TECHNICAL REPORT

ISO/TR 13062

First edition
2015-11-15

Electric mopeds and motorcycles - Terminology and classification

Cyclomoteurs et motocycles électriques ¿ Terminologie et classification

Reference number
ISO/TR 13062:2015(E)

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 38, *Motorcycles and mopeds*.

Electric mopeds and motorcycles - Terminology and classification

1 Scope

This Technical Report establishes a vocabulary of terms and the related definitions used in ISO/TC 22/SC 38 standards. These terms are specific to the electric propulsion systems of electrically propelled mopeds and motorcycles.

2 Terms and definitions

2.1 Complete motorcycle/moped

2.1.1 Type of Electric motorcycle and electric moped

2.1.1.1
motorcycle
two-wheeled motor-driven vehicle or three-wheeled motor-driven vehicle whose unladen weight does not exceed 400 kg

Note 1 to entry: *Mopeds* (2.1.1.2), as defined in 2.4, are not included in this definition.

[SOURCE: ISO 3833:1977, 3.5]

2.1.1.2
moped
two-wheeled or three-wheeled motor-driven vehicle with a maximum design speed not exceeding 50 km/h

Note 1 to entry: If the driving motor is an engine, its displacement or equivalent *capacity* (2.3.3.2) must not exceed 50 cm^3.

[SOURCE: ISO 3833:1977, 3.4]

2.1.1.3
electric vehicle
electrically propelled vehicle
EV
vehicle with one or more electric drive(s) for vehicle propulsion

[SOURCE: ISO 13063:2012, 3.19]

2.1.1.4
battery-electric vehicle
BEV
electric vehicle (2.1.1.3) with only a *traction battery* (2.3.1.3) as the power source for vehicle propulsion

Note 1 to entry: The abbreviation BEV is often shortened to EV .

[SOURCE: ISO 13063:2012, 3.6]

2.1.1.5
hybrid electric vehicle
HEV
vehicle with at least one *RESS* (2.3.1.1) and one fuelled power source for vehicle propulsion

EXAMPLE ICE or fuel cell systems are typically types of fuelled power sources.

[SOURCE: ISO 13063:2012, 3.22]

2.1.1.6
externally chargeable hybrid-electric vehicle
HEV (2.1.1.5) with *RESS* (2.3.1.1) that is intended to be charged from an external electric energy source

Note 1 to entry: Externally chargeable HEVs are widely known as plug-in HEVs (PHEVs).

[SOURCE: ISO/TR 8713:2012, 2.34, modified]

2.1.1.7
fuel cell hybrid-electric vehicle
FCHEV
electrically propelled vehicle (2.1.1.3) with an *RESS* (2.3.1.1) and a fuelcell system as power source for vehicle propulsion

[SOURCE: ISO/TR 8713:2012, 2.36]

2.1.1.8
electric motorcycle
electrically propelled motorcycle
motorcycle (2.1.1.1) driven by electric motor with two or three wheels

2.1.1.9
electric moped
electrically propelled moped
moped (2.1.1.2) driven by electric motor with two or three wheels

2.1.2 Construction and components

2.1.2.1 Propulsion and driving device

2.1.2.1.1
auxiliary electric system
on-board vehicle system, other than for vehicle propulsion, which operates on electric energy

[SOURCE: ISO 13063:2012, 3.1]

2.1.2.1.2
propulsion system
combination of on-board power source for vehicle propulsion and power train

[SOURCE: ISO/TR 8713:2012, 2.56]

2.1.2.1.3
electric power train
power train, consisting of electric drive and drive train

[SOURCE: ISO/TR 8713:2012, 2.25]

2.1.2.1.4
hybrid power train
power train of an *HEV* (2.1.1.5), consisting of a fuelled power source and an *electric power train* (2.1.2.1.3)

[SOURCE: ISO/TR 8713:2012, 2.43]

2.1.2.1.5
drive direction control
device physically actuated by the rider for selecting the driving direction of the road vehicle (forward or backward)

EXAMPLE A lever or a push-button switch.

[SOURCE: ISO 13063:2012, 3.13]

2.1.2.2 Electric devices and components

2.1.2.2.1
live part
conductor or *conductive part* (2.1.2.2.2) intended to be electrically energized in normal use

[SOURCE: ISO 13063:2012, 3.25]

2.1.2.2.2
conductive part
conductor
part capable of conducting electric current

[SOURCE: ISO 13063:2012, 3.9]

2.1.2.2.3
exposed conductive part
conductive part (2.1.2.2.2) of the electric equipment that can be touched by a test finger according to IPXXB after removing *barriers* (2.1.3.3.7)/*enclosures* (2.1.3.3.8) that can be removed without using tools and that is not normally live, but which may become live under fault conditions

Note 1 to entry: *Protection degrees* (2.1.3.3.18) (e.g. IPXXB) are defined in ISO 20653.

