Safety Cam Visual Inspection

PFLOW INDUSTRIES MATERIAL HANDLING SOLUTIONS

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Before You Begin

Read this entire document prior to performing the safety cam visual inspection.

⚠DANGER

Keep clear of unsupported platforms. Stay out of the area under a raised platform. If a maintenance operation requires the carriage to remain in the raised position, refer to Bulletin 15709-0083 for additional information or contact PFlow Industries, Inc. Product Support Department for assistance.

⚠WARNING

- This equipment must be maintained to ensure safety. Allow only properly trained personnel to service the equipment. Implement a routine safety inspection plan and follow the recommended preventive maintenance schedule in the owner's manual.
- Lockout/tagout equipment before performing any adjustments or maintenance. If the equipment is not locked out, it could start unexpectedly and cause injury or damage. ***Make sure all personnel are aware of the potential for stored energy to be present even after the power has been locked out.*** Refer to ANSI Z244.1 and OSHA 29 CFR 1910.147 for minimum requirements for a lockout/tagout system. There may be additional state or local requirements.
- Secure all VRC access areas (e.g., gates, push-button stations) before any troubleshooting or service is begun. Never leave the VRC unattended with the gates in the open position. Never close gates when a person is on the carriage or within the fenced area.

⚠CAUTION

Falling equipment hazard! Safety devices must be overridden to perform the safety cam visual inspection. The chain tensioner and lower level limit switches will be disconnected during this procedure. It is possible to run the lift chains off the upper sprockets and cause the lift chains to fall. Locate and become familiar with the emergency stop button.

NOTICE

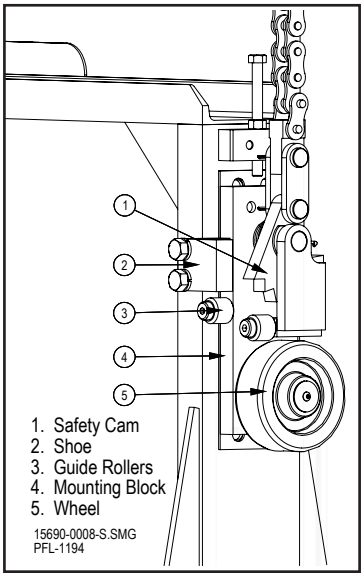
ASME B20.1-2015 defines a qualified person as a person who, by possession of a recognized degree or certificate of professional standing, or by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve problems relating to the subject matter and work.

Purpose

The following pages are the recommended guidelines for performing a visual inspection of the safety cams on a VRC (Vertical Reciprocating Conveyor). PFlow Industries, Inc. recommends the visual inspection be done on a annual basis.

The safety cam is a VRC safety device. The safety cam is spring-loaded and designed with a series of hardened teeth. Safety cams are mounted on the carriage and positioned between the flanges of the guide column. The visual inspection and test verifies that in the unlikely event of a lift chain break, the safety cam will immediately and automatically rotate into position.

As the safety cams rotate into position, the downward pressure of the carriage forces the teeth into the flanges of the guide columns, preventing carriage descent.



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Tools Required

- Low profile floor jack with long handle or bottle jack to handle the appropriate weight of the carriage
- 10' (3048mm) length of conduit pipe (to use as a handle)
- MQ models may require six (6) vice grips

Visually Inspect the Safety Cam

1. Visually inspect the safety cam for rust and corrosion, chipped or broken safety cam teeth and any other visual signs of wear or damage.

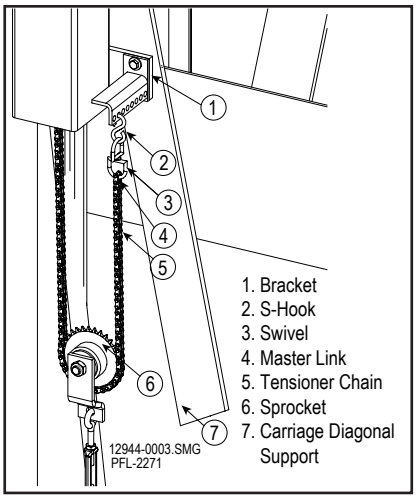
The safety cam must rotate freely to perform properly. Verify cam rotation by removing all weight from the chains and slackening the lift chains. The following steps are required.

2. Unhook the #35 chain swivel from the S-hook attached to the carriage and from around the sprocket on the chain tensioner device at the bottom of each column. (Make sure chains are free from catching on anything. The chains will travel about 5" (127mm) in and out of the chain tube.) See Figure 1.
3. The safety limit switch is now activated on the chain tensioner device and will prevent the lift from operating. Either pull the limit switch arm from between the roll pins on the device or remove the arm completely so the limit switch returns to its neutral position. See Figure 2.

