TECHNICAL PAPER

Guidelines concerning operating conditions for stop and start systems

Introduction

Idling stop systems (ISS), which are also referred to as "stop and start systems," are one of the most effective means of controlling and reducing CO_2 emissions from vehicles, and the adoption of this technology is expected to increase in the future. However, since the operating conditions of these systems differ depending on the automaker, an immediate standardization of system specifications is greatly desired.

This technical paper describes the guidelines concerning the operating conditions of ISS as a preliminary step toward standardization.

1. Scope

These guidelines describe the guiding principles for the design of the operating conditions of ISS used in passenger vehicles equipped with an automatic transmission. [a)]

Note: [a)]

According to the definition stipulated in **JIS D 0101**.

2. Normative references

The following standards, when referred to in this standard, constitute a part of the specifications of this standard. The latest edition of the cited standard (including any amendments) shall apply.

JASO Z 201	General Rules for Glossary of Terms Relating to Automobiles
JIS D 0101	Glossary of terms relating to kinds of automobiles

3. Terms and definitions

The main terms and definitions used in this standard shall be as stipulated in JASO Z 201. If not described in that standard, the following terms and definitions shall apply.

3.1 Idling stop system (ISS)

A system that stops the engine when the vehicle enters a state where engine operation is not required and then re-starts the engine when engine operation becomes necessary again.

3.2 Brake holding function

A function that automatically holds the vehicle in a stopped state when the vehicle has been brought to a stop, even if the brake pedal is not depressed.

Documents
Document Sharing Hub

Full document details: JASO TP-15001 2015

4. Design guidelines

4.1 Basic operating conditions of ISS

The ISS shall detect the intention of the driver to stop or decelerate, and then shall stop the engine after determining that driving force is not necessary. The ISS shall also detect the intention of the driver to move off or accelerate, and then shall start the engine after determining that driving force is necessary.

The determination of the necessity for driving force is different for each position of the shift lever, so the following sections specify these details for each shift lever position.

The positions of the shift lever in which the ISS operates shall be selectable by the manufacturer, except for reverse (R).

The R shift position shall be limited to temporary uses, such as when parking. The ISS shall be prohibited from operating when the position of the shift lever is R to avoid complicating the process of backing up with frequent engine stops and starts.

4.1.1 Operating conditions when the shift lever is in neutral or park

When the shift lever is in the neutral (N) or park (P) positions, the ISS shall determine that driving force is unnecessary and the engine shall be stopped because these are non-travel shift positions.

When the ISS detects that the shift lever has moved from a non-travel shift position to a travel shift position (a forward travel shift position or R), it shall determine that driving force is necessary and start the engine.

4.1.2 Operating conditions when the shift lever is in a forward position

When the shift lever is in a forward position with the brake pedal depressed and the accelerator pedal not depressed, the ISS shall determine that driving force is unnecessary and the engine will be stopped. When the ISS detects that the brake pedal is not depressed or the accelerator is depressed, it shall determine that driving force is necessary and start the engine.

Note: [(1)]

In the case of vehicles equipped with a function that stops the vehicle even if the brake pedal is not depressed, such as a brake holding function, the driver will frequently release the brake pedal when the vehicle is stopped. This means that it will not be possible to stop the engine if the engine is started when the brake pedal is not depressed. Therefore, it shall be permissible for the ISS to determine that driving force is necessary when only the accelerator pedal is depressed as an engine start condition.

Note: [(2)]

The guidelines written above are minimum conditions. For example, it is also permissible to add other conditions to those stated above, such as adding the condition that the brake pedal must be depressed to the engine stop conditions when the shift lever is in the N position.

Table 1 shows a summary of the basic operating conditions of ISS.

Documents
Document Sharing Hub
Full document details: JASO TP-15001 2015