

	SURFACE VEHICLE RECOMMENDED PRACTICE	SAE J2948 JAN2011
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Keyless Ignition Control Design		

RATIONALE

This SAE Recommended Practice establishes guidelines for the operation of automotive keyless ignition systems with the goal of helping to minimize user instigated errors.

1. SCOPE

This SAE Recommended Practice establishes guidelines for the operation of automotive keyless ignition systems with the goal of helping to minimize user instigated errors.

For the purpose of this Recommended Practice, user instigated errors may include:

- the inability to start and stop the vehicle propulsion system,
- exiting the vehicle with the automatic transmission in a non-parking gear,
- exiting the vehicle while the vehicle propulsion system is enabled,
- exiting the vehicle while the vehicle propulsion system is disabled, but the accessory or electrical systems are active.

To help minimize these errors, this Recommended Practice contains design recommendations pertaining to uniform labeling, operating logic, indication of vehicle ignition/control status, and physical control characteristics of keyless ignition systems.

This Recommended Practice applies to keyless ignition controls permanently mounted in passenger cars, MPVs, and trucks 10 000 GVWR and under. It does not apply to remote start/remote stop systems that provide remote controls to start or stop a vehicle engine from outside the vehicle.

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2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 FMVSS Publications

Available from U.S. Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328.

FMVSS 101 Controls and displays

FMVSS 102 Transmission control functions

FMVSS 114 Theft protection and rollaway prevention

2.1.2 ISO Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 2575 Road vehicles - Symbols for controls, indicators and tell-tales: 2010, 8th Edition

3. TERMS AND DEFINITIONS

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

3.1 KEY CODE

Electronic code which, when transmitted to and stored in the starting system software, allows the driver to select a vehicle ignition mode using a keyless ignition control.

3.2 KEY CODE CARRYING DEVICE

Physical device capable of transmitting an electronic key code to the vehicle starting system.

3.3 KEYLESS IGNITION CONTROL

Permanently mounted physical device such as a pushbutton, rocker switch, multi-position control, or rotary control used to start or stop a vehicle propulsion system without need for insertion or removal of a conventional key from a keyslot.

3.4 KEYLESS IGNITION CONTROL ACTUATIONS

Method by which a keyless ignition control is physically pressed, rotated, or otherwise actuated by the driver in order to change vehicle ignition mode.

NOTE: The method includes the duration of time that the control is actuated by the operator.

Ignition control actuation methods and durations include:

3.4.1 SHORT ACTUATION

Any single ignition control actuation duration less than a LONG ACTUATION as specified by the vehicle manufacturer, with the minimum activation duration also specified by the vehicle manufacturer.

NOTE: Actuation durations below the manufacturer specified minimum activation duration are ignored.

3.4.2 LONG ACTUATION

Any single ignition control actuation longer than a SHORT ACTUATION with the minimum activation duration between 0.5 and 2 s as specified by the vehicle manufacturer.

3.4.3 MULTIPLE ACTUATION

Sequence of two or three short ignition control actuations, occurring within a manufacturer-specified period of time that is at least three times the manufacturer's minimum duration for a LONG ACTUATION but not more than 10 s.

NOTE: A multiple actuation is treated as a single ignition control actuation for the case of disabling a propulsion system in a non-stationary vehicle. In all other cases each of the 2 or 3 actuations may be treated as an individual short control actuation by the ignition system controller as specified by the vehicle manufacturer.

3.5 IGNITION MODES

Propulsion and/or vehicle electrical states as determined by vehicle operating conditions and driver actuation of the keyless ignition control.

Ignition modes include:

3.5.1 START MODE

Transient mode where the vehicle propulsion system is initiated (e.g., engine cranking), leading to RUN mode, while an electronic key code is present in the starting system.

3.5.2 RUN MODE

Mode in which the vehicle propulsion system is enabled and an electronic key code is present in the starting system.

NOTE: Automatic start/stop-equipped vehicles (reference FMVSS 102, S3.1.3.1) remain in RUN MODE when automatic stop is engaged.

3.5.3 ELECTRICAL and ACCESSORY MODES

Mode in which the vehicle propulsion system is disabled, the vehicle electrical system elements are active as determined by the vehicle manufacturer, and an electronic key code is present in the starting system.

3.5.4 STOP MODE

Mode in which the vehicle propulsion and vehicle electrical systems are disabled and an electronic key code is not present in the starting system.

NOTE: Vehicle manufacturers may choose to temporarily keep vehicle electrical systems active, and the key code in the starting system in this mode until a trigger event occurs (such as a driver-door open event or timer event). This vehicle state is sometimes provided to allow use of in-vehicle displays and entertainment systems after the propulsion system is disabled.