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E-bikes and e-scooters

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To fully understand this guidance, it is important to note the difference between the United Kingdom and Great Britain:

- UK: England, Scotland, Wales and Northern Ireland
- GB: England, Scotland and Wales

In this guide, the words 'must' or 'must not' are used where there is a legal requirement to do (or not do) something. The word 'should' is used where there is established legal guidance or best practice that is likely to help you avoid breaking the law.

This guidance is for England, Scotland and Wales

E-bikes (sometimes known as e-cycles) and e-scooters have become increasingly popular in recent years as a means of transport. They are also known as PLEVs (personal light electric vehicles) and that term is used in this guide to refer to both e-bikes and e-scooters.

When assessing the safety of a PLEV, a number of matters are taken into consideration, and anyone in the supply chain can be held liable for the supply of unsafe products.

The legal term for an e-bike is an electrically assisted pedal cycle (EAPC). An EAPC may have more than

two wheels.

Electric-powered cycles that do not conform to the EAPC rules are classed as motorcycles or mopeds, which are not covered here. Most 'twist and go' electric cycles, or those that can attain speeds of more than 15.5 mph / 25 kph under electrical power only, are regulated as road-going motor vehicles in the same way as motorcycles and cars. Further information on the legal framework and the specific way in which such products are classified can be found in 'EAPC standards and legal requirements' on the GOV.UK website.

Note: references to European legislation in this guide are to the EU version, not the assimilated UK version.

E-bikes

E-bikes are vehicles that are essentially cycles with two or more wheels and the following definitions:

- cycle must be fitted with pedals that are capable of propelling it
- continuous rated power of the electric motor must not exceed 250 W
- electrical assistance must cut off when the cycle reaches 15.5 mph or 25 km/h

Under the Electrically Assisted Pedal Cycles Regulations 1983 (which were amended by the Electrically Assisted Pedal Cycles (Amendment) Regulations 2015), an e-bike that complies with the above is not considered to be a motor vehicle within the meaning of the Road Traffic Act 1988. As a result, it is not required to be registered and is not subject to vehicle excise duty (road tax), nor does it have to be insured as a motor vehicle. E-bikes must not be ridden by anyone under the age of 14.

E-scooters

E-scooters are considered to fall within the definition of 'powered transporters' in the Road Traffic Act 1988. As such, privately owned e-scooters are not currently legal for use on roads or other public highways. However, E-scooters that are part of a public rental scheme (usually administered by local authorities) may be used on the road.

Product safety

The law requires that any product sold to consumers must be safe. Products must not present any unnecessary risk to anyone when used in a normal or reasonably foreseeable way. When assessing the safety of a product, the following must be taken into account:

- packaging, labelling and instructions
- effect of the product on other products with which it might be used
- special needs of particular types of people, such as elderly people or those with disabilities

EAPCs and powered transporters (including e-scooters) are grouped together as PLEVs and are classed as machinery under the Supply of Machinery (Safety) Regulations 2008 / EU Directive 2006/42/EC *on machinery* (depending on whether they are UKCA- or CE-marked - see below). Therefore, they have to comply with the essential health and safety requirements as set out in these Regulations. One way to show compliance is to design it in accordance with a Designated Standard or a Harmonised Standard*, which will offer a presumption of conformity with essential safety requirements of the Regulations. The essential safety requirements determine the parameters for what is a safe product under the Supply of Machinery (Safety) Regulations 2008 / EU Directive 2006/42/EC.

[*'Designated Standards' are those approved by the Secretary of State and published by the British Standards Institution (BSI), and 'Harmonised Standards' are those that have been referenced in the Official Journal of the European Union. Designated Standards are used for UKCA conformity marking, and Harmonised Standards are used for CE conformity marking. Both marks are valid for the market in England, Scotland and Wales.]

Manufacturers, their representatives, and importers must ensure that, when their cycles, scooters, systems, components or separate technical components are placed on the market or are entering into service, they are manufactured and approved in accordance with the requirements set out in the Regulations.

Manufacturers are required to equip the battery pack on PLEVs with:

- appropriate battery management systems (also known as BMS) to reduce the risk of thermal runaway
- master control devices and mechanisms to prevent tampering or modification to increase power or maximum speed, which impacts on user safety

Everyone in the supply chain, including retailers, has a legal obligation to ensure that products are safe for supply and to take the necessary precautions to prevent the supply of unsafe products. In general, it is a criminal offence to supply unsafe products; you could also be liable to pay compensation for any injury or property-damage caused.

All businesses in the supply chain should be prepared to carry out checks on the product and/or on their suppliers to ensure that they meet the appropriate product safety requirements. Doing nothing is not enough.

