

FutureFleet

Delivering the future

A guide to operating electric vans

DELIVERING THE FUTURE

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ARVAL
BNP PARIBAS GROUP

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INTRODUCTION

For the first time, mainstream manufacturers are starting to make a reasonably wide choice of electric vans available to fleets in the UK. Compact vans such as the Renault Kangoo and Nissan e-NV200 are being followed by others in the 3.5 tonne sector including the Renault Master EV and Volkswagen E-Crafter.

It's something of a watershed moment, providing genuine light commercial vehicle, zero emissions options.

Of course, issues such as range and access to charging points mean these vehicles aren't for everyone – but they certainly appear to have definite appeal for some and the first are starting to make their way onto fleets. We expect to see numbers grow quite rapidly.

There is quite a lot of information now available about the process of deciding whether electric vans are suitable for you.

However, almost no-one in the commercial vehicle sector knows very much about their actual operation; we are all beginners. So this guide is designed to provide a basic introduction in four key areas: compliance, day-to-day operation, safety and servicing.

Its purpose is to give newcomers to electric vans a working knowledge and, if a more detailed analysis is needed for your particular needs and circumstances, we'd be very happy to introduce you to our expert van consultancy team.

COMPLIANCE

There are four key areas of compliance that you need to consider for electric vans – driving licence legislation, the MOT test, O licences and the Electrical Equipment (Safety) Regulations 2016.

■ Electric vans and driving licences

Soon, a normal Category B or “car” driving licence may be able to be used to drive an electric van of a higher weight than usual.

Earlier this year, the Government announced that it was planning to make it possible to drive alternative fuel vans - including battery electric Vehicles (BEVs), range extended Vehicles (REVs) and plug-in hybrid electric vehicles (PHEVs) - of up to 4.25 tonnes GVW rather 3.5 tonnes for diesel or petrol equivalents.

To make this legal, the Government needs to secure a five-year derogation from the EU. Both Germany and France have already secured these, so there is every reason to expect that it will take effect in the UK.

The weight derogation will not apply to towing trailers, it is thought, and it is also believed drivers will not need a Driver Certificate of Professional Competence (DCPC), which would normally be required for a vehicle above 3.5 tonnes.

■ The MOT test

There is a sharp dividing line when it comes to MOTs for electric vans – and that line started on 1st May 2015.

Simply, if your van was registered before then, there is no requirement for an MOT test.

The reason is that the legislation covering electric vans has lagged some way behind the fast-evolving, real-world situation. It was really designed for a time when the only common electric commercial vehicles were milk floats. But, recognising this situation, the Government has recently moved to rectify it.

The MOT absence does create an operational difficulty because the test provides a useful structure for fleets when it comes to maintenance – as well as proving that they are being looked after to legally recognised standards. Therefore, our advice to fleets operating these vehicles is to follow exactly the same compliance rules you would for any other vehicle on your fleet, even to the point of undertaking a “mock” MOT inspection.

If your van was registered after 1st May 2015, then it will face an MOT like any other commercial vehicle which means it can be integrated into your normal fleet compliance regime.

Finally, for plug-in hybrid vans, of which none are expected to reach the market until 2019, the MOT regulations with which you need to comply are exactly the same as for a standard diesel or petrol van.

■ O licence requirements

It was recently announced that, from September 2018, alternatively fuelled and electric vans up to 4.25 tonnes GVW would be exempted from O licence requirements, other than those used for international journeys, rather than the normal 3.5 tonnes GVW.

This move has been made by the Government to encourage take up of low emissions commercial vehicles and also in recognition of the fact the electric vans simply tend to be heavier than their diesel counterparts because of the weight of batteries.

For some fleets, this exemption might be an attractive factor when making the decision to go electric.

When it comes to plug-in hybrid vans, O licence requirements are exactly the same as for their petrol or diesel counterparts.

Fast facts



- Electric vans registered before 1st May 2015 need no MOT...
- ...but those registered after face a normal MOT test.
- However, all electric vans are affected by The Electrical Equipment (Safety) Regulations 2016.
- There is a special exemption for electric vans under O licence requirements - the minimum qualifying weight for electric vans is 4.25 tonnes GVW instead of 3.5 tonnes for their diesel or petrol equivalents.
- All plug-in hybrid vans are covered by normal diesel or petrol van legislation, so need an MOT and are required to comply with O Licence requirements where appropriate.

