
**Battery-electric mopeds and
motorcycles — Performance —**

**Part 2:
Road operating characteristics**

*Cyclomoteurs et motocycles électriques — Performance —
Partie 2: Caractéristiques d'utilisation sur route*





COPYRIGHT PROTECTED DOCUMENT

© ISO 2012

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Parameters, units and accuracy of measurements	2
6 Test conditions	3
6.1 Vehicle conditions.....	3
6.2 Atmospheric conditions.....	3
6.3 Track conditions.....	3
6.4 Rider and riding position.....	4
6.5 Driving selection mode.....	5
7 Preconditioning of the vehicle	5
7.1 Battery charge.....	5
7.2 Warm-up.....	5
8 Test sequence	5
9 Test procedures	6
9.1 Range at 80 % maximum speed.....	6
9.2 Complete battery discharge.....	6
9.3 Maximum speed.....	6
9.4 Partial battery discharge.....	7
9.5 Acceleration ability.....	8
9.6 Hill starting ability.....	8
9.7 Speed uphill.....	9
10 Presentation of results	9
Annex A (informative) Specimen format for test result sheet	10

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 13064-2 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 23, *Mopeds*.

ISO 13064 consists of the following parts, under the general title *Battery-electric mopeds and motorcycles — Performance*:

- *Part 1: Reference consumption and range*
- *Part 2: Road operating characteristics*

Battery-electric mopeds and motorcycles — Performance —

Part 2: Road operating characteristics

1 Scope

This International Standard specifies the procedures for measuring the road performance of electric motorcycles and mopeds with only a traction battery(ies) as power source for vehicle propulsion.

The road performance comprises road operating characteristics such as speed, acceleration and hill climbing ability.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11486, *Motorcycles — Methods for setting running resistance on a chassis dynamometer*

ISO 28981, *Mopeds — Methods for setting the running resistance on a chassis dynamometer*

ISO 13064-1:2012, *Battery-electric mopeds and motorcycles — Performance — Part 1: Reference energy consumption and range*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13064-1 and the following apply.

3.1

complete battery-electric moped (motorcycle) kerb mass

total unladen mass of the battery-electric moped (motorcycle), 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

3.2

maximum design total mass

maximum vehicle mass as specified by the battery-electric moped (motorcycle) manufacturer

3.3

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

3.4

tyre rolling radius

effective radius of a tyre when it is deformed by the mass of the vehicle loaded to its test mass

3.5

range at 80 % maximum speed

Total distance the vehicle can cover when running at 80 % maximum speed

NOTE For the relevant test procedure, see 9.1.

3.6

maximum speed

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

NOTE For the relevant test procedure, see 9.3.

3.7

acceleration ability

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

NOTE For the relevant test procedure, see 9.5.

3.8

hill starting ability

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

NOTE For the relevant test procedure, see 9.6.

3.9

speed uphill

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

NOTE For the relevant test procedure, see 9.7.

4 Principle

All road operating characteristics (3.5 to 3.9) shall be tested in the test sequence according to Clause 8 with the charged states of the battery for each test resulting from the previous procedure.

However, if any test is conducted individually, start the test procedure for range and maximum speed (9.1 and 9.3) with a battery state between 100 % and 90 % of fully charged.

For acceleration (9.5), hill starting ability (9.6) and speed uphill (9.7), the test procedure shall be started with a battery state between 65 % and 50 % of fully charged.

5 Parameters, units and accuracy of measurements

Table 1 specifies parameters and their units, accuracy and resolution.

Table 1 — Parameters, units and accuracy of measurements

Parameter	Unit	Accuracy	Resolution
Time	s	±0,1 s	0,1 s
Distance	m	±0,1 %	0,1 m
Temperature	°C	±1 K	1 K
Air pressure	kPa	±1 kPa	1 kPa
Speed, constant	km/h	±1 % or ± 0,1 km/h ^a	0,2 km/h
Mass	kg	±0,5 %	1 kg
^a Whichever is the greater.			