



Wheel attachment requirements

The 'Tyres, Wheels and Hubs' section of the General Vehicles VIRM specifically states that wheel spacers or adaptors fitted to a vehicle is a reason for rejection during a Warrant of Fitness inspection, unless the vehicle has been LVV Certified. A spacer is defined as a component which is used to position a wheel assembly outward, by sliding over the vehicle's wheel studs or bolts, while an adapter bolts to the vehicle's hubs and provides a second set of studs further outward.

Although, we're sure that some members of the public and potentially even some Warrant of Fitness inspectors believe this may be overzealous, the justification behind this requirement is easily explained.

LVVTA, who are responsible for certification of modified light vehicles within New Zealand, often see issues with vehicles fitted with these items. The inspection requirements include assessing that the wheel nuts or bolts meet minimum thread engagement requirements, which an alarming number do not. In some instances the small amount of thread that is securing the wheel to the vehicle is frightening (some being found with as little as two threads engaged). This lack of thread engagement is often common where a vehicle has been fitted with aftermarket wheels which have a thicker mounting face. As a WoF inspection doesn't allow removal of components for inspection, this lack of thread engagement can go undetected.

For LVV Certification purposes, where removal of components is permitted, wheel spacers must be no thicker than 20mm and must be manufactured from a solid block of suitable material. They must also be fitted as to ensure the wheel locates snugly over the hub spigot so that the hub carries the weight of the wheel assembly instead of the wheel studs, or where there is a mis-match between the hub spigot and the wheel centre, a close tolerance fit center bore locator must be provided.

LVVTA also requires that the spacers are securely attached to either the wheel or hub face to ensure that when a wheel is taken off the vehicle, there's no danger of the spacer being left off, or incorrectly fitted.



Any vehicle fitted with aftermarket wheel spacers or adaptors requires LVV Certification before a Warrant of Fitness can be issued. Part of the inspection process is to ensure thread engagement meets requirements. The example shown here has dangerously-low thread engagement.

Wheel adaptors, which bolt to the vehicle's hub face and offer a secondary set of wheel studs, be it in the identical or an alternative PCD, must be no thicker than 30mm as to limit the additional loadings applied to the vehicle's hub. Minimum thicknesses and specific material requirements also apply.



The full requirements for wheel spacers and adaptors can be found in the LVV Wheels & Tyres standard on LVVTA's website, lvvta.org.nz.

Besides spacers and adaptors, WoF inspectors should also keep an eye out for aluminium wheel nuts. These offer a serious safety risk to road users as their threads can gall, causing damage to the nuts particularly where wheels have been removed and refitted a large number of times or where air tools have been used to fit them. There have been fatalities in New Zealand directly attributed to aluminium wheel nuts failing in this manner. As such they cannot be accepted for LVV Certification or WoF/CoF.



These aluminium wheel nuts are part of a set that failed, resulting in a wheel detaching from the vehicle the vehicle being involved in a head on collision, where the driver sustained fatal injuries.