DAY-TO-DAY OPERATION

This guide assumes that you have already made a decision to buy electric vehicles, so will have undertaken research into how they will meet your overall transport needs. However, there are still a variety of everyday operational issues to consider.

Payload

There are two main payload considerations. The first is that EVs and plug-in hybrids are heavier than their petrol and diesel counterparts so, for equivalent vehicle weights, will carry less. Drivers accustomed to diesel or petrol vans need to be aware of this to ensure that they are staying within legal limits.

The second is that the payload carried can have an extremely detrimental impact on the range of the electric van. For example, Arval has undertaken tests that show when loaded to 75% of the maximum permissible payload, an electric van's available range can be reduced by more than 70%. This means that drivers need to ensure that they are only carrying what is needed at any point in time in order to maximise range potential.

Charging

In most electric van operations, the vehicle is used during the day and recharged overnight. If the vehicle returns to a secure depot each night, ensuring that the appropriate recharging infrastructure is available is relatively simple. However, if it goes home with the driver, there are some points to consider.

For home based vehicles, the first question to be answered is whether the driver has access to off-street parking? If the answer is no, then there is no easy solution unless there is a nearby public charge point.

Assuming the driver has off-street parking, the business must consider whether to install a dedicated home charging unit or rely on connecting to a standard 3-pin mains socket.

Installing a dedicated charging unit is preferable from a speed and safety perspective, while ensuring that the vehicle will have direct access to the charge point. If a smart unit is chosen, the business will also know the exact amount of electricity that has been used for recharging rather than relying on more ad hoc reimbursement methods.

■ **Extra equipment**

Typical commercial vehicle extras, where fitted, could have an effect on the range of electric vans, although we are unaware of any research that shows the exact impact.

Light bars and beacons typically run off a 12v battery – in the same way as a diesel or petrol vehicle – and not off the main system so won't directly affect the range. A battery saver system can also be incorporated to ensure the 12v battery doesn't run flat.

However, additional weight from towing and tail lifts will obviously increase the energy consumption of the vehicle and reduce the range.

■ **Driver acceptance**

Gaining driver acceptance of electric vans is a crucial operational challenge.

Any change of vehicle can create objections from fleet drivers and this is especially true when contemplating a shift to electric, which does require a different style of driving and introduces considerations such as range anxiety and charging.

You need to ensure that you properly train and engage staff, even potentially creating 'EV champions' – enthusiastic drivers who have volunteered to trial an electric van and can communicate the pros and cons of the technology to their peers.

Our experience is that, over a period of time, drivers come to accept EVs as long as the situation is proactively managed.

SAFETY

There are no reasons why electric vehicles should not be as safe as any other in use. However, they do bring specific risks with which you may be unfamiliar.

The most important concern is servicing and repair, which will be dealt with in the next section of this document. However, there are also key safety considerations covering drivers who are using electric vans and others coming into contact with them through very basic maintenance activities such as valeting.

For these people, there is perhaps one fundamental fact to remember about electric vans – while the risk of electrocution is very low, the charge they carry is high and potentially fatal. Most operate at 650V DC, compared to the 400V you'd find in a Tesla car or the 48V that you might find in a mild hybrid car. For this reason, it is essential to make them aware that they should not, under any circumstances, attempt to carry out any repair to the vehicle, however minor.

This guidance should also prove useful:

- Remote operation keys that only need to be close to the vehicle for it to power up should be kept away from vehicles. This is to prevent the van from accidentally moving.
- There is a good argument for instituting additional rules surrounding the movement of electric vans because of the lack of noise they produce, especially in closed areas such as a compound where there may be workers on foot present around vehicles.
- Pressure washing has the potential to damage batteries, high voltage electrical components and cables. We would suggest seeking guidance from manufacturers before valeting in any under body areas including the engine bay.
- It is possible that a vehicle may move unexpectedly and without warning because of magnetic forces within the motors.
- There is potential for the electrical systems on the vehicle to affect medical devices such as pacemakers.
- Any battery that contains electrical energy has the potential to cause explosion or fire and components within the vehicle may retain a dangerous voltage even when a vehicle is switched off and the battery disconnected.

