seal Master List Development & Approvals	-	C I	C I	C I	R	C I
Car Seal purchase requisition & specs	-	C I	C I	C I	R A	C I
Car Seal Testing & approval in WH	-	I	I	I	R A	I
Car Seal Master List updates	I	R A	R	C I	C I	C I
Car Seal Inspections monthly/quarterly	-	I	I	R A	I	R A
Car Seal Inspection NCs, raise PS NM incident report	I	C I	R A	C I	I	C I
Car Seal Awareness / Training	-	A	R A	R I	I	I

Conference  
On Plant & Process Safety  
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# THANK YOU

Ghazi Al-Mutairi