BSI has produced PAS 7050: *Bringing safe products to the market. Code of practice*, which can be downloaded for free from the BSI website. You have obligations under the General Product Safety Regulations 2005 if an incident arises that requires corrective action, such as a recall. Guidance to assist with putting together a product safety incident plan (PSIP) can be found in PAS 7100: *Product recall and other corrective actions. Code of practice*, which can also be downloaded for free from the BSI website. For more information, see Business Companion's Business in Focus guide 'Providing safe products (PAS 7050, PAS 7100 and PRISM)'. This guide sets out the systems that may be put in place to help businesses abide by the obligation to ensure products are safe.

The current primary relevant Standard for e-bikes is BS EN 15194:2017+A1:2023 *Cycles. Electrically power assisted cycles. EPAC Bicycles*. This Standard is Designated but with a limitation; therefore, it provides a limited presumption of conformity with the Supply of Machinery Regulations 2008. It is also Harmonised, but with additional restrictions in relation to conformity with EU Directive 2006/42/EC.

The restrictions in designation primarily relate to essential requirements addressing vibrations. For harmonisation, the same restriction applies, in addition to requirements relating to extreme temperatures, fire and explosion, which is particularly relevant for battery stability.

Where there are additional safety considerations over and above those addressed in the Standard, the manufacturer must apply the principles of design risk management, which are set out below.

The current relevant Standards for e-scooters are:

- BS EN 17128:2020 *Light motorized vehicles for the transportation of persons and goods and related facilities and not subject to type-approval for on-road use. Personal light electric vehicles (PLEV)*
- BS EN IEC 63281-2-1:2024 *E-Transporters - Safety requirements and test methods for personal e-*

Transporters

These Standards are not Designated; therefore, the safety of the product must be determined through the process of design risk management, and the Standard may be used for identification and quantification of hazards (a product characteristic which may lead to harm) but does not provide a presumption of conformity.

Design risk management is the process of identifying all product hazards (a product characteristic capable of causing injury) and then applying the following protocol.

1. The first step is to try to eliminate the hazard.

2. If elimination is not possible due to the product's functionality, then you move on to step two, which is mitigation of the risk. This is done by reducing either the probability or the severity of the harm - for example, by using guarding or safety interlocks / devices.

3. If mitigation is not possible either, then you must provide warnings about the hazard and how to avoid it causing harm, as well as recommendations about appropriate personal protective equipment etc. Such warnings are generally required to be on the product itself, as it cannot be assumed that consumers will read detailed safety information in the instruction handbook.

As well as strength tests, BS EN 15194:2017+A1:2023 requires safety measures that relate to the general safety of e-bikes, including:

- brakes
- chain-wheel and belt-drive protective device
- drive-chain and drive belt
- electromagnetic compatibility
- frames
- front fork
- front mudguard
- lighting systems and reflectors
- luggage carriers
- pedals and pedal / crank drive system
- protrusions
- rims, tyres and tubes
- road-test of a fully-assembled e-bike
- saddles and seat-posts
- security and strength of safety-related fasteners
- sharp edges
- spoke protector
- steering
- thermal hazards
- warning device
- wheels and wheel / tyre assembly

BS EN 17128:2020 has requirements for the following safety attributes for e-scooters:

- adequate stability
- charging of batteries
- classes of vehicles
- driving power management
- edges and protrusions
- general safety requirements and protective measures

- electrical components
- electromagnetic compatibility
- energy storage within the vehicle
- hot surfaces
- markings and instructions for use
- moving parts
- presence awareness
- speed limitation
- structural integrity

Conformity assessment of machines is undertaken at both the design and production phases to ensure that the product design is safe, and also that subsequent mass production continues to meet this safe specification. This is undertaken by specifying a design that meets all the relevant essential safety requirements, laying down a detailed specification for this design, and then setting up a quality-managed manufacturing system to ensure that this design specification is maintained throughout the production run.

Electrical compliance

The battery and charger for the product must be compatible to meet safety requirements. The battery must meet the appropriate standards for batteries; the charger must be both compatible with the battery and meet the Standard BS EN 60335-2-29:2021+A11:2024 *Household and similar electrical appliances. Safety. Particular requirements for battery chargers*.

