

# Information and recommendations for inspection and use of TRAC AND TRAC PLUS pulleys

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Dear Clients,

three adventure parks that operate zip lines have informed us of cases where a VERTIGO carabiner broke on the TRAC and TRAC PLUS pulleys. Thankfully, there were no injuries in any of these cases. Metallurgical analyses have shown that the breakage is caused by a corrosion micro-crack that forms on the surface and spreads very slowly through vibration fatigue in the most stressed part of the carabiner (see photo below). This crack was not detected during repeated PPE inspections, as it is located in the upper part of the carabiner which is hidden by the pulleys' side plates.



According to our analyses, this phenomenon is a result of the combination of two contributing factors:

- a corrosive environment: near the ocean, a stretch of water, etc.
- very intensive use: combining a high frequency of use with a very long zip line produces vibration effects.

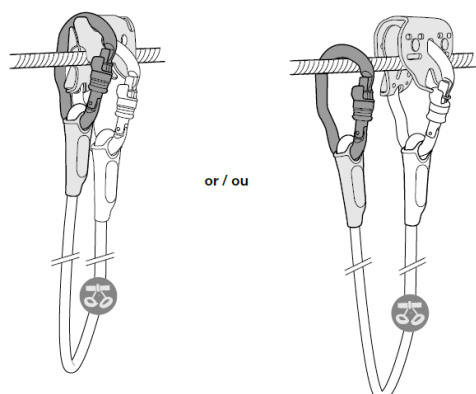
## As a result of this feedback from the field, Petzl recommends:

- When inspecting your park's PPE, the VERTIGO carabiner should always be removed from the TRAC and TRAC PLUS pulleys to allow for a complete and detailed inspection. As outlined in the PPE inspection procedure, any crack found on a carabiner indicates that it must be immediately retired. The PPE inspection sheet for TRAC and TRAC PLUS pulleys is available in attachment.

- Adapt the frequency of TRAC and TRAC PLUS pulley PPE inspections to the intensity of use, according to the following table:

	Dry environment	Humid environment
Distance traveled $\leq$ 2 km/day	3 months	2 months
Distance traveled $\geq$ 2 km/day	2 months	1 month

- Use a back-up system that captures the zip line cable:



TRAC pulleys have been on the market for over 10 years, and their durability has proven itself. The safety of our users and the quality of our products are Petzl's primary concerns, and we continually integrate feedback from the field to improve our products.

For any questions on this subject, please contact the Petzl distributor in your country. We thank you in advance for considering these recommendations.

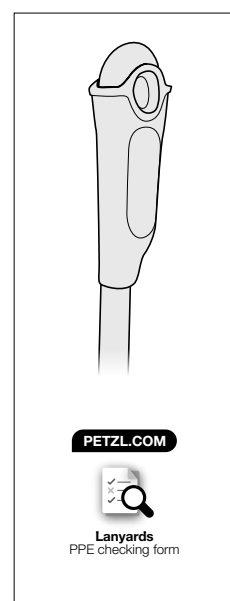
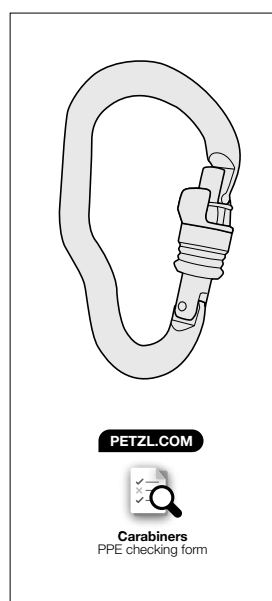
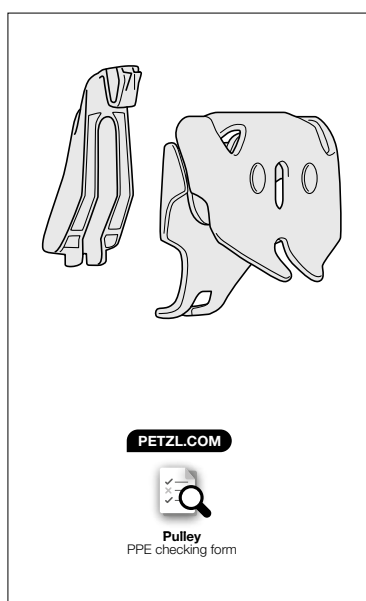
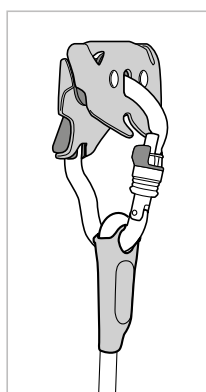
PPE checking



# INFORMATION

## TRAC / TRAC PLUS

For a complete PPE inspection of your TRAC or TRAC PLUS, make sure to disassemble it to be able to check properly every part.