[SOURCE: ISO 13063:2012, 3.21]

2.1.2.2.4
electrical chassis
conductive parts (2.1.2.2.2) of a vehicle that are electrically connected and whose potential is taken as reference

[SOURCE: ISO 13063:2012, 3.15]

2.1.2.2.5
electric power system
electric circuit, containing electric power sources

EXAMPLE Fuel cell stacks, batteries.

[SOURCE: ISO 13063:2012, 3.17]

2.1.2.2.6
isolation-resistance monitoring system
system which periodically or continuously monitors the *isolation resistance* (2.1.3.3.10) between *live parts* (2.1.2.2.1) and the electric chassis or *exposed conductive parts* (2.1.2.2.3)

[SOURCE: ISO 13063:2012, 3.23]

2.1.3 Performance

2.1.3.1 Drivability

2.1.3.1.1
range at 80% maximum speed
total distance the vehicle can cover when running at 80 % *maximum speed* (2.1.3.1.4)

Note 1 to entry: For the relevant test procedure, see ISO 13064-2:2012, 9.1.

[SOURCE: ISO 13064-2:2012, 3.5]

2.1.3.1.2
reference range
distance covered by an *electrically propelled vehicle* (2.1.1.3) over a designated test sequence on a fully charged *traction battery* (2.3.1.3), to the end of the test sequence as defined by the end of test sequence criteria

Note 1 to entry: The reference range is usually expressed in kilometers (km).

[SOURCE: ISO 13064-1:2012, 3.2]

2.1.3.1.3
reference energy consumption
quantity of electric energy from the mains needed to charge the *traction battery* (2.3.1.3), divided by the distance covered after the vehicle has been driven through the specified test sequence

Note 1 to entry: The reference energy consumption is usually expressed in watt-hours per kilometer (Wh/km).

[SOURCE: ISO 13064-1:2012, 3.1]

2.1.3.1.4
maximum speed
highest average speed which the vehicle can maintain twice over a distance of 200 m

Note 1 to entry: For the relevant test procedure, see ISO 13064-2:2012, 9.3.

[SOURCE: ISO 13064-2:2012, 3.6]

2.1.3.1.5
acceleration ability
shortest time required to accelerate the vehicle from standstill over a given distance

Note 1 to entry: For the relevant test procedure, see ISO 13064-2:2012, 9.5.

[SOURCE: ISO 13064-2:2012, 3.7]

2.1.3.1.6
hill starting ability
maximum slope on which the vehicle can start moving over a minimum distance of 10 m

Note 1 to entry: For the relevant test procedure, see ISO 13064-2:2012, 9.6.

[SOURCE: ISO 13064-2:2012, 3.8]

2.1.3.1.7 Efficiency

2.1.3.1.7.1
direct determination of efficiency
determination of the efficiency from direct measurement of active input power and active output power

[SOURCE: IEC 60050, 411-53-10]

2.1.3.1.7.2
indirect determination of efficiency
determination of the efficiency from the measurements of the power loss

[SOURCE: IEC 60050, 411-53-11]

2.1.3.1.8
speed uphill
highest average speed which the vehicle can maintain on a given slope over a distance of 200 m

Note 1 to entry: For the relevant test procedure, see ISO 13064-2:2012, 9.7.

[SOURCE: ISO 13064-2:2012, 3.9]

2.1.3.2 Braking

2.1.3.2.1
regenerative braking
braking with conversion of kinetic energy into electric energy for charging the *RESS* (2.3.1.1)

[SOURCE: ISO/TR 8713:2012, 2.64]

2.1.3.3 Protection against electric shock

2.1.3.3.1
maximum working voltage
highest value of a.c. voltage (rms) or of d.c. voltage which may occur in an electric system under any normal operating conditions according to manufacturers' specifications, disregarding transients

[SOURCE: ISO 13063:2012, 3.26]

2.1.3.3.2
voltage class A
classification of an electric component or circuit as belonging to voltage class A, if its *maximum working voltage* (2.1.3.3.1) is ≤30 V a.c. or ≤60 V d.c., respectively

[SOURCE: ISO 13063:2012, 3.33]

2.1.3.3.3
voltage class B
classification of an electric component or circuit as belonging to voltage class B, if its *maximum working voltage* (2.1.3.3.1) is (>30 and ≤1 000) V a.c. or (>60 and ≤1 500) V d.c., respectively

[SOURCE: ISO 13063:2012, 3.34]

2.1.3.3.4
electric shock
physiological effect resulting from an electric current passing through a human body

[SOURCE: ISO 13063:2012, 3.18]

2.1.3.3.5
balance of electric power system
remaining portion of an *electric power system* (2.1.2.2.5) when the power sources are disconnected

EXAMPLE Fuel cell stacks, batteries.