If battery chargers are supplied separately, they must have sufficient information on them to comply with the Electrical Equipment (Safety) Regulations 2016 / EU Directive 2014/35/EU *on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits* (depending on whether they are UKCA- or CE-marked), including:

- the UK manufacturer's or importer's name (or their trade name) and address
- an indication of the input and output ratings
- the type of insulation used
- a batch code
- any other instructions and warnings as appropriate

Other requirements:

- PLEVs and their battery packs must be designed to avoid risk of fire and mechanical deterioration resulting from abnormal use
- during testing, the PLEV and the batteries must not emit flames, molten metal or poisonous ignitable gas in hazardous amounts, and any enclosure must show no damage that could impair compliance with the Standard
- safety and compatibility of the battery / charger combination must be ensured, according to the manufacturer's specifications
- the battery terminals must be protected against creating an accidental short circuit
- appropriate care must be taken to ensure that the batteries are protected against overcharging
- an appropriate overheating and short-circuit protection device must be fitted

Battery packs (whether supplied with the product or separately) must be safe for their entire lifetime in conditions of foreseeable use, which includes being left on charge. A BMS must be fitted to ensure that even if the battery becomes unstable, for any reason, it does not go into a condition called 'thermal runaway', which results in a catastrophic release of energy that can lead to fire and explosion. For more information, see the statutory guidelines on lithium-ion battery safety for e-bikes, published by the Office

for Product Safety and Standards (OPSS).

Labelling requirements, instructions and warnings

PLEVs are required to be labelled with:

- contact details and UK address of the manufacturer or responsible person
- BS EN 15194:2017+A1:2023 for the e-bike or BS EN 17128:2020 for the e-scooter, if these Standards have been applied
- appropriate marking required by legislation (CE and/or UKCA - see below)
- year of construction - that is, the year in which the manufacturing was completed
- cut-off speed, expressed as XX km/h
- maximum continuous rated power, expressed as XX kW
- the weight of the PLEV
- maximum permissible total weight
- designation of series or type
- individual serial number, if any

There are also recommendations for safety-critical components to be marked with traceable identification. If further information is required, then advice should be sought from your local Trading Standards service.

All markings must be clear and visible, legible and indelible in accordance with the relevant Standard, which ensures compliance with the labelling requirements under the Regulations.

As well as labelling requirements, PLEVs must be supplied with a set of instructions for safe use. It is currently obligatory to deliver these in paper form, along with more detailed information to enable access for vulnerable people. Instructions for use should be available additionally in electronic form on demand. The relevant Standards also stipulate that the instructions for use cover all aspects of the safe use of the PLEV.

Warnings about safe use should be affixed to the product itself. These will include the type of personal protective equipment that may be appropriate, appropriate age markings, the maximum carriage weight and any instructions for assembly and/or use of any folding mechanism, charging the batteries, and safe riding, as well as warnings related to wear-and-tear and impact damage. The instructions also need to include any warnings against the dangers of misuse.

Technical documentation

Manufacturers must draw up technical documentation that clearly identifies how the PLEV complies with the Electrical Equipment (Safety) Regulations 2016 / EU Directive 2014/35/EU (although the PLEV is a machine, the power supply will fall under the regulatory framework for electrical equipment because it is a mains-operated domestic appliance). If anyone in the supply chain modifies a PLEV, they become a manufacturer of a modified vehicle; they take on the manufacturer's responsibility and need to ensure that the PLEV meets the approval and conformity necessary for any new intended use.

The technical construction file must contain:

- general description of the machinery
- drawings and calculations
- documentation on risk assessment, demonstrating the procedure followed
- list of essential requirements that apply to the machinery and the Standards used to assess

compliance
- protective measures to eliminate identified hazards and to reduce risks
- any test results
- copy of instructions
- copy of declaration of conformity
- for factory-produced products, the internal measures that will be implemented to ensure that the machinery remains in conformity with the provisions of the Regulations

The Regulations also place an obligation on importers that place PLEVs on the market to:

- ensure that the technical documentation is compiled and made available in accordance with the requirements
- provide information as necessary to operate it safely, such as instructions for use, repair and maintenance
- follow appropriate conformity assessment procedures, as prescribed by the Regulations
- ensure that there is a declaration of conformity undertaken by the manufacturer

The declaration of conformity must accompany the PLEV throughout the supply chain and must contain the following:

- business name and full GB address of the responsible person, which is either the UK manufacturer, importer or the manufacturer's authorised representative
- name and address of the person authorised to compile the technical file
- description and identification of the machinery, including generic denomination, function, model, type, serial number and commercial name
- declaration that the machinery fulfils all the relevant provisions of the Regulations and, where appropriate, other enactments and/or relevant provisions with which the machinery complies.
- where appropriate, the name, address and identification number of the approved body that carried out the type-examination and the number of the type-examination certificate
- name, address and identification number of the approved body that notified the full quality assurance system
- reference to the published Designated / Harmonised Standards used
- reference to other technical standards and specifications used
- place and date of the declaration
- identity and signature of the person empowered to draw up the declaration on behalf of the responsible person

CE / UKCA mark

The CE and/or UKCA mark is placed on a product by the manufacturer as confirmation that it complies with all the relevant safety and conformity legislation. All machinery requires CE and/or UKCA marking in accordance with the:

- Supply of Machinery (Safety) Regulations 2008 / EU Directive 2006/42/EC
- Electrical Equipment (Safety) Regulations 2016 / EU Directive 2014/35/EU (where relevant to electrical components such as chargers)

For more information on these marks, see 'CE / UKCA marking'.

