

Helping New Zealanders Build & Modify Safe Vehicles

**SUB-STANDARD AFTERMARKET CAST-IRON I-BEAM AXLES  
'Helix'-brand supplied by 'Johnny Law Motors'**

American company 'Johnny Law Motors' sells an aftermarket cast-iron I-beam axle branded as 'Helix', generally at a price which is much lower than other aftermarket axle brands. These Helix-brand axles are not acceptable and cannot be LVV certified, because they are sub-standard in design and physical dimensions, and are manufactured from poor-quality ductile cast-iron. The Johnny Law Motors website incorrectly states that the axles are manufactured from steel, and displays advertising photographs of different axles.

**▶ Ductile Cast-iron Testing**

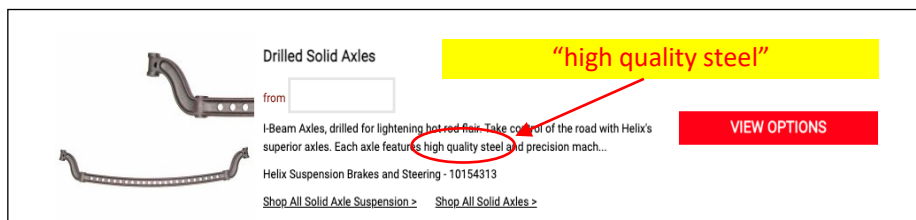
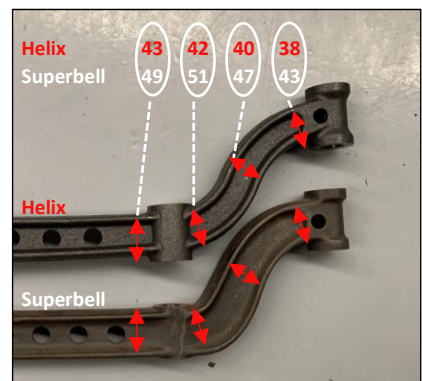
While ductile cast-iron axles are still able to be LVV certified for use in New Zealand, in every case they must be tested by LVVTA to ensure they have been manufactured correctly. The test is non-destructive and involves a very fine polishing process which reveals the microstructure of the casting and determines its nodularity rating (which in turn shows the ductility and strength of the axle). This process enables an experienced and qualified metallurgist to make an accurate comparison of the axle's nodularity against recognised international standards. The Helix axle was found to have 30% nodularity, compared to the 80% nodularity required by international standards for ductile cast-iron.



**▶ Axle Design and Physical Dimensions**

The Helix axle is thinner, and shows a reduced height of up to 18% when compared to other commonly-used aftermarket I-beam axles - and it's also much smaller than the OEM forged steel I-beam axles. It also has more abrupt transitions at the most highly-loaded points of the axle. These factors all increase the risk of weakness and stress concentrations which can result in fatigue-related failures over time.

**Right:** This shows a comparison between the height dimensions of Helix and Superbell axles. **Below left:** The Johnny Law Motors website advertisement states 'high quality steel'. **Below right:** Picture from the same website shows a completely different design of axle, that may mislead buyers.



**LVVTA requires LVV Certifiers certifying a vehicle fitted with a Helix axle of this design to reject the axle, and advise the vehicle owner to cease using the vehicle until the axle is replaced with a safe and compliant axle.**

**FOR FURTHER INFORMATION PLEASE CONTACT YOUR LVV CERTIFIER, OR LVVTA.**