Risks in the event of an accident



- Vehicles should be visually checked for signs of damage to high voltage electrical components or cabling, which are usually coloured orange.
- Consider whether the integrity of the battery is likely to have been compromised. Battery systems contain chemicals that can be harmful if released. This creates a potential hazard, especially in accident conditions. Tesla recommend that an electric car is monitored for 24 hours in the event of a vehicle fire because of the risk of combustion spontaneously reoccurring.
- Shorting or loss of coolant may present ignition sources in the event of fuel spillage.
- If the vehicle is damaged or faulty, and if safe to do so, isolate the high voltage battery system using the isolation device on the vehicle. Remember, though, that it may still contain a residual charge.
- During movement onto a recovery vehicle, the remote operation key should be removed to a suitable distance and the standard 12/24v battery disconnected to prevent the vehicle from being activated or started.

Charging



The act of charging an electric van or plug-in hybrid should not in itself be in any way dangerous. The equipment is designed in such a way to make the likelihood of shock almost impossible. However, it is important to impress on users that they should only use charging points and cables that are approved for use with the vehicles

and also, if they are charging from home, that any additional equipment used – such as a mains extension cable – is properly rated. Also, of course, a charging cable can represent a trip hazard, and drivers should be given information that allows them to minimise risks.

SERVICING

The servicing, maintenance and repair provisions you have in place for your conventionally engined diesel and petrol vans are unlikely to be suitable for electric vans. The reason for this is simple - the technology is almost unknown to most conventional providers. At the moment, these are not vehicles that can be serviced by your friendly local garage or, if you have them, even in your own workshops, at least for the foreseeable future.

Instead, in almost all circumstances, most scheduled servicing and maintenance, and most emergency repair, will be undertaken by franchise dealers who have undergone specialist training and have appropriate equipment.

However, you may be planning to carry out lower-level maintenance such as tyre fitting and changing brake pads, that have no direct relevance to the electric system that powers the vans. Our advice is that such actions are undertaken only by appropriately-trained personnel to minimise risk of injury.

Here are a range of things you may need to consider:

- Before you do anything, refer to vehicle-specific sources of information such as the manufacturer or appropriate trade bodies in order to identify precautions you need to implement which are necessary to prevent danger.
- High voltage systems should be isolated with the power disconnected and secured so that it cannot be inadvertently switched back on, and proven dead by testing before any work is undertaken. Always isolate and lock off the source of electricity in accordance with the manufacturer's instructions.
- It may be necessary to locate the van within an area that can be secured so that people who could be put at risk are not able to approach the vehicle. Warning signs should be used to make people aware of the dangers.
- Visually check the vehicle for signs of damage to high voltage electrical components or cabling, which are usually coloured orange.
- Determine the locations of high voltage cables before carrying out any drilling, welding or body repair. Take appropriate precautions to prevent them from being damaged.
- Even when isolated, vehicle batteries may still contain residual but large amounts of energy. Only suitable tools and test equipment should be used including electrically insulated tools and test equipment.
- Some electronic components may also retain dangerous amounts of electricity even when the vehicle is off and the battery isolated. The manufacturer should give guidance on how to discharge stored energy.
- There may be circumstances, such as after collision damage, where it has not been possible to fully isolate the high voltage electrical systems and to discharge the stored energy in the system. Refer to the manufacturer's instructions about what control measures should be implemented before attempting to carry out further remedial work.

- Battery packs can be affected by high temperatures. The vehicle will typically be labelled, advising of its maximum temperature and this should be considered – and advice sought - when carrying out operations such as painting where booth temperatures may exceed this limit.
- Don't take any risks – if in any doubt, seek help and advice from someone who is trained to work on the vehicle and has appropriate equipment.
- Working on live electrical equipment should only be considered when there is no other way for work to be undertaken. Even then it should only be done if it is both reasonable and safe to do so. You should consider the risks for working on this live equipment and implement suitable precautions including, as a final measure, the use of appropriate personal protective equipment.

Plug-in hybrid vans



In the car world, plug-in hybrid vehicles that combine electric and combustion engine propulsion, are relatively common. There are currently no vans on sale that fall into this category although the Ford Transit Custom PHEV is expected to go on sale in 2019. As more information becomes available about operating these vehicles, Arval will be producing relevant advice and guidance.

SUMMING UP

In the introduction to this guide, we made the point that when it comes to operating electric vans, almost everyone in the UK fleet sector is still very much a beginner.

This document represents a short summary of our knowledge to date but this is very much an evolving area, and that means we want to gather as much information as possible.

If you are running electric vans or planning to do so, we'd very much like to hear about your experiences and share some of ours.

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To make sure your fleet is future fit, speak to our team today:

 0370 419 2818  @corporatesales@arval.co.uk  arval.co.uk/fleet-research/futurefleet



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