Low Volume Vehicle Technical Association (inc)

SAFETY ALERT

 # 05 – 2019 (September 2020)

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Aftermarket Cast I-beam Axle Failures

During 2012, a 1940 Ford Pickup was involved in an accident due to an aftermarket cast I-beam axle failure. The axle snapped while the vehicle was turning at low speed, dropping the left front corner of the vehicle onto the ground. After investigating, it was found that similar incidents had occurred in Australia and the USA indicating that this was not a one-off event. As a result, LVVTA introduced an axle testing requirement and process for cast axles fitted to vehicles going through LVV certification.

Although there is no requirement for already-certified vehicles fitted with a cast I-beam axle to be tested, LVVTA would like to warn vehicle owners that their vehicle could potentially be fitted with an unsafe axle and strongly recommend getting it tested. Axles that have been tested and passed are provided with a test inspection report, which should remain with the vehicle. All vehicles fitted with a cast I-beam axle that are being certified or recertified will be required to have the axle tested or provide a valid test inspection report to the LVV certifier.

Further details regarding the reason for the failure and the testing procedure can be found here, but in summary, the nodularity of the failed axle (and other axles tested that hadn't yet failed but were certain to) was found to be well below industry standard. Major manufacturing problems affected the important composition and micro-structure of the axle which have a direct affect on the axle ductility and strength, leading to them breaking under normal operating loads.

The testing process involves polishing a section of the axle's spring perch to inspect the micro-structure of the axle. Dependant on the nodularity percentage results, the axle will either pass or fail. A pass would indicate the axle was manufactured correctly and therefore is of sufficient strength to handle normal operating loads. A fail means there was an issue with manufacturing and the axle strength has been reduced as a result, which may lead to complete failure.

If you own a vehicle fitted with a cast I-beam axle, LVVTA urges you to have it tested before continuing to use it. For information visit https://lvvta.org.nz/approvals.html#axle-testing