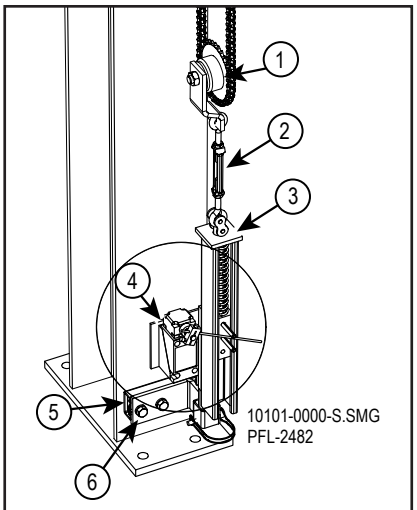
Additional Steps 4-6 for MQ Series

4. ***Mechanical override:*** Either pull each of the limit switch arms from between the roll pins on early versions of the slack chain sensor or mark the plunger positions on the newer versions of the slack chain sensor located at the top of each column.
5. Pull each plunger away from the chains and secure into place with a vice grip.
6. ***Electrical override:*** Contact PFlow Industries, Inc. Field Operations Manager for details.

7. Manually override the gate safety switches.
8. With the carriage at the first level, push the “Send to 2” button on the push-button station.



Tensioner Chain Assembly Figure 1



Chain Tensioner Assembly Figure 2

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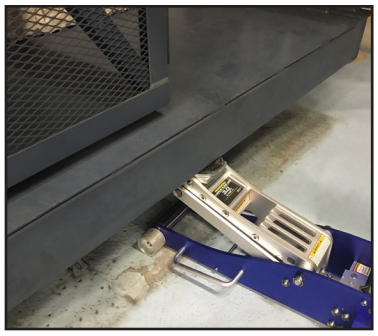
Visually Inspect the Safety Cam (continued)

9. Allow the VRC carriage to raise 2" (52mm) above the lowest height of the retracted floor jack. Push the emergency stop button in on the push-button station.
10. Place the retracted floor jack under the carriage until the saddle is centered under the front edge of the carriage. See Figure 3.
11. Push downward on the floor jack's lever to lift the saddle upward so that it contacts the edge of the carriage. Continue pushing downward on the lever to lift the carriage upward.
12. Observe the chain in the column. As the carriage is lifted, the chain will begin to slacken and the chain links stack up upon each other. Continue to lift the carriage an additional 6" (152mm) beyond the starting point.

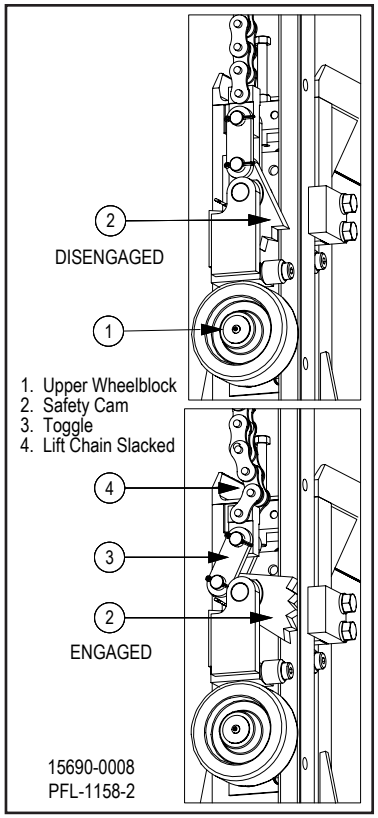


Floor Jack Placement Figure 3

⚠ DANGER

Stay out of the area under a raised platform!

13. Confirm that the safety cam rotates freely. See Figure 4.
14. Pull the emergency stop button out on the push-button station.
15. Push the "Send to 2" button on the push-button station to raise the carriage slightly to remove slack from the safety cams.
16. Push the emergency stop button in to stop the carriage.
17. Confirm that all safety cams are disengaged.
18. Remove the floor jack from under the carriage.
19. Pull the emergency stop button out on the push-button station.
20. Push the "Send to 1" button on the push-button station to lower the carriage to the first level.



Lift Chain and Safety Cam Figure 4

21. Reroute the #35 chain around the chain tensioner sprocket and up to the S-hook on the carriage.

Important!

22. ***Readjust the limit switch arm back to its original position.***
23. ***Remove any temporary overrides of the gate safeties.***

Additional Steps 24-25 for MQ Series

24. ***If done mechanically, readjust the limit switch arms on the MQ slack chain sensor back to its original position or remove the vice grips from the plungers on the MQ slack chain sensor. Ensure the plungers are properly positioned.***
25. ***If done electrically, remove the jumper cables from inside the control panel.***

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