[SOURCE: ISO 13063:2012, 3.2]

2.1.3.3.6
potential equalization
electric connections of *exposed conductive parts* (2.1.2.2.3) of the electric equipment to minimize differences in potential between these parts

[SOURCE: ISO 13063:2012, 3.27]

2.1.3.3.7
barrier
part providing protection against *direct contact* (2.1.3.3.12) from any usual direction of access

[SOURCE: ISO 13063:2012, 3.3]

2.1.3.3.8
enclosure
part providing protection of equipment against *direct contact* (2.1.3.3.12) from any direction

[SOURCE: ISO 13063:2012, 3.20]

2.1.3.3.9
basic protection
protection against *direct contact* (2.1.3.3.12) with *live parts* (2.1.2.2.1) under fault-free conditions

[SOURCE: ISO 13063:2012, 3.5]

2.1.3.3.10
isolation resistance
resistance between *live parts* (2.1.2.2.1) of voltage class B electric circuit and the electric chassis or *exposed conductive parts* (2.1.2.2.3) as well as the voltage class A system

[SOURCE: ISO 13063:2012, 3.24]

2.1.3.3.11
creepage distance
shortest distance along a surface of a solid insulating material between two *conductive parts* (2.1.2.2.2)

[SOURCE: ISO 13063:2012, 3.10]

2.1.3.3.12
direct contact
contact of persons with *live parts* (2.1.2.2.1)

[SOURCE: ISO 13063:2012, 3.11]

2.1.3.3.13
indirect contact
contact of persons with an *exposed conductive part* (2.1.2.2.3) made live by a fault of the *basic insulation* (2.1.3.3.14) of a *live part* (2.1.2.2.1)

2.1.3.3.14
basic insulation
insulation applied to *live parts* (2.1.2.2.1) for protection against *direct contact* (2.1.3.3.12) under fault-free conditions

Note 1 to entry: Basic insulation does not necessarily include isolations used exclusively for functional purposes.

[SOURCE: ISO 13063:2012, 3.4]

2.1.3.3.15
supplementary insulation
independent insulation applied in addition to *basic insulation* (2.1.3.3.14) for protection against *electric shock* (2.1.3.3.4) in the event of a failure of the basic insulation

[SOURCE: ISO 13063:2012, 3.31]

2.1.3.3.16
double insulation
insulation system comprising both *basic insulation* (2.1.3.3.14) and *supplementary insulation* (2.1.3.3.15)

[SOURCE: ISO 13063:2012, 3.12]

2.1.3.3.17
reinforced insulation
insulation of *live parts* (2.1.2.2.1) for protection against *electric shock* (2.1.3.3.4) equivalent to *double insulation* (2.1.3.3.16)

Note 1 to entry: Reinforced insulation does not imply that the insulation shall be a homogeneous piece. The reinforced insulation may comprise several layers which cannot be tested individually as supplementary or *basic insulation* (2.1.3.3.14).

[SOURCE: ISO 13063:2012, 3.30]

2.1.3.3.18
protection degree
protection provided by a *barrier* (2.1.3.3.7)/*enclosure* (2.1.3.3.8) related to the contact with *live parts* (2.1.2.2.1) by a test probe, such as a test finger (IPXXB), a test rod (IPXXC), or a test wire (IPXXD)

Note 1 to entry: Protection degrees (e.g. IPXXB, IPXXC, or IPXXD) are defined in ISO 20653.

[SOURCE: ISO 13063:2012, 3.28]

2.1.3.4 Mass

2.1.3.4.1
complete battery-electric moped (motorcycle) kerb mass
total unladen mass of the battery-electric moped (*motorcycle*) (2.1.1.1), including traction batteries, cooling liquid, window-washer fluid, lubricating oil, tool kit, spare wheel (if mandatory), and on-board charger and portable charger or part of it, if provided as standard equipment by the manufacturer

[SOURCE: ISO 13064-2:2012, 3.1]

2.1.3.4.2
test mass of a battery-electric vehicle
complete battery-electric vehicle kerb mass increased by a uniform figure of 75 kg, which represents the mass of a rider

[SOURCE: ISO 13064-2:2012, 3.3]

2.1.3.4.3
maximum design total mass
maximum vehicle mass as specified by the battery-electric moped (*motorcycle*) (2.1.1.1) manufacturer

[SOURCE: ISO 13064-2:2012, 3.2]