
Motorcycles — Guideline for verification of total running resistance force during mode running on a chassis dynamometer

*Motorcycles — Lignes directrices pour la vérification de la force
totale de résistance à l'avancement durant les essais sur un banc
dynamométrique en mode roulage*





COPYRIGHT PROTECTED DOCUMENT

© ISO 2023

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols	2
5 Evaluation method	3
5.1 Test summary	3
5.2 Vehicle test	4
5.2.1 Test cycles	4
5.2.2 Warm-up condition	4
5.2.3 Evaluation requirements	4
5.2.4 Evaluation procedure	5
5.3 Simulation test	5
5.3.1 Test cycles	5
5.3.2 Evaluation requirements	5
5.3.3 Evaluation procedure	6
6 Test result	6
6.1 General	6
6.2 Vehicle test result	7
6.2.1 Relationship between fuel consumption and correlation coefficient of vehicle 1,2,3 and 4	7
6.2.2 Relationship between fuel consumption and slope of the regression line of vehicle 1,2,3 and 4	8
6.2.3 Relationship between fuel consumption and intercept of the regression line of vehicle 1,2,3 and 4	9
6.2.4 Relationship between fuel consumption and relative standard deviation of vehicle 1,2,3 and 4	10
6.2.5 Relationship between fuel consumption and integral work error of vehicle 1,2,3 and 4	11
6.3 Simulation test result	12
6.3.1 Relationship between fuel consumption and dead time of vehicle 5	12
6.3.2 Relationship between fuel consumption and rise time of vehicle 5	13
7 Guideline	15

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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

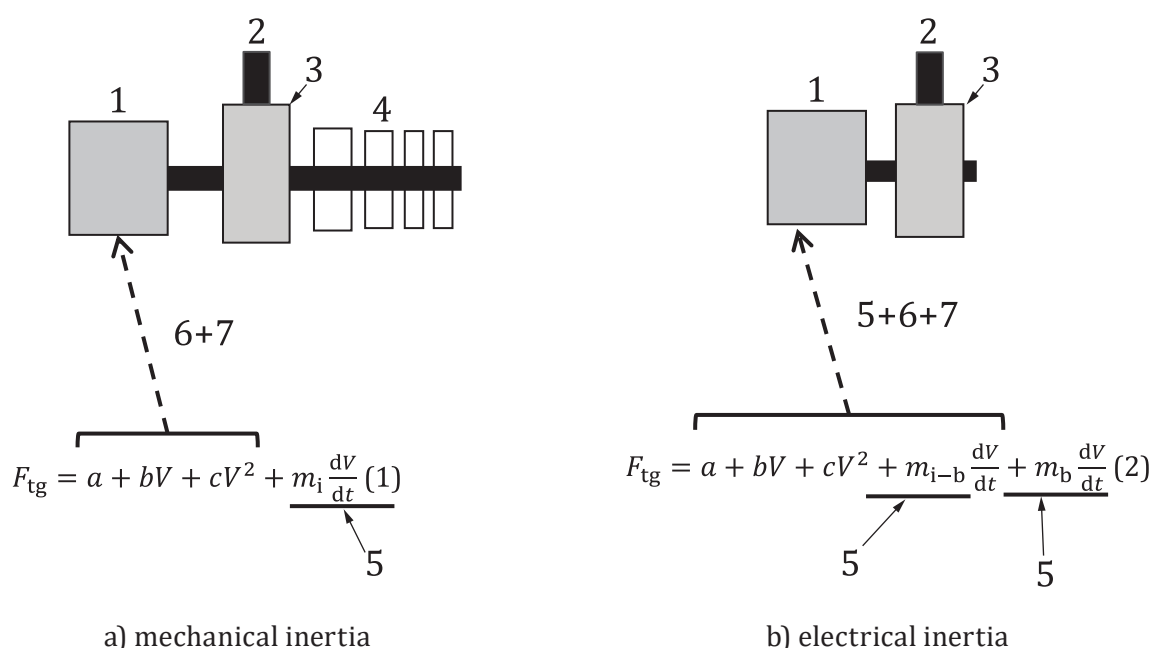
This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 38, *Motorcycles and mopeds*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

A mechanical inertia chassis dynamometer (Formula (1)) is a device with a mechanical flywheel, whereas a chassis dynamometer (Formula (2)) using the electric inertia function is not equipped with such a mechanical flywheel equivalent to inertia mass system and the inertia force is electrically set in the same way of the running resistance force control (Figure 1). The inertia force is generated by the acceleration and/or deceleration, therefore, it is necessary to check the performance of electric inertia function during the mode running test and ISO 18580 specifies the method to verify the chassis dynamometer operated normally.

However, ISO 18580 does not provide a threshold for the verification result, and it is difficult to determine its validity. Therefore, we investigate the effect of factors affecting fuel consumption on ISO 18580 verification results, and propose a technical report that shows the guideline for determining the threshold of the verification result.



Key

- 1 dynamometer
- 2 tire
- 3 roller
- 4 flywheels
- 5 acceleration resistance
- 6 rolling resistance
- 7 aerodynamic drag resistance

NOTE The symbols are defined in [Clause 4](#).

Figure 1 — The principle of mechanical and electrical inertia dynamometer

Motorcycles — Guideline for verification of total running resistance force during mode running on a chassis dynamometer

1 Scope

This document shows the results of investigating the guideline for determining the threshold of the evaluation result on an electric inertial chassis dynamometer that electrically controls the amount of inertia using fuel consumption.

This document is applicable when the running resistance force of a chassis dynamometer is set in accordance with ISO 18580.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 18580, *Motorcycles — Verification of total running resistance force during mode running on a chassis dynamometer*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18580 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

dead time

time between the input being given and the output

Note 1 to entry: Dead time is shown in [Figure 2](#), key 3.

3.2

rise time

time required to reach 10 %-90 % of the final output value

Note 1 to entry: Rise time is shown in [Figure 2](#), key 4.