



Urgent warning about permanently installed quick draws and carabiners in climbing areas

Mammut is urgently calling for the immediate discontinuation of use and removal of permanently installed quick draws and carabiners in climbing areas. Irrespective of the manufacturer of such equipment, repeated wear can result in the formation of sharp edges capable of damaging or completely severing ropes, even in relatively small falls.

Investigations by Mammut have shown that this known problem is actually far more dramatic than previously assumed and represents a very high risk for climbers.

In recent years, it has become increasingly common to install quick draws on overhanging routes in climbing areas. On the one hand, this is intended to make it easier to clip the rope and, on the other hand, to prevent the sometimes laborious removal of the quick draws.

Depending on their position, as a result of friction from climbing ropes when lowering climbers, these quick draws can be worn to a blunt angle resulting in the formation of very sharp edges (see figure 1).

The following positions are particularly affected:

- the first belay point (where the belayer stands away from the wall when lowering)
- belay points under a roof/overhang
- off line belay points

Wear is increased by the presence of dirt or sand on the rope. Extremely sharp edges form on carabiners which almost never bear the load of a fall and are rarely used as a turning point. This means that they are never "deburred" (worn to a rounded shape) and razor-sharp edges can develop. Carabiners with a T-profile tend to be more prone to the formation of sharp edges in comparison with round profiles.

In tests in the Mammut standard fall facility on the carabiner shown in figure 1, it was found that a 9.5 mm rope with fall mass of 80 kg severed at a fall height of just 2.7 meters/fall factor of 1.0. The carabiner used had an extremely sharp edge. Previous investigations have also shown that, in practice, friction in the safety chain can result in a fall factor that is significantly higher than the calculated value. In combination with a very sharp carabiner, even very small falls with a fall height of less than a meter can be critical. Several cases of cut ropes without grave consequences are known. Presently this is being researched as a possible reason for a fatal climbing accident in Switzerland.



Figure 1: carabiner with sharp edges created through friction from climbing ropes.

Mammut also examined the effect of the rope diameter on these sharp edges. A clear connection emerged, as shown in graphic 1: in all cases, a thicker rope offers a higher safety margin in relation to sharp edges. However, even with a 10 mm rope the values are critical and life-threatening. Twin and half ropes (both ropes clipped) offer the highest safety margins. No significant differences were observed between the values for used ropes (light furring on the sheath, no damage) and new ropes.

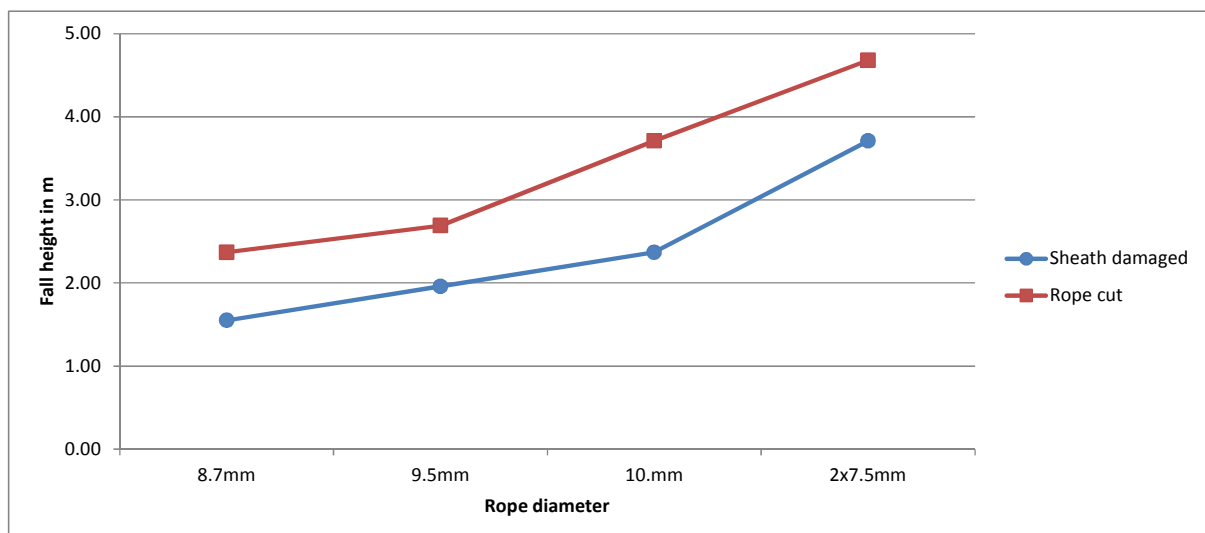


Figure 2: Rope damage for different rope diameters depending on fall height. Anchor point using sharp-edged carabiner from figure 1. Fall mass 80 kg, rope length paid out 2.64 meters. Mammut Sports Group, October 2012.



Sharp edges can also develop on carabiners at the anchor point, however in this case the rope runs over the carabiner at an acute angle, resulting in a rounded wearing effect and the edges formed are less extreme. However, these carabiners can be critical if the remaining strength of the equipment is not sufficient to support the load.

Climbing gyms generally use steel carabiners which wear less quickly and the fixed equipment is checked regularly. However, Mammut recommends paying close attention in this situation as well. Do not use any worn carabiners and report them immediately to the climbing gym operator.

Fixed equipment on outdoor climbing routes is not usually maintained or checked. In general, care is required due to deterioration of slings, corrosion, etc. and it is best to avoid using the equipment.

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