Gear & Safety Warning

Webbing slippage warning in Weblocks

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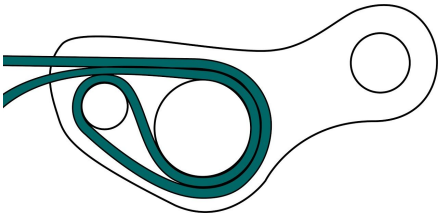
We have identified the mechanism responsible for webbing slippage in webbing lockers (weblocks). During a test on a hydraulic cyclic testing machine, we found webbing to move through the weblock with every stretch and release cycle. We observed this micro-slippage of the webbing within the weblock. The webbing was installed in single wrap without a tie-off so we could witness webbing slippage, webbing tailwalk, and a complete failure of the webbing locking mechanism first hand.

The process we discovered is driven by the stretch of the webbing within the webbing locker. While the top webbing layer releases, it pulls through the webbing tail below, a tiny bit with every cycle. No special orientation of the weblock nor a tension drop to zero is necessary for the webbing to slip. The weblock was sitting upright and was not positioned at any angle to the webbing.



Webbing locker with single wrap configuration

With a single wrap, we observed micro-slippage during every tension-detension cycle. We tested in the 3-5 kN range, which is about the force range of normal bounces on a highline. A test of 250 cycles is equivalent to about 10 minutes of bouncing. This was enough to get from an intact single wrap to complete failure of the webbing locker mechanism. The webbing pulled through completely after a tailwalk.

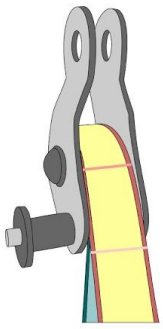
Future experiments will have to show which weblocks are more prone to slipping with which webbing and at which tension intervals and tension drops. Strength with 1.5 and double wrap webbing installments in weblocks has not been fully assessed yet, but in preliminary studies, we found double wrap configuration to not slip after an initial settling.
Additionally there could be other mechanisms at play for webbing to slip and tailwalk faster in weblocks, such as movement and orientation of the weblock.

Always tie-off your webbing tails coming out of the weblock when highlining. There have been several incidents and close calls due to webbing slippage in weblocks already, in some cases with the entire tail pulling through. Here some general advice on webbing tie-offs!

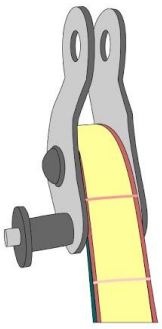
Ask your weblock manufacturer on how to tie-off your specific model. Also, ask if 1.5 and double wrap webbing installment methods are recommended. We further recommend that you attach a tape when finished with rigging, so that you can monitor the amount of webbing slippage - Slack Safe!

Monitoring webbing slippage and tail walk in weblocks

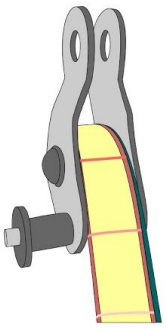
These pictures describe the observable steps of webbing slippage and tailwalk in a weblock and can help assess if slippage occurs. We recommend resetting of the weblock in case you observe anything beyond step 3 - **when highlining always tie-off the webbing tail of your weblock.**[1]



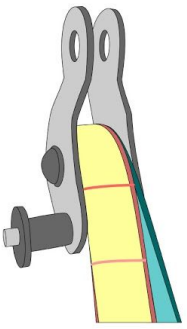
1. Intact single wrap with webbing in webbing locker



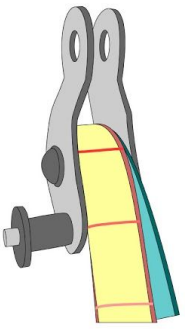
2. Continued webbing slippage and and lateral sliding of the webbing



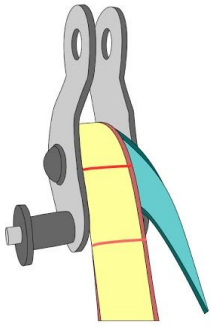
3. Webbing shifts to the side, lower webbing can be observed along the sidewall



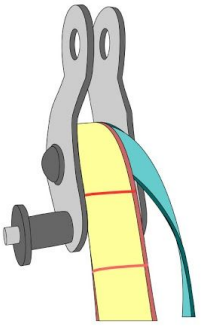
4. Initial tail walk starts



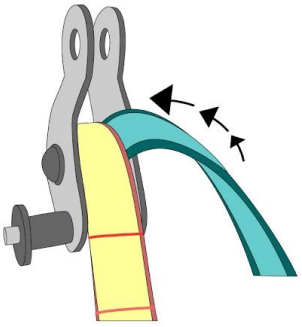
5. Continued tailwalk with webbing tail shifting to the side



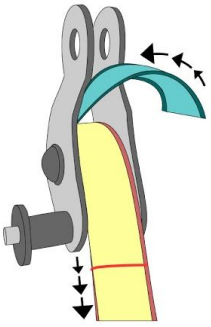
6. Continued tailwalk, webbing lifts above side plate



7. Continued tailwalk



8. Continued tailwalk, friction locking impaired



9. Complete failure of the webbing locking mechanism and pull through of the entire tail

[1] ISA Members and Partners helped fund this work. Support the production of further such studies with a donation to the Highline FundRACE or directly via Paypal.