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**TECHNICAL COMMITTEE
MEMORANDUM TCM 11/02**

**Petzl Meteor III Helmet Headband Clip Failure
Incident Ref. 09/11F.HUY**

SUMMARY

This Petzl Meteor III has a faulty adjustment clip on the lefthand side of the headband. The helmet is just over a year old and it shows no signs of damage or wear other than the above reported fault.

The reason for the headband clip slipping on the headband ratchet is a crack in the upper leg of the clip. This crack reduces the pre-load of the clip on the headband ratchet.



Figure 1. The Reported Petzl Meteor III Helmet

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Approved for issue by the EIP:	

1. INTRODUCTION

This Petzl Meteor III helmet was received complete with a BMC Incident Report form stating that the helmet was purchased on 13 March 2011 from the Cotswold Outdoors shop in Manchester. Apparently the helmet was used four times before the broken adjustment clip was noticed.

2. ANALYSIS

Examination

On initial examination of the helmet, it was obvious that the lefthand adjustment clip (Figure 2) was not gripping the ratchet. The righthand adjustment clip grips the headband ratchet as would be expected even when a reasonable degree of force is applied to it.

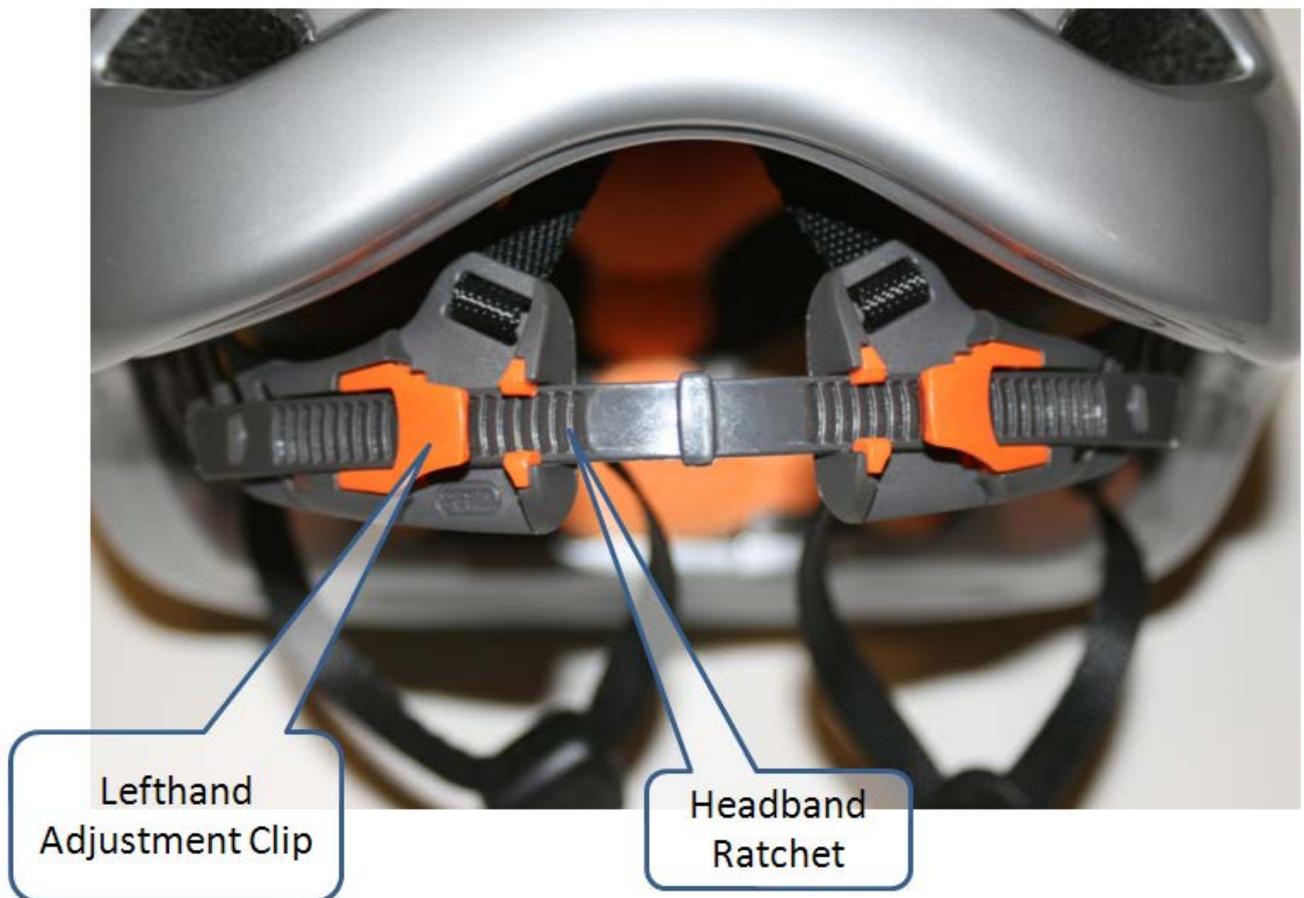


Figure 2. Picture Showing the Lefthand Adjustment Clip

Initially it is not immediately obvious whether this lack of grip is due to the clip losing its pre-load or due to the tooth face being damaged.