## FAQ regarding the PPE inspection of the Petzl TRAC and TRAC PLUS pulleys

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### **What TRAC pulleys are concerned with this information?**

All TRAC and TRAC PLUS pulleys still in service are concerned with this information.

### **Are all VERTIGO carabiners concerned?**

No, only VERTIGO carabiners mounted in the TRAC or TRAC PLUS are affected by this phenomenon.

### **Have you changed the material used in the VERTIGO carabiners?**

VERTIGO carabiners on the market since 2005 have not changed material. To reduce wear at the points of contact with the TRAC body and thus improve their longevity, VERTIGO carabiners delivered in 2014 use a new aluminum alloy.

### **What are the marks on the inside of VERTIGOs? Is this not the reason for the appearance of the cracks?**

Visible marks on the inside of the VERTIGO frame are caused by our individual tensile tests. We perform these tests on every single Petzl carabiner. These marks are not the cause of the corrosion cracking. These marks are very close to the most stressed section of the carabiner when it is used in the TRAC or TRAC PLUS. This is normal - the individual tensile test is designed to reflect the use.



### **How long will it take for a crack to lead to a failure?**

Carabiners we have seen with cracks have had an average of two years in use. In one case, the crack occurred after 5 months of extremely intensive use.

### **Have you had any accidents?**

No, there have been no accidents. We have tested a TRAC with a broken VERTIGO carabiner which supported a load much greater than 300kg. This is explained by the presence of the plastic cover which locks the VERTIGO carabiner body in the TRAC. In addition, a slightly cracked VERTIGO carabiner withstands a force more than 25 kN.

### **In view of the problem, is your action appropriate?**

The popularity of zip lines has grown significantly in recent years. Some parks have followed the enthusiasm of customers wishing to try increasingly long and impressive zip lines. These large installations attract more customers, and are therefore used with greater frequency.

Accordingly, these pulleys have higher and higher demands placed on them, and we are seeing the emergence of new and unusual wear phenomena. It is exactly this case that concerns us, with these corrosion cracks that can develop and spread slowly across the most loaded section of the VERTIGO.

In one adventure park, it was seen that only a few carabiners had developed this mode of wear combining the two phenomena: surface corrosion which was not necessarily visible, associated with vibration fatigue of the working section of the carabiner. Metal analysis showed no difference between cracked carabiners and carabiners in good condition. Surface corrosion is random, with usage levels and loadings of TRAC or TRACPLUS pulleys differing from one to another, which explains why these differences can be observed.

This type of wear can be very easily detected during PPE inspection, by removing the VERTIGO carabiner to inspect it entirely, and by adjusting the frequency of inspection relative to the intensity of use of the TRAC pulleys, just as an inspector will do for other products which are in frequent and intensive use.

All these elements have led us to conclude that the best preventive actions are to:

- inform our customers of this rare but possible phenomenon
- recommend that PPE inspection include the removal of the VERTIGO carabiner to inspect it entirely
- recommend decreasing the time between inspections of heavily used TRAC or TRAC PLUS adventure park pulleys

### **Are you working on a technical solution to this issue?**

Our commitment is to continually improve our products. We are working on improving TRAC and TRAC PLUS pulleys to limit this phenomenon of corrosion and vibration fatigue. User safety and the quality of our products are our primary concerns at Petzl, and we continually integrate feedback from the field in order to improve our products.

### **Will you replace any cracked VERTIGO carabiners?**

If a VERTIGO carabiner assembled in a TRAC or TRAC PLUS pulley passes its PPE control except for the crack (i.e., the carabiner is in good working condition and with minimal wear), then in these specific cases we will replace the carabiner.