

Specialized Turbo Levo Motor housing Water and Silt issue.

The Problem: Due in part to a semi open design of the motor housing assembly water and associated silt enters at a numbers of points in the housing. There is a drain hole at the bottom of the frame however it is small - approx 5mm - and is prone to blocking if the bicycle is used in wet, muddy conditions. The water cannot drain away due to silt build up. This in turn leads to a build up of moisture inside the motor housing held in by muck and silt.

Despite the waterproof nature of the electrical connectors moisture ingress was observed after a very short period of time. A further issue would be the patchy quality control at manufacture as 2 of the 3 electrical connectors did not have complete or in one case any O ring gaskets which give the plugs their IP rating.

In short water and silt can get in but cannot get out.



Semi open design allows water to enter at the battery lead aperture and in particular at the back of the motor where water and mud from the wheel is directed at the exposed motor.



A local partial fix for this is a Mudhugger front mudguard mounted in reverse which gives some protection to this area.



Above: Photos showing silt build up, also moisture ingress in the main battery to motor plug and drain hole still blocked even after cleaning.



Above: Motor removed shows the extent of the silt build up and drainage problems.

Solution: So what are we trying to achieve here and it would seem to be maintaining waterproof integrity of the electrical connections.

Firstly all o rings need to be present, second a smear of suitable grease to help seal the connectors and finally as recommended by UK Specialised rider care a corrosion block to the terminals themselves, I understand this is becoming a standard service procedure.

As for the motor housing itself it would appear due to the design virtually impossible to stop water entry so the answer seems to be to improve drainage to let water and silt out. Two 7mm drain holes one in each of the lower plastic housings let the water and silt straight out. there is a slight downside in that cycling with the motor submerged may allow more water in, hopefully the additional waterproofing of the electrical connectors should negate this.



Above: Additional holes drilled a the plastic housing low points to assist drainage.



Motor cover removed after new drain holes added and ridden in similar conditions as before.

After riding in similar conditions and then removing the motor cover the new drain holes would appear to be working. Some silt residue is visible but there is no remaining moisture and the electrical connectors are dry and sound, even the ones with missing o rings.



To cover all bases the bike has been cleaned in accordance with UK Specialised rider care instructions confirmed via email. That is a low pressure hose and Muc off. I have been informed that is how their fleet of bikes are cleaned.