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Motorcycles — Measurement method for gaseous exhaust emissions and fuel consumption —

Part 1:
General test requirements

Motocycles — Méthode de mesure des émissions de gaz d'échappement et de la consommation de carburant —

Partie 1: Exigences générales d'essai

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Foreword

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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).

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This document was prepared by Technical Committee ISO/TC 32, *Road vehicles*, Subcommittee SC 38, *Motorcycles and mopeds*.

This second edition cancels and replaces the first edition (ISO 6460-1:2007), which has been technically revised. It also incorporates the Amendment ISO 6460-1:2007/Amd.1:2015.

The main changes are as follows:

— addition of a detailed description of a critical flow venturi (CFV) as a flow measurement principle to the CVS system;

— permission to use of the subsonic venturi (SSV) as a flow measurement principle to the CVS system;

— addition for the measurement of methane (CH_4) concentration, either a GC-FID (flame ionization detector with gas chromatograph) or an NMC-FID (flame ionization detector with non-methane cutter);

— addition of a calculation method for non-methane hydrocarbons (NMHC);

— permission to determine the ratio of hydrogen and carbon (R_{HC}) and the ratio of oxygen and carbon (R_{OC}) by the content analysis of fuel;

— addition of calculation methods for the mass of the gaseous exhaust emissions and the fuel consumption when using oxygenated fuels;

— deletion of descriptions related two-stroke engines and diesel fuel.

A list of all parts in the ISO 6460 series can be found on the ISO website.

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

For the measurement of motorcycle fuel consumption, the carbon balance method, where the fuel consumption is calculated from analysis of the carbon quantity in the exhaust emissions, is now widely used in addition to the conventional fuel flow measurement. Therefore, the measurement of exhaust emissions pollutants and fuel consumption are inseparably related to each other.

This document defines the fundamental elements such as the measurement accuracy, test motorcycle conditions and the details of the carbon balance method. The measurement of gaseous exhaust emissions and fuel consumption during test cycles can be conducted by means of this document and ISO 6460-2. Additionally with ISO 6460-3, these three documents provide details of those measurements at a constant speed.

The following revisions are mainly made in this document.

— The detailed description of a critical flow venturi (CFV), adopted by most of the manufacturers as well as a positive displacement pump (PDP), is added as a flow measurement principle to the CVS system. Also, the use of the subsonic venturi (SSV) is also permitted as a CVS flow measurement principle.

— For measurement of methane (CH_4) concentration in the diluted exhaust mixture, either a GC-FID (flame ionization detector with gas chromatograph) or an NMC-FID (flame ionization detector with non-methane cutter) shall be used as the analytical instrument. The formula for calculating non-methane hydrocarbons (NMHC) is also defined.

— Instead of obtaining the ratio of hydrogen and carbon (R_{HC}) and the ratio of oxygen and carbon (R_{OC}) from the exhaust emissions analysis, R_{HC} and R_{OC} shall be determined by the fuel analysis. In addition, when using the oxygenated fuels such as gasoline (E5) and gasoline (E10), the mass of the gaseous exhaust emissions and the fuel consumption also can be calculated.

— As there has been no need for newly development of two-stroke engines and compression ignition engines in recent years, the description regarding two-stroke engines and diesel fuel is to be deleted. If these are required, see ISO 6460-1:2007.