Conversion kits and battery replacement

Conversion kits (to turn an existing pedal cycle into an e-bike) are considered to be partially completed machinery and are regulated in a similar way to completed e-bikes. They must be safe for foreseeable

fitting and use. They must also be supplied with a Declaration of Incorporation and adequate fitting instructions, setting out the parameters for installation and use. This is to ensure that, once the conversion kit is installed, the bicycle is safe, in accordance with the Supply of Machinery (Safety) Regulations 2008 / EU Directive 2006/42/EC and other applicable legislation.

The position for retailers

Retailers may not have the same degree of technical knowledge and expertise as a manufacturer or importer. However, they may be able to carry out certain checks on the safety of PLEVs.

Retailers must ensure that the vehicle has undertaken any relevant conformity assessment and has a 'declaration of conformity' document. They also need to ensure that each vehicle is marked visibly, legibly and indelibly with the following particulars:

- business name and full address of the manufacturer and, where applicable, the manufacturer's authorised representative in the UK
- designation of the machinery, series and type
- serial number
- CE and/or UKCA mark
- year of construction
- any information that is essential for safe use, as per the manufacturer's responsibilities listed above

Retailers must ensure that each vehicle is supplied with adequate written instructions. Instructions for maintenance are particularly important to pass on in written format, as they will be relied on for safe use for the entire expected life of the product. If there are parts of the instructions that have a particular relevance to safety, you may wish to highlight them.

Anyone selling these products should carry out basic checks before placing the PLEV on the market - for example:

- all fixings, nuts and bolts are correctly and securely fastened
- frame is not damaged
- condition and inflation of tyres
- brakes are working effectively
- no sharp edges and entrapment hazards
- ensure that the steering is aligned
- ensure that you can supply full instructions for use

You may wish to offer advice on the appropriate safety equipment that needs to be used with the PLEV - for example, a cycle helmet and suitable clothing.

If PLEVs are supplied with rechargeable batteries and chargers, mains operated chargers must be compliant with the Electrical Equipment (Safety) Regulations 2016, as well as being compatible with the batteries. There are Designated Standards for both batteries and mains operated chargers.

Where retailers fit conversion kits (see above) they will be considered the 'manufacturer' of the PLEV in its final form, and must follow the fitting instructions and comply with the Declaration of Incorporation supplied with the kit. They must also ensure that the final machine complies with the relevant essential requirements under the Supply of Machinery (Safety) Regulations 2008 / EU Directive 2006/42/EC.

RoHS and EMC

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (RoHS) are an important piece of legislation for e-bikes and e-scooters. However, RoHS is not enforced by Trading Standards services, but rather by the Office for Product Safety and Standards (OPSS); therefore, it is not covered in this guide. For more information, see the guidance on RoHS on the GOV.UK website.

Neither does this guidance cover compliance with the Electromagnetic Compatibility Regulations 2016 (EMC), but all e-bikes and e-scooters must meet the Regulations' requirements. For more information, see the statutory guidance produced by OPSS.

Further information

OPSS has produced advice for businesses on the prevention of fires caused by dangerous PLEVs, particularly related to repairing, modifying and converting them. The lithium-ion batteries contained within these products can be the source of fatal fires. The advice is also available in a printable version.

OPSS has also published independent research on the safety of e-bike and e-scooter lithium-ion batteries, chargers and e-bike conversion kits.

See also 'My safety: e-bikes and e-scooters' on the GOV.UK website.

Trading Standards

For more information on the work of Trading Standards services and the possible consequences of not abiding by the law, please see 'Trading Standards: powers, enforcement and penalties'.

In this update

General detail added.

Last reviewed / updated: January 2026

Key legislation

- Electrically Assisted Pedal Cycles Regulations 1983
- General Product Safety Regulations 2005
- EU Directive 2006/42/EC *on machinery*
- Supply of Machinery (Safety) Regulations 2008
- Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
- EU Directive 2014/35/EU *on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits*
- Electrically Assisted Pedal Cycles (Amendment) Regulations 2015
- Electrical Equipment (Safety) Regulations 2016
- Electromagnetic Compatibility Regulations 2016

Please note

This information is intended for guidance; only the courts can give an authoritative interpretation of the law.

The guide's 'Key legislation' links go to the legislation.gov.uk website. The site usually updates the legislation to include any amendments made to it. However, this is not always the case. Information on all changes made to legislation can be found by following the above links and clicking on the 'More Resources' tab.

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