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**Road vehicles — Durability test  
method of starter relay for stop and  
start system**

*Véhicules routiers — Méthodes de test d'endurance pour le relais  
démarrreur stop and start system*



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## 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](http://www.iso.org/directives)).

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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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 32, *Electrical and electronic components and general system aspects*.

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](http://www.iso.org/members.html).

## Introduction

A stop and start system requires more frequent engine starting therefore, the starter relay used in such an engine should be durable. Currently, there is no common durability test method for starter relays, and most individual durability test methods of vehicle manufacturers and relay suppliers use actual starter solenoids as electrical loads of the relay. However, heat mass of the starter solenoid is not sufficient, so cooling equipment and/or a longer test cycle time are necessary to prevent starter solenoid damage.

This document provides a test method using a simulated electrical load which can shorten the test period or eliminate cooling equipment.



# Road vehicles — Durability test method of starter relay for stop and start system

## 1 Scope

This document defines the durability test methods of a starter relay for passenger vehicles (12 V) with a stop and start system. It uses a simulated electrical load to represent the starter solenoid.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### **stop and start system**

system to stop the engine automatically when its operation is not needed, and to start the engine automatically when its operation is needed

### 3.2

#### **starter solenoid**

mechanical switch equipped with a solenoid that supplies current to the DC motor of the starter motor and/or shifts starter motor pinion to engage the ring gear of internal combustion engine

### 3.3

#### **starter relay**

relay that opens and closes the circuit to the starter solenoid

### 3.4

#### **simulated load**

electric load used as a substitute for the starter solenoid

## 4 Structure of starting circuit

The starting circuit is shown in the [Figure 1](#). The starter relay opens and closes the circuit to the starter solenoid.