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TECHNICAL COMMITTEE MEMORANDUM TCM 05/08

Broken Salewa Karabiner

Incident ref: 05/11/C.KOC

SUMMARY

This karabiner failed following a fall by a lead climber. The climber's fall was arrested by a lower piece of protection.

The failure mode of the karabiner is consistent with the sling attached to the protection being hooked in the nose of the karabiner holding the gate open and loading it inappropriately.



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Final
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1. INTRODUCTION

The climber who submitted this broken karabiner for inspection reports the he was climbing a route in Egypt when he fell from approximately 2.5 metres above his last piece of gear (a camming device) due to a foothold breaking.

He reports that there was a clear 'ping' sound as the karabiner broke and flew past him. His next piece of gear held and the climber is not reported as having been injured.

It is noted that the karabiner was bought by mail order from the USA.

2. EXAMINATION

The broken karabiner has broken near to the top of the spine of the karabiner. The karabiner is of the wire gate type. The spine shows it to have a major axis strength of 24 kN, a minor axis strength of 7 kN and a gate open strength of 9 kN. It also has UIAA and CE marks on it.

The fracture surface of the broken karabiner shows no apparent defects and is consistent with ductile failure due to being overloaded.

3. ANALYSIS & DISCUSSION

The break at the top of the spine of the karabiner is similar to those previously reported during testing following failures of a DMM Pro Wire karabiner¹, a Wild Country Wild Wire² karabiner and an HB Meteor³ karabiner.

In all cases the failure at the top of the spine of the karabiner was found to be indicative of the protection having become hooked in the nose of the karabiner holding the gate open. The failure strength of the karabiner when inappropriately loaded in this manner is then less than 4 kN for all types previously tested. This is likely to be lower than the force generated in a typical climbing fall^{4,5}.

It seems most likely that in this case a similar situation has occurred, in which the sling connecting the camming device became hooked in the nose of the karabiner, holding the gate open.

As in previous cases the climber thinks that the gear was correctly clipped and it cannot be ascertained how it became hooked in the nose of the karabiner.

5. CONCLUSIONS

The karabiner failed due to being loaded close to its nose with the gate being held open. This was most likely caused by the sling of the protection cam being caught in the nose of the karabiner holding the gate open and loading the nose when the climber fell.

It is not known how the sling of the protection became caught in the nose of the karabiner.

6. RECOMMENDATIONS

There have been several reported failures of karabiners by this mechanism. Climbers are reminded to ensure that equipment is correctly clipped with the gate of the karabiner closed and in an attitude where it is unlikely to be opened accidentally.

7. REFERENCES

1. TCM 02/05, DMM Prowire Karabiner, M. Taylor, BMC Technical Committee Memorandum
2. TCM 04/03, Failed Wild Wire Karabiner, O. Milling, BMC Technical Committee Memorandum
3. TCM 02/01, Failed HB Karabiner, N. McMillan, BMC Technical Committee Memorandum
4. TCM 03/03, DMM Walnut 0 with Broken Wire, N. McMillan, BMC Technical Committee Memorandum
5. How Strong Does Your Climbing Gear Need to Be?, N. McMillan, BMC Technical Conference, Plas y Brenin, November 2003.