

LED tail-lights — are you aware of the risks?



If you wouldn't mess with your computer motherboard, why would you consider adding LED tail lights to a new light commercial vehicle?

Background

Vehicle manufacturers are designing computerised modern cars and utility vehicles to be as smart and efficient as possible in order to reduce fuel consumption and emissions.

This leads to a complex electrical circuit and charging system, which means that adding accessories to the electrical system is often fraught with risk.

Many new vehicle owners, however, are still turning to retrofit LED lights for light commercial vehicles. This is despite the fact that most modern vehicles do not have a compatible electrical system that allows a direct replacement of the OEM (Original Equipment Manufacturer) tail light assembly.



Discussion

Many new vehicle owners consider LED tail lights to be far superior to traditional bulbs – they last longer, burn brighter and use less power to operate, not to mention they are better for the environment.

LED lights are excellent when powered directly from the battery or in addition to an existing circuit, however this is not the case when used to replace OEM tail lights.

The problem is that modern commercial vehicles are akin to a computer on wheels, which means that post-fitting LED lights – or other electrical items – is a bit like messing with the motherboard.

Manufacturers are making vehicle electrics more and more sophisticated using electronic switching, CAN bus (a message-based computer protocol for electrical wiring) and monitoring systems to control, protect and power the vehicle's electrical circuits. These systems detect a variation in the electrical current that can result in a 'fault' condition showing up on the dashboard and thereby help diagnose problems to the driver so they can be repaired.

Due to the low current draw of LED tail lights, this 'fault' condition can appear when installed on a circuit not designed for this type of light.

On an indicator light circuit, the fault appears as a fast flash. To overcome it, it is necessary to fit a load resistor that matches the original light globe wattage at the same time as the LED lights are fitted.

Resistors used in this manner, however, are an inefficient use of energy. They do not perform any physical action, and can overheat and melt insulation, causing short circuits and possible fire hazard. As the size of the load resistor matches the replaced globe, there is no saving in energy.

Load resistors are needed on indicator lights, and depending on the base vehicle, perhaps on tail, stop and reversing lights as well.

Without a load resistor, the indicator light circuit will continue to flash fast, and this fast flash feature is an Australian Design Rule requirement. In a normal circuit, it occurs when there is a globe failure and acts as a warning to the driver to take action. This feature no longer operates when a load resistor is fitted, which means the installation is no longer ADR-compliant.

But what is more alarming is that the modifications needed may negatively affect the vehicle's safety features.

If left on too long, or incorrectly sized, the load resistor's temperature can melt insulation, cause short circuits and create a fire hazard.

There are special load resistors designed for LED light circuits, which when correctly installed minimise the maximum temperature of the resistor.

If you are considering converting your fleet vehicles' tail lights to LED, consider these facts first:

- Most modern vehicles do not have a compatible electrical system to allow a direct replacement of the OEM tail light assembly.
- You need to fit load resistors on each indicator light and possibly stop, tail and reversing lights as well.
- These load resistors need special mounting to ensure the component does not overheat and cause potential fire hazards.
- The indicator light circuit is no longer compliant with Australian Design Rules in that there will not be a warning to the driver if a globe has failed in the circuit.
- You may have to change the OEM tail light connector.
- Each extra connection increases the risk of a fault and reduces reliability.
- Vehicle manufacturers will not support non-OEM tail lights, creating potential service, warranty and parts issues.
- The cost of installation is high, and creates waste as the existing OEM tail-light assembly is scrapped.
- There is no energy saving.

The physical installation of LED tail lights requires changes to the OEM system including:

- Replacement of the light assembly.
- Replacing tail light connectors.
- Installing load resistors which have to be correctly mounted to prevent overheating.
- Up to 16 additional electrical connections.

All this is on top of standard fit out costs by the body builder/auto electrician, none of which is supported by the vehicle manufacturers. Dealer networks at times are reluctant to assist with non-OEM installations, making repairs difficult.



Conclusion

While on the surface, LED tail lights seem like the optimum choice for fleet vehicles, post-fitting them carries costs and risks that far outweigh any perceived benefits.

They can compromise the modern electrics, and the 'fix' of a load resistor can introduce new problems, not to mention compromising the vehicles manufacturer's warranty.

Put simply, never fit LED tail lights if you need to modify the base vehicle electrical circuit. This includes changing OEM connectors and fitting load resistors.

XL strongly recommends consultation with the vehicle manufacturer and/or dealer before making any electrical modifications to new vehicles. As recognised experts in the field, the team at XL is more than happy to discuss fleet vehicle fit out options, including electrical accessories and systems.



Since 1991 XL Service Bodies has dedicated itself to delivering top-quality products at competitive prices. Our production line manufacturing and our commitment to quality has enabled XL Service Bodies to become the leading Service Body and Canopy manufacturer in Australia. With over 4000 square metres of manufacturing space we make a variety of vehicle storage solutions to suit the modern service operator.

XL has designed and manufactured customised service bodies for many government and military fleets, some numbering in the 1000's. All XL-Bodies are designed and manufactured in Queensland, and all materials, fixings and components are sourced locally where possible.

Our mission is to fulfil the needs of our customers, and in doing so, exceed their expectations for service, quality and value. XL Service Bodies provide a place for everything, and, everything in its place.

Contact us

www.xl.com.au

Phone: +61 (0)7 3271 9900 | Fax: +61 (0)7 3271 9909 | Email: info@xl.com.au



**Proudly celebrating 25 years
of Australian design, innovation
and manufacturing excellence**



Australian made, Australian owned and proud supporter of Australian suppliers