Removing both of the adjustment clips from the headband enabled a more detailed comparison on the tooth (gripping) faces. The comparison shows very little difference in the gripping surfaces of the adjustment clips. This confirms that the lack of grip is due to a problem with pre-load on the ratchet surface.

Once removed, it was obvious that the lefthand adjustment clip has a through thickness failure of the upper leg (Figure 3) which is increasing the flexibility of the clip and reducing the pre-load that the clip exerts on the ratchet.

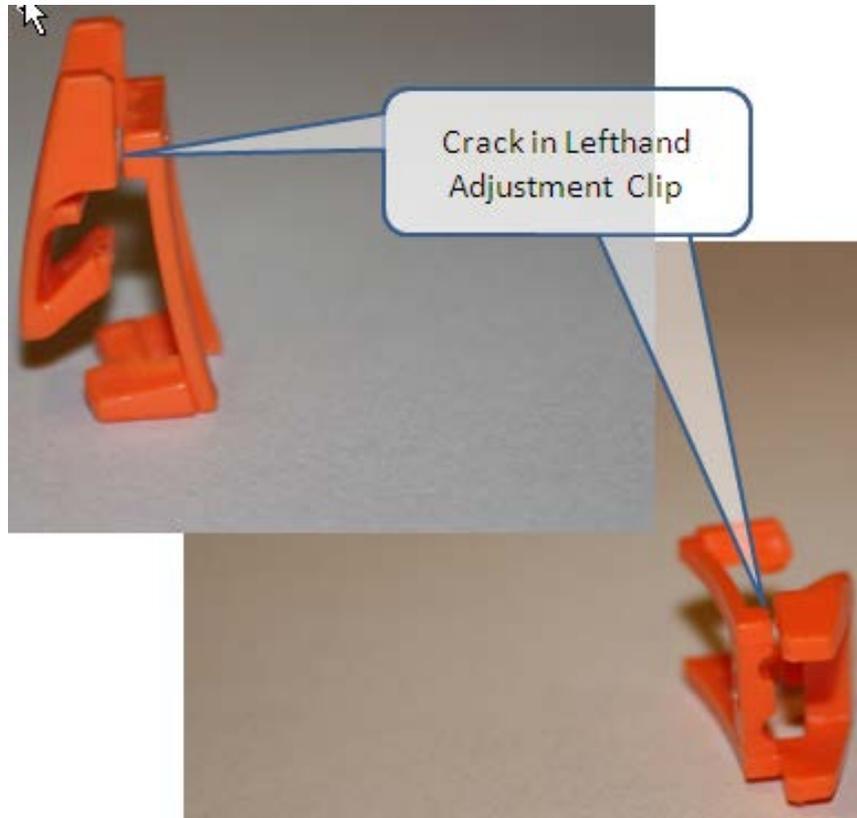


Figure 3. Details of the Crack in the Lefthand Adjustment Clip

Other than the cracked adjustment clip, the helmet shows no signs of excessive wear (Figure 1). The helmet is in fact in a very good condition reinforcing the reporters comments that it was only worn four times.

The righthand headband adjustment clip shows no sign of cracking and functions as expected by fully gripping the headband ratchet. This again reinforces the lack of use or abuse that the helmet was subjected to.

3. DISCUSSION

The crack in the upper leg of the lefthand adjustment clip is reducing the sprung pre-load that the clip can exert on the ratchet. This is obviously the reason for the clip slipping on the headband ratchet.

There is a safety aspect to this failure, although it is good practice to check your equipment before use, a failure of this nature if not spotted before use, could risk the helmet not providing the full protection expected for such safety equipment. This aspect of the fault being undetected is especially important due to the unexpected nature of the low life failure.

4. CONCLUSIONS

The lefthand headband adjustment clip no longer grips on the headband ratchet. This lack of grip on the ratchet is due to a crack all the way through the upper leg (Figure 3). It is unlikely given the short life of the helmet that this crack is due to excessive use or abuse. These facts indicate that the cause of the crack to be in some way due to manufacturing issues.

Without detailed knowledge of the manufacturing process it is hard to determine whether the crack in the headband adjustment clip was caused by poor design, poor material, a poor manufacturing process or a mix of all of these. However, a change in the design to reinforce this section of the adjustment clip could help to reduce the likelihood of cracking at this location.

Taking into account these facts I recommend the manufacturer, Petzl, review the design of this headband adjustment clip part of the Meteor III helmet to improve its durability.

5. ADDENDUM

A copy of this report along with the helmet and clips were sent to the manufacturer Petzl's agent in the UK, Lyon Equipment Ltd. Lyon Equipment forward this report on to Petzl. As a result of this communication. the failed clip was replaced by Lyon Equipment (ref R73853) with the approval of Petzl and the helmet returned to its owner. Additionally Lyon Equipment checked the helmets that they had in stock for similar faults. No other failures were found leading both Petzl and Lyon Equipment to conclude that this was a "single defective part".